



2026 Taiwan Innotech Expo

Technical Handbook

AI 賦能創新 | 永續邁向未來

AI-Powered Innovation | Driving a Sustainable Future



Smart
Sustainability
智慧永續



Innovation
Economy
創新經濟



Future Tech
未來科技

About TIE

Taiwan Innotech Expo (TIE) is jointly organized by 12 government ministries and agencies, featuring the Innovation Economy Pavilion, Future Tech Pavilion, Smart Sustainability Pavilion, and Invention Competition Area.

Under the theme “AI Cross-Domain Innovation, Driving the Smart Future,” TIE showcases innovative technologies from industry, academia, and research institutions in Taiwan and around the world, while promoting international collaboration, patent commercialization, and technology matchmaking.



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創新經濟館

INNOVATION ECONOMY PAVILION

Integrating resources across the Ministry of Economic Affairs, the Innovation Economy Pavilion brings together Taiwan's AI innovation capabilities, highlighting advancements in semiconductors, smart manufacturing, net-zero, precision health, and emerging cross-domain applications.

With a focus on AI-driven hardware-software integration, the pavilion showcases achievements in industrial adoption and commercialization, accelerating industrial transformation and upgrading across sectors.



Empowering the Future of Data Centers: 3.2T SiPh Optical Engine Technology

TECHNOLOGY INTRODUCTION

- ① Ultra-High 3.2T Transmission Capacity for AI Data Centers
Upgraded to 3.2 Tbps transmission capacity to meet the growing bandwidth, fast data exchange, and scalability requirements of generative AI, high-performance computing, and cloud data centers.
- ② Low-Power Design with Reduced Packaging and Optical Path Losses
A low-power optoelectronic integration design helps reduce packaging loss and optical path loss, improving energy efficiency, signal quality, and overall system reliability for data center applications.
- ③ Standard EVB Package Interface for High-Density Multi-Channel Integration
Featuring a standard EVB package interface, the module supports multi-channel optical and electrical integration in a high-density configuration. This enhances module scalability and flexibility, facilitating deployment in next-generation data center interconnect architectures.



◀ MORE INFO

INDUSTRIAL APPLICATIONS

To meet the growing data transmission demands driven by generative AI, real-time computing, and high-speed data analytics, ITRI has developed a 3.2 Tbps silicon photonics optical engine module using high-speed optoelectronic integration technology. It provides a high-speed interconnect solution for next-generation data centers.

The module features high transmission capacity, low power consumption, low packaging loss, and low optical path loss. Its innovative fiber interface design improves the integration efficiency between optical signals and chips, helping reduce transmission loss. The technology can be applied to AI computing, cloud data centers, telecommunications networks, and high-performance computing, supporting system designs with higher bandwidth, higher density, and better energy efficiency.



3D Aluminum-
Microchannel
Thermosyphon Heat
Sink

TECHNOLOGY INTRODUCTION

Technological Innovation – 3D Aluminum-Microchannel Thermosyphon Heat Sink is a next-gen air-cooling technology tailored for high-performance computing servers. Using capillary-free microchannels and balanced pressure control, it can dissipate over 1,500 W of heat even under low airflow conditions, without pumps or leakage risks. The system delivers liquid-cooling-level performance with air-cooling simplicity, making it a lightweight, durable, and cost-effective thermal solution.

Competitive or Intellectual Property Advantages – Core patents on wickless two-phase microchannels and a comprehensive global IP portfolio create strong technical barriers and mass-production competitiveness.

Important Achievements / Awards – 2026 Edison Awards



◀ MORE INFO



INDUSTRIAL APPLICATIONS

An all-aluminum build replaces copper heat sinks—about \$2,592/ton vs. \$9,334/ton—reducing cost and weight. In a \$12B 2025 data-center cooling-module market where air cooling still holds ~79%, our drop-in design pushes air cooling to the top end, bridging the gap to liquid cooling without pumps, pipes, or leak risk. We plan a 2026 startup to commercialize this scalable, reliable solution.

Using lightweight, recyclable aluminum instead of copper further reduces environmental impact, helping build a more sustainable digital infrastructure. This will enable denser, more efficient data centers, support AI applications across industries, and strengthen next-generation high-performance computing.

硬體技術概覽

無所遁形：軍規級熱顯像與影像融合技術



多重熱顯模式

白熱 黑熱 鐵紅 高彩

Intelligent Payload with Identification, Tracking and Positioning

640x512 高解析度	60FPS 刷新率	-40~180°C 測溫範圍
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戰術優勢：影像融合套疊功能

未開啟

開啟後

融合可見光與熱顯像，清晰勾勒目標邊緣，大幅提升夜間與火場搜救效率

輕量化邊緣運算硬體

NPU影像酬載
三軸自穩雲台
(優質原始影像)



終端決策行動
座標回傳/協同作業
(實現戰術價值)

高效壓縮模型
知識蒸餾/網路剪枝/網路壓縮
(高校算力使用)

自研動態追蹤演算法

TECHNOLOGY INTRODUCTION

Technological Innovation Drones utilize AI-powered visual recognition payload systems to identify, track, and locate objects on land or at sea, and transmit accurate object identification information and dynamic geographic data in real time to ground command and control centers or ground control systems for collaborative operations.

Competitive Advantages: Hardware and software integration, non-red supply chain

Key Achievements: Procurement of over 3,000 aircraft by the ROC Armed Forces, and procurement of over 1,000 aircraft by the US police and fire departments.

INDUSTRIAL APPLICATIONS

Based on dynamic information from drones and imagery, combined with AI recognition capabilities, the system can quickly and accurately provide relevant dynamic location information of the target being searched, serving as a basis for decision-making and collaborative operations. Drones equipped with image payloads can perform edge computing, enabling them to autonomously search for targets.



◀ MORE INFO

Smart Water Dual-Core: Autonomous Monitoring Vessel × Digital Twin Treatment Plant

TECHNOLOGY INTRODUCTION

This technology integrates the Intelligent Sampling and Monitoring Vessel with a Digital Twin Water Treatment Plant to establish a dual-core smart system. The autonomous vessel enables automated navigation and high-density water quality monitoring, transmitting real-time data to the WaterOps platform. An AI-powered digital twin provides real-time visualization and intelligent decision support, optimizing chemical dosing, predicting equipment maintenance needs, and improving energy efficiency. By connecting raw water monitoring, AI analytics, and treatment operations, the system enables real-time water management from monitoring to decision-making, supporting low-carbon, efficient, and resilient operations.



◀ MORE INFO

INDUSTRIAL APPLICATIONS

The system enables automated water sampling and high-density monitoring of lakes and reservoirs. It supports pollution inspections and emergency sampling, reducing operational risks and improving safety. AI-driven analytics optimize chemical dosing and energy use, supporting ESG carbon reduction and digital transformation. The integrated solution offers strong potential for market deployment and technical collaboration.



Intelligent Neuro- Oculomotor Diagnostic System



TECHNOLOGY INTRODUCTION

NeuroSwift Pro is an AI-powered neurodiagnostic platform built on Eye Intelligence technology. It integrates 3D eye model auto-calibration, high-precision nystagmus analysis, visual stimulus testing, and AI algorithms to accurately capture binocular eye movements, even in high-interference environments. The system automatically classifies vertigo causes and predicts neurological risks, providing interpretable clinical insights for rapid decision-making. With integrated voice and visual guidance, NeuroSwift Pro reduces operator dependency and shortens examination time by more than 50%, enabling efficient neurological assessment across diverse clinical settings.

Backed by over 1.1 billion eye movement data points and 2,901 proprietary algorithms, NeuroSwift Pro has established a strong AI training advantage. FDA and TFDA medical device certifications further validate its technological excellence, clinical reliability, and global market competitiveness.



◀ MORE INFO

NeuroSwift Pro has obtained FDA and TFDA medical device certifications and has been successfully deployed across ENT, neurology, emergency medicine, and health screening facilities. Its scalable platform is well positioned for telemedicine, rural healthcare, and international market expansion.

INDUSTRIAL APPLICATIONS

NeuroSwift Pro is an intelligent neuro-oculomotor diagnostic system featuring a 3D eye model auto-calibration and high-precision nystagmus analysis. It enables clinicians to rapidly differentiate central versus peripheral vertigo, brainstem lesions, and neurological abnormalities. Combined with AI modules, the system automatically classifies vertigo causes and predicts brain risks, enhancing diagnostic efficiency and accuracy across diverse clinical and telemedicine settings.



External Wireless Electronic Press- response System

Patent NO I881867



The System And Method Of Multifunctional Electronic Wind Instrument

Patent NO M603611

*肺部胸腔訓練-尤其適合高齡者使用

*小巧輕便吹奏容易，隨時享受健康與吹奏樂趣

*人人會用-自訂指法，舒適自然(預設6/12/單孔陶笛指法)

*不同樂器聲音，趣味合奏

*轉調享受伴奏樂趣

*陶樂笛(電子陶笛)-每個人都可以享受吹奏音樂的樂趣!

TECHNOLOGY INTRODUCTION

Designed for dialysis shunt care, this tech uses pressure & IMU sensors to monitor grip strength & rhythm via an App with visual data & voice cues to prevent blockage. Unlike passive traditional balls, it adds cloud tracking & games for remote monitoring, boosting compliance. Ideal for seniors' strength & kids' focus, it delivers all-round rehabilitation. Award: 2025 TIE Platinum Award.

INDUSTRIAL APPLICATIONS

For smart healthcare & elderly care:

1. Clinical & Home Care: It adopts as a standard shunt care tool in dialysis centers & care homes. Cloud monitoring enables precise telehealth, cutting medical costs from shunt blockage.
2. Cross-Sector Market: Highly marketable, it extends to seniors' anti-frailty tools or kids' focus trainers, seamless joining smart wearables & rehab supply chains.

TECHNOLOGY INTRODUCTION

Merging modular hardware & App, this tech breaks music limits. Via pressure sensors & key inputs, it converts tones instantly, supporting custom fingering & interactive teaching. Integrated into smart care, it offers efficient respiratory & swallowing muscle training. Perfect for education, therapy, & performance across all ages, it delivers all-round rehabilitation. Award: 2025 TIE Silver Award.

INDUSTRIAL APPLICATIONS

It connects smart healthcare, digital education, and elder entertainment:

1. Smart Care & Rehab: Deployed in care centers & clinics as a standard breathing/swallowing training system. Gamified blowing boosts compliance, preventing pneumonia & cutting care costs.
2. All-Age Education/Fun: With modular hardware, it enters kids' music ed & home fun, seamless joining wearables & global markets.



◀ MORE INFO

Intelligent Pillbox and Care System

Patent No I877079



TECHNOLOGY INTRODUCTION

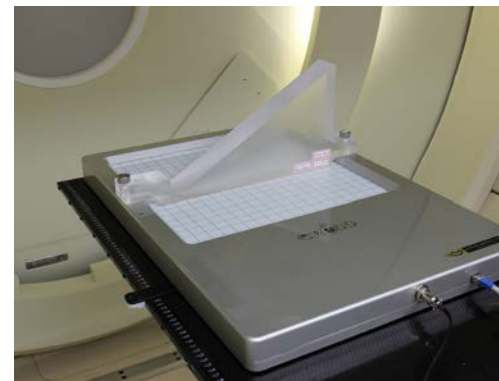
For patients on long-term medication, it is crucial to take medicines on time and track physiological data. This work offers medication reminders and data logging both at home and outdoors to help stabilize patients' conditions. It has received multiple honors, including a Gold Medal and Special Award at the Seoul International Invention Fair.

INDUSTRIAL APPLICATIONS

Due to population aging and medical advances, the number of elderly people with chronic diseases is increasing, making effective disease control crucial. This work presents a smart pillbox and care system for older adults and chronic patients, integrated with a mobile app. It offers medication reminders, records, and physiological data logging at home and outdoors, helping stabilize health conditions.

Detector For Measurements Of Scanning Beam In Radiotherapy

Patent No I610698



TECHNOLOGY INTRODUCTION

We developed a XY strip detector and analysis method for scanning particle beams. The detector uses two ionization chambers for X and Y measurements, each with many electrodes at a few mm pitch. Data analysis achieves better than 0.1 mm spatial resolution. With a 40 kHz readout rate, the system can track beam motion, calculate velocity, and estimate beam energy using a wedge-shaped acrylic block.

INDUSTRIAL APPLICATIONS

This technology can be used for proton and heavy-ion therapy systems to support machine QA, beam calibration, routine checks and acceptance testing. By measuring beam position, trajectory, velocity and energy, it helps improve treatment accuracy, reduce delivery errors and enhance patient safety. It has strong potential for particle therapy centers and medical equipment manufacturers.



◀ MORE INFO

MORE INFO ▶



Preparation Method of Rice Bran Extract Composition and Its Use for Skin Care

Patent No I838147



TECHNOLOGY INTRODUCTION

Rice bran requires neither pretreatment nor defatting, with low extraction temperatures and short extraction times.

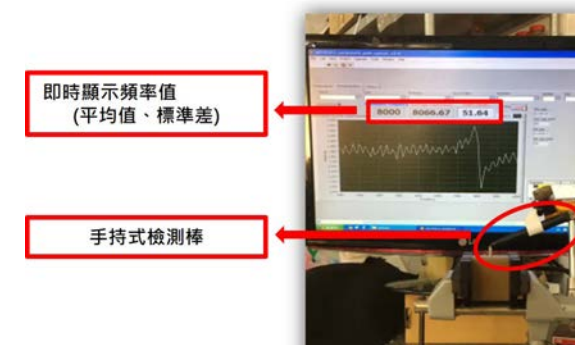
The extract has undergone comprehensive cell-based safety and efficacy testing. The extract exhibits whitening, anti-aging, anti-inflammatory, and anti-allergic effects.

INDUSTRIAL APPLICATIONS

A facial cream containing 2.5% of the rice bran extract composition (in powder form) covered by this patent was formulated. Following confirmation of its stability and safety, a 28-day human clinical trial was conducted. The results indicated trends such as reduced wrinkles, increased collagen levels, diminished spots and skin texture irregularities, improved skin tone, and reduced melanin content. Notably, significant improvements were observed in wrinkles (-22.4%), collagen (+9.9%), skin texture (-5.2%), and spots (-5.1%); these human trial results substantiate efficacy outcomes that could not be demonstrated through cell-based assays alone. Furthermore, the stability of the cream confirms the suitability of the invention's composition for use in skincare products, thereby enhancing their skin-care performance.

Detecting Device

Patent No I729594



TECHNOLOGY INTRODUCTION

This technology is a non-contact electromagnetic detecting device for evaluating the structural condition of implants or fixed components. The activation module generates a variable magnetic field to excite the tested structure, while the reference module is arranged outside the excitation field to reduce interference and improve detection accuracy. It can support the assessment of osseointegration stability, bone defects, and mechanical component defects.

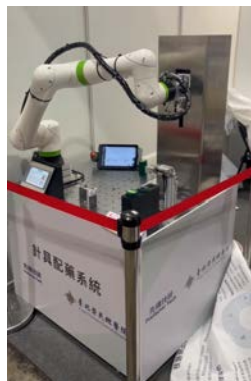
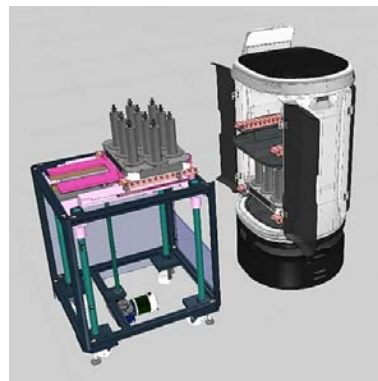
INDUSTRIAL APPLICATIONS

This technology is applicable to medical devices, dental implants, osseointegrated prostheses, orthopedic implants, and industrial inspection. It can assist clinicians in evaluating initial implant stability, osseointegration status, long-term follow-up, and exercise-loading permission. It may also be extended to condition monitoring of fixed components, connectors, and cutting tools.



Automatic Nuclear Medicine Dispensing System

Patent No I885971



TECHNOLOGY INTRODUCTION

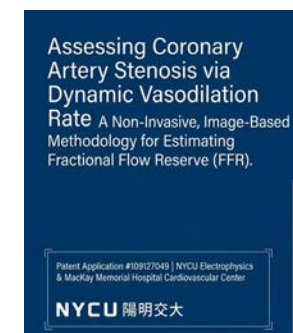
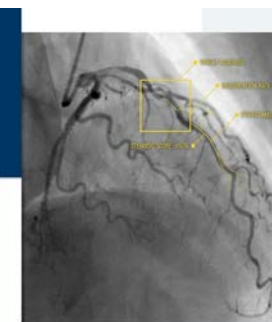
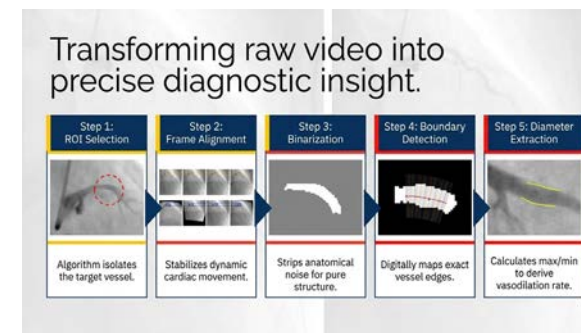
An automated dispensing system for radiopharmaceuticals. It automates vial extraction, radiation dose measurement, and loading into lead canisters for automated distribution.

INDUSTRIAL APPLICATIONS

By replacing traditional manual handling, this system eliminates risks of radiation exposure, high labor intensity, and bacterial contamination, while offering customization to the different medical institutions.

Method For Estimating Degree Of Arterial Occlusion

Patent No I740600



TECHNOLOGY INTRODUCTION

Accurately estimates Fractional Flow Reserve (FFR) by applying the Law of Laplace to the vasodilation ratio quantified from medical coronary images. Unlike traditional methods requiring invasive pressure guidewires or vasodilators, this technology offers the advantages of being guidewire-free, enabling dynamic functional assessment, and facilitating lightweight, real-time analysis. A Taiwanese invention patent application has been filed (Application No. 10912704).

INDUSTRIAL APPLICATIONS

1. Guidewire-free functional assessment: Relies primarily on coronary angiography images, reducing the need for additional invasive procedures.
2. Dynamic functional evaluation: Utilizes dynamic imaging parameters, such as vessel expansion rates, to assess the impact of stenosis on blood flow dynamics.
3. Lightweight, real-time analysis: Eliminates the need for 3D fluid modeling and complex reconstructions, offering the potential for faster analysis and clinical integration.



Embedding structure of hyaluronic acid

Patent No M610155



TECHNOLOGY INTRODUCTION

An innovative ampoule - medical-class glass bottle vacuum sealing, so the active ingredients are always maintain efficient. To activate the mitochondrion means "to replace a new battery for body cells" as the concept of the main idea, and combine with the high-end standard hvaluronic acid as the base of the active mgredients. Awarded the Gold Medal at the 2024 Seoul International Invention Fair (SIIF), Korea.

INDUSTRIAL APPLICATIONS

Patented technology works on the skin and connective lissues to strengthen the structure of the joints, muscles, blood vessels as well as the skin, effectively activate the cellular activity, strengthening of health and beauty in a comprehensive solution .

Booth
IB07

Embedding structure of fucoidan concentrate

Patent No M588544



TECHNOLOGY INTRODUCTION

Combined with the patented embedding technology, long-lasting protect the concentrated fucoidan and make it release slowly in the slow-release layer, which has the effectiveness of antioxidant, anticancer, anti-inflammation and can effectively inhibit the vascularization of cancer cells as well as the self-destruction of cancer cells.Awarded the Gold Medal at the 2024 Seoul International Invention Fair (SIIF), Korea.

INDUSTRIAL APPLICATIONS

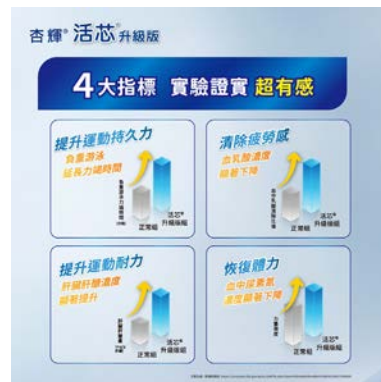
It can be used as health supplement for cancer treatment. A combination of active ingredients, suitable for immune imbalance, health promotion - cancer prevention groups, detoxification of the body, and beneficial to anti-aging and physical adjustment.

Booth
IB07



Anti-fatigue Composition Used For Increasing Endurance Performance

Patent No I721248



TECHNOLOGY INTRODUCTION

The patented formula combines echinacoside (ECNS) derived from *Cistanche tubulosa* extract with reduced coenzyme Q10 (QH). Experimental results showed that this specific combination outperformed QH alone in exercise time to exhaustion and mitochondrial energy production, significantly increasing exercise duration by nearly twofold. The formula is protected by patents in multiple countries, including the United States, Taiwan, China, and Malaysia, and its findings have been published in international academic journals. Through mitochondrial energy production experiments, the optimal anti-fatigue and heart-supporting ratio was identified. The formula has also received 10 domestic and international awards, including the Gold Medal at the Moscow Archimedes International Exhibition and a Special Award from Poland.

INDUSTRIAL APPLICATIONS

The patented composition is applied in anti-fatigue health food products to provide optimal nutritional support for individuals seeking heart-strengthening and anti-fatigue benefits. It also helps overcome Taiwan's 30 mg limit on reduced coenzyme Q10 (QH), enhancing functional performance and supporting the development of the heart health industry.

Booth
IB08

Computerized Writing Evaluation and Training Method

Patent No I676919



TECHNOLOGY INTRODUCTION

This patented technology provides a computer-assisted handwriting evaluation and training system that preserves natural pen-and-paper writing while integrating a digital tablet and real-time feedback. It combines stroke digitization and stroke-level comparison algorithms to objectively assess handwriting quality and provide immediate feedback for training and monitoring purposes.

INDUSTRIAL APPLICATIONS

The potential applications include handwriting assessment and intervention for children with developmental difficulties, functional monitoring of individuals with neurological or neurodegenerative disorders. It can also support cognitive and motor function screening in older adults, offering strong potential for commercialization in smart education, telehealth, and clinical assessment markets.

Booth
IB09

Large Pipeline Robot

Patent No I866869



TECHNOLOGY INTRODUCTION

- Technological Innovation – The proposed invention features an adaptive four-drive-leg support mechanism that automatically adjusts its front–rear span for different pipe diameters, enabling stable vertical climbing in pipelines larger than 24 inches and smooth passage through tee junctions. It also integrates an intelligent visual management platform for real-time monitoring of in-pipe cleaning performance and operational status.
- Competitive or Intellectual Property Advantages – Developed with a total investment of NT\$7.5 million, the system integrates the robot, cleaning modules, operation platform, and smart management platform, supported by two invention patents and one utility model patent, providing strong cost integration and intellectual property advantages.
- Important Achievements / Awards – Participated in major domestic and international invention exhibitions (2024–2026), receiving 1 Platinum, 11 Gold, 1 Silver, 1 Bronze, and 4 Special Awards.

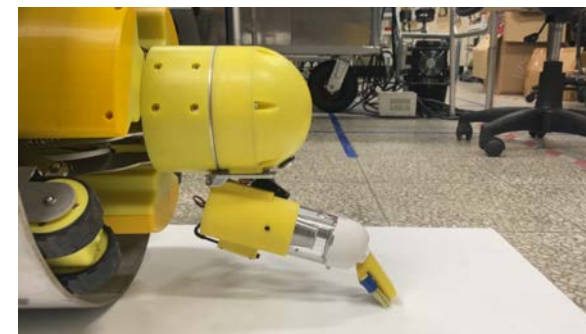
INDUSTRIAL APPLICATIONS

The proposed invention features a modular dual-tracked in-pipe robot designed for industrial applications in petrochemical, natural gas, power, chemical, and public utility pipelines. It performs pipeline inspection, welding slag removal, foreign object cleaning, and maintenance operations. The system integrates high-resolution vision, a 50–200 m electro-optical composite transmission system, attitude monitoring, and an intelligent control platform to support long-distance and high-risk pipeline operations. Its modular architecture enables rapid maintenance, component replacement, and future expansion while incorporating ergonomic, portable, and user-friendly features. The design effectively reduces 3K (dirty, dangerous, and demanding) operational risks, labor costs, and downtime, significantly improving pipeline maintenance efficiency and intelligent asset management.

Booth
IB10

Modular Combined Multifunctional Tubeline Working Robot

Patent No I850013



TECHNOLOGY INTRODUCTION

- Technological Innovation – The proposed modular in-pipe robot is designed for cleaning 14–24 inch industrial pipelines. Interchangeable vacuum, brush, and grinding modules enable versatile operation, while the integrated wired electro-optical transmission system provides stable control, real-time video transmission, and reliable cleaning over distances exceeding 50 m.
- Competitive or Intellectual Property Advantages – Developed with a total investment of NT\$3.5 million, the system integrates the robot, cleaning modules, and a transmission system exceeding 50 m, and is supported by one invention patent, providing strong cost integration and intellectual property advantages.
- Important Achievements / Awards – Participated in major domestic and international invention exhibitions (2023–2024), receiving 2 Platinum, 9 Gold, and 4 Special Awards.

INDUSTRIAL APPLICATIONS

The proposed modular dual-tracked in-pipe robot is widely applicable to petrochemical, natural gas, power, chemical, and public utility pipeline industries for pipeline inspection, welding slag removal, foreign object cleaning, and maintenance operations. The system integrates high-resolution imaging, a 50–200 m electro-optical composite transmission system, attitude monitoring, and an intelligent control platform to support long-distance, high-risk pipeline operations. Its modular architecture enables rapid maintenance, expansion, and component replacement, while ergonomic, user-friendly, and foolproof features reduce 3K (dirty, dangerous, and demanding) operational risks, labor costs, and downtime, significantly improving pipeline maintenance efficiency and intelligent management.

Booth
IB10

◀ MORE INFO

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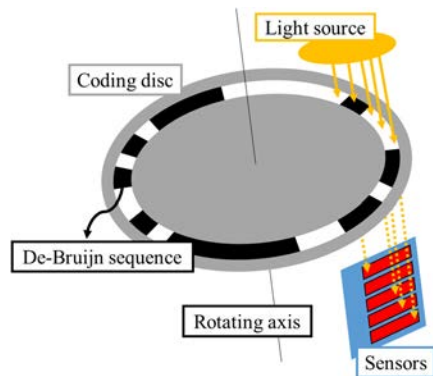
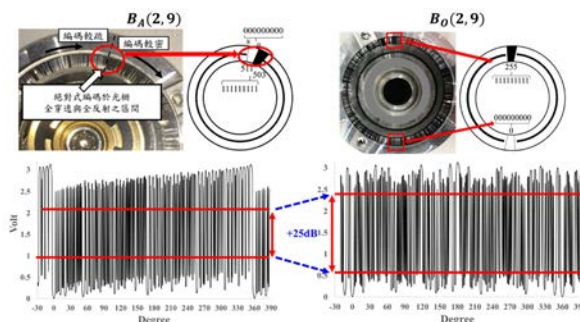
MORE INFO ▶

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Rotary coding disc and method for designing the same

Patent No I722886



TECHNOLOGY INTRODUCTION

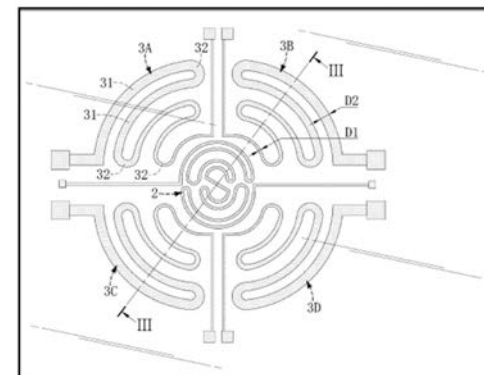
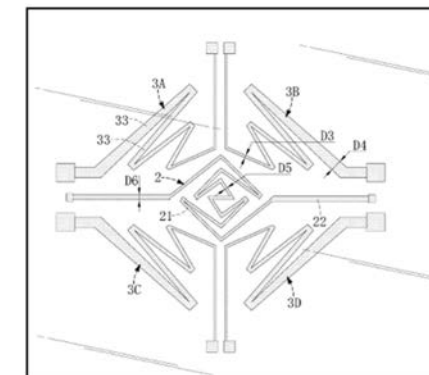
This technology optimizes optical rotary encoder code disks by selecting suitable De Bruijn sequences instead of conventional M-Code. It suppresses photocurrent blooming noise and improves readout stability without software or hardware changes. Implemented in an in-house 25-bit AC servo motor encoder, it reduced the bit error rate from 262.76 ppm to 0.82 ppm, over 300 times lower. It received the Platinum Award at the 2024 Taiwan Innotech Expo.

INDUSTRIAL APPLICATIONS

This technology can be applied to optical rotary encoders using absolute encoding, especially for compact, high-resolution positioning systems. It supports applications in smart machinery, robotics, semiconductor equipment, green energy, biomedical systems, smart agriculture, and defense industries. By improving motor positioning, speed control, and automation stability, it helps reduce control risks caused by decoding errors.

Airflow Sensor

Patent No I881501



TECHNOLOGY INTRODUCTION

A flexible MEMS airflow sensor featuring a central micro-heater and Wheatstone bridge architecture. Gradient sensing lines and an asymmetric heater improve airflow direction detection, sensitivity, and thermal stability. Protected by Taiwan Patent I881501, the sensor features low power consumption, mature fabrication, and seamless integration into smart sensing applications.

INDUSTRIAL APPLICATIONS

The technology is applicable to smart healthcare, respiratory monitoring, HVAC systems, indoor air quality monitoring, smart buildings, industrial automation, and IoT sensing platforms. Its flexible design, low power consumption, and seamless integration make it suitable for wearable devices, medical equipment, and intelligent monitoring systems.



Onion Harvester

Patent No M652238



TECHNOLOGY INTRODUCTION

- Technical Innovation: Integrated onion harvester featuring digging, conveying, foliage trimming, and automatic collection to improve harvesting efficiency and reduce labor.
- Competitive / Intellectual Property Advantages: An integrated, labor-saving harvesting system with built-in foliage trimming, reducing post-harvest processing and enhancing commercialization potential.
- Major Achievements / Awards: Granted an invention patent, validated through field trials, and demonstrated at agricultural machinery field events.

INDUSTRIAL APPLICATIONS

Applicable to onion harvesting for cooperatives, agricultural enterprises, custom farming services, and large-scale farms. The integrated mechanized harvesting system reduces labor, shortens harvesting time, and improves operational efficiency and harvest quality, offering strong commercialization and industrial application potential.

Log Segment Transporting Machine

Patent No I863763



TECHNOLOGY INTRODUCTION

The Multi-Axis Log Handling Machine was developed for shiitake mushroom cultivation to reduce labor demand. Built on a crawler platform, it features multi-axis lifting, tilting, and rotating functions for log gripping, turning, and stacking. Its modular design enables quick replacement of grippers or forks. Operated by a single user via remote control, it can also integrate with an automated inoculation machine.

INDUSTRIAL APPLICATIONS

The Multi-Axis Log Handling Machine has strong cross-domain application potential. In addition to shiitake mushroom cultivation, it can be applied to timber handling in forestry, heavy material handling in industrial warehouses, and material transport at construction sites. Its multi-axis handling mechanism and modular design provide excellent scalability and adaptability, improving handling efficiency while reducing labor intensity.



Drive Control System for an Electric Remote-Controlled Vehicle

Patent No I704067



TECHNOLOGY INTRODUCTION

Award: Golden, 2022 Taiwan Innotech Expo (tie)

- Technological Innovation

The self-developed control box enables independent control of the left and right brushless drive motors. By synchronizing or differentiating the speeds of the left and right tracks, the tracked vehicle can perform precise steering maneuvers, including forward and reverse counter-rotation for zero-radius turning. In addition, the hybrid power output control provides smoother and more stable power delivery.

- Competitive or Intellectual Property AdvantagesFunctions and Practical Applications

Power supply unit, Left and right reduction gear units, Left and right power output shafts, Independent or simultaneous activation of the left and right drive systems, Two electronic speed controllers (ESCs) that can operate independently or simultaneously, Signal receiver, Control box

- Commercialization Status

Successfully mass-produced for 1:10 scale remote-controlled model tanks.

Applied in industry–academia collaborative projects.

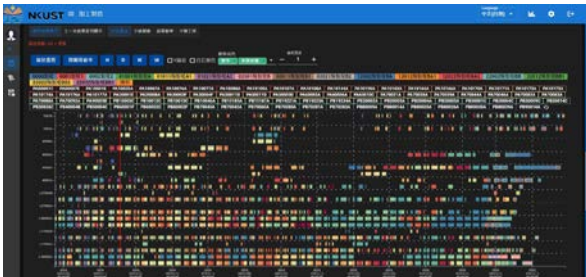
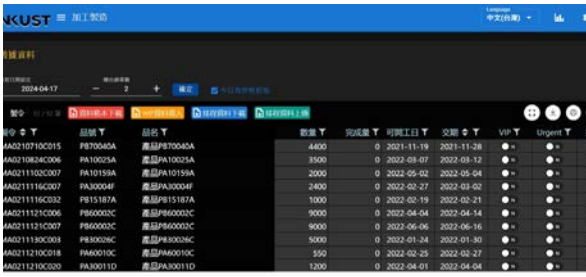
The technology can be commercialized for various vehicles requiring hybrid power systems, including tanks, excavators, loaders, and other vehicles.

Provides educational value by helping students develop logical thinking and technical skills.

Contributes to the development of commercial and technological potential.

Production Management Method

Patent No I777700



TECHNOLOGY INTRODUCTION

- Technological Innovation: Auto-generates QR-coded work orders from schedules; AI camera recognizes operators, orders, and postures to record actual work hours.
- Competitive or IP Advantages: Taiwan invention patent I777700; low-cost deployment without modifying existing equipment.
- Achievements/Awards: Gold Medal, 2024 Taiwan Innotech Expo Invention Competition.

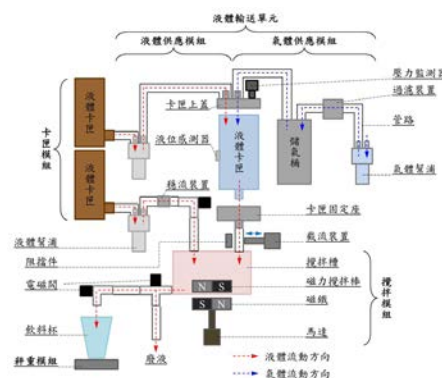
INDUSTRIAL APPLICATIONS

Ideal for labor-intensive manufacturing sites in metalworking, machinery, and electronics assembly. Electronic work orders and camera-based recognition automatically collect actual work hours, replacing manual reporting and visualizing production progress in real time. Accumulated data improves scheduling accuracy, on-time delivery, and smart-factory transformation.



Smart beverage preparation equipment

Patent No I842581



TECHNOLOGY INTRODUCTION

Integrates beverage preparation, ingredient delivery, intelligent preparation, and cloud hygiene management. Standardized workflows ensure safety, consistency, and convenience, reducing human error while optimizing equipment efficiency.

INDUSTRIAL APPLICATIONS

Addressing labor constraints, it suits beverage chains, restaurants, convenience stores, fitness centers, and unmanned retail. Minimizes labor dependency via automated preparation, real-time monitoring, and safety controls. A Bag-in-Box (BIB) supply model reduces plastic and water usage, delivering measurable efficiency and verifiable sustainability.

Noodle With Enhanced Chewability

Patent No I752584



TECHNOLOGY INTRODUCTION

1. This technology combines multi-ingredient formulations and unique geometrical structures to overcome conventional cold-water noodle limitations. It produces additive-free noodles with handmade-like texture, enhanced chewiness, reduced cooking time, and stable quality.
2. Protected by patented multi-shape noodle forming technology.
3. Gold Medal, Taiwan Innotech Expo (TIE), 2025.

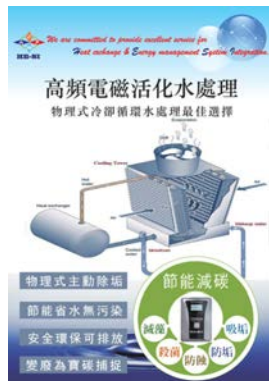
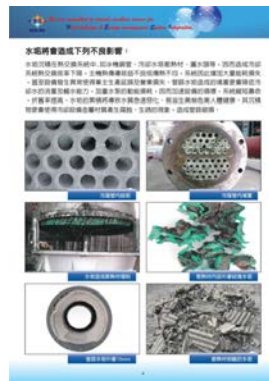
INDUSTRIAL APPLICATIONS

This technology is applicable to noodle manufacturers, food processing companies, food service providers, and specialty agricultural product industries. It enables the development of clean-label and value-added noodle products using grains, legumes, vegetable powders, and functional ingredients. The technology supports customized product design, ready-to-eat meals, central kitchens, and premium noodle applications, creating market differentiation and commercial value.



A Cooling Tower-based Cooling Circulating Water Management Device

Patent No M603950



TECHNOLOGY INTRODUCTION

Electrochemical circulating water treatment and carbon capture: Patented electrochemical technology is used in industrial water treatment and cooling circulation systems for water treatment and energy conservation and emission reduction. The process generates and recovers calcium carbonate, thereby achieving carbon dioxide capture and storage (CDR).

INDUSTRIAL APPLICATIONS

High-Frequency Electromagnetic (Electrochemical) Cooling Water Treatment provides chemical-free scale control, disinfection, corrosion protection, and energy savings for industrial plants, data centers, hospitals, hotels, and commercial buildings. It supports ESG goals by reducing energy consumption, water usage, and carbon emissions.

LNG-based cryogenic seawater desalination system and method

Patent No I918254



TECHNOLOGY INTRODUCTION

This system utilizes the "waste cooling" generated during the gasification process at a natural gas receiving terminal for seawater desalination. This technology not only provides environmentally friendly freshwater but also boasts superior energy efficiency compared to traditional technologies and can generate carbon assets through energy substitution benefits.

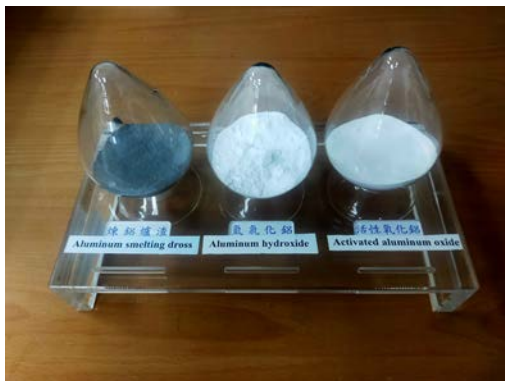
INDUSTRIAL APPLICATIONS

LNG-based seawater desalination uses waste cold energy from LNG regasification to freeze seawater and produce freshwater. Compared with conventional desalination, it significantly reduces energy use and carbon emissions. It is ideal for LNG terminals, power plants, AI data centers, industrial parks, and water-scarce regions.



Method of Fabricating Green Desiccant Wheel

Patent No I675812



TECHNOLOGY INTRODUCTION

Innovation: Aluminum hydroxide and aluminum oxide, extracted from aluminum industry waste, serve as the base material. Activated alumina is then added to create a composite material, which is finally integrated into a desiccant wheel.

Advantages: cost reduction, recyclability, CO2 emissions reducing and energy efficiency improving.

Awards: the 19th National Innovation Award, the Platinum Award at the 2023 TIE Invention Competition, and the Gold Award at the 2025 TIE Invention Competition.

INDUSTRIAL APPLICATIONS

Desiccant wheels are widely used in industries with strict humidity requirements. The technology has expanded from general moisture control to high-tech manufacturing, precision agriculture, and precision facilities, encompassing the following areas:

1. Semiconductor manufacturing and cleanrooms.
2. Biopharmaceuticals and medical products.
3. Food processing and high-value agriculture.
4. Warehousing, archives, and precision facilities.
5. Commercial HVAC and energy-efficient buildings.

Closure Structure of Storage Box

Patent No M656355



TECHNOLOGY INTRODUCTION

Pre-applied with a natural plant-based adhesive, the carton seals instantly with just water, entirely eliminating plastic tape and improving packing conditions, perfectly aligning with global ESG and carbon-reduction trends. Awarded Double Gold at the 2024 Concours Lépine for smartly solving the long-standing plastic waste issue in carton packaging.

INDUSTRIAL APPLICATIONS

Perfect for the booming e-commerce and logistics sectors handling over 80 million cartons daily. By replacing plastic tape, it helps businesses achieve ESG goals from the source and accelerates automated recycling by eliminating manual tape removal. Already commercialized with government grants, it aims to become a universal packaging standard for every enterprise and household globally.



Plates that can help stack bowls

Patent No M669162



TECHNOLOGY INTRODUCTION

The top surface of the plate is designed with an upward convex curve, while the bottom features a downward concave curve. Both surfaces are engineered with multiple concentric ring grooves, allowing them to fit securely against the rims and bases of standard circular bowls. This enables the plates to be stably stacked at least five layers high, achieving a stacking efficiency comparable to five LocknLock food storage containers. This innovative creation has been successfully commercialized and won the Gold Medal at the 2026 Paris International Exhibition of Inventions (Concours Lépine).

INDUSTRIAL APPLICATIONS

By pairing these specialized plates with the existing circular bowls found in every household, they function effectively as food storage containers. This eliminates the need for disposable plastic wrap, saving consumers money while protecting the environment. Furthermore, it streamlines refrigerator space management for easy food access, reducing the time the fridge door stays open and ultimately lowering electricity bills.

Coffee Filtration Cup

Patent No M681679



TECHNOLOGY INTRODUCTION

Made of 304/316 stainless steel springs with precise gaps. The 3-prong top hooks securely onto cups for paperless brewing, stopping microplastics. Compact, reusable for decades. Unlike bulky metal drippers, the spring design resists residue, is ultra-easy to clean, and highly cost-effective. Awarded the Gold Medal at the world's oldest invention exhibition, Concours Lépine 2026 in Paris.

INDUSTRIAL APPLICATIONS

Targeting the global pour-over coffee market, it replaces paper filters and bulky drippers. It is ideal for home, office, and camping. By breaking the myth that paper filters are needed to remove oils, its health (microplastic-free) and eco-friendly (zero-waste) benefits will rapidly capture market share, offering immense commercial potential.



Self-propelled Soil Steam Sterilizer

Patent No M621923



TECHNOLOGY INTRODUCTION

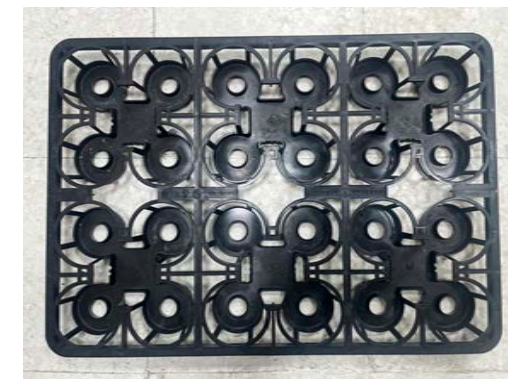
- Direct steam injection into deep soil improves heating efficiency. The electric-powered, sealed system is low-noise, emission-free, and ideal for greenhouse use.
- This technology features a patented crawler-mounted liftable spike bed with a sealed design, enabling deep soil penetration and faster disinfection.
- 2025 Taiwan Innotech Expo Invention Competition Gold Medal Award

INDUSTRIAL APPLICATIONS

Soil steam disinfection is widely used to control soil-borne diseases and pests, alleviate continuous cropping problems, and eliminate weed seeds. Steam treatment effectively destroys plant pathogenic fungi, bacteria, nematodes, and many weed seeds. As a physical disinfection method, it leaves no chemical residues, allowing crops to be replanted shortly after treatment.

Pot Plant Cultivation End Tray Bottom Irrigation System

Patent No M606075



TECHNOLOGY INTRODUCTION

An innovative sub-irrigation tray system for pot plants. The unique 4-pot connected modules with central aeration structures keep roots healthy while reducing water pipe setup by 75%. Competitive/IP Advantages: Patented design prevents soil-borne diseases and perfectly fits standard cultivation benches and transport trucks. Awarded the Gold Medal at the 2021 Taiwan Innotech Expo (TIE).

INDUSTRIAL APPLICATIONS

The system targets the floriculture industry, especially for pot plants under 12cm. Integrating sub-irrigation with automation, it cuts labor from 25 to 4.5 hours per 1,000 pots while saving 60% water and 50% fertilizer. Sized for standard benches and trucks, it applies seamlessly across flower farms, logistics, retail flower shops, and urban landscaping.



Surface-enhanced Raman Spectroscopy For Rapid Detection of Active Ingredients of Pesticide Products And Pesticide Residues In Agricultural Products

Patent No I604187



TECHNOLOGY INTRODUCTION

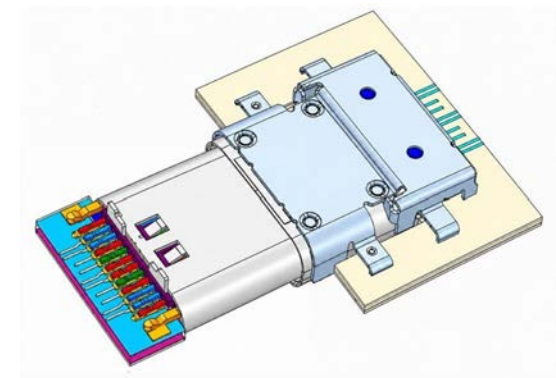
This technology utilizes the patented FaPEX sample pretreatment method to eliminate matrix interference and complete analysis within 3 to 5 minutes. Subsequently, it employs a nanomaterial chip with a high enhancement factor to generate Surface-Enhanced Raman Scattering (SERS), amplifying pesticide signals by more than three orders of magnitude. Finally, by integrating AI-driven big data algorithms, the system can simultaneously and accurately identify and analyze multiple types of pesticides within complex mixtures.

INDUSTRIAL APPLICATIONS

At the agricultural production stage, "pre-harvest screening" and self-management can be implemented; at the food distribution and retail stages, a food safety defense line within the green supply chain can be established; the technology can also be applied to government inspections and border checks to detect illegal, counterfeit, or banned finished pesticide products sold on the market.

Connector And A Method To Increase The Data Transmission Rate Thereof

Patent No I751081



TECHNOLOGY INTRODUCTION

This technology utilizes the equivalent capacitance circuit of differential transmission lines to resolve resonance issues caused by local differential impedance mismatching within the lines. Consequently, it increases transmission bandwidth and enhances data transfer speeds to meet the latest connector specifications. This technology has been successfully applied to the research and development of connectors such as USB Type-C, HDMI, PCIe CEM, and M.2 PCIe, securing patents for various connector designs. Notably, the USB Type-C connector patent (Patent No. I751081) won the Gold Medal in the "Invention Competition" at the 2024 Taiwan Innotech Expo. Furthermore, factors such as cost and assembly were thoroughly considered during the design process of these connectors, indicating immense market potential for the future.

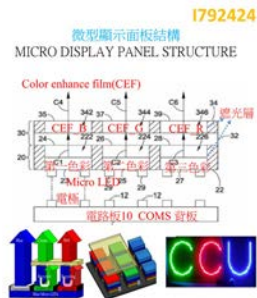
INDUSTRIAL APPLICATIONS

The USB Type-C connector derived from this technology is currently an essential component for 3C products, while the derived PCIe connectors (PCIe CEM as well as M.2 PCIe) are mandatory components for desktop PCs, laptops, and servers. Therefore, these products derived from this technology exhibit immense commercialization value and market potential.



Micro Display Panel Structure

Patent No I792424



TECHNOLOGY INTRODUCTION

1. Used to improve color saturation in Micro LED displays.
2. Improves color conversion efficiency.
3. Offers advantages in mass production and cost.

INDUSTRIAL APPLICATIONS

For use in full-color Micro LED displays, it can improve color saturation and conversion efficiency.

Vacuum Cleaner Adapter With An Electric Shock Module

Patent No I839207



TECHNOLOGY INTRODUCTION

- Simply attach the pest-eliminating nozzle to the compatible vacuum cleaner model to easily capture and electrocute pests.
- The entire process is 100% touch-free, fast, mess-free, and hygienic.
- The innovative, patented "adjustable-gap electrodes" can be adapted to accommodate pests of various sizes.

INDUSTRIAL APPLICATIONS

"If only getting rid of roaches had always been this easy!"

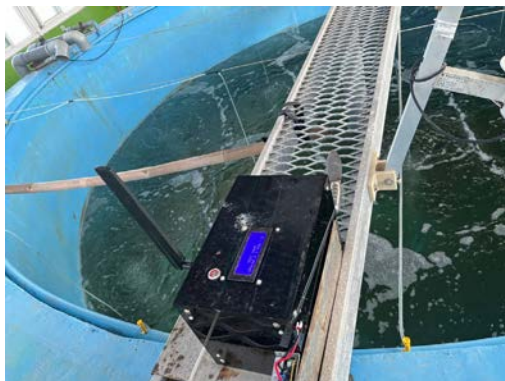
ZAPTIVE Bug Terminator | Turn your vacuum into the ultimate pest buster instantly!

- Zero Contact, Zero Mess: Just use your vacuum like you always do—Suck, Zap, and Bye-Bye Bugs!
- Patented "No-Grid" Tech: Say goodbye to the annoying stuck-bug cleanup of traditional electric swatters.
- The Ultimate Vacuum Upgrade: Adds powerful bug-zapping capabilities. The must-have attachment for every home.



Automatic Portable Detection System For Pathogenic Bacteria

Patent No I795735



TECHNOLOGY INTRODUCTION

Co-developed by FRI (MOA) and NTOU, the "Automatic portable detection system for pathogenic bacteria" integrates microfluidic chips and automated colorimetry for continuous, ultra-trace analysis. Supporting cloud alerts for smart water warnings, its prototype is primed for tech transfer. It secured ROC Invention Patent I795735, the 2025 National Innovation Award & Taiwan Innotech Expo Gold Medal.

INDUSTRIAL APPLICATIONS

Utilizing microfluidic and colorimetric tech, this system monitors pathogens (like Vibrio) in smart aquaculture. Integrating AIoT and cloud tech, it tracks ultra-trace levels to offer optimal early warnings. Data modules analyze metrics in real time, aiding white shrimp farmers in decision-making. It easily expands to marine environmental monitoring and food safety applications.

Low-Temperature Extraction Machine

Patent No M673060



自動冰滴。享純粹。
純粹，在時間裡。
Email: fu.ic@msa.hinet.net

TECHNOLOGY INTRODUCTION

1. Integrated chiller that generates ice water, with an IC-controlled system and circulation loop ensuring that every drop enters the brewing chamber at a precise, low, and constant temperature;
2. Built-in UV sterilization system to maintain hygiene in the brewing chamber and prevent airborne bacterial contamination.
3. Coffee drips directly into a refrigerated compartment.

INDUSTRIAL APPLICATIONS

The system employs a complete cold-chain process; a compressor generates chilled water that is piped directly onto the coffee grounds in the extraction chamber. This steady, temperature-controlled drip process yields a smooth texture and a rich, multi-layered flavor profile.



◀ MORE INFO

66

Booth
IB29

Booth
IB30

67

MORE INFO ▶



Multi-purpose Animal Repeller

Patent No M662190



TECHNOLOGY INTRODUCTION

With a modular and dynamically configurable design, this patented product allows users to adjust the animal-repelling components and their directionality according to the specific environment. It can be customized to adapt to the habitats and behavioral patterns of various animals, achieving the optimal repelling effect. It was awarded the Gold Medal for Invention at the 2025 Taiwan Innotech Expo.

INDUSTRIAL APPLICATIONS

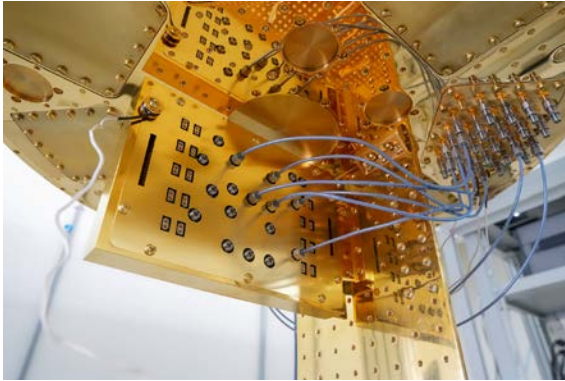
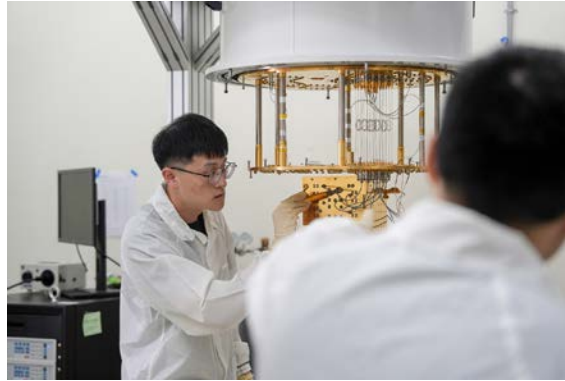
This patented product utilizes automatic, multiple dynamic variable-frequency ultrasonic technology to humanely repel various animals. With its modular and dynamically configurable design, the configuration of the repelling equipment can be adjusted according to the habitats and behavioral patterns of different animals, thereby achieving the optimal repelling effect. This product features a safe design that is both waterproof and fire-retardant. It is suitable for various locations, including factories, commercial premises, and residential homes.



Organized by the Taiwan Intellectual Property Office, Ministry of Economic Affairs (TIPO), TAIWAN PATENT GO showcases award-winning patented technologies at Taiwan International Tradeshow, promoting them to global buyers and facilitating face-to-face business matching. It encourages enterprises to adopt and invest in patented technologies, accelerates patent commercialization, and enhances the overall value of intellectual property and industrial competitiveness, ultimately facilitating patent transactions and advancing the vision of “Taiwan Innovates, Prosperity Follows.”



Cryo-CMOS Readout and Control Modules for Superconducting Quantum Computing



TECHNOLOGY INTRODUCTION

Proprietary Technology: Successful development of a 4K cryogenic control module

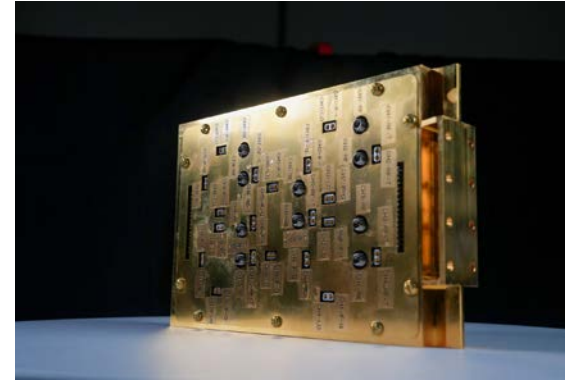
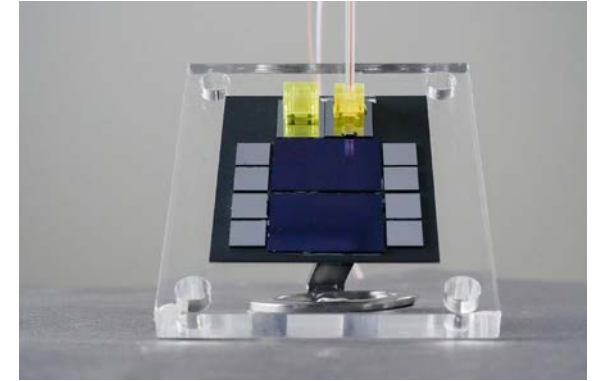
Optimized Architecture: Modular integration simplifying cabling and physical footprint

Key Breakthrough: Significant reduction in thermal load, noise, and system complexity

INDUSTRIAL APPLICATIONS

Quantum computing faces a "wiring bottleneck"—thousands of cables causing heat and noise that stunt qubit growth. Cryogenic CMOS solves this. By moving control circuits into the 4K zone, it shortens signal paths and shrinks thousands of connections into a few digital lines. This drastically cuts thermal load, accelerating commercial scaling for drug discovery and material simulation.

pluggable optical fiber array coupling module



TECHNOLOGY INTRODUCTION

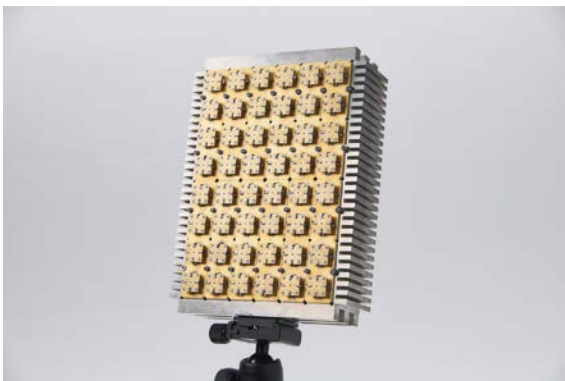
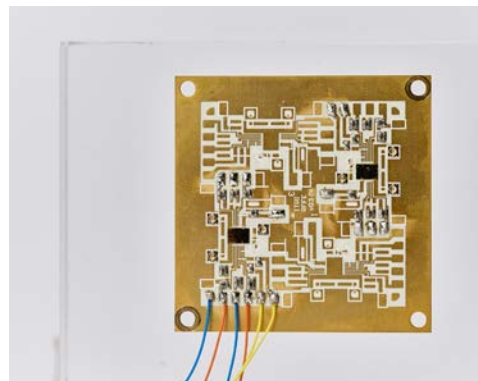
1. Innovative manually pluggable and replaceable design simplifies fiber optic array maintenance.
2. Adaptable to any flat wafer or PCB substrate requiring optical coupling, offering packaging flexibility.
3. Compatible with various commercially available fiber optic arrays, with channels flexibly expandable up to 64, effectively improving bandwidth requirements.

INDUSTRIAL APPLICATIONS

This module is a packaged solution providing direct fiber optic connection to SiPH chips, featuring high-density channels, low loss, and high stability. It also allows for pluggable fiber optic replacement, making it suitable for CPO systems with high-speed data transmission requirements, such as AI servers and data centers.



6G RF Front-End Chip and Massive MIMO Antenna Array Technology



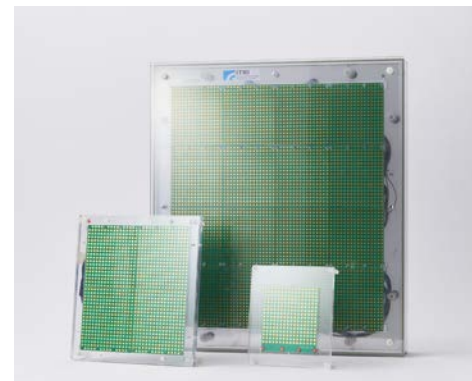
TECHNOLOGY INTRODUCTION

To significantly increase wireless data rates, future 6G systems are expected to adopt the new 6–8.5 GHz spectrum and leverage Extremely Massive MIMO antenna array technology to enhance spectral efficiency. To this end, ITRI has developed a novel 6G RF front-end chip that successfully integrates a power amplifier, a low-noise amplifier, and an RF switch, while featuring low noise and high linearity. In addition, ITRI has collaborated with National Sun Yat-sen University to develop an innovative double-density antenna array and module technology, which enables twice the number of antennas to be integrated within the same array aperture, forming twice the number of data beams while achieving wideband operation. This 6G RF chip and array prototype will help Taiwan establish key technologies for 6G base station RF front-end and antenna modules, facilitate the development of a domestic supply chain, and seize opportunities in the emerging 6G market.

INDUSTRIAL APPLICATIONS

This technology successfully integrates Taiwan's domestic 6G industrial supply chain capabilities, including semiconductor fabrication, IC design, and antenna array module development. ITRI leads the development of GaAs RF power amplifier and low-noise amplifier IP cores. In addition, ITRI has successfully developed a novel double-density integrated Massive MIMO antenna array technology for emerging 6G frequency bands, driving technological leadership and the domestic design of high-efficiency, highly integrated, and scalable 6G RF front-end modules and Massive MIMO antenna arrays.

mmWave CMOS IC-Based RIS Array and Base Station Collaborative Communication Technology



TECHNOLOGY INTRODUCTION

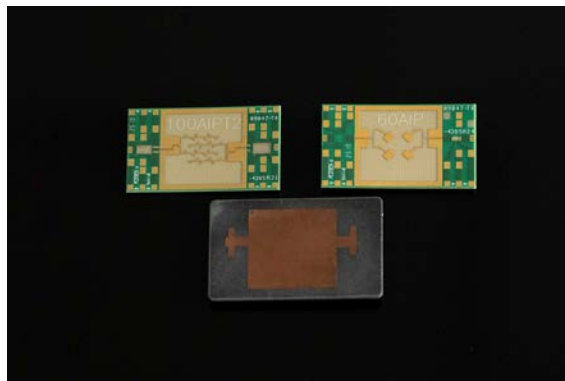
To enable high-data-rate, low-latency, and wideband communications for B5G/6G systems, millimeter-wave signals must overcome the challenges of signal blockage and limited coverage. ITRI has developed a scalable millimeter-wave CMOS IC-based Reconfigurable Intelligent Surface (RIS) array module. Each array element integrates an in-house developed CMOS RIS chip with power consumption of less than 1 mW for dual-polarized reflection phase control. The module can be configured into RIS arrays of different sizes for various communication scenarios, thereby successfully steering and optimizing signal propagation and extending base station coverage. ITRI has also developed a base station collaborative RIS communication technology. Based on channel state information reported by the user terminal, the base station can dynamically steer the reflected beams of the RIS module. Even while the user is moving, this technology enables reliable communication quality, paving the way for RIS to become a new network element in future 6G networks.

INDUSTRIAL APPLICATIONS

The proposed low-power, dual-polarized CMOS IC RIS array technology enables intelligent control of electromagnetic wave reflections, effectively overcoming the challenges of signal blockage and limited coverage in millimeter-wave communications. It has broad application potential in 6G base stations, smart factories, smart cities, private networks, and high-speed wireless access, enhancing communication quality and coverage.



Integrated AiP Packaging Architecture and Materials



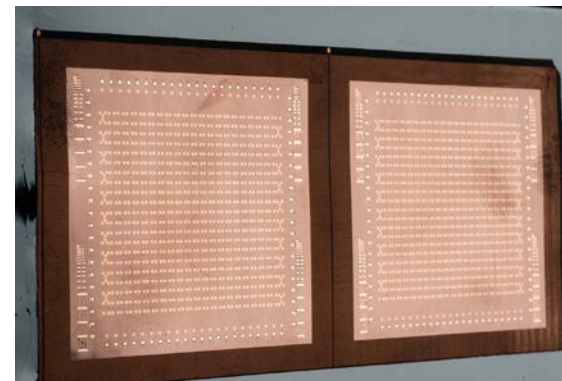
TECHNOLOGY INTRODUCTION

- Developed a GaN RF antenna-in-package (AiP) platform for high-frequency communications using heterogeneous integration, Stud Bump, and laser ball placement technologies.
- Achieved >10 dBi gain above 60 GHz, developed low-loss materials ($D_f=0.0022$, $CTE=10.7 \text{ ppm}/^\circ\text{C}$),
- Published one VLSI paper, obtained 10 patents, and showcased LEO satellite AiP technologies at SEMICON Taiwan 2025.

INDUSTRIAL APPLICATIONS

With the rise of B5G and 6G communications, we developed a 60 GHz AiP solution based on heterogeneous integration and Stud-bump/laser-ball placement technologies. The platform integrates RF chips and antennas in a compact package, achieving over 78% lower thermal resistance than competing solutions. Its 5 GHz bandwidth enables high-resolution sensing for occupant detection, respiration, and heartbeat monitoring, supporting future smart cockpit and automotive sensing applications.

Low Warpage Double Side Panel Level RDL with Fine Line Trace



TECHNOLOGY INTRODUCTION

- (1) Development of key technologies for panel-level interposers based on FOPLP technology.
- (2) Development of patterning processes for 3D interconnected structures.
- (3) Warpage control for double-sided interposer structures.

INDUSTRIAL APPLICATIONS

In response to the future requirements for high-speed IC computing, a low-warp, high-resolution panel-level packaging (PLP) double-sided RDL (Redistribution Layer) technology is being developed. Based on the existing single-sided process flows used by packaging and panel manufacturers, a large-size, low-warp double-sided RDL ($37 \times 47 \text{ cm}^2$) is being created, incorporating panel-level copper pillar processes to electrically connect the upper and lower RDL layers. Additionally, high-resolution circuitry ($3\mu\text{m}$) can also be applied to chip-first IC packaging for chip displacement compensation within the RDL, making it suitable for panel-level interposers required in advanced packaging technologies.



Wi-Fi 7 Transparent Antenna Laptop



TECHNOLOGY INTRODUCTION

- (1) Laptop-integrated panel-level glass transparent antenna.
- (2) The transparent antenna is positioned at the screen hinge, achieving both excellent signal reception and aesthetic appeal.
- (3) Independently developed Wi-Fi 7 tri-band transparent antenna with a transmittance of $\geq 80\%$.

INDUSTRIAL APPLICATIONS

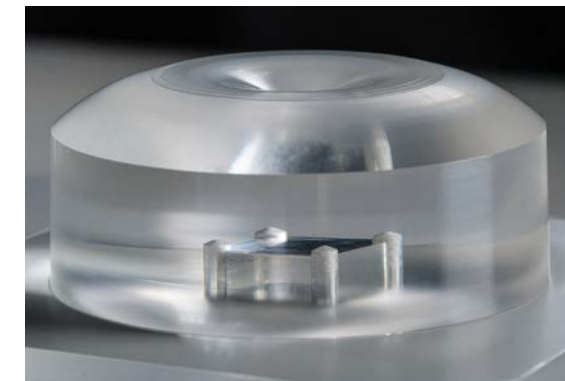
Industrial Applicability

Overcoming Metal Chassis Interference: By integrating the antenna into the patented hinge structure, this technology overcomes the signal shielding limitations of all-metal laptop chassis, ensuring unshielded high-frequency performance while maintaining a sleek, lightweight design.

Enabling Advanced Display Applications: Featuring an optical transmittance of 80%, this technology can easily expand into next-generation high-value applications, such as transparent displays, automotive smart windows, and AI-driven virtual interactive scenarios.

Establishing Technical Entry Barriers: Backed by the core patents and customizable cantilever technology, it allows ODM/OEM manufacturers to increase product premium value and accelerate the commercialization of next-generation high-frequency networking products.

Low-carbon Direct-lit Mini LED Backlight



TECHNOLOGY INTRODUCTION

- (1) Diffraction and refraction composite optical microstructure lens technology
- (2) Backlight panel thickness reduced by 31%
- (3) Mini LED chip usage reduced by 20%

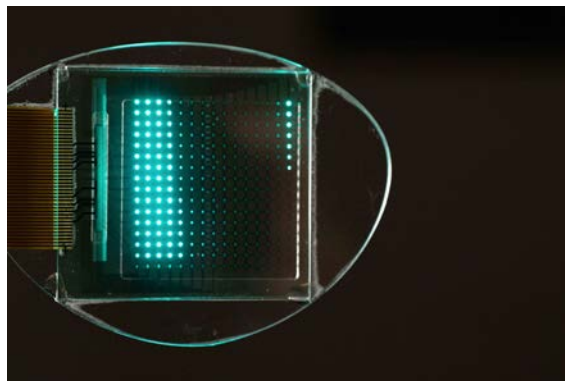
INDUSTRIAL APPLICATIONS

ITRI has innovated the "Diffraction-Refractive Hybrid Optical Micro-Structure Lens." Featuring a unique batwing light pattern, it expands the LED viewing angle to over 160° , precisely guiding the light and successfully reducing backlight module thickness by 31%.

Taking a 14-inch panel as an example, this technology cuts Mini LED usage by 20% while boosting brightness uniformity from 65% to 85%. Having passed rigorous automotive-grade reliability tests, the technology enables mass production through "single-pass roll-to-roll lens molding," successfully integrating the domestic supply chain. For every 1 million units produced, it is estimated to reduce carbon emissions by over 10,000 tons of CO₂e annually, joining hands with the industry to redefine the future of low-carbon displays.



Ultra-Compact Direct-View Optical Engine Technology



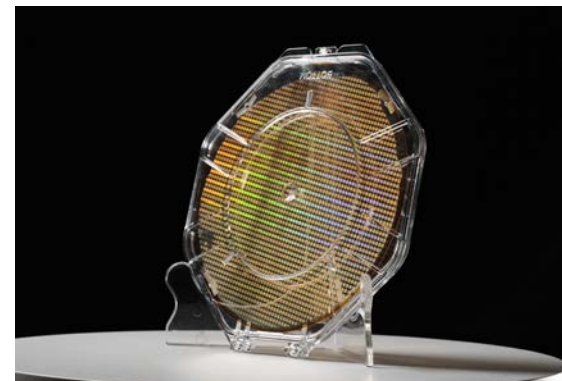
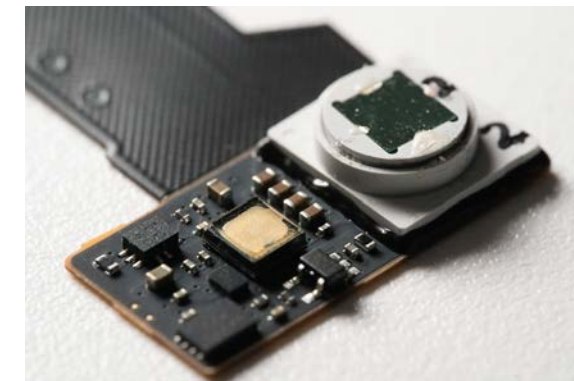
TECHNOLOGY INTRODUCTION

High brightness ensures clear images even under direct sunlight
Direct-display optical engine enhances light efficiency while maintaining lightweight and energy-saving design
Simplified structure facilitates production

INDUSTRIAL APPLICATIONS

The lightweight innovative direct-display optical engine offers advantages such as high brightness and low power consumption, making it widely applicable to consumer markets including outdoor walking navigation, museum cultural exhibitions, e-sports, and real-time translation. It can also support remote collaborative maintenance and professional training in education.

Ultra-thin structure chip technology for visual sensing applications



TECHNOLOGY INTRODUCTION

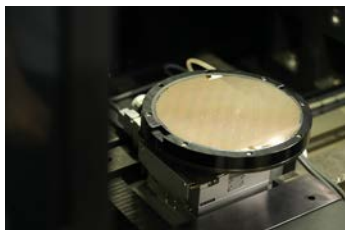
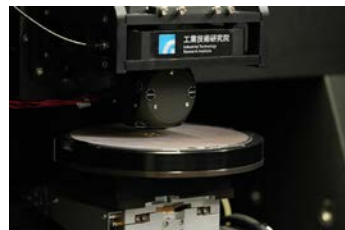
ITRI's Metalens planarizes bulky lenses using nano-scale microstructures, offering one-stop design-to-inspection manufacturing from visible to thermal infrared wavelengths. It reduces total module height (TTL) under 2mm. For 3D iToF sensing, it cuts lens thickness from 5.5mm to 3.3mm and expands the viewing angle to 63×64°, perfectly fitting slim laptops and robot vision.

INDUSTRIAL APPLICATIONS

This revolutionary, under-2mm monolithic metalens eliminates smartphone camera bumps and seamlessly integrates into ultra-thin laptops, wearables, and AR/VR/MR devices. Supported by an all-in-one foundry service from design to wafer inspection, it shortens development cycles and accelerates mass production, effectively disrupting the traditional optical supply chain.



Advanced Packaging Nanoscale Microstructure Inspection Technology



TECHNOLOGY INTRODUCTION

In response to the miniaturization trend of AI chips and advanced packaging, this technology overcomes the field-of-view limitations of conventional single-lens white-light interferometry. By establishing an array-based multi-lens synchronized imaging architecture, it expands the single-shot measurement field of view to 1.2 mm × 1.2 mm, achieving a fourfold improvement in inspection efficiency compared with commercially available solutions.

Integrated with AI-based signal analysis, the technology can adapt to variations in materials and stray-light interference while maintaining nanoscale measurement accuracy of ≤ 10 nm across a large field of view. This effectively addresses the inspection bottleneck in high-end chip mass production.

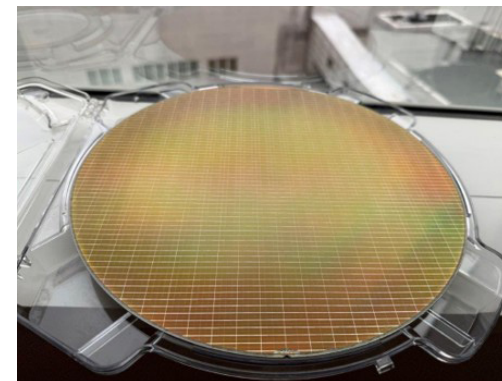
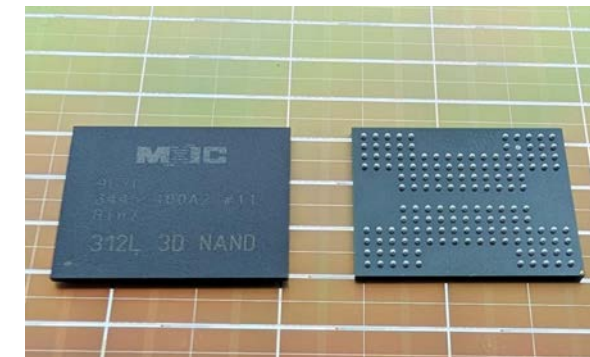
The technology surpasses the architectural limitations of single-lens systems adopted by leading international manufacturers. Key patents have been filed in optics, calibration, and AI-based signal analysis, establishing proprietary technological advantages and competitive barriers. It was honored with the 2025 ITRI Outstanding Research Award.

INDUSTRIAL APPLICATIONS

This technology can be applied to advanced semiconductor packaging and high-precision component inspection. Through large-area, high-speed scanning, it captures nanoscale 3D surface morphology of chips, including critical structures such as μ Bumps and RDLs, helping production lines identify height abnormalities and defects more efficiently.

Compared with conventional inspection methods, it improves inspection efficiency by more than four times, reducing inspection time and labor costs while supporting process quality monitoring, defect analysis, and yield improvement. These benefits contribute to more stable mass production.

High-Capacity, High-Performance 3D NAND Flash Technology and Product Development



TECHNOLOGY INTRODUCTION

The development focuses on high-capacity and high-layer 3D NAND Flash process technology and products. The three main features of the technical R&D are as follows:

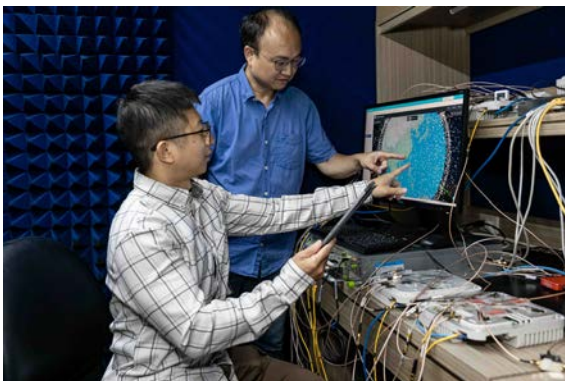
- (1) Developing high-layer 3D NAND process technology to increase memory product bit density to 18–20 Gb/mm²;
- (2) Developing CMOS components that support ultra-high-speed I/O (3.2 Gbps) to meet PCIe Gen.6 transmission specifications;
- (3) Developing ultra-low defect and ultra-high alignment precision hybrid bonding technology to achieve high yield and provide a competitive edge for ultra-high-speed products.

INDUSTRIAL APPLICATIONS

Big data and artificial intelligence rely heavily on data acquisition and processing, making memory bandwidth a major challenge. In the future, memory will evolve from simply storing data to integrating computing capabilities, leading to a new memory-centric computing architecture. This innovative solution can further be combined with logic chips, enabling more diverse application fields. The advanced high-capacity and high-speed 3D NAND technology proposed here can realize this vision and enhance the overall value of the industry chain.



3GPP NTN GEO/LEO Multiple Satellite Communications



TECHNOLOGY INTRODUCTION

Developed independently by ITRI, the "3GPP NTN GEO/LEO Multi-Orbit Satellite Communication Technology" fully complies with the latest international standards and leads the industry in perfectly integrating GEO and LEO satellite networks. Featuring powerful "seamless connectivity" and "dynamic cross-orbit handover" capabilities, the system automatically and smoothly switches to GEO satellites when LEO satellites move at high speeds or encounter signal blind spots, ensuring uninterrupted and highly reliable communications across land, maritime, and aerial environments.

- Technological Innovation - High Standardization Compatibility: Features high compatibility with mainstream chips and terminals, eliminating the limitations of traditional non-standardized closed systems and significantly reducing deployment costs for manufacturers.
- Competitive/IP Advantages - Robust Patent Barrier: Encompasses core key patents, including ephemeris-based cross-network handover control and time-frequency synchronization correction.
- Important Milestones/Awards: R&D 100 Award Winner.

Domestically Developed LEO Satellite Ground Terminal Communication System



TECHNOLOGY INTRODUCTION

ITRI developed the "LEO Satellite Ground Terminal Communication System," integrating baseband modules with beam acquisition and tracking technologies. Through technology transfer, ITRI helped bring key technologies into practical use and supported industry partners in completing Taiwan's first self-developed Ka-band commercial ground terminal system. The communication system has completed end-to-end outdoor communication tests at 100 meters and 2 kilometers, proving that domestically developed ground terminals are capable of real-world data transmission.

- ☑The communication system has demonstrated through simulation testing that it can track high-speed satellites within 1 second, with downlink transmission rate up to 200 Mbps, matching global benchmarks.
- ☑The communication system has completed 2 km end-to-end outdoor field testing, validating its communication transmission capability.

INDUSTRIAL APPLICATIONS

Upon successful validation of real satellite connectivity, this system can be widely applied in rural communications, maritime, aviation, disaster response, and mobile network backup. Leveraging LEO satellite high-speed transmission and rapid tracking, it supports real-time video backhaul, remote monitoring, IoT data collection, and emergency communications, enhancing communication resilience where terrestrial networks are limited or disrupted while promoting Taiwan's satellite terminal and communication module industries.



Pioneering Cross-Disciplinary Thermoplastic Composite Sounding Rocket Airframe



TECHNOLOGY INTRODUCTION

This technology integrates textile carding with polymer processing to develop directional recycled carbon fiber prepreg tapes for laser 3D-wound composite sounding rockets. Integrating a complete supply chain—from microwave pyrolysis recovery and prepreg/equipment development to advanced laser-winding fabrication—the final airframe is practically validated by NYCU's ARRC. This convergence of rCF recycling and precision manufacturing successfully drives the industrial transition from sports applications to aerospace technology.

INDUSTRIAL APPLICATIONS

Recycled carbon fibers are classified by length for diverse applications: short fibers serve as functional fillers in cementitious composites; medium-long fibers are compounded and pelletized for thermoplastic composites; and long fibers are converted into rCF mats via needle-punching. These flexible intermediate forms facilitate cross-industry integration, accelerating end-product development.

Booth
IC15

Micro Complex Internal Pipe Coating System Technology



TECHNOLOGY INTRODUCTION

Technical Innovation

Pioneered an intelligent CVD in-tube coating technology for complex micro-conduits via aerodynamic simulation. By integrating simulation guidance with closed-loop control, it overcomes high-aspect-ratio piping limitations to deposit highly adherent amorphous coatings. This prevents reactions between corrosive propellants and metal substrates while resisting high-pressure erosion. The system also integrates a constant-temperature testing and automated calibration module, achieving smart manufacturing.

Competitive & IP Advantages

Secured core patents for full-coverage uniform coating inside micro-curved conduits. Compared to conventional methods, it delivers superior adherence against liquid fuel erosion and longer anti-corrosion lifespans, establishing a robust intellectual property barrier through automated calibration.

Key Achievements & Awards

Awarded the DoIT, MoEA project: "Key Component Development and Application Project for Satellite Carriers." The technology was also showcased at the 2026 Automation Taipei exhibition, successfully demonstrating aerospace-grade digital twin and intelligent inspection applications.

INDUSTRIAL APPLICATIONS

As Taiwan's first intelligent CVD equipment for aerospace fuel in-tube coating, this technology has been successfully applied to low-Earth orbit (LEO) satellite propulsion systems. It significantly extends satellite lifespans, mitigates fuel corrosion risks, and empowers domestic manufacturers to enter the global aerospace supply chain, achieving self-reliance in key components. Beyond aerospace, this technology offers substantial cross-industry spillovers. It can be widely extended to the semiconductor and advanced chemical industries to coat interior walls of bent piping, valves, gas showerheads, and specialized storage cylinders, drastically improving component lifespans against corrosion and erosion while elevating the competitiveness of high-end manufacturing.

Booth
IC16

◀ MORE INFO

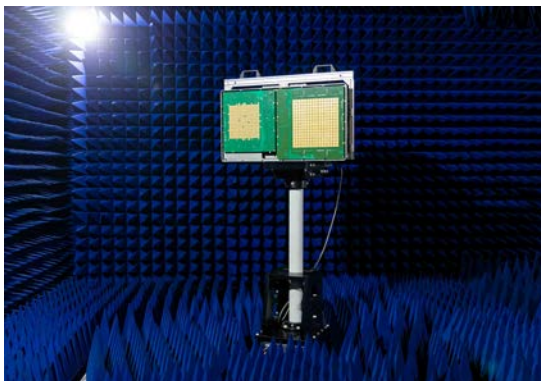
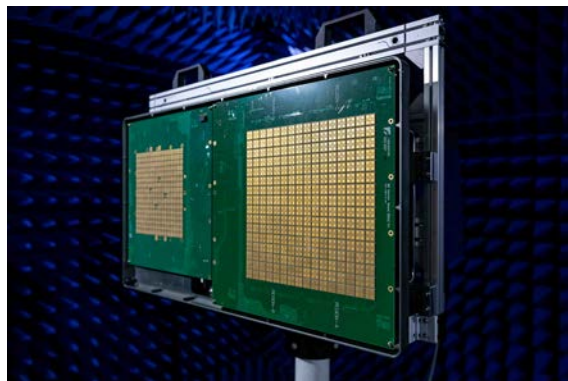
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MORE INFO ▶



RF Front-End Technology for LEO Satellite Ground Equipment



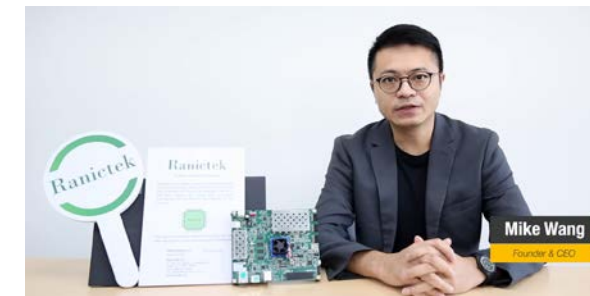
TECHNOLOGY INTRODUCTION

This innovation marks Taiwan's first Ka-band core RF chipset for LEO satellite ground equipment. Integrating a tile-based array antenna module and high-speed beam tracking, it offers a 100% proprietary one-stop solution. Rivaling global leaders, it helps domestic companies developing vehicle roof-mounted antennas and enter global supply chains, driving Taiwan's growth in the satellite market.

INDUSTRIAL APPLICATIONS

With 100% Self-developed Technology and a one-stop solution, it drastically lowers R&D barriers and integration costs. Applicable to V2X, maritime, aviation broadband, and 6G NTN, it breaks global monopolies. It elevates Taiwan's ICT sector from OEM to high-end system providers, building a robust and independent satellite communication ecosystem and enhancing global supply chain competitiveness.

Baseband Chips for 5G/6G Massive MIMO RUs, Satcom, and Drone/UAV Communications



TECHNOLOGY INTRODUCTION

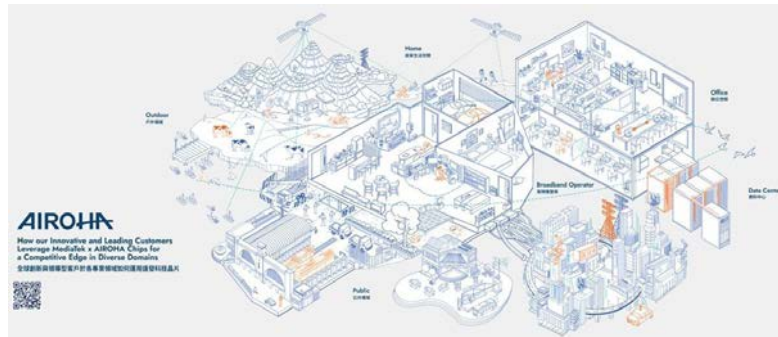
One of Ranictek's core technologies is Massive MIMO, which enables significant energy-saving for both base stations and mobile devices. In Satcom, Ranictek's key technology is Digital Beamforming (DBF). Compared with traditional Analog Beamforming, DBF can substantially increase capacity and improve spectral efficiency. For UAVs, Ranictek has a proprietary communication protocol that effectively mitigates jammer interference, enhances cybersecurity, and supports multi-UAV swarm operations.

INDUSTRIAL APPLICATIONS

One of Ranictek's core technologies is Massive MIMO, which enables energy-saving for both base stations and cell phones. In Satcom, Ranictek's key technology is Digital Beamforming, which can increase capacity and improve spectral efficiency. For UAVs, Ranictek has a proprietary protocol that mitigates jamming, enhances cybersecurity, and supports multi-UAV swarm operations.



Fixed Networking Infrastructure and Wireless Edge AI — Two Core Technology Domains



TECHNOLOGY INTRODUCTION

1. Built on core AI audio and wireless transmission technologies, Airoha integrates active noise cancellation (ANC), beamforming, and Bluetooth®, applying AI algorithms to deliver professional-grade precision of recognition, clarity of listening, low latency, low power consumption, and highly stable transmission.
2. Through ephemeris prediction, it reduces power consumption and shortens time-to-first-fix; dual-band signal reception ensures anti-jamming performance with zero blind spots; and centimeter-level RTK precision positioning combined with DR (Dead Reckoning) inertial navigation creates a positioning technology that is fast, power-efficient, and highly accurate.
3. For 50G-PON technology, we integrate upstream burst-mode system design, low-power digital signal channel equalization circuit design, and low-power high-speed transmitter and receiver circuit design.

INDUSTRIAL APPLICATIONS

1. Short-range wireless transmission broadly empowers the consumer electronics, gaming, business, assistive hearing, and public broadcast markets. With exceptional audio technologies and wireless transmission technology, it empowers clients to rapidly deploy AI into edge devices with ultra-low power consumption, significantly elevating customer product competitiveness.
2. Our satellite positioning spans from premium smart wearables to diverse industrial applications with automotive-grade reliability, overcoming signal noise interference and physical obstructions from tall buildings, underpass, and tunnels to precisely compute 3D spatial positioning, orientation, and motion trajectories.
3. The 50G-PON Optical Network Unit (ONU) physical layer (PHY) chip connects directly to operator networks and can be paired with communication interfaces including Wi-Fi 7/8, Bluetooth®, Zigbee, GbE and VoIP for smart home, campus network and industrial applications. It is also expected to drive Taiwan's domestic electronics supply chain and strengthen the country's pivotal position in the global 50G-PON ecosystem.

Lens Materials and High-Gain Antenna Technologies for Sub-Terahertz Applications



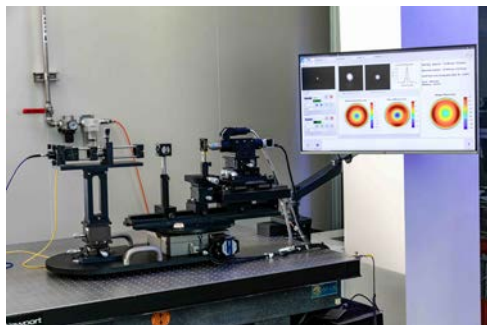
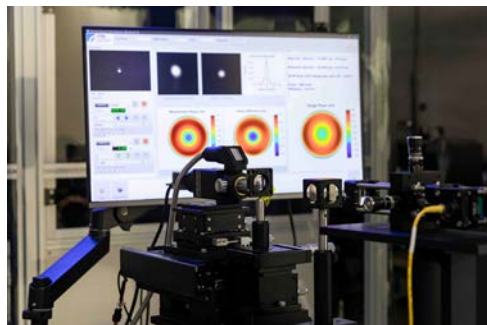
TECHNOLOGY INTRODUCTION

This technology establishes a low-thermal-sensitivity, ultra-low-loss polyolefin composite platform for dielectric lenses used in sub-terahertz communications. By integrating low-dielectric reinforcing fillers, interfacial compatibilization design, and low-shear compounding technology, it achieves a balance among low dielectric loss, mechanical strength, heat resistance, and dimensional stability. In addition, mold-flow simulation and injection-molding parameter optimization are employed to meet the geometric accuracy and mass-production stability required for dielectric lenses.

INDUSTRIAL APPLICATIONS

Compared with conventional PC, ABS, or general glass-fiber composites, this technology can effectively reduce signal loss, enabling radar modules to achieve longer detection distances under the same transmit power. Through low dielectric loss and stable dielectric properties, it allows the radar beam to become more focused and improves transmission efficiency, thereby enhancing target recognition capability, distance measurement accuracy, and sensing stability. It is suitable for large tank liquid-level monitoring, powder or granular material level detection, industrial equipment distance sensing, and non-contact measurement in high-temperature, high-humidity, or enclosed environments, providing a longer-range, lower-power, and high-accuracy sub-terahertz radar sensing solution.

Light-Field Scanning Measurement Instrument for Metalens and High-Precision Lens



TECHNOLOGY INTRODUCTION

As metalenses continue to advance toward higher precision and greater miniaturization, the quality of their nanoscale structures has a direct impact on optical performance. Conventional inspection methods rely on destructive sampling using electron microscopes and cannot comprehensively evaluate the overall optical characteristics of a device. ITRI's Measurement Center has developed a Light Field Scanning Inspection System that non-destructively measures the three-dimensional light-field distribution throughout the entire depth of focus of a metalens, reconstructs the wavefront phase, and verifies fabrication quality. The system integrates AI algorithms to analyze imaging performance and identify defect sources, enabling quantitative evaluation of focal length deviation, wavefront error, and structural abnormalities. It also establishes correlation models between optical performance and nanoscale structures, enhancing metalens inspection and diagnostic capabilities.

INDUSTRIAL APPLICATIONS

This system can be applied to metalens research and development, manufacturing, and mass-production inspection processes, providing rapid and non-destructive optical quality verification. By measuring the three-dimensional light-field distribution and reconstructing the wavefront phase, it can analyze imaging performance, focal length deviation, and fabrication defects, enabling manufacturers to promptly adjust process parameters and equipment conditions to improve product yield and consistency. The system is applicable to AR/VR devices, smartphone cameras, optical sensors, and semiconductor optical components. Furthermore, it can be integrated with AI-based analysis technologies to establish an intelligent closed-loop manufacturing mechanism, accelerating the mass production and adoption of next-generation optical devices.

Non-Destructive Defect Inspection Technology for Silicon Carbide Ingots



TECHNOLOGY INTRODUCTION

1. Non-Destructive Inspection: Assess internal defects without cutting the SiC ingot.
2. AI-Powered Analysis: Rapidly identify defect types and locations through intelligent image analysis.
3. High-Precision Detection: Detect 50 μm micropipes with a false-positive rate below 10%, improving product quality and yield.

INDUSTRIAL APPLICATIONS

ITRI has developed Taiwan's first non-destructive SiC ingot inspection technology that combines X-ray CT and AI image recognition to detect internal defects without cutting. The system can identify micropipes down to 50 μm with a false detection rate below 10%, enabling earlier defect screening, higher production yield, reduced inspection costs, and enhanced quality assurance for SiC manufacturing.



OMNIS OPM-MEG Brain Functional Magnetic Signal Assistance System



TECHNOLOGY INTRODUCTION

Technological Innovation – 150 characters
Portable OPM-MEG detects weak brain magnetic signals at room temperature and integrates MCU-on-chip, shielding, and GenAI rTMS decision support.
Competitive / IP Advantages – 150 characters
Owns system-level know-how in optical, magnetic, chip packaging, shielding, and AI analysis, forming a domestic supply chain and IP barrier.
Important Achievements / Awards – 100 characters
Completed OPM upgrades, AI prototype, clinical links, and won the 2025 Edison Gold Award.

INDUSTRIAL APPLICATIONS

This technology can be applied to brain magnetic signal detection, rTMS treatment assessment, and digital prescription decision support, helping physicians observe brain activity more quickly and improve the efficiency of neurological and psychiatric care. With its compact design and room-temperature sensing capability, it can also be extended to magnetic immunoassay testing, weak magnetic sensing, semiconductor process applications, and defense-related high-value industries, showing strong potential for both medical and cross-sector market expansion.

Endoscopic Surgical Imaging System



TECHNOLOGY INTRODUCTION

This system integrates endoscopic surgery with soft- and hard-tissue image fusion technology. Through real-time dual-camera visualization and algorithm optimization, it clearly displays vascular and neural structures, improves surgical precision, and effectively monitors the resection and implantation process, thereby reducing the risk of reoperation.

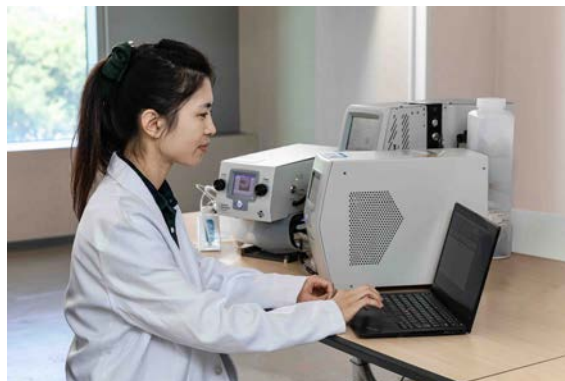
1. 3D MR/CT-Based Preoperative Planning for Percutaneous Endoscopic Procedures
2. Real-Time MRI/C-Arm image fusion and Guidance System
3. Single-Use Endoscope and AI-Enhanced Tissue Recognition Technology

INDUSTRIAL APPLICATIONS

This system features ultra-high resolution and supports smooth playback at over 30 frames per second, ensuring a clear surgical field and delay-free dynamic imaging. To better meet clinical needs, the system not only incorporates an AI-powered clinical database to address complex surgical scenarios, but also adopts a single-use disposable endoscope design, achieving an optimal balance between infection control and clinical convenience. This innovative technology fills a critical gap in the industry, enhances the precision of image-guided surgery, and supports the development of emerging medical industries. It also expands applications into minimally invasive procedures in spine surgery, neurosurgery, and otolaryngology, increasing its market potential.



Technology for middle to large molecule uremic toxin measurement



TECHNOLOGY INTRODUCTION

- DiaTrack connects to dialysis machine and provides real-time, quantifiable reference data on dialysis quality and membrane performance.
- Seven patents have been established in Taiwan, the United States, and Japan.
- 2024 National Startup Award, the 2025 ITRI Outstanding Research Award, and the 2025 ITRI Entrepreneurship Competition runner-up.

INDUSTRIAL APPLICATIONS

The device connects directly to dialysis machines to enable online toxin monitoring and dynamic adjustment of dialysis parameters. It can also instantly calculate the remaining treatment time based on each patient's personalized toxin removal target. This allows patients to plan their daily lives more flexibly and say goodbye to the long hours of "blind dialysis" and uncertain waiting.

Key Ingredients and Evaluation Technologies for Microbiome-Directed Health Products



TECHNOLOGY INTRODUCTION

FIRDI has established a microbiome-based platform integrating high-throughput isolation and discrimination of anaerobes, static fecal co-culture, dynamic GI simulation, and microbiota/metabolite analysis. It combines Taiwanese gut microbial resources with physiologically relevant models and collaborations with CGMTC, NYU College of Medicine, and Grape King Bio to develop microbiome-directed products.

INDUSTRIAL APPLICATIONS

FIRDI has established a microbiome-based platform for precision health product development. The platform offers one-stop services, including access to strain resources, screening, microbiome analysis, and functional validation, to help advance Taiwan's precision health products in the global market.



Development Technology of Chitosan Fiber Textiles



TECHNOLOGY INTRODUCTION

Our institute's Chitosan Fiber Technology transforms discarded shrimp and crab shells into high-performance hemostatic gauze capable of stopping bleeding within five minutes, surpassing military-grade standards. A plant-based version reduces allergy risks and enhances wound healing by 36%. Protected by 20 global patents, the technology has been licensed to industry partners, generating over NT\$2 billion in economic value and supplying more than 150,000 units to Taiwan's military and ambulance systems.

INDUSTRIAL APPLICATIONS

This technology offers high cross-industry scalability. In the medical sector, it can expand into absorbable hemostatic powders, dental patches, and burn dressings. For consumer lifestyle, its antibacterial and low-allergen traits enable applications in sensitive-skin functional apparel, infant textiles, and medical-grade masks. It can also be used for heavy metal filtration and water dechlorination.

MagicABC AI-Guided Interactive Speech-Language Therapy System



TECHNOLOGY INTRODUCTION

- Technological Innovation: MagicABC is an AI-powered speech and language intervention platform that combines gamified therapy activities, AI-driven guidance, and automated assessment. Designed for children with language delays, ASD, and other communication disorders, it enables engaging, measurable, and accessible early intervention in both clinical and home settings.
- Competitive Advantages: MagicABC is the world's first speech-language therapy platform integrating AI therapeutic guidance with automated language assessment. Acting as a virtual speech-language pathologist, the AI provides real-time personalized feedback and intervention strategies, while automatically generating performance scores and progress reports for parents and clinicians.
- Awards and Recognition: 2025 R&D 100 Awards; 2026 Edison Awards.

INDUSTRIAL APPLICATIONS

This system integrates artificial intelligence, voice interaction, and gamified training technologies to provide a speech and language intervention platform for children with language delays, autism spectrum disorder (ASD), and other communication disorders. The platform includes a variety of therapy activities, such as imitation exercises, picture-based learning, storybooks, and conversational training, helping children improve vocabulary, sentence construction, and everyday communication skills through engaging and interactive experiences. During each training session, an AI-powered virtual speech-language therapist provides real-time guidance and feedback based on the child's responses, encouraging active participation and personalized learning. After the session, the system automatically analyzes performance and generates progress reports, enabling parents and speech-language pathologists to objectively track language development and intervention outcomes. The system can be deployed in hospitals, rehabilitation centers, early intervention institutions, schools, and home environments, helping to address the shortage of speech-language therapy resources while improving accessibility, training intensity, and overall treatment effectiveness.

LYSward™: A pH-Dependent Antibody Platform for ADCs



TECHNOLOGY INTRODUCTION

DCB's LYSward™ platform utilizes pH-dependent antigen binding to enhance payload release and improve the anti-tumor activity of ADCs. This innovative approach may help reduce drug resistance and enable the development of next-generation ADC therapies.

INDUSTRIAL APPLICATIONS

The LYSward™ platform can be applied to the development of next-generation antibody-drug conjugates (ADCs), enhancing intracellular payload release and improving anti-tumor efficacy while reducing the risk of resistance caused by antigen loss. This technology can be used to develop more effective ADC therapeutics as well as optimize existing ADC products, increasing their clinical value and market competitiveness. In addition, LYSward™ offers strong potential for technology licensing and industry partnerships, making it a promising platform for next-generation ADC development.

Development of TXNDC5-Targeted Oligonucleotide Therapeutics



TECHNOLOGY INTRODUCTION

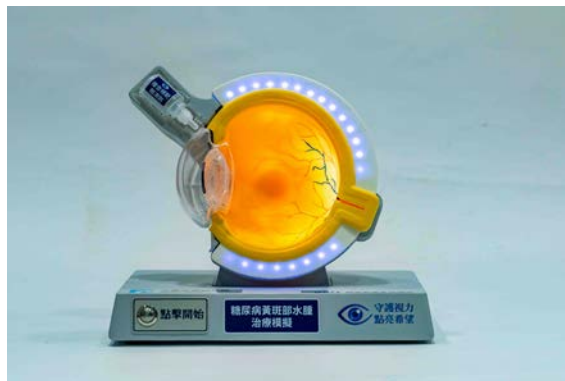
1. First-in-Class Anti-Fibrotic Oligonucleotide Therapeutics.
2. Scalable Lung-Targeted Oligonucleotide Inhalation Delivery Platform.
3. Integrating Domestic Oligonucleotide Capacity.

INDUSTRIAL APPLICATIONS

Idiopathic Pulmonary Fibrosis (IPF) represents a major unmet medical need, with a projected USD 5.4 billion market by 2030. To tackle the challenging target TXNDC5—unconquerable by traditional large or small molecules—this study introduces novel nucleic acid therapeutics. NTU research proves that blocking TXNDC5 treats lung, heart, kidney, and liver fibrosis, alongside atherosclerosis. This broad multi-indication potential offers breakthrough treatments for organ fibrosis, driving exceptional commercial and investment value.



Novel Dual-Target Eye Drops for Diabetic Macular Edema Treatment



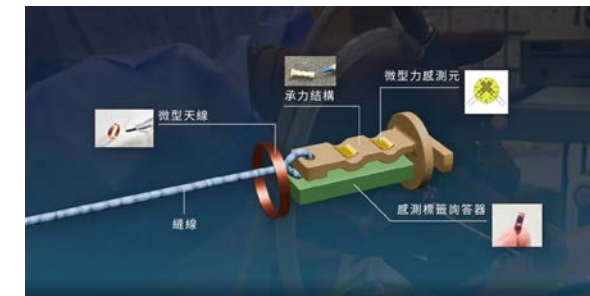
TECHNOLOGY INTRODUCTION

1. The dual-target drug modulates multiple pathways to enhance therapeutic efficacy.
2. The unique eye drop formulation enables efficient delivery of the drug to posterior ocular tissues.
3. The non-invasive route of administration improves convenience and safety.

INDUSTRIAL APPLICATIONS

This technology significantly enhance drug permeability to reach the lesion directly, suppressing inflammation and damage caused by abnormal blood vessel growth, and protecting the retina at the source. Pre-clinical studies have confirmed its efficacy surpasses that of leading international treatments. Targeting a future market valued at tens of billions of dollars, this innovative technology offers patients new treatment opportunities, positioning Taiwan's innovative R&D as a standout in the global ophthalmic drug market.

Smart Implant for Tension Monitoring



TECHNOLOGY INTRODUCTION

This technology integrates a micro-sensor and a sensor-tag transponder within a conventional suture anchor. By utilizing Radio Frequency Identification (RFID) technology, the implant achieves wireless power charging and data transmission, enabling real-time monitoring of suture tension variation. This innovation assists physicians in accurately assessing tendon healing status, preventing post-operative re-tears or tissue adhesion, and providing patients with superior post-surgical evaluation and care.

INDUSTRIAL APPLICATIONS

Smart implants provide physicians and patients with real-time data, allowing the physicians to actively monitor and evaluate intra-operative and post-operative recovery conditions from outside the body. It enables the delivery of more precise services throughout the treatment process, effectively reducing the probability of re-operation and consequently lowering overall treatment costs. Furthermore, the data collected by the smart implant will serve as a valuable clinical asset, contributing to the continuous improvement of implant design, optimization of surgical protocols, and the development of more effective post-operative rehabilitation strategies, facilitating sustainable product upgrades.



Digital Therapeutics for Generalized Anxiety Disorder (GAD)



TECHNOLOGY INTRODUCTION

Transcutaneous Auricular Vagus Nerve Stimulation Technology: By stimulating the vagus nerve through ear-mounted electrodes, this technology modulates the central nervous system and effectively relieves stress and anxiety.

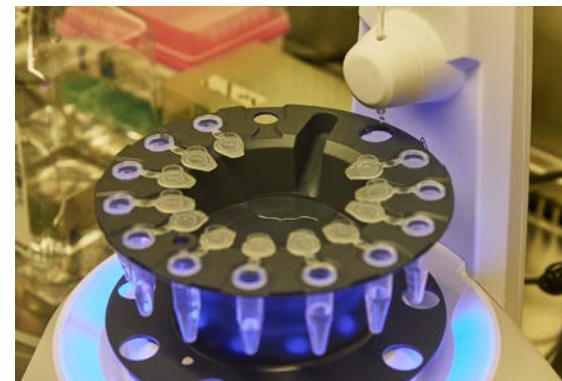
Real-Time Multimodal Physiological Signal Monitoring: By integrating signals such as heart rate variability and galvanic skin response, this technology objectively quantifies stress levels and provides real-time feedback.

AI-Driven Personalized Digital Therapeutics: Through AI-based automatic optimization of stimulation parameters, combined with a digital therapeutics app and cloud-based tracking, this technology delivers long-term and precise personalized treatment.

INDUSTRIAL APPLICATIONS

This technology integrates auricular vagus nerve stimulation, physiological signal sensing, and AI-driven modulation to develop a non-invasive, personalized digital therapeutics solution with remote care capabilities. It can monitor stress conditions in real time and dynamically adjust treatment parameters. In the future, it can be applied to mental health, home healthcare, and smart healthcare, with further potential in anxiety treatment, stress management, and mental wellness promotion. This technology is expected to improve the accessibility of mental healthcare and support Taiwan's digital therapeutics and smart healthcare industries in expanding into the global market.

Integrated iPSC Technology Platform for Highly Stable MSC and Exosome Manufacturing



TECHNOLOGY INTRODUCTION

Established an iPSC reprogramming platform for disease modeling and drug evaluation, including mitochondrial DNA mutation-associated hearing loss and genetic vision disorders.

Differentiated iPSCs into ISCT-compliant mesenchymal stromal cells (iMSCs) and developed proprietary media for iMSC differentiation and iPSC expansion.

Established a highly consistent iPSC-based MSC and exosome manufacturing platform, becoming the first institution in Taiwan to obtain an INCI designation for iPSC-derived exosomes

INDUSTRIAL APPLICATIONS

- 1.Ensures stable and efficient cell production, enhancing clinical feasibility in regenerative medicine and cell therapy.
- 2.Optimizes cell function through genetic engineering, improving therapeutic efficacy and safety, advancing personalized precision medicine.
- 3.Establishes an exosome production and analysis platform, addressing market demands in medical aesthetics, pharmaceuticals, and immunotherapy.
- 4.Standardized and scalable cell manufacturing reduces production costs and increases product accessibility.



Lightweight Exoskeleton Assistive Device



TECHNOLOGY INTRODUCTION

Lightweight assistive exoskeleton for long-term care, reducing lower-back strain during repetitive caregiving tasks. Integrated app alerts bending angle and frequency. Validated at Taipei Veterans Home and Yilan Si Da Ren.

INDUSTRIAL APPLICATIONS

Based on the practical needs and pain points of domestic long-term care institutions, this lightweight assistive exoskeleton advances wearable robotics technology while enhancing user experience and wearing comfort. By improving user acceptance, it aims to expand the domestic assistive device market, increase caregiving efficiency, and enhance the overall quality of long-term care services.

iSure AI Guardian: Electrical Appliance Monitoring System with Sound Recognition



TECHNOLOGY INTRODUCTION

iSure combines Edge-Cloud AI with dual power-sound tracking for care & sustainability. 1) AIoT: Embeds AI into outlets for 24/7 telemetry & cloud modeling. 2) Privacy: Wake-word-free Edge AI alerts multilingual cries (ZH/TW/EN/JA) & falls on-site. 3) Modular: Tailored to integrate with care, EMS or smart homes. 4) Inference: Matches baselines to auto-alert anomalies, optimizing elderly care & energy.

INDUSTRIAL APPLICATIONS

Elderly Care: iSure offers AI monitoring. Detecting appliance/sound anomalies or multi-lingual cries (e.g. falls) alerts caregivers. Traction: Taiwan's MacKay, Tokyo, Kumamoto (tech dorms) & Malaysia's top eldercare. Energy Saving: Plug-and-play AI auditing for individual appliances beats loop analytics. Ideal for malls, rentals & dorms to cut phantom loads.



ScalpX AI Smart Care Service System



TECHNOLOGY INTRODUCTION

ScalpX uses 150k scalp records and patented AI to deliver 95% accuracy, 6× faster analysis, and personalized care reports.

With seven global AI scalp imaging patents, ScalpX has built a scalp care ecosystem and proprietary data advantage.

Winner of 2024 Taiwan Excellence and 2025 SME Innovation Award.

INDUSTRIAL APPLICATIONS

ScalpX is an AI-powered scalp analysis system that uses image recognition and big data analytics to assess scalp health and generate personalized reports and care recommendations. It is designed for hair salons, scalp care centers, dermatology clinics, and aesthetic medicine practices, improving service efficiency and supporting data-driven product development, health management, and precision marketing.

SEA - Stress EEG Assessment System



TECHNOLOGY INTRODUCTION

Technological Innovation

AI analyzes 90 seconds of resting-state brainwaves and converts them into a clear SEA Index for objective depression risk assessment in 10–15 minutes.

Competitive Advantages

An integrated platform combining an in-house medical-grade EEG device, signal processing, AI analytics, and automated reporting for seamless deployment.

Important Achievements

TFDA-cleared AI SaMD in 2023; validated in 400+ participants at three medical centers.

INDUSTRIAL APPLICATIONS

SEA combines a medical-grade EEG device with cloud-based AI to turn a 90-second resting-state recording into a clear risk indicator. It complements questionnaires and interviews with objective data, supporting more informed communication and follow-up. Suitable for psychiatry, neurology, health screening, and community programs, SEA helps identify individuals who may benefit from earlier mental health support.



OT Guard



全時專業守護中心



長者安全家人放心

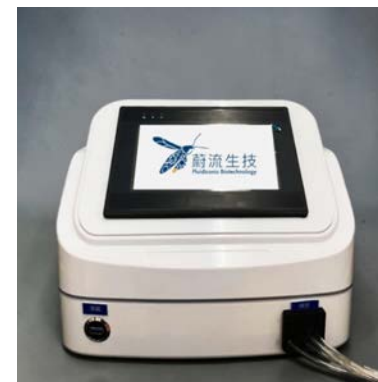
TECHNOLOGY INTRODUCTION

OT Guard features "active group calling," instantly linking to apps and care centers via two-way voice with zero latency. For passive protection, it uses AI motion sensors to privacy-safely detect "prolonged inactivity." Integrating Gen AI and speech-to-text, it transcribes calls and syncs health summaries to family apps, reducing caregiver burdens through smart long-term care.

INDUSTRIAL APPLICATIONS

OT Guard drives smart care with dual-track protection and Gen AI. For B2G, it helps governments monitor solo seniors, easing social worker burdens. For B2B property and senior housing, it enables "one-touch, all-respond" safety and converts voice to structured digital care records. Transforming basic calls into a smart ecosystem, it offers low-cost, scalable digital upgrades with global potential.

MedSelect®-Functional Oncology Drug Development Evaluation Infrastructure



TECHNOLOGY INTRODUCTION

The MedSelect® platform reconstructs an environment closely resembling that of a real human tumor, including hypoxia gradients, differences in nutrient distribution, and immune cell interactions, making drug responses more clinically relevant.

The platform combines a programmable pneumatic pump with automated microscopic imaging analysis to simultaneously perform multiple drug and dosage condition tests and observe tumor tissue changes in real time.

INDUSTRIAL APPLICATIONS

MedSelect® utilizes tumor intratumoral heterogeneity models, deeply integrating tumor characteristics from patients, data analysis of drug responses, and standard treatment data from clinical patient. It can be applied throughout the new drug development process, providing crucial "functional validation and decision support tools". This allows R&D teams to simulate complex tumor pathological environments in the laboratory beforehand, and provides highly clinically relevant drug response data and drug resistance analysis, improving the accuracy of new anticancer drug efficacy and drug resistance assessment. It also provides key data for precision medicine, effectively reducing the risk of clinical failure in new drug development.



AI-assisted Sleep Airway Nasopharyngoscope System



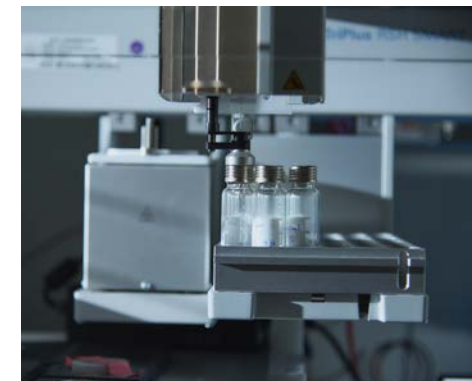
TECHNOLOGY INTRODUCTION

Sleep airway assessment system combining a mini-nasopharyngeal endoscope and AI-assisted image recognition technology. The system captures real-time upper airway images during natural sleep without anesthesia, directly visualizes obstruction sites, and uses AI algorithms to analyze generate objective reports.

INDUSTRIAL APPLICATIONS

The miniature nasopharyngeal sleep endoscope is designed for sleep medicine and home health monitoring. It enables direct visualization of upper airway obstruction during sleep, supporting screening, diagnosis, and treatment planning of sleep breathing disorders.

Tea Flavor Fingerprinting and Intelligent Aroma Extraction Process Control



TECHNOLOGY INTRODUCTION

Traditional tea processing relies heavily on experience, making it difficult to consistently retain unique tea aromas. This technology uses GC-MS-based Tea Aroma Fingerprinting to convert aroma characteristics into measurable data. Combined with Spinning Cone Column extraction and AI analytics, it enables precise aroma extraction and recovery control, improving product consistency, reproducibility, and the development of high-value tea products.

INDUSTRIAL APPLICATIONS

This technology can be applied to bottled tea beverages, bubble tea products, tea aroma concentrates, and natural flavor ingredients. By integrating Tea Aroma Fingerprinting with intelligent process control, it enables accurate evaluation of raw material quality and aroma characteristics, improving aroma extraction efficiency and flavor consistency. It also supports aroma recovery, flavor standardization, and the development of high-value tea products.



Next-Gen Smart Heat Treatment System for High-Performance Cast Materials



TECHNOLOGY INTRODUCTION

(Next-Gen SHT) integrates a domestically developed intelligent austempering heat treatment system, an AI-powered metallographic image recognition module, and an AI-driven materials design model to establish a smart platform for materials design, heat treatment, and microstructure verification. The system automatically identifies metallographic structures and feeds the results back to the AI model to optimize heat treatment parameters, reducing trial-and-error and manual inspection. By precisely controlling the microstructure, it increases cast material strength by 90%, elongation by 30%, and hardness by 40%, while achieving 90% AI recognition accuracy. The technology was recognized with the 2026 Edison Awards, demonstrating its innovation and global competitiveness in intelligent heat treatment technology.

INDUSTRIAL APPLICATIONS

Next-Gen SHT is widely applicable to high-performance cast component industries, including automotive, wind energy, rail transportation, construction machinery, agricultural machinery, mining equipment, energy, and defense. It is suitable for manufacturing gears, crankshafts, differentials, suspension components, hydraulic parts, and wear-resistant components. The platform enables manufacturers to rapidly establish optimal heat treatment processes, improve material performance and product consistency, shorten development cycles, reduce trial-and-error costs and labor requirements, and minimize scrap rates and energy consumption. By accelerating smart manufacturing and digital transformation, Next-Gen SHT enhances the competitiveness of high-value products and offers strong potential for cross-industry adoption and large-scale commercialization.

High-Pressure Gas Quenching and Vacuum Carburizing Heat Treatment Technology



TECHNOLOGY INTRODUCTION

Metal components are heated and held at a vacuum environment. During this holding period, acetylene (or ammonia gas simultaneously) is pulsed through the vacuum to perform carburizing (carbonitriding). The carburized (carbonitrided) components are then transferred to another vacuum chamber for rapid cooling with high-pressure nitrogen (20 bar) to complete the quenching process.

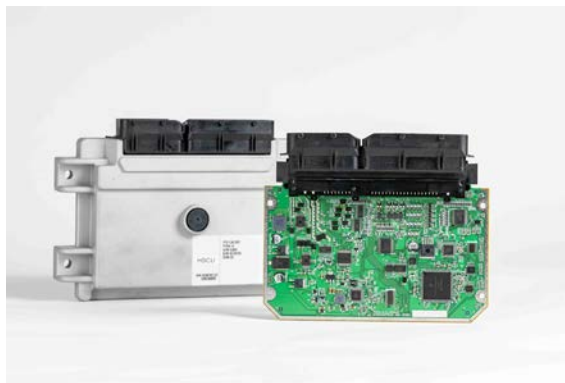
- Technological Innovation: Carburizing (carbonitriding) and tempering in a vacuum environment prevents metal components from being affected by oxygen-containing environments, while simultaneously improving surface hardness and fatigue resistance.
- Competitive/Intellectual Advantage: Advanced vacuum heat treatment technology further improves product performance and reduces heat treatment energy consumption.
- Significant Achievements/Awards: Assisted domestic micro-transmission component manufacturers in improving product lifespan and dimensional accuracy after heat treatment.

INDUSTRIAL APPLICATIONS

This system utilizes advanced vacuum heat treatment technology to address the negative effects of oxygen-containing heat treatment on metal components, while simultaneously improving surface hardness and increasing wear resistance. It can be applied in high-yield and demanding environmental applications such as automation, unmanned vehicles, and the medical industry. The implementation of this technology will enhance domestic industrial technology and facilitate integration into the international supply chain.



Hydrogen Storage Controller for Hydrogen Vehicles



TECHNOLOGY INTRODUCTION

The HSCU is an automotive controller independently developed by ITRI, featuring pressure and temperature monitoring, as well as hydrogen leak detection and monitoring functions. It complies with the SAE J2799 hydrogen refueling communication standard and communicates with hydrogen refueling stations via an IR interface. It accurately estimates the state of charge (SOC) of hydrogen.

INDUSTRIAL APPLICATIONS

The development of hydrogen storage controllers can help accelerate the localization of domestically produced hydrogen vehicles and drive the improvement of related technologies such as fuel cells, hydrogen storage systems, sensing elements and vehicle electronic control, which will help promote the development of hydrogen transportation technology and hydrogen refueling station infrastructure.

Ultra-Wideband and Vision Fusion Robot Positioning Assistance Module



TECHNOLOGY INTRODUCTION

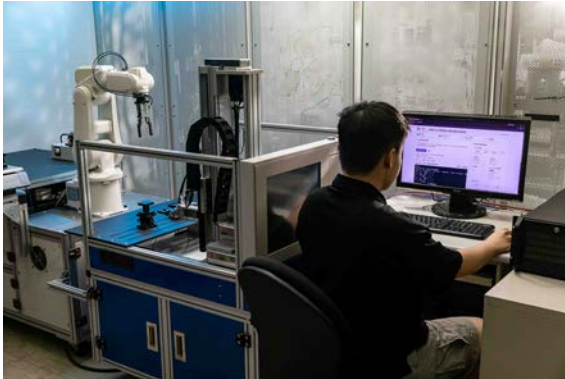
Integrating ultra-wideband and visual perception technologies, a hybrid position estimation module has been created. By measuring distance with ultra-wideband and combining it with high-speed visual feature comparison, it instantly corrects lidar drift, allowing robots to adjust and locate themselves while moving and observing. Real-world testing shows an average error within ± 6.6 cm. The modular design allows for rapid installation on existing AMRs, making it suitable as a positioning upgrade module, system license, or complete solution.

INDUSTRIAL APPLICATIONS

This positioning assistance module adopts a modular design and can be installed on mobile robots, allowing robots to report their positions to each other instead of moving independently. It also helps robots continuously correct their position and can be applied to highly obscured areas, metal manufacturing, processing plants, PCB factories, and semiconductor factories, etc.



Automatic PLC Control Program Code Generation Technology



TECHNOLOGY INTRODUCTION

Uniqueness: Integrates a RAG architecture with a CBR mechanism to support cross-syntax PLC code generation.

Application Scenario: Rapid PLC development for factory automation equipment, such as devices and production lines.

Market Value: Improves generation accuracy to 96.67% and significantly reduces the cost of specialized software engineering manpower.

INDUSTRIAL APPLICATIONS

This technology pioneers RAG-CBR integration for PLC code generation. With domain-specific data, ISSAC Sim simulation, and RPA-based PLC deployment, it reduces GAI hallucinations and enables AI-generated code to move from generation to verified execution on physical controllers.

Defect Image Augmentation and Closed-Loop Model Refinement System



TECHNOLOGY INTRODUCTION

For AOI equipment, GAI generates rare defect images to solve data imbalance and sample shortages, reducing model bias.

With RAG industry knowledge and closed-loop refinement, feedback, retraining, and data regeneration enhance unexpected defect recognition.

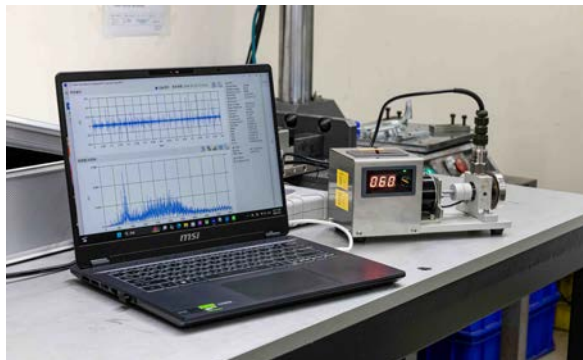
It cuts data collection and annotation by over 50%, reaches >90% detection with 1,000 real rare defect images, and improves accuracy to ≥90%.

INDUSTRIAL APPLICATIONS

This technology reduces data collection and labeling without on-site visits, shortens PoC preparation, and supports deployment. It can expand to smart inspection in metal processing, automotive parts, and PCB. By integrating data import, pseudo-labeling, cluster updates, retraining, and inference, it achieves 89% detection with 50% labeled images, halves labeling time, and cuts PoC time by 30–40%.



Smart Labeling & Multi Parameter Fault Diagnosis



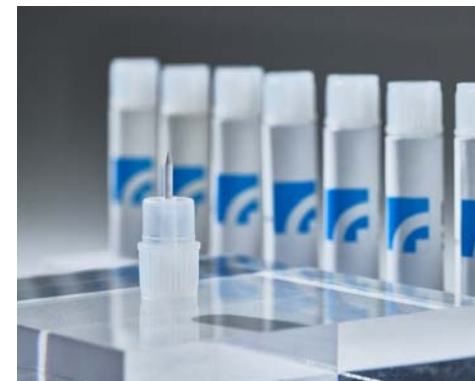
TECHNOLOGY INTRODUCTION

This technology combines LLM-based semantic extraction with multi-physics AI analytics to identify equipment faults and provide maintenance recommendations, improving operational decision-making efficiency.

INDUSTRIAL APPLICATIONS

A versatile AI-powered maintenance solution that combines LLM-based knowledge extraction with multi-parameter fault diagnosis to deliver intelligent troubleshooting and decision support. Applicable to semiconductor, energy, petrochemical, textile, and other asset-intensive industries, it reduces downtime, lowers maintenance costs, and improves operational efficiency.

Precision Molding Technology for Wire Bonding Ceramic Nozzles



TECHNOLOGY INTRODUCTION

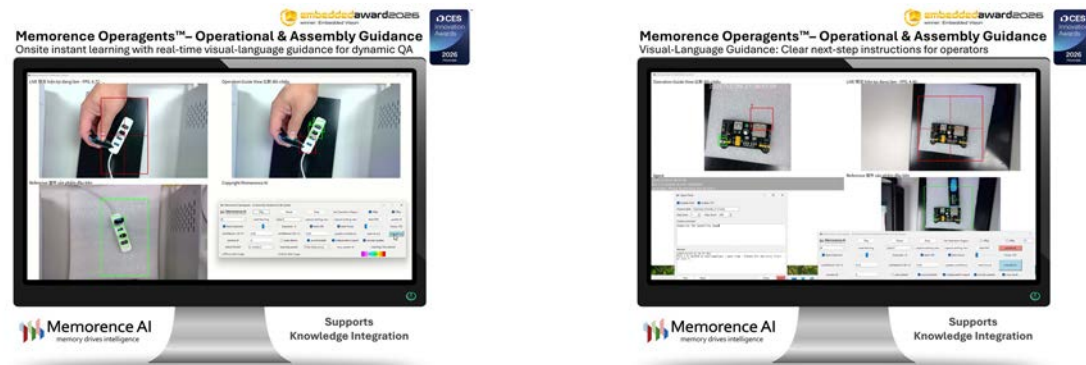
This project optimizes ZTA (zirconia-toughened alumina) bonding capillaries to improve wear resistance and strength for silver alloy wire bonding. The capillary lifetime is expected to increase from about 100,000 to over 200,000 bonding cycles, reducing replacement frequency, lowering packaging costs, and improving process stability.

INDUSTRIAL APPLICATIONS

This project develops high-wear-resistant ZTA ceramic capillaries for semiconductor packaging. The improved capillaries provide higher wear resistance and strength for silver alloy wire bonding, extending service life, reducing replacement frequency and downtime, lowering packaging costs, and improving process stability.



Operagents: Reliable AI for Real-Time Work Guidance, Quality Control, and Traceability



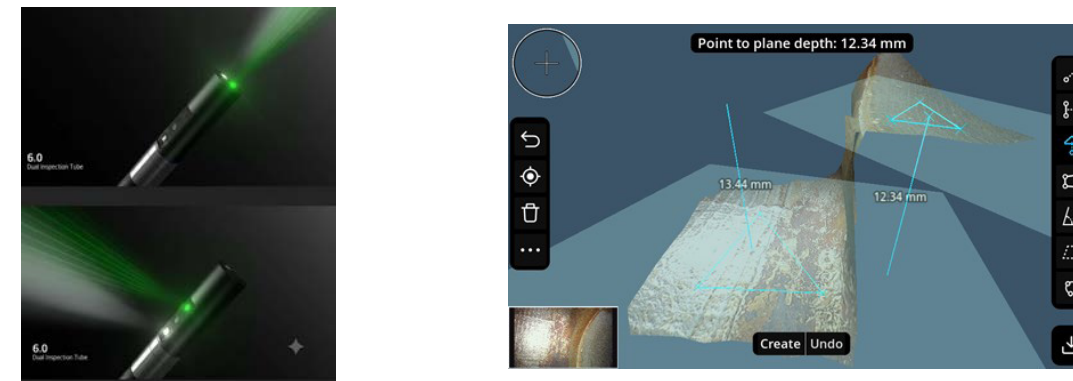
TECHNOLOGY INTRODUCTION

- **Technological Innovation:** Operagents integrates computer vision, VLMs, and AI agents to understand frontline operations in real time using standard cameras and edge AI. It provides step-by-step guidance, quality verification, anomaly alerts, and rapid on-site learning.
- **Competitive and Intellectual Property Advantages:** Unlike fixed AOI systems and conventional vision AI, Operagents does not rely on dedicated fixtures or tightly controlled lighting. Frontline users can quickly update the AI through a small number of demonstrations, making it well suited for high-mix, low-volume production and frequent line changeovers. Its core technologies are protected by granted patents in Taiwan, the United States, Japan, and China.
- **Important Achievements and Awards:** Recognized as a CES 2026 Innovation Awards Honoree and winner of the embedded world 2026 Embedded Award.

INDUSTRIAL APPLICATIONS

Designed for electronics assembly, IPC, semiconductor equipment, medical devices, automotive, aerospace and other high-mix frontline workstations. It supports assembly, inspection, packing, repair and training with real-time guidance, key-step verification, traceability and faster changeovers. Deployment with standard cameras and edge AI reduces custom fixtures, lighting and data collection.

Dual-view 3D Measurement Industrial Video scope



TECHNOLOGY INTRODUCTION

- 1.The world's first "Dual View 3D measurement" videoscope.
- 2.Snapshot, Reconstruct & Measure in 10 Seconds.Multiple measurements with initiative user interface and Wireless image sharing.
- 3.Super wide and high resolution 2D & 3D image output & reconstruction.

INDUSTRIAL APPLICATIONS

Snap, Reconstruct & Measure in 10 Seconds. In simple 3 steps, you can generate a detailed 3D reconstruction without any complex setup or tedious procedures. Versatile Features: Hand-grip design for a stay-still operation/ Tripod application for a hands-free operation/Advanced Image & File Management Functions.



AI-Driven Manufacturing as a Service Platform



TECHNOLOGY INTRODUCTION

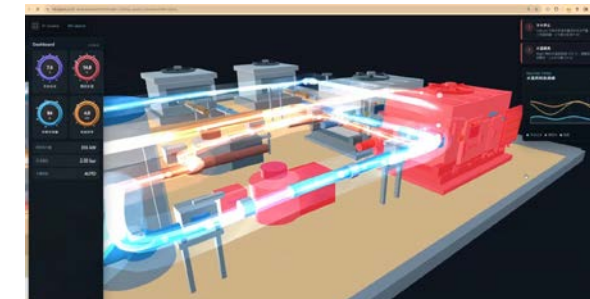
The platform integrates AI design optimization, Metal Additive Manufacturing and digital manufacturing management to provide one-stop services from product design and rapid prototyping to low-volume production. Its Distributed Manufacturing Platform improves manufacturing efficiency, supply chain flexibility, shortens development cycles, reduces prototyping costs, and supports high-precision, customized production.

INDUSTRIAL APPLICATIONS

The technology integrates AI design optimization, metal additive manufacturing, and a distributed manufacturing platform to provide design, rapid prototyping, and low-volume production services. It improves development efficiency, shortens lead time, and reduces prototyping costs. Applications include AI server cooling, semiconductor equipment components, precision molds, and high-end industrial parts.

Booth
IE11

Comprehensive Smart Network Energy Management System



TECHNOLOGY INTRODUCTION

ZiG: The Turnkey Solution for Smart Transformation

A modular visualization platform from EMS and AIoT to Digital Twins, built to accelerate enterprise smart transformation and AI deployment.

ZiG Hub (Integration Center): Cross-brand, cross-device integration for all equipment communication protocols.

No-Code Platform: A drag-and-drop visualization interface that enables fast customization by combining dashboards, SCADA, and BIM-embedded Digital Twins. High scalability and maximum flexibility.

ZiG AI: Automates device connection, dashboard generation, and real-time monitoring. It seamlessly cross-communicates and collaborates with diverse vertical AI applications, fast-tracking enterprise AI solutions across all domains.

INDUSTRIAL APPLICATIONS

Core Markets:

Smart Manufacturing (~80%) — Our Primary Market

Smart Buildings / Smart Energy / Smart Warehousing & Logistics

Next-Gen Horizons (Under Active Development):

Robotics / High-Tech Industries / Semiconductors

Booth
IE12



Smart Manufacturing and Integrated Supply Chain Platform



TECHNOLOGY INTRODUCTION

Technological Innovation

AI Proactive Alerts & Quality Prediction: Breaking away from traditional "fix-it-when-broken" and "post-inspection" methods, our AI identifies equipment anomalies in advance and forecasts yield rates, keeping management ahead of the curve.

Full-Line Smart Connectivity & Automation: Ensures total transparency of production line data and bridges the supply chain to enable automated quoting and ordering, eliminating traditional communication lags and production delays.

Core Technology & Competitive Advantages

Featuring a highly compatible integration mechanism, the platform effectively breaks down data silos. Its core algorithms successfully digitalize "veteran expertise," perfectly resolving the pain point of technical gaps in the manufacturing industry."

INDUSTRIAL APPLICATIONS

AVECTEC drives industrial transformation for precision-controlled sectors (chemicals, steel, grinding). Its war rooms and equipment warnings reduce part-breakage downtime and inspection costs. AI process optimization boosts yields and minimizes rework waste in power, gas, and materials, saving massive annual losses.

For supply chain collaboration, it connects upstream and downstream suppliers for real-time tracking, eliminating communication lags. Combined with smart manufacturing, it enhances operational efficiency and accelerates industrial upgrades.

5G Smart Manufacturing Solution



TECHNOLOGY INTRODUCTION

The 5G Smart Manufacturing Solution integrates a 5G SA private network, O-RAN architecture, and MEC edge computing to provide high-bandwidth, low-latency, and reliable connectivity. It supports equipment networking, AGV/AMR operations, AI visual inspection, and real-time process monitoring. With modular and scalable design, the solution integrates MES, ERP, and automation systems to build secure, flexible, and efficient smart factories.

INDUSTRIAL APPLICATIONS

Designed for semiconductor, electronics, metal processing, food, and logistics industries, the solution supports high-density device connectivity, AGV/AMR operations, AI visual inspection, and real-time monitoring. Leveraging a 5G private network and AI analytics, it improves reliability, optimizes production, reduces defects, and accelerates digital transformation.



ProcessEye: Real-Time Continuous NIR Monitoring



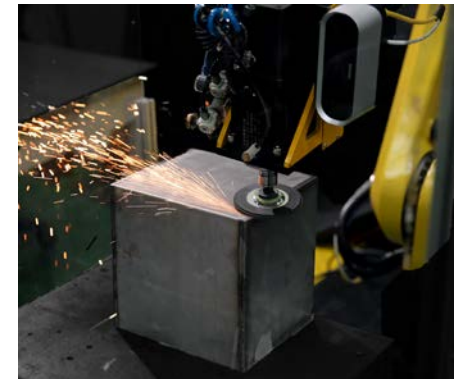
TECHNOLOGY INTRODUCTION

To resolve batch-to-batch quality inconsistencies and manual variances in our flagship constipation drug (Sennoside), we integrated spectroscopic inspection with PCA and PLS automation for real-time manufacturing monitoring. Consequently, batch analysis time plummeted from 20 minutes to 10 seconds, and testing personnel was streamlined from 12 to 6, significantly boosting mass production efficiency and pharmaceutical quality.

INDUSTRIAL APPLICATIONS

By utilizing non-destructive spectroscopy, we capture spectral variations during pharmaceutical manufacturing. Combined with data analysis and automated controls, this system delivers real-time process insights, such as moisture levels and formulation ratios. Establishing calibration models ensures controlled states and product specification compliance, successfully implementing Pharma 4.0 smart manufacturing and advanced quality management.

Experience-Driven Robotic Operating System (HolonOS)



TECHNOLOGY INTRODUCTION

HolonOS is an industrial robot operating system that integrates multi-brand robots, sensors, and AI. Through a graphical interface, it supports rapid deployment, path generation, and parameter adjustment, lowering the barriers to traditional robot programming and implementation.

INDUSTRIAL APPLICATIONS

This system integrates sensors, AI algorithms, and robotics to give conventional robotic arms vision and a brain, focusing on metal surface processing such as polishing, grinding, welding, spraying, and deburring. Through automated robotic-arm applications, it now serves manufacturing fields ranging from small metal parts (faucet hardware, cutlery, hand tools) and mid-size structural components (bicycle frames, auto/motorcycle parts) to large, high-value-added, high-precision aerospace, defense, and automotive components.

Humanoid Robot Joint Modules with High-Precision Motion Transmission Technology



TECHNOLOGY INTRODUCTION

TURVO Technologies independently develops high-precision harmonic and planetary reducers. Leveraging nearly 40 years of precision machining experience and expertise, the company has established a turnkey development capability spanning design, machining, assembly, and performance verification. This reduces reliance on imported critical components and enables customized specifications based on customer requirements, thereby increasing market adoption flexibility. With core strengths in mature precision machining, mass production capabilities, stable quality, and fast delivery times, TURVO has also completed extensive patent portfolios. In 2025, its TUH110-007 high-precision planetary reducer won the Automation and Robotics System Innovation Award (ARSI), and the company debuted its robotics products at the SPS exhibition in Nuremberg, Germany.

INDUSTRIAL APPLICATIONS

The high-precision harmonic reducers, planetary reducers, and precision metal component machining developed by TURVO Technologies can be widely applied in fields such as industrial robotics, collaborative robots (cobots), automation equipment, smart manufacturing, semiconductor equipment, medical devices, and AI-driven smart equipment.

Modular Smart Autonomous Aquaculture Vessel



TECHNOLOGY INTRODUCTION

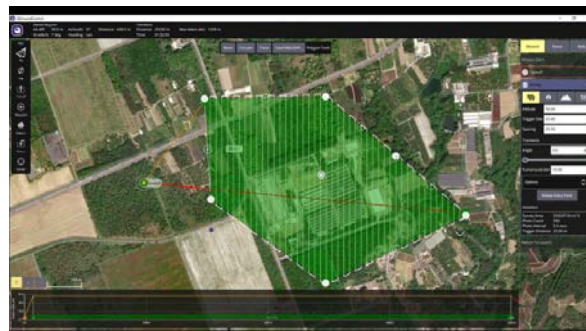
This patented detachable automatic feeding and dispensing system separates the hull assembly from the motor/control assembly for quick installation across different boats or ponds. It supports automatic feed, lime/powder dispensing, liquid additive applications and towing tasks, reducing manual labor, dust exposure and maintenance burden.

INDUSTRIAL APPLICATIONS

Applicable to traditional fish ponds, clam, shrimp and fish farms, aquavoltaic sites, and surface inspection. Its patented detachable design enables quick installation and maintenance across ponds, replacing manual boating for feeding, lime spreading and water additive dispensing while reducing labor, sun exposure, falling and dust inhalation risks.



Ground Task Assignment System



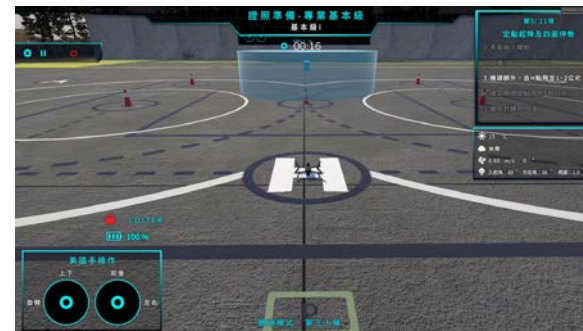
TECHNOLOGY INTRODUCTION

SkyCortex is a drone command center combining 3D GIS and swarm technology for single-operator control. Powered by AI edge computing, it automatically detects targets from live feeds to provide actionable tactical intelligence. This system boosts inspection coverage by 300% to 400% and cuts decision-making time by 50%, maximizing mission efficiency without extra manpower.

INDUSTRIAL APPLICATIONS

Integrating 3D GIS and drone swarm control, this system empowers remote disaster command by overlaying multi-drone live feeds onto 3D maps for wide-area searches. For defense and security, AI-driven automated patrols provide 24/7 monitoring, instant threat assessment, and precise target pinpointing. By cutting manual patrol costs by 50% and accelerating golden-hour responses, this solution is ideal for smart cities, rescues, and homeland defense.

SkySims Drone Simulator



TECHNOLOGY INTRODUCTION

SkySims is a Digital Twin platform combining high-fidelity physics and 3D GIS for drone training and virtual R&D. Supporting SITL/HITL simulations, it verifies aerodynamics pre-manufacturing. This cuts time-to-market by 40% and prototype costs by 60%, optimizing flight parameters for efficient end-to-end operations.

INDUSTRIAL APPLICATIONS

Leveraging Digital Twin and high-fidelity physics, this system builds custom GIS-based virtual environments for high-risk drone operations. Pilots train with real controllers under simulated extreme conditions, while AI analyzes flight metrics for personalized training and tactical planning. Bypassing physical flight constraints, this solution boosts mission readiness by 60% for professional certification and government drills.



Taiwan Baseball Hawk-Eye Tracking System



TECHNOLOGY INTRODUCTION

1. High Data Precision: The electronic strike zone features an average margin of error of less than 1 cm, outperforming the internationally recognized Trackman system (which has an error margin of approximately 3–6 cm).
2. Markerless Non-Wearable Technology: Utilizing a combination of markerless motion capture and multi-camera high-speed videography, the system requires no wearable sensors or equipment.
3. Comprehensive Data Coverage & Multi-Object Tracking: It provides a robust suite of data, including 16 pitching quality metrics, 15 biomechanical indicators, and batting data such as swing trajectory.

INDUSTRIAL APPLICATIONS

ITRI's Taiwan's Hawk-Eye System integrates AI vision, markerless biomechanics, and cloud data, demonstrating high industrial value. First, in professional tournaments and broadcasting, it is deployed in major CPBL venues like the Taipei Dome, providing real-time pitch tracking, auto-recognition, and an electronic strike zone with under-10mm error. Enhanced by 3D rendering, it elevates umpiring fairness and the fan viewing experience. Secondly, in scientific training and youth development, it replaces traditional radar by using high-speed cameras to capture full-body 3D joint coordinates without sensors. This allows precise analysis of biomechanics (like elbow torque) to optimize form and prevent injuries, while successfully bringing advanced sports science to grassroots and remote schools like Hongye Elementary. Finally, its cross-platform cloud database enables multi-dimensional historical queries and post-game analysis.

HoleInOne: Smart Golf Service Solution



TECHNOLOGY INTRODUCTION

Pioneering the integration of 3D sensing and AI into a lightweight hardware architecture. Unlike traditional simulators tied to high costs and complex installation, this tech breaks environmental barriers to deliver plug-and-play, virtual-real interaction and data-driven measurement, while utilizing a cloud platform for real-time feedback and personalized guidance.

1. AI & 3D Sensing Integration: Captures swing dynamics at high speed with a 97% ball speed detection accuracy.
2. Lightweight & High-Performance: At only 1/3 the size of traditional equipment, processing speed is boosted by 60%.
3. Plug-and-Play Adaptability: Eliminates environmental restrictions while leveraging a cloud platform for AI-powered coaching.

INDUSTRIAL APPLICATIONS

This technology drives cross-industry integration across hardware, IT service platforms, and sports venues, establishing a smart golf ecosystem. Technologically, it has guided leading domestic display and sensing component manufacturers in advanced interactive display and multi-modal sensing R&D, accelerating the commercialization of domestic golf simulators. For venue implementation, the solution has been validated at a 2025 World Masters Games demonstration course. Furthermore, by integrating AI virtual coaching and fitness assessments into high-end indoor golf clubs and home training environments, it achieves multi-scenario deployment and drives the global export of total solutions.



Clean Hydrogen Tandem-Rotor Drone



TECHNOLOGY INTRODUCTION

- 3x the energy density of lithium for much longer flight endurance.
- Eco-friendly and pollution-free, generating only water and heat with zero carbon emissions.
- Instant power with quick cylinder replacement, eliminating long charging wait times.

INDUSTRIAL APPLICATIONS

For mountain supply and cross-sea delivery, traditional drones hit a 20-minute lithium-battery limit. To bridge this gap, ITRI's Clean Hydrogen Tandem-Rotor Drone lifts a 15kg payload with precise stability in high-altitude winds. Powered by fuel cells, it flies with zero emissions—emitting only water to achieve peak performance.

Lithium-Metal Batteries for UAV



TECHNOLOGY INTRODUCTION

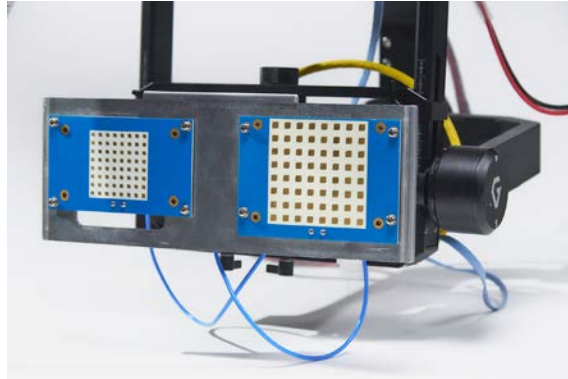
1. "Lithium-Metal Battery" specifically for drones. The energy density has been significantly increased from 250 Wh/kg to 420 Wh/kg, with an estimated flight range of over 1.5 times. Collaborating with NCSIST, the team completed module integration and successfully conducted a 30-minute flight test, precisely verifying key performance stages including takeoff, ascent, and hovering.
2. The technology overcome the challenges of "high mass-producibility" and "cost control." By simplifying cell structures and optimizing standardized manufacturing processes, we have effectively resolved the mass-production barriers of lithium-metal batteries. The integration of common components and modular assembly techniques significantly reduces material and R&D costs.

INDUSTRIAL APPLICATIONS

The "Lithium-Metal Battery" technology integration of common components and modular assembly techniques significantly reduces material and R&D costs. This solution—combining high energy efficiency, commercial supply readiness, and price competitiveness will serve as the core engine driving drones into the era of long-endurance flight.



Long-Range Broadband Video Transmission Communication Module for Drones



TECHNOLOGY INTRODUCTION

Technology Introduction: Please provide a clear and concise description within 400 characters, or list three key features:

- Technological Innovation – 150 characters
- Competitive or Intellectual Property Advantages – 150 characters
- Important Achievements / Awards – 100 characters

INDUSTRIAL APPLICATIONS

Please describe the applicable industries and application scenarios within 400 characters.

Occlusion-Robust AI Driver Gaze Tracking Technology



TECHNOLOGY INTRODUCTION

- Technological Innovation
AI tracks head pose, eyes and gaze in real time, judging attention despite masks, sunglasses, headwear, low light/glare.
- Competitive or Intellectual Property Advantages
22 cases/62 patent filings in Taiwan, U.S., Japan and China; links OEMs, system, sensor-module and chip partners.
- Important Achievements / Awards
Won Edison Award Bronze and SAE paper award; validated autonomous e-bus co-driving.

INDUSTRIAL APPLICATIONS

Addressing UN R171 and R157, this technology enables real-time driver monitoring and reliable detection under occlusions and complex lighting. Deployed in autonomous electric buses, it supports human-machine co-driving and MRM decisions. Integrated with bio-radar, it assesses driver availability and monitors heart rate and respiration, with applications in smart buses, autonomous vehicles, and defensive driving training simulators.



Lateral Active Safety Systems



TECHNOLOGY INTRODUCTION

The Lateral Active Safety System assists steering when braking is insufficient. Using cameras and radar, it enables lane changes, emergency evasion, and minimal risk management, overcoming the limits of braking-only AEB systems while meeting UNECE R171 and R157 requirements. The technology holds 18 patents, has been validated on domestic electric buses, and received the 2025 Edison Awards and 2024 TIE Gold Award.

INDUSTRIAL APPLICATIONS

This system uses cameras and radar to detect road obstacles, side traffic, and driving risks. When braking alone may not prevent a collision, it assists steering to avoid hazards. If driver abnormality or system failure is detected, it can help the vehicle slow down and pull over safely. Without costly LiDAR, it is easier to mass-produce and can be applied to electric buses, commercial vehicles, passenger cars, public transportation, and smart fleets.

Booth
IF07

AI Bike



TECHNOLOGY INTRODUCTION

1. Bicycle Common Communication Protocol Technology for Seamless Integration of Complete Bicycle Systems
2. AI-Powered Road Condition Monitoring, Providing Early Warnings of Riding Risks.
3. Intelligent Suspension Control, Enhancing Riding Stability.

INDUSTRIAL APPLICATIONS

In the global wave of intelligent technologies, the challenge for Taiwan's bicycle industry is no longer only to manufacture high-quality components, but to start from the needs of riders.

The Cycling & Health Tech Industry R&D Center has developed an intelligent e-bike that integrates electronic components, sensing modules, and control systems into a smart complete-bike system capable of real-time response. At intersections, on slopes, or on uneven roads, it uses AI image recognition to detect traffic and pedestrians ahead. Based on people and vehicle dynamics, riding rhythm, and road surface changes, it coordinates power assistance and suspension response to reduce riding risks and deliver a smoother, more stable ride.

The Cycling & Health Tech Industry R&D Center has brought together more than 30 cross-disciplinary companies to form the CCPA alliance, linking complete-bike systems and is expected to reduce integration costs by 40% while increasing the value of high-end products by more than 30%. This will help Taiwan's bicycle industry move beyond manufacturing strengths toward the export of intelligent complete-bike systems.

Booth
IF08



Low-Carbon Polyester Elastomer Synthesis and All-Polyester Sports Shoe Technology



TECHNOLOGY INTRODUCTION

- Technological Innovation – Upcycled recycled PET into polyester elastomers for resilient, slip- and wear-resistant midsoles/outsoles, enabling fully recyclable mono-material shoes.
- Competitive or Intellectual Property Advantages – Providing all-polyester footwear solutions with low carbon footprint, high performance, and closed-loop recyclability.
- Important Achievements / Awards – Validated all-polyester shoes with supply chain partners and expanded into the European market."

INDUSTRIAL APPLICATIONS

This technology upcycles recycled PET bottles into polyester elastomers, reducing carbon emissions by 29%. The materials provide high resilience, cushioning, and slip and wear resistance for midsoles and outsoles. Combined with polyester uppers, they enable mono-material footwear with closed-loop recyclability, supporting circular and low-carbon strategies for global brands.

Circular Remoldable Carbon Fiber Composite Shoe Plate System



TECHNOLOGY INTRODUCTION

- Technological Innovation: World's first recyclable carbon fiber composite shoe plate system.
- Competitive Advantage: Debonding within one minute and remolding more than five times.
- Achievement: Winner of 2025 iF Design Award and showcased at JEC World.

INDUSTRIAL APPLICATIONS

Applicable to performance footwear and sports equipment, enabling closed-loop recycling and circular manufacturing.



AI Sensing Yoga Wear: a real-time sensor



TECHNOLOGY INTRODUCTION

The G.F 9 high-strain sensing yarn offers 3–4 times greater sensitivity than conventional strain gauges while maintaining excellent softness, stretchability, and seamless integration into garments. It reduces sensing apparel manufacturing processes by 34.21% and, when combined with AI-powered motion recognition, achieves 98.4% accuracy. After 100 washing cycles, it retains 98.8% electrical resistance stability, ensuring long-term durability and reliability. Backed by international patents covering sensing yarns, electronic-integrated textiles, and AI algorithms, the technology received the 2026 Edison Awards Bronze Award and shows strong potential for rehabilitation, health monitoring, and remote healthcare applications.

INDUSTRIAL APPLICATIONS

The G.F 9 strain sensing yarn features high sensitivity, softness, and scalable manufacturability, enabling seamless integration into a wide range of smart wearable products, including sports apparel, protective gear, and intelligent assistive devices. By enhancing motion-monitoring accuracy and user convenience, the technology supports applications in sports technology, rehabilitation medicine, healthcare monitoring, and robotic sensing. With strong commercialization potential, it offers significant opportunities for market expansion across the smart healthcare and wearable technology sectors.

Ultra-Light Professional Running Shoe with 3D Melt-Blown Seamless Forming Technology



TECHNOLOGY INTRODUCTION

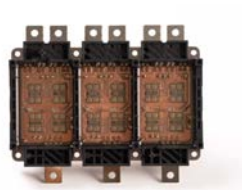
- Technological Innovation – This technology uses integrated meltblown forming to directly produce professional running shoe uppers with 3D support, elastic breathability, and an ultra-lightweight structure under 100g.
- Competitive or Intellectual Property Advantages – 5 national patents and 6 invention patents.
- Important Achievements / Awards – 2026 Edison Awards and the 2025 iF Product Design Award.

INDUSTRIAL APPLICATIONS

This technology simplifies complex running shoe manufacturing from multiple stations to only two. It can be applied to lightweight, breathable uppers for premium performance running shoes. With integrated forming and microstructure control, it creates high-strength 3D structures with curved-surface fit, verified by a 300 km field test with an international sports brand.



The First Automotive-grade 1700V Silicon Carbide (SiC) Power Module



TECHNOLOGY INTRODUCTION

- Developed Taiwan's first automotive-grade 1,700V/600A Silicon Carbide (SiC) power module, featuring in-house high-voltage SiC devices and highly reliable sintered packaging technology. Combined with an innovative wave-shaped heatsink design, the module achieves a 15% improvement in thermal performance. The technology significantly enhances system power density, reduces energy losses, and enables a more compact system design. It is well suited for high-voltage electric vehicle applications
- The technology integrates proprietary SiC device, packaging, and thermal management designs, delivering over 1.2 times higher performance than comparable international products. It has successfully passed the AQG-324 automotive qualification standard, establishing a complete indigenous technology platform and commercialization capability.
- The technology has been successfully transferred to domestic manufacturers, with products validated by international automotive OEMs and incorporated into global automotive supply chains. It represents Taiwan's first successful case of a domestically developed SiC power module entering the international automotive market.

INDUSTRIAL APPLICATIONS

This technology can be applied to passenger electric vehicle traction inverters, electric bus motor drive systems, and hybrid electric vehicle (HEV) powertrain applications. Compared with conventional silicon-based power devices, Silicon Carbide (SiC) power modules offer higher efficiency, lower power losses, and superior thermal performance, enabling increased system power density and reduced energy consumption.

The technology has been successfully integrated into a three-in-one electric vehicle powertrain system and validated through vehicle-level testing. Furthermore, it has been transferred to domestic manufacturers, allowing entry into international automotive supply chains through successful qualification by global automotive OEMs.

Professional VR Training Interactive System with Hybrid Haptic Feedback Gloves



TECHNOLOGY INTRODUCTION

- (1) Hybrid haptic feedback and generated rendering with haptic fidelity $\geq 70\%$.
- (2) Combining VR and haptic feedback for immersive disaster preparedness training applications.
- (3) Cross-domain integration to create full-sensory interaction for smart entertainment and manufacturing.

INDUSTRIAL APPLICATIONS

This technology combines a composite haptic feedback system with generative haptic rendering technology, possessing the following industrial applications:

- (1) Cross-domain integration and commercialization potential: integrating thin-film devices and control module into gloves, with a complete domestic technology chain, and has the potential for commercialization in smart wearable electronics.
- (2) Enabling zero-risk training for high-risk environments: With low latency and over 70% haptic fidelity, the system allows professionals working in high-risk environments to safely and repeatedly practice in simulated harsh 4D environments, helping build accurate muscle memory while significantly reducing the risks associated with real-world training.
- (3) Cost reduction and efficiency improvement in training: Virtual training can significantly reduce equipment wear and tear in on-site training and eliminate the need for tedious manual scene setup, greatly reducing training preparation time by up to 80%, maximizing training effectiveness, and potentially providing enterprises and governments with a safe, low-cost, and highly efficient next-generation professional training solution.



EM Cloack Graphene EMI absorbing film



TECHNOLOGY INTRODUCTION

It's more than 2 million devices equipped Black Solutions' EM Cloak.
The microstructure of graphene metamaterial has following features:

- Extremely thin, ultra-light weight.
- Grounding free solution with excellent EMI suppression ability.
- Low thermal resistance

INDUSTRIAL APPLICATIONS

EM Cloak™ is an easy-to-apply film that can be used to reduce electromagnetic noise across a wide range of systems, modules, and devices. It avoids the need for grounding associated with faraday-cage and shielding can solutions and operates much better at high-frequencies than do magnetic materials. The industries are including computer, wireless and wearable devices, automotive electronics.

Althena-Shield: Enterprise private GenAI & AI agent platform



TECHNOLOGY INTRODUCTION

AlthenaShield provides a secure computing infra for enterprise & compliance-ready. Computing optimization technology enables AI-agents to run efficiently on edge. Integrates a hardware ecosystem that complies with TAA supply chain requirements, meeting the needs of the US gov. and key clients, creating a significant competitive advantage. NVIDIA is featured us on NVIDIA's official blog this year.

INDUSTRIAL APPLICATIONS

Althena Shield features data security, providing a secure computing infra-environment for highly regulated industries such as semiconductors, advanced manufacturing, pharmaceuticals, government and defense. It integrates LLM and AI agents to adapt to internal enterprise workflows, helping industries create custom AI applications and eliminate shadow AI risks while keeping risks under control.



Battle-Proven NDAA-Compliant UAV Secure Communication Stack



TECHNOLOGY INTRODUCTION

100% Non-China BOM and Verifiable Country of Origin for Absolute Supply Chain Transparency
Comprehensive 5-15 KM Video and Data Transmission System
Battle-Tested Ultra-Low Latency Frequency-Hopping Protocols for Extreme Anti-Jamming Resilience

INDUSTRIAL APPLICATIONS

Tailored specifically for military, defense, tactical FPV drones, and special unmanned vehicles, this product series builds a military-grade communication and video transmission ecosystem characterized by high resilience, ultra-low latency, and extended operational range (5 to 20 km). The portfolio comprehensively integrates an NDAA-compliant (Non-China) Full HD digital video link, a zero-latency and highly survivable 4W high-power analog video link, and a high-refresh-rate ELRS control link supporting the dual-band Gemini architecture. Featuring exceptional anti-interference capabilities and industrial-grade durability, the entire lineup effectively overcomes severe challenges in high-interference urban terrain, mountainous blind spots, and electronic warfare environments. It serves as the ideal solution for high-dynamic assault missions, long-range border patrols, real-time intelligence gathering, and safety-critical primary or redundant control link systems.

Drone LiDAR



TECHNOLOGY INTRODUCTION

Technological Innovation: Integrates high-peak-power lasers and fast digital processing for fast drone scanning ($\geq 50\text{kHz}$). Features AI 3D/2D sensor fusion.
Competitive Advantages: 100% Taiwan-made "Non-Red Supply Chain". Allied to develop the world's 1st 1x128 AI LiDAR chip.
Important Achievements: Secured MOEA SBIR grant for marine UAV LiDAR systems; invited to participate InnoVEX exhibition.

INDUSTRIAL APPLICATIONS

Applied in aerospace for space debris monitoring. In the UAV sector, it empowers drones with AI sensor fusion for marine patrols, small boat detection, infrastructure inspections, and disaster rescue. Future applications include robotics and smart manufacturing.



Walkii AI Personalized Health Service System



TECHNOLOGY INTRODUCTION

Walkii links InBody measurement, AI analysis, personalized missions and home workouts into one interactive journey: AI generates a placement and analysis report, then the phone camera detects squats, jumping jacks and boxing in real time, auto-counting reps and correcting posture. Wearable-free, software-only, integrating InBody hardware. 250+ enterprise clients; market leader since 2023.

INDUSTRIAL APPLICATIONS

Applicable to corporate wellness, gyms, health-management centers and long-term care. After an InBody measurement, AI interprets the data and generates a personalized plan with daily missions, paired with camera-based AI home-fitness interaction to build lasting habits. Employers track engagement and generate wellness/ESG reports, turning check-ups into sustainable digital health management.

AI Facial Recognition Transparent Digital Signage



TECHNOLOGY INTRODUCTION

AI-Driven Immersive Interaction: Integrates AI edge computing with high-transparency Micro LED displays to transform static banners into active, intelligent sales tools.

Real-time Precision Marketing: Utilizes instant AI vision algorithms (ms-level) to identify customer demographics (age/gender) and automatically trigger personalized advertising content.

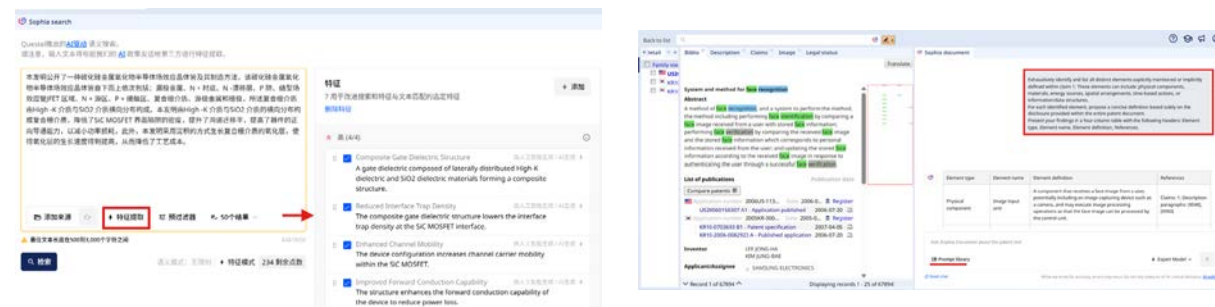
Significant Business Growth: Enhances visual appeal while effectively boosting retail performance, with projected increases of 2–3x in foot traffic and over 30% in sales conversion.

INDUSTRIAL APPLICATIONS

This solution leverages high-transparency Micro LED display technology combined with AI facial recognition systems to create a next-generation 'Smart Transparent Advertising Banner' for retail, department store, and exhibition environments. Through edge computing, the system instantly analyzes consumer gender and age characteristics, transforming traditional, passive advertising banners into 'active marketing' displays. It automatically broadcasts personalized promotional information to different customer segments (e.g., displaying apparel discounts for female customers) to achieve precision guidance for sales. This application not only preserves the store's visual transparency but also enhances store traffic and conversion rates through OMO (Online-Merge-Offline) experiences. Additionally, the backend AI model continuously analyzes foot traffic data and advertising performance.



Orbit Intelligence: AI-Powered Patent Insights and Automated Analysis



TECHNOLOGY INTRODUCTION

Technological Innovation:

- (1)AI-Generated Search Strategies
- (2)Multimodal Semantic Understanding and Prior Art Identification
- (3)Automated Summarization and Deep Patent Decomposition

Competitive/Advantages:

Integrates over 100 million patent records with embedding algorithms and AI analytics.

Key Achievements/Awards:

Awarded "Best IP Tech Provider of 2025". Over 100,000 users worldwide and leading enterprises such as Samsung and Pfizer.

INDUSTRIAL APPLICATIONS

Orbit Intelligence integrates generative AI with global patent databases and is widely used in high-tech, semiconductor, biotech, and manufacturing industries to support R&D and market decision-making.

Its Sophia features enables users to describe ideas in natural language, which are automatically converted into search strategies. The system retrieves high-risk patents from over 100 million patent records and uses vector-based matching to rank results.

SWCNT Conductive Paste



TECHNOLOGY INTRODUCTION

Key Advantage:

1. Low Dosage: Using just 1/10 the dosage of traditional agents, SWCNT paste can enhance energy density and charging efficiency.
2. Uniform Dispersion: SiAT resolve SWCNT agglomeration and achieve uniform dispersion to ensure coating quality in battery production.
3. Long Life: SWCNT paste alleviate the volumetric expansion of silicon anodes during cycling and extend battery lifespan

INDUSTRIAL APPLICATIONS

SWCNT conductive paste is the key materials for applications in

1. EV: SWCNTs is essential material for achieving 10min fast charging and 1000km ultra-long EV range.
2. Drones & eVTOL: SWCNTs can provide lightweight and high energy density batteries for drones and improve fly time.
3. Next-Gen Battery: SWCNTs play an indispensable conductive framework role in next-gen solid-state batteries.



ePAL AI Learning Platform



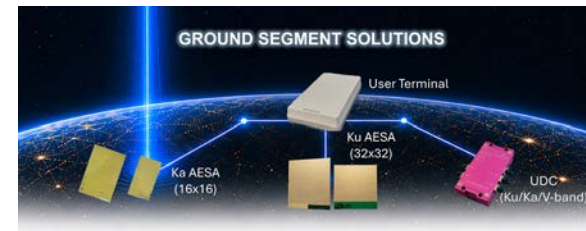
TECHNOLOGY INTRODUCTION

ePAL is a complete AI learning platform, not a single device, spanning generation, delivery, learning and feedback. From one sentence, the console auto-generates illustrated lessons, quizzes and figures, then pushes them to learning terminals. Its teaching-expertise RAG knowledge base digitizes veteran teachers' know-how. A cloud/edge dual-model runs on-campus for privacy. Shown at CES 2026.

INDUSTRIAL APPLICATIONS

ePAL suits schools, tutoring centers, home learning and digital education platforms. Teachers generate personalized materials from one sentence, cutting prep time. Its knowledge base preserves veteran teachers' know-how, so it survives staff turnover. With edge computing and a cloud/edge design, it delivers real-time support on-campus. School pilots are planned for Q4 2026.

Integrated Space-to-Ground Communication Solution



TECHNOLOGY INTRODUCTION

Our solution features a Taiwan-developed, complete end-to-end system combining spaceborne communication payloads with ground user terminals. Validated through multiple ground stations worldwide, it delivers reliable satellite links, efficient data transmission, and seamless global connectivity. The solution supports broadband communications, IoT connectivity, and remote monitoring applications.

INDUSTRIAL APPLICATIONS

Rapidtek's end-to-end architecture simplifies system integration and accelerates LEO satellite communication deployment. Validated through satellite-to-ground connectivity with multiple international ground stations and user terminals, the solution strengthens global partnerships and supports the global expansion of Taiwan's LEO communication technologies and products.



5G Smart Firefighting Rescue



TECHNOLOGY INTRODUCTION

Real-Time 3D Mapping

Integrates LiDAR, RGB cameras, depth cameras, and gyroscopes to enable real-time 3D mapping without prior site deployment.

Footprint and Trajectory Tracking

Provides real-time firefighter footprint positioning and movement tracking to support RIT (Rapid Intervention Team) rescue operations.

Rapid Deployment and High Accuracy

Achieves over 85% mapping accuracy, trajectory positioning within 150 cm, and system readiness within approximately 2 minutes, significantly reducing deployment time compared with BIM-based solutions.

INDUSTRIAL APPLICATIONS

This project adopts LiDAR-based positioning and real-time 3D mapping technologies to support footprint tracking and rapid fireground visualization without the need for pre-built BIM models. The solution helps improve firefighting and rescue efficiency by at least 30% while reducing risks for frontline personnel.

As a 5G + AIoT smart disaster response solution, the project integrates advanced technologies and cross-sector resources to support nationwide rescue capability upgrades. Its validated results can be shared with local fire departments to accelerate technology adoption and enhance fireground rescue efficiency across Taiwan.

Intelligent Thermal Imaging Detection Technology



TECHNOLOGY INTRODUCTION

Building on the expertise in sensing, thermal imaging, and edge AI computing technologies, PixArt is developing Taiwan's first self-designed thermal imaging chip and module. By integrating proprietary processes, supply-chain resources, and on-chip deep-learning models, it enhances system integration and intelligent computing performance. Its vertically integrated approach enables low-power, low-bandwidth, and low-latency solutions for edge intelligent devices. As of 2025, PixArt holds 2,504 granted patents, strengthening its technological leadership and IP portfolio.

INDUSTRIAL APPLICATIONS

The thermal imaging intelligent detection is not affected by lighting and supports all-weather operation. It combines edge AI for real-time human detection and event recognition, enabling high-reliability applications. In robotics and drones, it supports navigation and safety in dark or harsh environments. In security, it enables patrol, perimeter protection, and anomaly detection. In industrial and energy use, it provides equipment monitoring and early warning. In smart buildings and healthcare, it supports privacy-friendly activity and safety sensing. Overall, it combines low-power edge computing with real-time performance and reliability for intelligent sensing and automation systems.



Next-Generation Mobile Perception Robotics



TECHNOLOGY INTRODUCTION

1. Cloud-to-Chip AI Deployment

A dedicated SDK connects the Cloud AI platform directly with eYs3D Edge AI SoCs, enabling model conversion, optimization, deployment, and device management through a unified workflow. This significantly simplifies the traditional process of bringing AI models from development environments to production edge devices.

2. Open-Model AI Compression & Optimization

An integrated AI compression and optimization toolchain enables developers to optimize a wide range of open models for different edge computing constraints. Through quantization, model compression, graph optimization, and hardware-aware optimization, models can be adapted to different requirements for compute, memory, power consumption, and performance.

3. Chip-Level Deployment & Hardware-Software Co-Optimization

Instead of relying primarily on application-level AI integration, the deployment stack is designed to integrate AI models directly with the chip runtime, drivers, and middleware layers. This tighter hardware-software integration reduces unnecessary software overhead and data movement, enabling lower latency, higher hardware utilization, and more predictable edge AI performance.

INDUSTRIAL APPLICATIONS

This technology can be widely applied across smart robotics, smart manufacturing, intelligent inspection, retail, transportation, healthcare, and a broad range of Physical AI edge devices. Through a unified Cloud-to-Chip deployment architecture, enterprises can manage, convert, and optimize AI models in the cloud, then deploy them directly to Edge AI chips through a dedicated SDK, significantly reducing the complexity of model migration and system integration.

At the same time, the Open-Model AI Compression tool enables developers to freely select and optimize open models according to the compute, memory, power, and cost constraints of different devices, making existing AI technologies easier to deploy on low-power edge platforms. Combined with Chip-Level Hardware-Software Co-Optimization, AI workloads can be deeply integrated with the Runtime, Driver, and Middleware layers, reducing software overhead and unnecessary data movement while improving real-time performance and hardware utilization.

As a result, the same platform can be rapidly customized for different hardware configurations and application scenarios, enabling Lower Compute, Lower Cost, Faster Integration, and Faster Time-to-Market, and accelerating the transition of AI from model development to mass-produced devices and real-world deployment.

Dual-Modal Perception AI Architecture



多頭輸出 – Segmentation結果



TECHNOLOGY INTRODUCTION

1. Transformer-Based Dual-Modal Fusion

A Transformer-based backbone unifies Spatial/Geometric and Visual/Semantic perception within a single architecture, enabling efficient understanding of objects, spatial relationships, and scene context without relying on multiple independent AI pipelines.

2. Lower Compute Loading

Through a shared backbone, feature reuse, and efficient multi-modal fusion, the architecture reduces redundant feature extraction and computation, resulting in lower compute loading, smaller memory footprint, and lower power consumption while supporting multiple perception tasks.

3. Designed for Edge Deployment

Built from the ground up for Edge AI, the architecture enables advanced dual-modal perception without requiring high-end GPUs or large computing platforms. It can be deployed on lower-compute, low-power, and cost-efficient Edge SoCs, bringing advanced perception and intelligence directly into robots and Physical AI devices.

Transformer Backbone × Dual-Modal Perception × Lower Compute — Bringing Advanced Physical AI to Smaller Edge Platforms.

INDUSTRIAL APPLICATIONS

This technology is built around Transformer-Based Dual-Modal Fusion, integrating both Spatial / Geometric Perception and Visual / Semantic Perception. It can be widely applied to Autonomous Mobile Robots (AMRs), service robots, smart manufacturing, intelligent inspection, logistics and warehousing, smart retail, and various Physical AI devices.

Through a shared Transformer backbone, feature reuse, and efficient multimodal fusion, the architecture enables object recognition, spatial relationship understanding, and scene-level semantic understanding within a unified framework. This reduces redundant computation, memory usage, and power consumption typically associated with multiple independent AI pipelines.

Designed and optimized from the outset for Edge AI deployment, the architecture does not require high-end GPUs or large-scale computing platforms. Instead, it can operate on lower-compute, low-power, and cost-efficient Edge SoCs, bringing advanced perception and intelligence directly into robots and edge devices.

By reducing hardware requirements and system complexity while improving real-time performance and integration efficiency, this architecture enables scalable and production-ready environmental perception and understanding for a broader range of intelligent devices and Physical AI applications.

Industry Value: Lower Compute → Lower Power → Lower Cost → Scalable Physical AI Deployment



RAISE-PET:Raman-Assisted Intelligent Sorting Engine for PET-Blended Textiles



TECHNOLOGY INTRODUCTION

This AI-powered molecular fingerprint sorting technology uses Raman spectroscopy to read the chemical features of textile fibers. It can identify dark fabrics and complex blends such as polyester, cotton, and elastane, improving textile sorting efficiency and recycled material purity. With patents across Taiwan, the U.S., and Europe, it won the 2025 R&D 100 Award.

INDUSTRIAL APPLICATIONS

This technology applies to textile recycling and garment collection. Using Raman spectroscopy and AI, it quickly identifies polyester, cotton, elastane, and blended fibers for accurate sorting. It improves recycled material purity, supports "old clothes to new clothes" circular supply chains, and can expand to automated sorting lines.

Low-carbon materials for PCBs



TECHNOLOGY INTRODUCTION

Utilizing monomers recycled from defective automotive manufacturing waste as raw materials, this technology develops a low-carbon, bio-based epoxy resin system, which is further integrated into formulation designs for CCL.

- 1.Line-compatible & easy to formula adjustments.
- 2.Low-carbon recycled + bio-based formula drastically cuts footprint.
- 3.Drop-in existing processes, boosting green competitiveness.

INDUSTRIAL APPLICATIONS

This tech verified full-process PCBs—from resin, CCL/PCB, to modules—via power boards while advancing UL certification. With transferrable formulas and patents, it scales up materials and commercializes the "Low-Carbon PCB Solution." This ensures mass-production readiness, builds auditable carbon metrics, and boosts Taiwan's competitiveness.



Recycling composite textiles into waterproof and breathable polyurethane membranes.



TECHNOLOGY INTRODUCTION

- Technological Innovation: This technology upcycles PET/PU waste textiles into fluorine-free recycled materials and builds a formulation database linking feedstock variability to moisture permeability, enabling high-performance waterproof and breathable films through a circular approach.
- Competitive or Intellectual Property Advantages: Protected by patents, the technology improves mass production stability and quality consistency, enabling scalable industrial adoption of recycled materials.
- Important Achievements / Awards: Developed with Singtex, awarded the 2025 R&D 100 Award, demonstrating leadership in circular textile innovation.

INDUSTRIAL APPLICATIONS

This technology integrates textile waste recycling, chemical depolymerization, circular polyurethane resin development, and waterproof and breathable film manufacturing, forming a complete PET/PU Textiles-to-Textiles (T2T) circular value chain. It reduces reliance on virgin petrochemical resources and supports textile circularity.

In collaboration with Singtex Industrial Co., Ltd., it has been applied in the RePUra™ product line and waterproof breathable outerwear, validating its manufacturability, scalability, and market potential.

Low-Carbon H2 Carrier: Low-Temperature Catalytic NH3 Cracking for H2 Production



TECHNOLOGY INTRODUCTION

1. Patented Ru-based catalyst: achieves >99% ammonia conversion below 500°C and passes 12,000-hour continuous operation, showing high activity and stability.
2. Ton-scale validation: Validated at ton scale with 99.91% ammonia conversion, >99.9% hydrogen purity, and 3.05 tons/year hydrogen capacity.
3. Low-carbon ecosystem: Integrates with CCU to convert low-carbon hydrogen and CO₂ into methanol, methane, and other chemicals, enabling a circular hydrogen–chemical industry.

INDUSTRIAL APPLICATIONS

This technology leverages existing ammonia supply and logistics infrastructure to reduce hydrogen infrastructure costs and accelerate applications in industry, heat treatment, power generation, and fuel cells. Integrated with CCU, low-carbon hydrogen and CO₂ can be converted into chemical feedstocks, building a circular “ammonia-to-hydrogen-to-chemicals” value chain and supporting Taiwan’s net-zero transition.



Mono-material Fully Circular and Traceable Waterproof Garment Technology



TECHNOLOGY INTRODUCTION

1. Mono-material construction eliminates recycling barriers associated with multi-material bonded garments.
2. Seamless waterproof bonding technology combines sustainability with contemporary design.
3. Digital 3D design enables precise development while reducing energy use and carbon emissions.

INDUSTRIAL APPLICATIONS

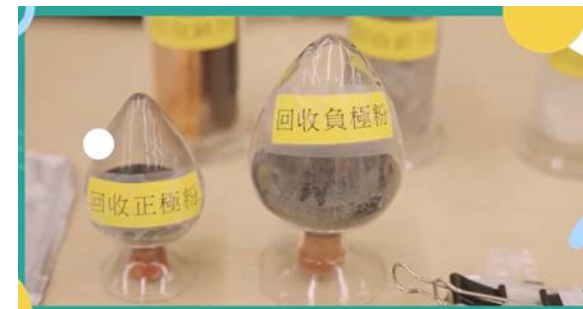
Taiwan Textile Federation (TTF) is promoting a revolutionary new manufacturing process with Texbonder® polyester homopolymer bonding technology. This technology combines waterproofing, high performance, and a stylish appearance with a single material, along with a seamless waterproof bonding process, taking into account both environmental sustainability and design aesthetics.

The garment development process incorporates AI-powered digital design, computerized pattern making, and 3D garment simulation to enable precise product development while reducing energy consumption and carbon emissions.

This innovation was honored with the 2026 iF Design Award -Gold Award, the competition's highest distinction, recognizing its outstanding achievement in sustainable innovation and positioning Taiwan's green fashion on the global stage.

Booth
IG05

Green Processing Technology for High-Yield Lithium-Ion Battery Recycling



TECHNOLOGY INTRODUCTION

1. Carbon-negative discharging technology with zero pollution throughout the process; an enclosed physical processing line for lithium-ion batteries featuring proprietary atmosphere control to guarantee maximum production safety. The total recovery and sorting rates of the battery disassembly technology both reach > 80%, supporting a ton-scale daily processing capacity and yielding black mass with a material purity exceeding >90% of pristine cathode raw materials—significantly outperforming the market average of approximately 15% produced via conventional pyrolysis.
2. High-efficiency recovery rates for valuable materials (nickel, cobalt, copper).
3. An established low-carbon footprint for lithium carbonate (ca. 5.2 kg CO₂e/kg), featuring a lithium carbonate recovery rate >75% and a purity >99%. Currently, it is verified that the precious metal content within the recovered raw materials exceeds 95%.

INDUSTRIAL APPLICATIONS

Through the Value Creation Program, this technology undergoes equipment scale-up and validation, utilizing a low-carbon, pollution-free discharging technique to rapidly and safely disassemble batteries into cathode black mass and other scrap metals. This approach suppresses adverse side reactions caused by electrolyte decomposition, enhancing metal dissolution and thereby improving both the purity and yield of the recovered metals from the cathode material. Compared to current mainstream recycling methods, the black mass obtained through this technology features a higher metal content and lower impurity levels, reducing sludge volume by approximately 20% and acid consumption by 30%. This significantly enhances metal extraction efficiency while streamlining the purification pathway, enabling recycled materials to re-enter the market 20% faster due to the time saved in extraction and purification. Furthermore, our innovative process design and technical parameters deliver superior recovery efficiency; the total recovery rate can reach approximately 80% based on total battery weight, whereas conventional technologies only achieve about 30% to 60%. Lastly, the low-temperature thermal treatment reduces overall energy costs by 20%.

Booth
IG06



Directional Pulse Descaling Technology



TECHNOLOGY INTRODUCTION

- Technological Innovation: Designed for downhole deployment, this device minimizes pulse energy attenuation and features repetitive pressure accumulation and release. By integrating a packer to restrict fluid movement in the target zone, pressure energy is focused and released radially around the wellbore for highly efficient descaling. Compared to traditional chemical descaling, this technology offers the advantages of being eco-friendly and low-pollution.
- Competitive or Intellectual Property Advantages: Due to the limitations of chemical descaling in domestic geothermal wells, physical methods are more suitable. ITRI has developed the directional pulse descaling technology, breaking through past limitations of only cleaning the wellbore interior to achieve descaling of both the screen slots and the surrounding wellbore area. Applied in drilling, hot springs, and geothermal power generation, this technology, when combined with mechanical well flushing, can significantly boost the production capacity recovery rate from 20% to over 75%.
- Important Achievements / Awards: 2023 Patent Map Competition - Honorable Mention, 2025 Patent Granted: TW 1879696

INDUSTRIAL APPLICATIONS

International geothermal well descaling is complex and expensive. Due to regional land and population constraints, traditional chemical methods are difficult to implement, making physical approaches more suitable. ITRI's "Directional Pulse Descaling Technology" successfully breaks through past limitations of only cleaning the wellbore interior. It not only removes scale from casing screen slots but also extends cleaning to the surrounding wellbore formations.

High efficiency electric water heater



PU foam insulation material



TECHNOLOGY INTRODUCTION

A high-efficiency storage-type electric water heater made from high-performance PU insulation material. By using nano-additives to increase the nucleation sites in the PU foam, the material achieves optimal pore size and density, thereby reducing the equivalent thermal conductivity. The thermal conductivity at 300K reaches 21.52 mW/m·K, which is 10% to 30% lower than that of commercial products.

INDUSTRIAL APPLICATIONS

Recent geopolitical conflicts have driven up global energy prices, increasing worldwide focus on energy efficiency and net-zero emissions by 2050. This project applies high-performance insulation materials to reduce heat loss, improve thermal retention, and extend reheating intervals, thereby achieving energy-saving and carbon-reduction goals.



Make Energy Savings Visible: Smart Choices with Energy Label & Energy Efficiency Grading Labeling



TECHNOLOGY INTRODUCTION

Program Features

Energy Label:

Encourages manufacturers to develop high-efficiency products while guiding consumers toward eco-friendly choices.

Energy Efficiency Grading Labeling:

Uses a simple 1-to-5 scale to help buyers quickly compare and select energy-saving appliances.

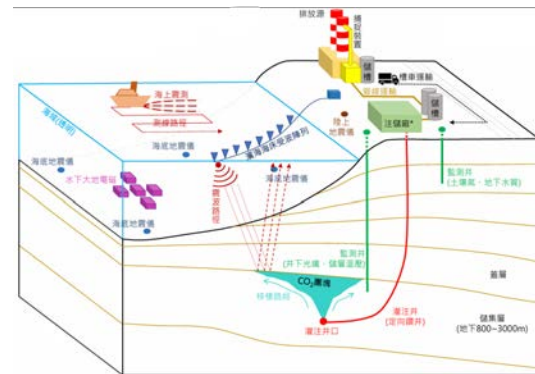
Residential Appliance Replacement Subsidy:

Encourages upgrading old appliances to lower household electricity bills.

INDUSTRIAL APPLICATIONS

Across industrial, commercial, and residential sectors, these initiatives enhance product competitiveness, drive green technology adoption, and foster sustainable growth.

Carbon Capture and Storage(CCS) Systems



TECHNOLOGY INTRODUCTION

Capture: Capturing CO2 at emission point sources, followed by purification processes to reduce impurities and corrosivity, before compressing it for intermediate storage.

Transport: Optimizing transport modalities—such as tanker trucks, pipelines, or maritime vessels—based on the volume of captured CO2 and the distance to the storage sink, efficiently integrating the capture and storage nodes.

Geological Storage: Injecting supercritical CO2 into suitable deep geological reservoirs via injection wells.

Pre-injection Phase: Establishing environmental baselines through seismic surveys and geochemical baseline investigations. This characterizes formation containment integrity and injectivity, serving as the criteria for site selection and the formulation of injection strategies.

During and Post-injection Phase: Operating a real-time monitoring system comprised of sensors and fiber-optic technologies, complemented by time-lapse seismic surveys, magnetotelluric (MT) soundings, and geochemical monitoring. This integrated monitoring network across the storage site ensures operational safety during injection and long-term

INDUSTRIAL APPLICATIONS

By utilizing carbon capture technology at emission point sources and sequestering the captured CO2 in strictly assessed, secure geological formations, this technology will achieve tangible and effective carbon mitigation. It will provide industries with robust decarbonization solutions and is poised to serve as the crucial last mile toward achieving net-zero emissions.

Point-Absorption Wave Energy Converter



TECHNOLOGY INTRODUCTION

Designed for Taiwan's typhoon-prone marine environment, this highly weather-resistant wave energy converter features a long-stroke design and an active-passive cable restoring mechanism with adaptive electromechanical control for enhanced reliability and efficiency. A 100-day sea trial demonstrated its survivability under extreme wave conditions, with maximum wave heights of up to 11 meters.

INDUSTRIAL APPLICATIONS

In order to accelerate the feasibility of the construction of Taiwan's Wave Energy Power Plant, extreme weather and environmental factors and the difficulty of deploying maritime projects are needed. The point-absorbing wave power generation system developed by this technology has a patent for a long-stroke cable reply mechanism and is integrated into a modular floating structure. It can meet the needs of low-cost settings in different depths and wave seas. It is easy to maintain and can survive in typhoon weather environments, greatly improving the feasibility of domestic wave energy industry settings.

Low-glare flexible crystalline silicon photovoltaic module



TECHNOLOGY INTRODUCTION

- Minimizes reflection and urban light pollution.
- High Efficiency: Maintains excellent photovoltaic conversion performance.
- High Adaptability: Flexible structure fits curved and irregular surfaces.

INDUSTRIAL APPLICATIONS

The Low-Glare Flexible Silicon PV Module uses low-reflectance material to reduce glare and light pollution. Weighing just 5 kg/m², its lightweight, flexible design bypasses conventional glass load limits, enabling deployment on roofs, curved structures, and vehicles. This flexibility simplifies installation and cuts costs, broadening solar adoption across diverse scenarios.



Introduction of iPV System Inspection Laboratory



TECHNOLOGY INTRODUCTION

Technology Introduction: Please provide a clear and concise description within 400 characters, or list three key features:

- Technological Innovation – 150 characters
- Competitive or Intellectual Property Advantages – 150 characters
- Important Achievements / Awards – 100 characters

INDUSTRIAL APPLICATIONS

We provide technical services for the final acceptance of PV systems, confirming whether the construction on site is in accordance with the drawings, whether there are any major abnormalities in the electrical circuits, and performing electrical measurements on site according to the design drawings. We also provide system maintenance and inspection and professional training to understand the causes of failures and propose improvement plans, and analyze the power generation status of the site through performance ratio data.

Integration of Photovoltaic Systems in Building Construction



TECHNOLOGY INTRODUCTION

- Integrating into building components for both construction and power generation.
- Providing daylighting, soundproofing, heat insulation, and solar power.
- Combining with PIPV to lower adoption barriers.

INDUSTRIAL APPLICATIONS

To achieve 'building-integrated power generation' and 'self-consumption through micro photovoltaics', this technology integrates photovoltaic glass into architectural elements such as balconies and rooftops. It provides power generation, sound insulation, and thermal insulation**, and** can be further integrated with Plug-in Photovoltaic (PIPV) technology to supply electricity for daily use.



E-cube



TECHNOLOGY INTRODUCTION

This mobile system features a modular, scalable design for off-grid use and rapid deployment. It integrates 4.5kW PV, 20kWh secure storage, and a 5kW methanol-hydrogen fuel cell backup. This hybrid setup ensures stable, low-carbon power, meeting energy demands of net-zero sites and accelerating carbon reduction goals.

INDUSTRIAL APPLICATIONS

With high mobility and all-weather power, this system offers great value. For disaster response, it deploys fast to command centers for critical power. In remote off-grid areas like camps or outposts, it fully replaces polluting diesel generators. It also helps green parks and corporate events adopt clean energy easily to achieve ESG goals.

Green Ammonia to Hydrogen Application Platform and Distributed Power Generation Application



TECHNOLOGY INTRODUCTION

Develop medium-temperature catalysts ($\leq 600^{\circ}\text{C}$) and high-efficiency ammonia cracking reactors to reduce operating temperature, heat loss, and the use of high-temperature-resistant materials, thereby lowering overall system costs. Establish a hydrogen-ammonia purification and tail-gas recovery mechanism and develop hydrogen/ammonia combustion technologies to improve overall energy utilization. Integrate a $100 \text{ Nm}^3/\text{h}$ green ammonia-to-hydrogen system with an overall energy efficiency of over 75% and a 200 kW hydrogen/ammonia-fueled SOFC power generation system to establish the Shalun Green Ammonia-to-Hydrogen Application Platform.

INDUSTRIAL APPLICATIONS

We have established patents for high-performance catalyst materials and developed technologies for green ammonia-to-hydrogen conversion, hydrogen/ammonia combustion, and integrated power generation applications, while supporting enterprises in related product development. Demonstration sites covering the production, transportation, storage, and utilization of hydrogen and hydrogen carriers have also been established to promote real-world applications of low-carbon hydrogen and assist industries in adopting hydrogen technologies for carbon reduction.



Shalun Hydrogen Application Technology Demonstration Platform



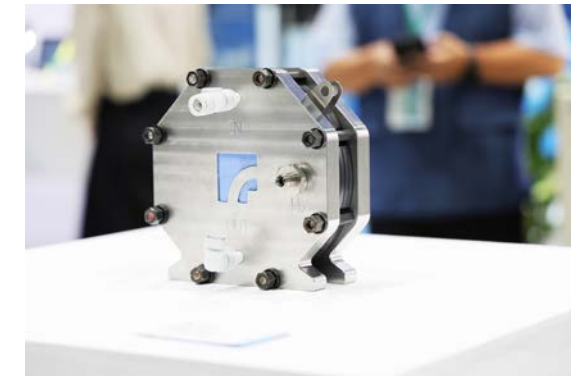
TECHNOLOGY INTRODUCTION

The Industrial Technology Research Institute has constructed a hydrogen energy industry development platform and established the first demonstration and verification site for hydrogen energy production, transportation, storage, and application in Taiwan at the Shalun Green Energy Technology Demonstration Site. This platform incorporates technologies such as MW-level renewable energy power, 100-kilowatt-level electrolysis systems, hybrid hydrogen energy/battery energy storage, distributed power generation, combustion heat application, and hydrogen purification for recovery and application.

INDUSTRIAL APPLICATIONS

The Shalun Hydrogen Application Demonstration Platform integrates with the Shalun site energy management system (EMS) to optimize on-site power dispatch and enhance energy management flexibility. With an energy storage capacity of 500 kWh and an output power of 110 kW, the platform supports the development of the hydrogen industry value chain and promotes domestic and international technology exchange, joint demonstration, and verification.

High-efficiency anion exchange membrane electrolyzer (AEM electrolyzer)



TECHNOLOGY INTRODUCTION

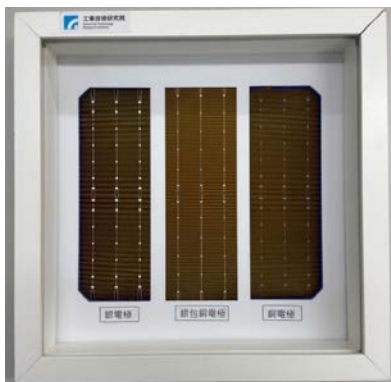
Designed with an AEM architecture to overcome PEM's precious metal reliance and AE's footprint limits, it features a zero-gap gradient flow field and doped non-precious alloy catalysts. Using low-concentration alkaline electrolyte, it achieves >65% (LHV) efficiency, ampere-level current density, and pressurized H₂ output, effectively improving system energy consumption.

INDUSTRIAL APPLICATIONS

Renewable-powered hydrogen production enables low-carbon hydrogen to replace gray hydrogen, reducing end-use emissions and supporting decarbonization across sectors. As global water electrolysis capacity continues to expand, key hydrogen production technologies will help industries strengthen their position in the hydrogen supply chain and capture opportunities from the net-zero transition. On-site hydrogen production improves supply flexibility and resilience, while surplus renewable energy can be converted into hydrogen for grid balancing and long-duration energy storage.



Laser-Assisted Silver-Coated Copper Electrode Technology



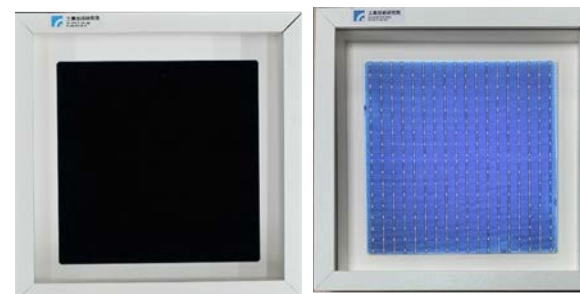
TECHNOLOGY INTRODUCTION

Laser-induced Ag-coated Cu electrodes integrated with sintering technology reduce resistance and enhance stability. Efficiency increased by 0.5%, costs reduced by 8%, generating NTD 200 million annually while reducing silver consumption. By integrating equipment suppliers, material providers, and solar cell manufacturers, industrial upgrading is promoted through technology licensing.

INDUSTRIAL APPLICATIONS

The laser-assisted sintering technology, combined with innovative silver-coated copper conductive paste, successfully enhances the conversion efficiency of solar cells while significantly reducing silver consumption, thereby optimizing production costs. This technology offers high scalability and has been proven compatible with existing manufacturing processes, bringing a dual breakthrough in performance and cost-effectiveness to the solar photovoltaic industry and demonstrating strong potential for industrial-scale green energy applications.

Tunnel Oxide Passivated Back Contact (TBC) Solar Cell



TECHNOLOGY INTRODUCTION

Back-contact solar cells place the electrodes at the rear, significantly improving efficiency and aesthetics. Combining back-contact and TOPCon technologies significantly boosts cell efficiency. Compatible with existing TOPCon production lines, it allows for rapid implementation and creates new business opportunities.

INDUSTRIAL APPLICATIONS

Creating New Business Opportunities:

Establish a back-contact technology platform and collaborate with domestic manufacturers to develop new materials and equipment, strengthening both horizontal and vertical integration within Taiwan's solar photovoltaic (PV) industry chain.

Technology Advancement:

Develop next-generation solar cell technologies by introducing new structures and specialized processes to achieve high-efficiency TBC solar cells, thereby supporting industrial upgrading.

Silicon-Based Tandem Technology Platform:

Expand the PV technology platform to serve as the foundation for silicon-based tandem cell technology, guiding the domestic industry in evaluating next-generation solar photovoltaic solutions.



Perovskite/silicon tandem solar cells



TECHNOLOGY INTRODUCTION

- Ultra-High Conversion Efficiency: Stable at 29.0%–29.5%.
- Exceptional Long-Term Stability: Battery stability is far superior to that of conventional materials.
- Strong Cost Competitiveness: Approximately 25% lower in cost compared to traditional processes.

INDUSTRIAL APPLICATIONS

Perovskites are lightweight, ultra-thin, and semi-transparent, making them easy to apply to various substrates. These properties allow integration into building facades, vehicles, windows, and textiles, transforming everyday surfaces into energy generation and storage platforms.

AI-Enabled Centrifugal Chiller with Magnetic Bearing and Low-Carbon Refrigerants



TECHNOLOGY INTRODUCTION

- Technological Innovation – Mass Production: 120–1200 USRT high-efficiency Magnetic Bearing centrifugal compressors/chillers low-GWP refrigerants (R1234ze/R1233zd). Top Efficiency: Exceeds Taiwan Grade 1 by 10%; IPLV outperforms top ASHRAE benchmarks by 25%. Green & Quiet: Dual carbon reduction (refrigerant/power); noise < 75 dBA.
- Competitive or Intellectual Property Advantages – Proprietary aerodynamic components, permanent magnet motors, Advanced heat exchangers, and integrated cloud IoT and AI applications.
- Important Achievements / Awards – Commercial Deployment: 20+ domestic sites (semiconductor fabs, cleanrooms, central HVAC). Energy Savings: Proven 40%–60% power reduction.

INDUSTRIAL APPLICATIONS

Chillers are essential for building HVAC and industrial process cooling, accounting for over 50% of total central air-conditioning electricity use. According to the International Energy Agency (IEA), global cooling energy demand could triple by 2050. Adopting chillers with low-GWP (GWP=1) refrigerants and 10% higher efficiency than Taiwan's Level 1 standard can reduce annual energy use by over 40% and cut carbon emissions by more than 45%, making it a key technology for achieving net-zero emissions by 2050.



Amine-based carbon capture-solid adsorption carbon capture technology



TECHNOLOGY INTRODUCTION

Instead of liquid ethanol amine, porous amine-based solid sorbents apply for flue gas CO₂ capture under dry and humid conditions. CO₂ adsorption shows better effect in kinetics and thermodynamics, sorbent regeneration, cyclic stability, essential regeneration techniques, and techno-economic analysis for CO₂ capture from air.

INDUSTRIAL APPLICATIONS

Application for DAC could have benefits of carbon negative, also being a direct way of VER market (voluntary emission reduction).

This technology could build business model of carbon negative and create opportunities of net zero industry. This technology is able to operate in flue gas with low CO₂ concentration, and still has excellent capture capacity.

Process of solvent-free solid amine sorbent technology could achieve the standard value of EU (Regeneration consumption <2GJ/ton CO₂).

Thermal Chemical Conversion Technology gasification catalytic tar elimination technology



TECHNOLOGY INTRODUCTION

This tech modifies cheap industrial by-products into bed catalysts for fixed, fluidized, or entrained-flow gasifiers. It lowers activation energy and promotes water-gas shift reactions. This enhances gasification efficiency and expands by-product use, improving economic competitiveness and organic waste energy recovery.

INDUSTRIAL APPLICATIONS

Steel & Petrochemicals: Modifies slag and fly ash into catalysts for on-site gasifiers, achieving a circular economy.

Bioenergy & Chemicals: Applies to biomass or waste gasification, promoting water-gas shift to produce hydrogen-rich syngas for green H₂, methanol, or sustainable aviation fuel (SAF).

Waste Treatment: Enhances energy conversion of sludge and plastics, cutting operational costs and boosting plant economic feasibility.



Dry Anaerobic Digestion: A Solution for Resource Recycling and Green Energy Conversion



TECHNOLOGY INTRODUCTION

This technology adopts a dry anaerobic fermentation system to treat high-solids biomass waste, converting organic matter into biogas for the utilization of biomass thermal energy and green electricity. By introducing patented hydrolytic microbial agents, including cellulose-, protein-, and lipid-degrading microbial agents, the technology effectively enhances feedstock decomposition efficiency, increases biogas yield, and shortens the fermentation period. It also delivers multiple benefits, including waste reduction, pollution prevention, and energy recovery.

This technology has been successfully applied to the energy and resource recovery treatment of various types of organic waste. It has completed the commercial demonstration of the Tainan Bawengli Cattle Manure Biomass Biogas Center, with an installed capacity of 334 kW, and is also supporting the development of the Miaoli Fruit and Vegetable Biomass Biogas Center, with an installed capacity of 80 kW.

INDUSTRIAL APPLICATIONS

This technology converts organic wastes such as food waste, livestock manure, and fruit and vegetable residues into biogas for renewable heat and power generation. It helps industries reduce waste treatment costs while creating additional value through renewable energy production. By integrating patented microbial agents, the system enhances decomposition efficiency and biogas yield, improving overall economic performance. The technology has already been applied to dairy manure and vegetable waste energy recovery projects, demonstrating strong potential for large-scale deployment in the livestock, food processing, and organic waste management sectors while supporting carbon reduction, resource recycling, and sustainable development goals.

High efficiency thermal-driven dehumidification and drying system



TECHNOLOGY INTRODUCTION

Heat pump-driven solid dehumidifier or liquid dehumidifier will achieve more energy-saving dehumidification performance, which can be applied to sludge drying, plastic drying, constant temperature and humidity processes, etc. For example, the air conditioning dehumidification system's energy consumption index can be increased from 1.8~2.0 kg/kwh of the traditional condensation dehumidification system to 2.5~2.7 kg/kwh. Solid dehumidification can reach extremely low humidity and can be applied to lithium battery processes. Liquid dehumidification systems can apply waste heat without distance limit, and can sterilize and purify the air, which can be applied to green buildings and clean rooms. Both have their advantages.

INDUSTRIAL APPLICATIONS

Liquid and solid desiccants can utilize van der Waals forces to capture water vapor from the air directly, achieving efficient dehumidification. Compared to the energy-intensive process of supercooling and reheating in traditional condensation-based dehumidification systems, this method offers significant energy savings. Moreover, new desiccants feature low-temperature regeneration.



High-Efficiency Rare-Earth-Free EC Fan Motor Technology



TECHNOLOGY INTRODUCTION

- Technological Innovation – An innovative platform combining rare-earth-free IE5 EC motors, sensorless drive technology, and system integration to deliver high-efficiency, cost-effective, and reliable MIT fan solutions for sustainable energy savings.
- Competitive or Intellectual Property Advantages – The only EC motor solution that combines an electrolytic capacitor-free controller with a rare-earth-free IE5 efficiency-class motor.
- Important Achievements / Awards – Overcoming critical bottlenecks to facilitate industrial upgrading and assist in the development of EC motor and driver production lines.

INDUSTRIAL APPLICATIONS

EC fans offer high efficiency, low energy consumption, intelligent control, and long service life. They are widely used in various industries, including HVAC systems, refrigeration units, cleanrooms, ventilation systems, data centers, server rooms, residential and commercial air conditioning, and industrial process cooling. Due to their superior energy efficiency and intelligent speed control, EC fans are particularly favored in applications with strict energy-saving and environmental requirements.

Adaptive Cold Energy Management System; ACEMS



TECHNOLOGY INTRODUCTION

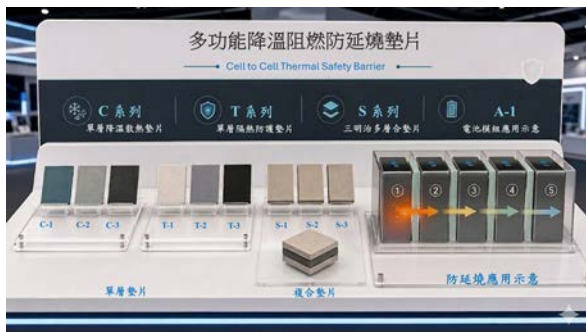
- Technological Innovation – This technology combines AI algorithms and IoT architecture to intelligently regulate freezing, refrigeration and air conditioning equipment in commercial spaces, achieving instant energy saving and automatic demand response. It is also the first to use refrigeration equipment as an energy storage medium to support grid load scheduling, taking into account both food safety and customer comfort.
- Competitive or Intellectual Property Advantages – A non-intrusive refrigerant leakage detection method
Smart defrost control method.
- Important Achievements / Awards – 2024 R&D100 Awards / 2025 Edison Awards.

INDUSTRIAL APPLICATIONS

This system is applied in the food retail industry. Through IoT sensor networks and AI algorithms, it connects the freezing, refrigeration, lighting and air-conditioning equipment in the store, automatically adjusts the operation strategy, and achieves energy saving while maintaining food safety and customer comfort. Recently, we have developed a demand response function and have demonstrated it in specific stores, using equipment pre-cooling/cooling as energy storage to help the power grid stabilize loads during peak hours.



Multifunctional Composite Pad for Cooling, Heat Dissipation, and Fire Propagation Prevention



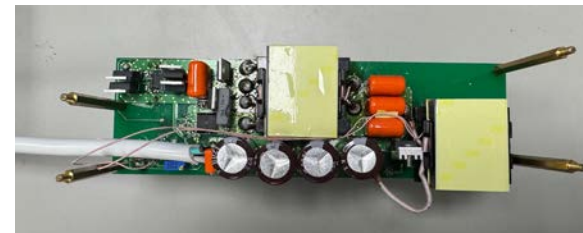
TECHNOLOGY INTRODUCTION

Lithium-ion batteries are widely used in EVs, drones, mobile phones, and energy storage systems, but high temperatures may affect safety. This multifunctional composite pad is placed between battery cells to dissipate heat, reduce temperature by about 3–5°C, absorb heat, provide insulation, and resist flame spread, improving battery module safety.

INDUSTRIAL APPLICATIONS

This multifunctional composite pad can be used in lithium-ion battery modules for electric vehicles, energy storage systems, drones, power tools, and high-power electronics. It helps dissipate heat, reduce temperature, absorb heat, provide insulation, and prevent fire spread, improving battery safety and supporting future mass production.

High Power Density GaN PD Charger



TECHNOLOGY INTRODUCTION

The high-density GaN PD power supply uses the buck-type patented architecture as the main design axis to design a 140W power supply that complies with the PD 3.1 specification. Its power density is 40% higher than the traditional design, reaching 25W/in³.

INDUSTRIAL APPLICATIONS

DC power supplies and chargers for information and communications, electronics and optoelectronics, and daily life applications



240W High-Efficiency Digital Power Supply



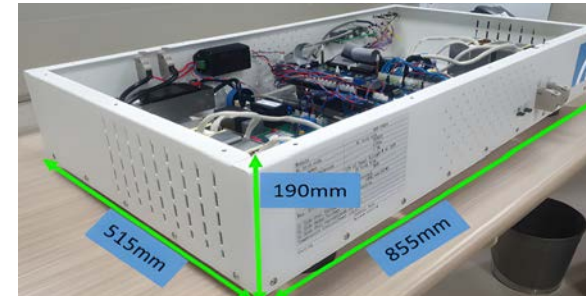
TECHNOLOGY INTRODUCTION

High Efficiency: 92% @ Half Load, 94% @ Full Load
Digital Control: Intelligent Algorithms & Multi-Protection Features
Remote Monitoring: Wireless Connectivity Enabled

INDUSTRIAL APPLICATIONS

DC power supplies and chargers for information and communications, electronics and optoelectronics, and daily life applications

Hybrid Transformer



TECHNOLOGY INTRODUCTION

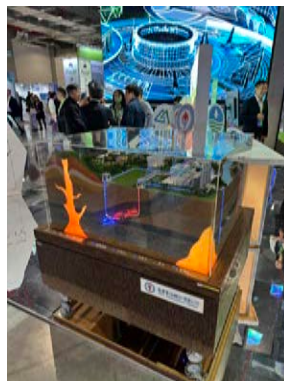
Voltage regulation;
enhanced resilience (fail bypass);
harmonic suppression;
coordination with regional power grid edge dispatch.

INDUSTRIAL APPLICATIONS

cascaded voltage regulation system implemented utilizes a low-capacity approach combined with active power compensation techniques to solve voltage fluctuation issues in low-voltage feeders with high penetration levels. By integrating AMI (Advanced Metering Infrastructure) communication, it enables coordinated and optimized dispatch across intelligent edge devices.



Geothermal Exploration and Development



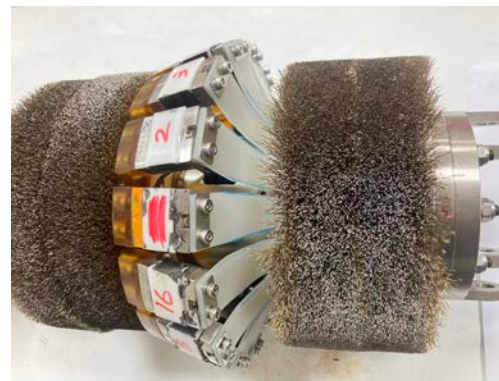
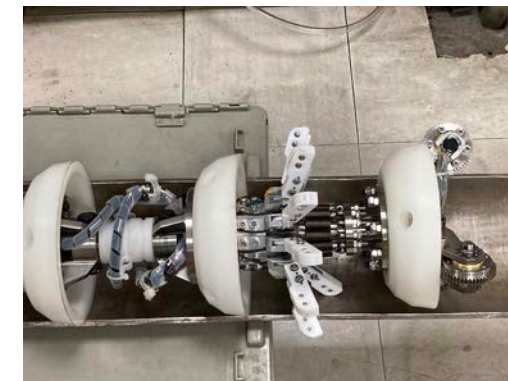
TECHNOLOGY INTRODUCTION

Geothermal energy originates from the Earth's interior with an average geothermal gradient of approximately 30°C/km. Based on the origin of the heat source, geothermal resources can be classified into volcanic and non-volcanic types. Geothermal power generation utilizes the circulation of a working fluid between production and injection wells to extract thermal energy and drive turbines for electricity generation. A geothermal power generation model is used to demonstrate the types and mechanisms of geothermal power generation, with the aim of promoting environmentally friendly renewable energy capable of stable, long-term continuous operation.

INDUSTRIAL APPLICATIONS

The geothermal power generation model is used to demonstrate the types and mechanisms of geothermal power generation, including volcanic, metamorphic rock, and deep geothermal systems. It also introduces underground doublet well circulation systems and deep geothermal hydraulic stimulation, as well as surface power generation equipment and related systems.

Development of smart inspection tool for pipelines



TECHNOLOGY INTRODUCTION

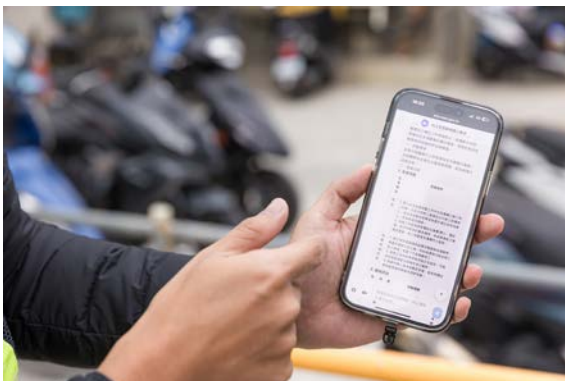
The ILI tool is a smart instrument that embedded with multiple thickness sensors. We insert the tool into the pipeline at a launch station. It is propelled by the pressure differential of fluid or gas in pipelines. As it moves, onboard sensors scan the pipe wall to gather important data, such as the presence and location of corrosion or other anomalies on the inner walls of the pipe. Smart pigs use nondestructive examination techniques to inspect for erosion corrosion, metal loss, pitting, weld anomalies, among others. The procedure of inspection by the developing smart tool can help pipelines operator to find anomalies in advance or perform remediation or replace pipeline sections before oil or natural gas leakage been taken placed.

INDUSTRIAL APPLICATIONS

1. Pipeline location and route detection.
2. Inspecting underground pipeline deformation and its location.
3. Measuring the wall thickness of underground pipelines along their entire length.
4. Established the operation policies for specific pipeline on oil and natural gas transportation.
5. Used for the inspection of long-distance underground oil and gas pipelines to ensure pipeline integrity and public safety



Taiwan Water AI Safety Inspection – AI Hazard Identification Assistant



TECHNOLOGY INTRODUCTION

“Taiwan Water AI Safety Inspection – AI Hazard Identification Assistant” is an intelligent inspection system integrating generative AI and occupational safety management. Users can upload on-site construction photos via mobile devices, and the AI system instantly identifies potential hazards, evaluates risk levels, and automatically compares related occupational safety regulations, company standards, and historical inspection cases to provide improvement recommendations. The system features simple operation, low implementation cost, and real-time analysis, helping personnel improve hazard identification capability efficiently.

INDUSTRIAL APPLICATIONS

This technology can be applied to occupational safety inspections and training in public infrastructure projects, construction engineering, water utility operations, equipment maintenance, and other high-risk workplaces. It assists personnel in rapidly identifying hazards, reducing occupational accident risks, and improving regulatory compliance.

Intelligent Underwater Ecological Recognition System



TECHNOLOGY INTRODUCTION

The Intelligent Underwater Ecological Recognition System is primarily deployed in the waters surrounding power plants to protect the marine ecosystem and provide all-weather monitoring. This technology features four core functions: first, it utilizes fixed-point real-time video monitoring to replace traditional, costly, and disruptive manual diving surveys; next, it leverages YOLO-based AI object recognition technology to automatically count and identify the species and quantity of fish. Finally, the recognized data is processed through automated data storage and analysis, and integrated into a web platform for retrieval and queries, continuously accumulating ecological data to achieve sustainable green energy development.

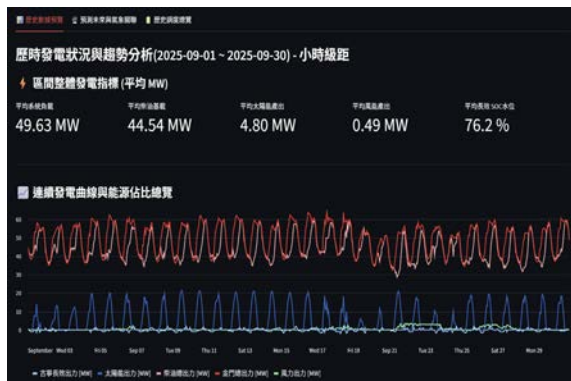
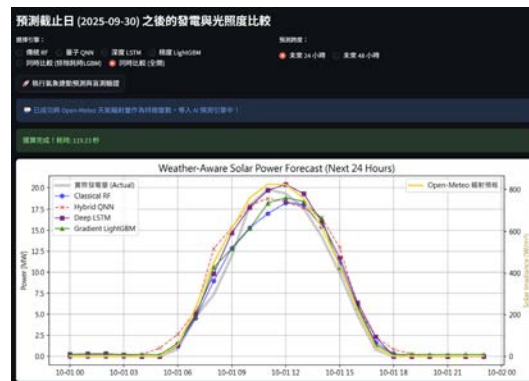
INDUSTRIAL APPLICATIONS

Traditional marine ecological surveys require hiring professional divers to conduct regular underwater investigations, manually counting and recording data. This approach is not only costly but also only yields fragmented data, making it impossible to capture long-term trends in ecological changes. More importantly, the diving surveys themselves disturb the natural behavior of marine life, compromising the objectivity of the observation results.

The Intelligent Underwater Ecological Recognition System we developed deploys underwater cameras in the waters near power plant water intakes to continuously record fish activities. Utilizing AI image recognition technology, the system automatically counts and identifies the species and population of the fish.



Smart Energy Storage at Tashan Power Plant: A Quantum AI Green Energy Brain for Island Grids



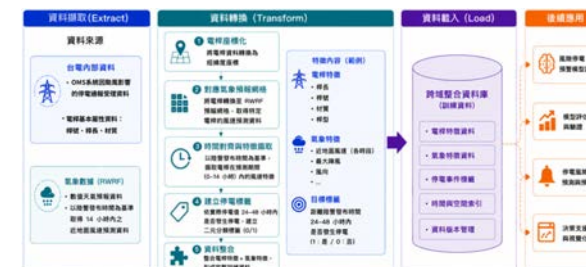
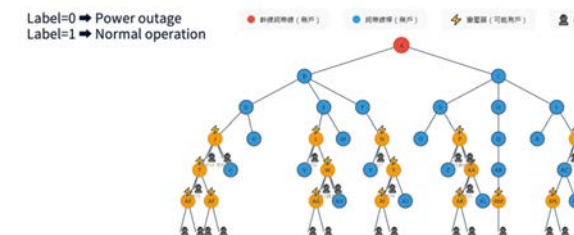
TECHNOLOGY INTRODUCTION

This system addresses energy storage and solar dispatching challenges in island grids by integrating Quantum Neural Networks (QNN) with meteorological big data for improved forecasting. Its core innovation is an “energy-hungry dispatching” algorithm that proactively releases storage capacity to maximize solar absorption and reduce curtailment. Combined with high-speed data processing and visualization, it enhances operational decision-making, grid resilience, and renewable energy utilization.

INDUSTRIAL APPLICATIONS

This system integrates Quantum AI forecasting, meteorological big data analytics, and intelligent energy storage dispatching. It can be widely applied to island power grids, microgrids, industrial parks, and large-scale renewable energy facilities. By predicting solar generation trends in advance and automatically optimizing charging and discharging strategies, it improves renewable energy utilization and reduces curtailment. With a smart visualization interface, it enables real-time monitoring of grid conditions and AI-driven dispatch decisions, enhancing grid resilience and operational stability. The system provides an effective solution for energy transition, smart grid development, and net-zero carbon emission goals.

Power Outage Warning Model under the Typhoon Disaster



TECHNOLOGY INTRODUCTION

Technological Innovation

This technology integrates historical outage events, utility pole structural characteristics, and meteorological forecast data to build a typhoon-induced power outage prediction model. It further combines generative AI to produce recommendations for preparedness, protection, and restoration, enabling the system not only to predict power outage risks, but also to help explain the underlying causes and support decision-making.

Competitive or Intellectual Property Advantages

Combines grid-specific data integration, outage risk prediction, and AI-generated response advice, forming a dedicated power resilience solution.

Important Achievements / Awards

Built a 100,000+ record dataset and a validated typhoon outage warning model for practical use.

INDUSTRIAL APPLICATIONS

This system can be applied to typhoon disaster prevention and power outage response operations. By integrating weather forecasts, historical outage records, and utility pole data, it can predict high-risk outage areas in advance. With the integration of generative AI, the system can assist in generating recommendations for pre-typhoon preparedness, resource allocation, and repair priority planning, thereby improving pre-disaster deployment and emergency response efficiency across regional offices. In the future, it can be further extended to distribution system maintenance, disaster risk management, and decision support for power grid resilience.



The introduction of CPCs Green hydrogen from anion exchange membrane water electrolysis



TECHNOLOGY INTRODUCTION

Successfully developed high-performance non-precious metal electrocatalysts for the oxygen evolution reaction (OER) and hydrogen evolution reaction (HER), with enhanced activity and stability achieved through material design and composition control.

INDUSTRIAL APPLICATIONS

The related technologies have progressed from material and component development to large-area single-cell and 3 kW-class stack integration validation, and are continuing toward system operation and field verification.

Booth
IG27

Oyster Shell Recycling and Circular Applications



TECHNOLOGY INTRODUCTION

- 1.TSC Biomaterial Factory is Taiwan's only oyster shell processor certified with ISO 9001, ISO 45001, ISO 14064-1, and BS 8001.
- 2.Turning waste oyster shells into high-value green materials, creating new sustainable value.
- 3.With a rotary kiln and high-efficiency dust control system (99.91% removal rate), it produces oyster shell powder in various sizes for different needs.

INDUSTRIAL APPLICATIONS

By recycling discarded oyster shells, TSC biomaterial factory reduces waste, supports local ecosystems, and creates new job opportunities. Oyster shell-derived calcium carbonate is used in antibacterial plastics, footwear, 3D printing materials, and handmade soaps. This initiative reflects Taiwan's commitment to the Circular Economy and New Agriculture development.

Booth
IG28



Drone-Based Release of Parasitoid Wasps for Sugarcane Borer Management



TECHNOLOGY INTRODUCTION

- 1.Nature over chemicals: Trichogramma wasps parasitize borer, breaking pest's life cycle without any pesticides.
- 2.Drones over manual labor: 10× faster deployment, 90% less labor cost.
- 3.Smart farming, net-zero future: biological control powered by drone technology — efficient and eco-friendly.

INDUSTRIAL APPLICATIONS

TSC cultures Trichogramma wasps and releases them by drones, providing efficient borer control in sugarcane, corn — no chemicals, less labor, and more sustainable.

TextileCloud™_The AI-Powered Enterprise Materials Management Solution



TECHNOLOGY INTRODUCTION

- Technological—Our AI turns fabrics into 3D via standard scanners in minutes, creating a digital closed-loop with PLM and DPP.
- Competitive or IP Advantages — Breaking costly equipment monopoly, our multi-national patents build barriers for global collaboration.
- Important Achievements / Awards — Winner of Taiwan AI Award, ITMF Start-up of the Year, and APICTA double Silver Awards

INDUSTRIAL APPLICATIONS

This system utilizes proprietary AI 3D fabric digitalization for apparel brands and textiles. Via cloud SaaS, it develops private fabric library platforms. Integrated with PLM and matchmaking, it provides cross-border collaboration for brands and suppliers, while its DPP module meets EU compliance to connect data flows. It can expand to global fashion supply chains.



High-Strength, High-Modulus Lightweight Carbon Fiber Materials for Unmanned Vehicles and Machinery Applications



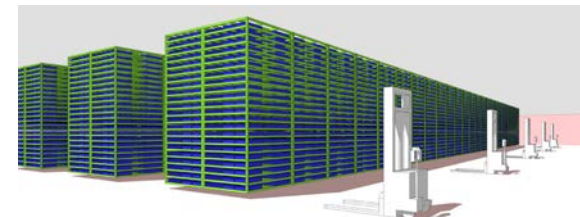
TECHNOLOGY INTRODUCTION

- A high-strength, lightweight material replaces resin in carbon-fiber parts, cutting UAV weight while improving strength, efficiency, and range.
- Natural binder know-how and core formulations create technical barriers and allow material tuning for UAV components.
- Received the 24th MOEA Business Startup Award in 2025.

INDUSTRIAL APPLICATIONS

This technology applies to UAV bodies, arms, housings, and structural parts requiring high strength, low weight, and reliability. Replacing conventional resin in carbon-fiber products helps reduce weight while improving strength, flight efficiency, range, payload capacity, and energy use. It can also serve aerospace, semiconductor equipment, smart mobility, and high-end electronics.

Smart Circular Bioconversion Technology Using Black Soldier Fly (BSF)



TECHNOLOGY INTRODUCTION

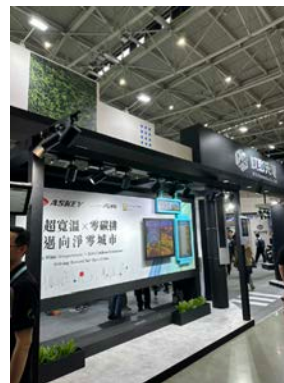
Technological Innovation: IoT sensors track temperature, humidity, ammonia, methane, and feed conditions, with cloud monitoring and real-time alerts.
Competitive/IP Advantages: Proprietary rearing parameters, alert thresholds, and SOPs improve yield and reduce labor and losses.
Achievements: Deployed in 2025; supported by Taiwan's 2026 cross-domain R&D program.

INDUSTRIAL APPLICATIONS

Applicable to insect farms, organic resource recovery facilities, food-processing plants, and overseas modular factories. IoT sensors monitor temperature, humidity, ammonia, methane, and feed conditions in real time. Cloud analytics and alerts support rapid adjustments to ventilation, feeding, and rearing conditions, reducing labor and losses while improving yield.



Cholesteric Liquid Crystal Display (ChLCD)



TECHNOLOGY INTRODUCTION

- Technological Innovation – True Full Color: Capable of displaying 16 million colors with the widest color gamut among all reflective display technologies. Ultra-Wide Temperature Range: Supports operation from -30°C to 85°C, ensuring reliability in extreme environments ranging from cold climates to desert conditions. Zero Power Consumption: Features a unique bistable design that maintains static images without consuming power.
- Competitive or Intellectual Property Advantages – Ranked 72th among Taiwan's Top 100 Patent Applicants in 2025, with a leading portfolio of 241 patents (as of June 2026) in the ChLCD field.
- Important Achievements / Awards – Winner of the 2026 Digital Signage Japan Excellence Award for its "Full-Color ChLCD ePaper technology"

INDUSTRIAL APPLICATIONS

ChLCD features unique characteristics, including true full-color capability, bistability, and blue-light-free operation. Its color performance can fully match traditional color printed materials. In indoor environments, it is ideal for applications in education, healthcare, and retail. When integrated with databases, it enables real-time and accurate information updates. For outdoor use, ChLCD leverages sunlight reflection to ensure excellent readability, making it suitable for replacing conventional transportation displays and static advertising, while significantly reducing printing and replacement costs. Its vibration-resistant design also enables installation on moving vehicles such as buses and metro systems.

Coloured Solar Application Solutions



TECHNOLOGY INTRODUCTION

- Technology Innovation: Transform building façades into a “second energy surface” by integrating colored solar PV, façade mounting, and EMS/MRV—combining power generation, heat reduction, architectural design, low glare, and carbon-data management.
- Competitive / IP Advantages: A portfolio of 4 invention patents + 3 utility model patents covering colored PV modules, smart media façades, display control, and façade mounting technologies, enabling one-stop delivery from materials and design to engineering integration.
- National Demonstration & Global Expansion: Completed a 35.90 kWp national-level solar façade demonstration at Taiwan’s Architecture and Building Research Institute (ABRI). In 2026, Richten expanded into #VivaTech Paris, AIH × Nasdaq in New York, Palau, Kansas, and Los Angeles, while advancing the Dodge City pilot-site evaluation and exploring colored solar applications for LA 2028.

INDUSTRIAL APPLICATIONS

Applicable to public buildings, campuses, offices, hotels, commercial facilities, and urban renewal projects, providing façade energy solutions that combine power generation, architectural design, and carbon reduction for both retrofit and new-build applications.



BLUE REACTION ECO SYSTEM



TECHNOLOGY INTRODUCTION

1. Material Innovation: Powered by the "Ocean Circulation Subscription Project," the TGB Green Cycle Bank platform combines material science and shared tech to process artificial fish environment waste into PE/PP and fluff fibers, creating "plastic alloy" building materials with 80% recycled content.
2. Digital Management: It utilizes blockchain to record tracking data and implements international standards like ISO 14067 and ISO 14040 for carbon footprint calculation.
3. Circular Ecosystem: Through a "subscription-and-leasing" business model, it achieves a green circular ecosystem spanning from environmental generation to product manufacturing.

INDUSTRIAL APPLICATIONS

Building a green supply chain from architecture to events and consumer goods. In construction, the 80% recycled, 100% recyclable "plastic alloy" replaces traditional wood, solving waste issues. For events, the subscription-and-leasing model replaces single-use decor with circular materials, cutting costs and providing ISO 14067 data for ESG reports. Finally, partnering with HCG and TZULAI turns marine waste into lifestyle goods, leveraging blockchain traceability to help brands differentiate and achieve a win-win for ESG and commercial value.

Smart Control System for Membrane Capacitive Deionization (MCDI)



TECHNOLOGY INTRODUCTION

- MCDI + FCC edge computing integrates key parameters to detect water quality changes and auto-adjust operation, saving ~83% manpower and cutting cloud data transmission by ~98%.
- Beyond manual/PLC control, it enables real-time computing, self-tuning and modular scaling; Taiwan invention patent pending.
- FCC won SME Innovation Research and Taiwan Excellence awards, with NTU lab validation.

INDUSTRIAL APPLICATIONS

This technology serves semiconductor, electronics, chemical, industrial park, water reclamation and wastewater reuse systems, especially sites needing stable long-term operation with limited manpower. Compared with RO and high-energy desalination, MCDI provides low energy use, high water recovery and modular expansion for medium/low-salinity reuse markets, with NTU collaboration.



Circular Packaging Solutions and Smart Self-Service Kiosks



TECHNOLOGY INTRODUCTION

PackAge+ provides smart reusable packaging solutions to transform packaging into a "traceable, recyclable, and reusable" service. Our technologies encompass eco-packaging, self-service kiosks, and circular process integration.

Products & Tech: Our patented packaging is made from recycled plastics to ensure durability. Our RFID system tracks logistics flows and cycle counts to generate reports, helping firms hit Scope 3 carbon reduction targets.

Returns & Social Impact: Through 4,700+ nodes in Taiwan, consumers return packaging via LINE, while unlocking green rewards. Partnering with social welfare groups for sanitization fosters social inclusion and creates jobs.

INDUSTRIAL APPLICATIONS

PackAge+ offers two circular models for diverse industry logistics:

Open-Loop Network: Built for B2C e-commerce/retail. It integrates into fulfillment workflows via widespread return nodes and digital interfaces, converting green consumption into brand loyalty.

Closed-Loop System: Tailored for semiconductors, manufacturing, and healthcare. It embeds into internal plant logistics, utilizing RFID tracking to optimize supply chain management and achieve green logistics.

eSort Textile Station



TECHNOLOGY INTRODUCTION

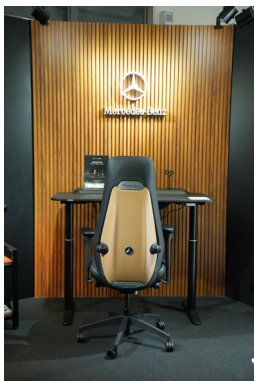
The system integrates NIR spectroscopy, AI models and cloud traceability to identify, record and sort used textiles. Compared with manual sorting, it creates material, batch and downstream-flow data for brand take-back programs, industrial sorting, recycled feedstock management and ESG reporting, turning mixed textile waste into manageable circular material assets.

INDUSTRIAL APPLICATIONS

The technology can be applied in department stores, brand take-back programs, corporate uniform recycling, recycling facilities and recycled-material supply chains. Smart collection units serve as consumer-facing data entry points, while industrial sorting systems classify and batch textile waste at scale, enabling a traceable and scalable textile circularity service model.



Resysta Rice Husk Composite 3D-Molded



TECHNOLOGY INTRODUCTION

Resysta® is an innovative eco-friendly composite material developed in Germany, made from recycled rice husks, mineral salt, and mineral oil. Free of wood content, it delivers the natural appearance and texture of real timber while offering outstanding durability. Resysta is waterproof, rot-resistant, mold-resistant, and insect-proof, making it ideal for demanding outdoor environments with minimal maintenance.

With advanced 3D molding technology, Resysta can now be formed into elegant organic curves, expanding its applications beyond architectural products into premium outdoor furniture and contemporary product design. In addition, the material is fully recyclable, supporting a sustainable circular economy.

INDUSTRIAL APPLICATIONS

Beyond its traditional use in architectural facades and decking, Resysta® can now be shaped through advanced 3D molding technology for broader applications, including premium furniture and office environments. In 2025, our collaboration with Mercedes-Benz showcased the material in ergonomic chairs and height-adjustable desks, demonstrating its potential for innovative cross-industry design.

Hibāng Re-Fishing-Net Circular Eyewear



TECHNOLOGY INTRODUCTION

Hibāng Circular Optical Frame uses recycled nylon from fishing nets collected in Taiwan waters. Its mono-material, screwless snap-fit structure lets frames, temples and nose pads be repaired or replaced without tools. Returned parts can be recycled into new frames, creating a closed-loop path from material to product to recovery. Awarded Good Design BEST100 and Golden Pin Circular Design Award.

INDUSTRIAL APPLICATIONS

Applicable to optical frames, sunglasses, sports eyewear and sustainable corporate gifts. The technology helps eyewear brands and retailers adopt low-carbon recycled materials, repair services and take-back recycling. It can also extend to outdoor products and wearable accessories, using modular design to reduce inventory, extend product life and communicate circular value.



25.3" E Ink Kaleido Interactive Bus Route Map



TECHNOLOGY INTRODUCTION

This product features E Ink Kaleido™ 3 color ePaper technology, providing fast updates for real-time transit information with ultra-low power consumption. Its Dynamic Multilingual Switching System displays bus arrival and route information in Traditional Chinese, English, Japanese, and Korean, improving accessibility and passenger convenience.

INDUSTRIAL APPLICATIONS

Multilingual Navigation:Instantly switches among Chinese, English, Japanese, and Korean to provide barrier-free guidance for tourists
Digital Route Maps:Replaces static paper maps. Clearly displays real-time locations and remaining stops at a glance
Fleet Efficiency:Eliminates manual sticker updates. Screens instantly sync new route data during vehicle dispatch, maximizing operational flexibility



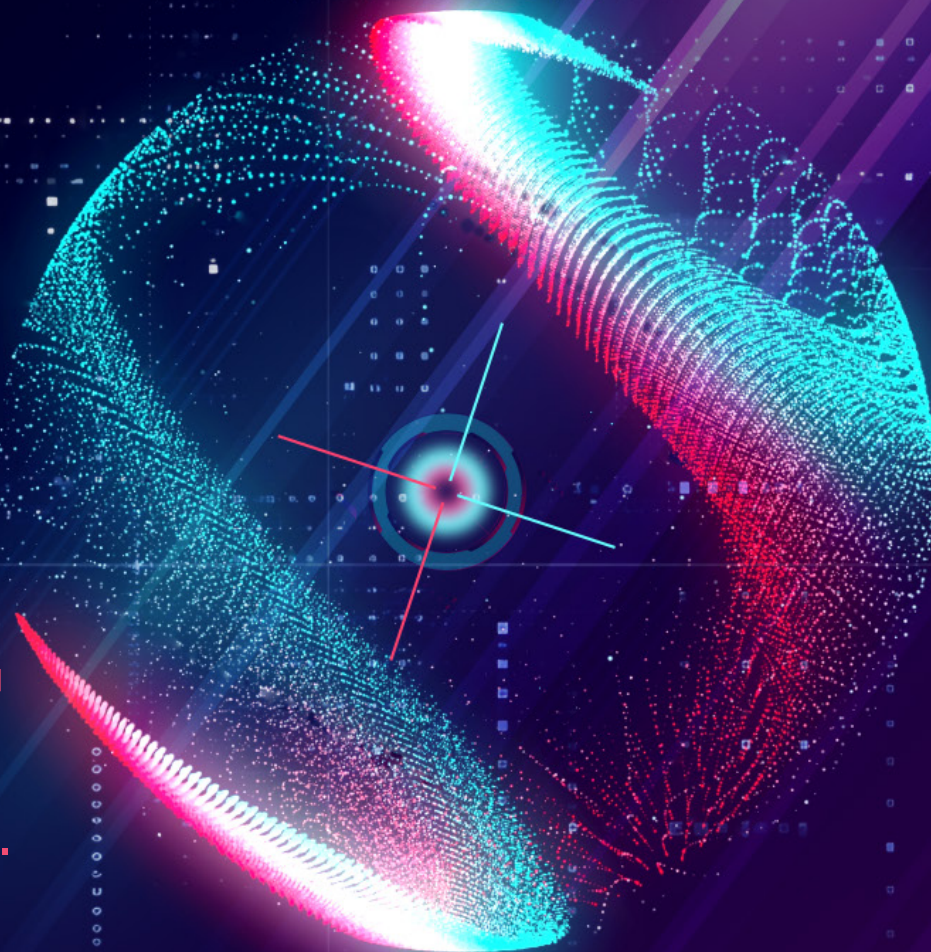
未來

Future Tech,

科技館

Leading Your Life.

Powering Industry Transformation with Taiwan's
Research Excellence



Future Tech Pavilion (FUTEX)

The Future Tech Pavilion (FUTEX) is jointly organized by the National Science and Technology Council (NSTC), in collaboration with Academia Sinica and the Ministries of Education, Sports, and Health and Welfare. The pavilion showcases technologies shaping the next 3–10 years under the theme "Powering Industry Transformation with Taiwan's Research Excellence". Featuring leading research innovations and industry-academia collaborations, FUTEX brings together Future Tech Award-winning technologies and major national initiatives. Through curated exhibitions, matchmaking sessions, and award ceremonies, it connects breakthrough research with real-world industry applications.



▲ More Info

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Integrated Generative AI Fashion Design and Virtual Try-On System

This technology integrates Generative AI, virtual try-on, and digital fashion development workflows into an end-to-end system covering concept generation, apparel design, AI-generated product imagery, and virtual fitting experiences. Through AI-based recognition and virtual garment mapping, users can instantly visualize personalized wearing effects, enabling a customized, cost-effective, and highly efficient fashion development process. The system can be applied to fashion design education, smart retail, brand development, and digital exhibitions, demonstrating a new paradigm for the digital transformation of the fashion industry.

This technology can be applied to fashion design and development, brand merchandise planning, smart retail and e-commerce, digital exhibitions, and design education. It establishes a one-stop solution covering AI-driven design generation, digital garment development, and virtual try-on experiences. By significantly reducing prototyping, photography, and fitting costs, the system shortens product development cycles, improves decision-making efficiency, accelerates time-to-market, enhances customer engagement, and creates new value through digital content. It offers a scalable solution for the future of digital fashion, enabling intelligent retail experiences, innovative brand services, and next-generation human-centered fashion interactions.



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▶ **EXHIBITED TECHNOLOGY**

AI-Powered Hemodialysis Auxiliary Monitoring Software

▶ TECHNOLOGY INTRODUCTION

This technology integrates explainable AI (SHAP), HL7 FHIR R4 standards, and hemodialysis clinical data to provide four clinical decision-support modules: heart failure risk prediction, dry-weight assessment, intradialytic hypotension prediction, and EPO/hemoglobin management. The heart failure model achieved AUC 0.90 with a 2–4 hr early-warning window. The platform adopts a vendor-neutral architecture, has completed multicenter clinical validation and technology transfer, and a TFDA Class II SaMD application was filed in Q3 2026.

▶ INDUSTRIAL APPLICATIONS

The technology has clear industrial applicability for routine dialysis-center needs, including heart failure risk monitoring, dry-weight adjustment support, hypotension warning, and EPO management. It can integrate with existing dialysis equipment and hospital information systems, while supporting SaaS delivery and edge deployment to lower implementation and integration barriers. Technology transfer has been completed, providing a foundation for commercialization, repeatable multicenter deployment, and scalable adoption across 366 dialysis centers and approximately 96,000 patients in Taiwan.



▲ **More Info**

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iMirror: An AI-Powered Interactive Smart Mirror for Health Promotion and Empowerment

This AI pose-assessment smart mirror uses a single camera and edge computing to extract human skeletons. It provides two branches: gait analysis quantifies steps, stride length, speed and body sway for rehab tracking and fall-risk interpretation; fitness assessment quantifies angles, angular velocity, repetitions and reach distance to track muscular endurance, flexibility, balance and cardiopulmonary endurance, generating sarcopenia alerts and personalized exercise suggestions

This technology can be deployed by scenario, with field validation shown in Fig. 3. The gait branch supports hospital rehab and long-term care, helping stroke, Parkinson's and lower-limb degeneration cases track rehab outcomes and interpret fall risk. The fitness branch suits community centers, senior fitness centers and homes, supporting sarcopenia alerts, movement-quality tracking, personalized advice and telecare, reducing manpower and tracking costs and improving access.



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▶ EXHIBITED TECHNOLOGY

Sub-Terahertz High-Speed Transparent Detection Technology

▶ TECHNOLOGY INTRODUCTION

"Sub-teraertz High-Speed Transparent Inspection Technology" is an intelligent, rapid screening and triage mechanism that fundamentally solves the bottlenecks of current ultrasound and X-ray inspections. Utilizing patented 3D circuit stacking technology, it achieves an ultra-lightweight 1.5kg handheld design and combines it with AI automatic annotation technology; a single unit can replace the work of 13 people. This solution boasts non-contact, second-level imaging advantages.

▶ INDUSTRIAL APPLICATIONS

The core of this technology lies in the value of "intelligent rapid screening and triage." It doesn't completely replace ultrasound or X-rays; rather, it filters out over 95% of non-abnormal structures at extremely high detection speeds. This allows truly questionable materials to be accurately returned to precision instruments for in-depth analysis, eliminating queuing bottlenecks in the testing line and achieving a smooth industrial chain where "detection equals decision-making."



◆ National Science and Technology Council

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EXHIBITED TECHNOLOGY

Construction Automation: AI-Driven On-Site Construction Robotics

TECHNOLOGY INTRODUCTION

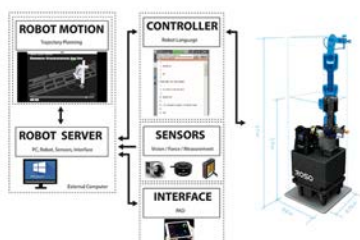
The ROSO AI On-Site Construction Robot integrates a robotic arm, an autonomous mobile robot (AMR), AI-powered computer vision, and multisensor fusion to create an intelligent construction system capable of autonomous navigation, spatial localization, scene recognition, and human–robot collaboration. Designed for complex construction environments, the system enables real-time obstacle avoidance, construction-site analysis, and automated operations, improving productivity, quality consistency, and the implementation of smart construction.

INDUSTRIAL APPLICATIONS

This technology is designed for labor-intensive and repetitive indoor construction tasks. By deploying AI-driven on-site construction robots, it improves productivity while reducing occupational safety risks and physical demands on workers. Real construction sites also provide valuable operating environments in which robots can accumulate real-world data and human–robot collaboration experience. This process strengthens their spatial perception, autonomous decision-making, and motion-control capabilities, laying the foundation for future physical AI and autonomous construction applications.



More Info ▲



AI-ACCELERATED ON-SITE ROBOTIC AUTONOMOUS SPRAY PAINTING

- Robust robotic simulation and control platform
- Battery operated
- Reliability of robot positioning
- User-friendly interface
- Automated robotic path planning
- Multi-robot task coordination
- Real-time environment
- AI for Robot

The ROSO robots "empower workers to easily complete indoor painting tasks."



◆ National Science and Technology Council

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EXHIBITED TECHNOLOGY

AI-Embedded Hot Food Vending Machine

TECHNOLOGY INTRODUCTION

This smart food vending machine integrates technologies including AI, sensing system, inventory management, and patented microwave heating. By analyzing transaction and environmental data, it provides inventory replenishment forecasting and dynamic menu recommendations, effectively reducing stock shortages and food waste. It can serve meals within 180 seconds and features real-time monitoring, multilingual services, and high operational stability. Offering 24/7 food service.

INDUSTRIAL APPLICATIONS

Centered on AI vending machines, this solution integrates intelligent replenishment and multi-brand food service to establish a replicable smart food model. In addition to deployment in science parks and public venues, And also be operated through mobile food trucks at markets. By connecting local specialty food brands, it creates a shared operating platform and franchise ecosystem, expanding unmanned, and cross-location sales channels while enhancing brand value, and overall industry benefits.



AI API 數據採集後端	
<p>機台 ID: SC-PC01-0002</p> <p>有效時間: 2026-06-16T08:53:37.375556 ~ 2026-07-16T08:53:37.375556</p> <p>內置卡: 405.2</p> <p>剩餘容量: 64%</p> <p>設備清單:</p> <ul style="list-style-type: none"> 麻辣香鍋 (AI001) (備用): 1 台式炸醬麵 (AI011) (備用): 2 台式炸醬麵 (AI011) (備用): 3 台式炸醬麵 (AI011) (備用): 4 台式炸醬麵 (AI011) (備用): 5 台式炸醬麵 (AI011) (備用): 6 台式炸醬麵 (AI011) (備用): 7 台式炸醬麵 (AI011) (備用): 8 台式炸醬麵 (AI011) (備用): 9 台式炸醬麵 (AI011) (備用): 10 台式炸醬麵 (AI011) (備用): 11 台式炸醬麵 (AI011) (備用): 12 台式炸醬麵 (AI011) (備用): 13 台式炸醬麵 (AI011) (備用): 14 台式炸醬麵 (AI011) (備用): 15 	<p>機台 ID: SC-PC01-0003</p> <p>有效時間: 2026-06-16T08:53:34.400000 ~ 2026-07-16T08:53:34.400000</p> <p>內置卡: 405.2</p> <p>剩餘容量: 64%</p> <p>設備清單:</p> <ul style="list-style-type: none"> 麻辣香鍋 (AI001) (備用): 1 台式炸醬麵 (AI011) (備用): 2 台式炸醬麵 (AI011) (備用): 3 台式炸醬麵 (AI011) (備用): 4 台式炸醬麵 (AI011) (備用): 5 台式炸醬麵 (AI011) (備用): 6 台式炸醬麵 (AI011) (備用): 7 台式炸醬麵 (AI011) (備用): 8 台式炸醬麵 (AI011) (備用): 9 台式炸醬麵 (AI011) (備用): 10 台式炸醬麵 (AI011) (備用): 11 台式炸醬麵 (AI011) (備用): 12 台式炸醬麵 (AI011) (備用): 13 台式炸醬麵 (AI011) (備用): 14 台式炸醬麵 (AI011) (備用): 15



More Info ▲

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▶ EXHIBITED TECHNOLOGY

AI Deep Learning-based Computer Vision Recognition for Automated Pork Lean Meat Proportion Detection System

▶ TECHNOLOGY INTRODUCTION

The live pig appearance identification and prediction system developed in this project has a determination coefficient (R^2) as high as 0.78, which is better than the industry average of 0.64. Furthermore, the difference between the predicted carcass and meat quality grades and those obtained by the Soxhlet extraction method is controlled within $\pm 0.2\%$. This project employs “three-free” technology to construct a complete data chain for objective grading.

▶ INDUSTRIAL APPLICATIONS

This project integrates the feeding, slaughtering and consumer. (1) Lean meat percentage identification system for pig carcasses is planned to be installed on the slaughtering line of Taiwan Farm Industry Co., Ltd. (T-HAM) to optimize the identification accuracy and match the slaughtering speed. (2) Pork quality and grading identification system classifies and identifies the lean meat percentage of meat products. (3) Lean meat percentage identification system for live pigs is built at the farm end to adjust the feed formula during the feeding.



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▶ EXHIBITED TECHNOLOGY

Multi-stage Concentric Well Pipe System for Stratified Groundwater Monitoring and Precision Sampling

▶ TECHNOLOGY INTRODUCTION

- Multi-depth monitoring: one borehole provides depth-specific water-level and water-quality data through independent channels.
- Representative sampling: filter media and sealing layers reduce vertical mixing between aquifers.
- Efficient installation: the single-pipe architecture reduces pipe entanglement, land use, materials, cost, and carbon emissions.
- Applications: contaminated sites, industrial parks, groundwater monitoring, hot springs, and geothermal fields.

▶ INDUSTRIAL APPLICATIONS

The system meets industry needs for long-term, depth-specific, and representative groundwater data. It is compatible with conventional water-level meters, sampling devices, and pumping equipment, lowering the barrier to field adoption. Full-scale fabrication and field installation have been verified, and a stratified-monitoring pilot at a contaminated site is planned to combine pumping tests, depth-specific water-quality sampling, and VSAFT3 analysis. Patent protection supports licensing, technology transfer, co-development, scalable manufacturing, and commercialization.



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▶ EXHIBITED TECHNOLOGY

PV-Zero: AI-Powered Full-Mass Photovoltaic Waste Recycling

▶ TECHNOLOGY INTRODUCTION

Driven by the growing demand for renewable energy, countries around the world are establishing management regulations for decommissioned solar panels. Taiwan has passed the "Resource Circulation Promotion Act". Similarly, Japan passed the "Solar Panel Recycling Promotion Act" on May 29 to address the upcoming surge of waste, which is projected to exceed 500,000 tons annually. At the core of this technology is AI-assisted identification of solar panels, which determines module dimensions to optimize frame dismantling, backsheet removal, and the layered scraping of materials such as semiconductor silicon and EVA.

▶ INDUSTRIAL APPLICATIONS

"Resource circulation and zero waste" is no longer just a slogan. Driven by regulatory updates, domestic treatment operators that have obtained waste solar panel recycling licenses (D-2528) are evolving into circular raw material manufacturers backed by advanced technological capabilities. Our team provides an array of technologies for circular recycled materials, including glass recycling, EVA reuse, hydrogen production from semiconductor silicon, and silver purification. These multi-faceted technologies are designed to drive and elevate the value of decommissioned solar panels.



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▶ EXHIBITED TECHNOLOGY

Lean Smart Manufacturing Carbon Emission Monitoring System

▶ TECHNOLOGY INTRODUCTION

The “Lean Smart Manufacturing Carbon Emission Monitoring System” integrates Lean Production, Smart Manufacturing, and Carbon Footprint Assessment technologies. Using IoT sensing and data analytics, the system monitors energy consumption, machine operations, and production activities in real time. The platform helps SMEs improve energy efficiency, reduce operational costs and carbon emissions, and accelerate digital transformation and sustainable net-zero development.

▶ INDUSTRIAL APPLICATIONS

The system can be applied to metal processing, machinery manufacturing, and electronics assembly industries. Through IoT sensing, AI analytics, and digitalized Value Stream Mapping (VSM), the platform monitors equipment operation, energy consumption, and carbon emissions in real time, helping enterprises improve production efficiency and energy management. With its modular and low-threshold design, the system is suitable for SMEs implementing smart manufacturing and net-zero transformation.

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▶ **EXHIBITED TECHNOLOGY**

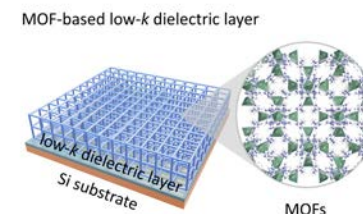
Deposition of Metal-Organic Framework Thin Films for Low-k Devices

▶ TECHNOLOGY INTRODUCTION

This technology uses ALD-derived metal oxide layers as metal sources and adhesion templates, followed by vapor-phase or solution-phase conversion to form wafer-scale MOF low-k thin films for advanced semiconductor dielectric applications.

▶ INDUSTRIAL APPLICATIONS

This technology is applicable to BEOL low-k dielectrics, insulating layers, barrier layers, and advanced packaging, with potential to reduce RC delay, leakage current, and power consumption in wafer-level semiconductor integration.



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Photon-Induced Atomic Layer Deposition

Photon-Induced Atomic Layer Deposition (PI-ALD) is the world's only technology to incorporate photocatalytic reactions into thin-film deposition, solving the critical trench-filling challenge in advanced processes while enabling precisely controlled area-selective deposition. Films deposited via PI-ALD achieve lower surface roughness, fewer residual impurities (C, O), lower resistivity, and faster deposition rates.

PI-ALD uses UV or visible light to activate precursor reactions, enabling low-temperature, area-selective deposition. Key applications include selective deposition and self-aligned patterning in advanced semiconductor processes, low-thermal-budget encapsulation for flexible electronics and OLEDs, and photocatalysis, sensors, and transparent conductive films.



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▶ EXHIBITED TECHNOLOGY

Sub-nanometer Characterization of Semiconductor Transistor Interfaces: Voltage-Tunable Cross-Sectional Scanning Tunneling Microscopy

▶ TECHNOLOGY INTRODUCTION

This work presents an in-situ, sub-nanometer-scale electronic characterization of 2D semiconductor devices using cross-sectional STM/STS — a capability previously inaccessible by conventional metrology. By directly imaging carrier injection profiles, electronic structure, and transfer length(LT) at the metal/semiconductor contact with sub-nanometer spatial resolution, this technique uniquely decodes the fundamental physics governing contact scaling limits, offering experimental insight for the advancement of next-generation 2D device technology.

▶ INDUSTRIAL APPLICATIONS

The atomic-scale interfacial characterization capability established here directly addresses the semiconductor industry's most critical challenge at advanced nodes: contact resistance scaling. As 2D semiconductors (MoS_2 , WSe_2) emerge as prime successors to silicon technology, metal–semiconductor contact quality has become the key performance bottleneck. This technology delivers the atomic-level physical insights essential for process optimization, material screening, and device design — offering strategic value across leading manufacturers and their equipment and materials supply chains.



More Info ▲



◆ Ministry of Sports

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► EXHIBITED TECHNOLOGY

Dynamic Informed Consent and Data Authorization System

► TECHNOLOGY INTRODUCTION

Developed by the Taiwan Institute of Sports Science, this system makes informed consent easier to manage. Users can sign consent forms online, keep track of their consent records, and connect their consent with sports data. Personal data is protected through de-identification and secure key encryption, helping ensure that sports data is used safely, legally, and responsibly.

► INDUSTRIAL APPLICATIONS

This system can be used by sports venues, associations, sports technology companies, wearable device providers, and data platforms as a foundation for data authorization and management. With e-consent, dynamic authorization, de-identification, and encryption protection, it helps reduce legal risks in data sharing and reuse, while supporting sports analysis, health services, AI training, and cross-organization collaboration.

►► Key Ministerial Projects

◆ Ministry of Sports

◆ Exhibitor
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► EXHIBITED TECHNOLOGY

Golf Data Integration and Real-Time Feedback System

► TECHNOLOGY INTRODUCTION

Through an indoor golf experience, this demonstration shows how swing, impact, and ball-flight data are generated in real time and transmitted to the sports data platform through APIs. Visitors can understand how venue-based equipment converts sports performance into analyzable data, supporting personal records, training feedback, and data authorization applications.

► INDUSTRIAL APPLICATIONS

The technology can start from TrackMan-based venues and expand to home indoor golf systems and other golf tracking devices. With our API, users can bring their golf data together in one personal journey dashboard, no matter which venue or device they use. They can review past records, track progress, get training feedback, and use the data for simulation and performance prediction.

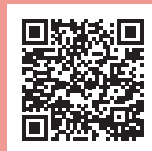


More Info ▲









▲ More Info

▶ EXHIBITED TECHNOLOGY

Sports Data Integration and API Services Platform

▶ TECHNOLOGY INTRODUCTION

API connections with different sports venues and equipment, users can bring all their sports data together in one personal activity log. No matter where they train or what sport they do, they can track their records, see their progress over time, and understand how their performance compares with the overall dataset. The platform can also support athlete training, talent development, and public health applications.

▶ INDUSTRIAL APPLICATIONS

This technology can be applied in sports venues, training centers, schools, associations, sports technology services, and health management. It supports personal activity logs, training feedback, data access, performance analysis, and data authorization management. In the future, it can expand across more sports and venues, supporting athlete training, public health, and the development of Taiwan sports technology industry.



More Info ▲



▶ EXHIBITED TECHNOLOGY

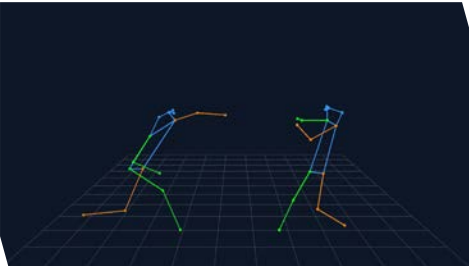
B.A.S.E. — Baseball Advanced Science & Evaluation Platform

▶ TECHNOLOGY INTRODUCTION

This platform integrates venue data, game data, and APIs to demonstrate real-world applications of baseball data. It combines player tracking, skeletal motion data, pitching and batting metrics, and advanced visualizations, presenting the results through 3D simulations, animated replays, and an interactive web interface. Visitors can explore how data supports training analysis, scouting, tactical decision-making, and game management.

▶ INDUSTRIAL APPLICATIONS

The system can be used in baseball and softball games, training centers, team management, scouting, and ballpark operations. By combining pitching and batting data, player tracking, 3D simulations, and advanced charts, it helps coaches, players, scouts, and organizers better understand performance, make decisions, develop talent, and manage games more efficiently.



▲ More Info

▶ EXHIBITED TECHNOLOGY

Satellite Communication Technology

▶ TECHNOLOGY INTRODUCTION

This technology presents a 1U L/S-band dual-band communication payload designed for CubeSats, leveraging the XCZU4EV and AD9361 platform for computationally intensive baseband processing. The system delivers a 1 Mbps data rate and supports both transparent and regenerative transponder modes, with an overall power consumption of approximately 15W. Adopting the DVB-S2 standard, it integrates LDPC and BCH error-correction coding alongside Doppler-resilient carrier and timing synchronization algorithms, ensuring high-reliability end-to-end connectivity in low-SNR environments.

▶ INDUSTRIAL APPLICATIONS

Currently, high-bandwidth communication and imaging modules for domestic CubeSats heavily rely on foreign commercial-off-the-shelf (COTS) products, frequently facing bottlenecks such as high costs, technology lock-in, and integration and maintenance challenges. This technology successfully demonstrates the indigenous development and integration of a critical communication payload, effectively reducing dependency on foreign imports and comprehensively strengthening the autonomy and completeness of the domestic space supply chain.



More Info ▲



▶ EXHIBITED TECHNOLOGY

Next-Generation Multi-Mission eVTOL Transformable-Wing UAV Technology

▶ TECHNOLOGY INTRODUCTION

This technology is Taiwan's first multi-mission eVTOL transformable-wing UAV, independently developed, designed, and manufactured by the National Formosa University research team in collaboration with Thunder Tiger through industry-academia cooperation. The UAV can transform between rotary-wing and fixed-wing configurations, combining vertical takeoff and landing with long-range and high-endurance flight capabilities.

▶ INDUSTRIAL APPLICATIONS

This technology combines vertical takeoff and landing, extended range, high endurance, and flexible payload integration. It can support diverse industrial applications, including defense and reconnaissance, disaster response, long-range inspection, maritime surveillance, logistics, and intelligent sensing, providing a versatile aerial platform for multi-mission operations.



▲ More Info

▶ EXHIBITED TECHNOLOGY

Enabling Talents Cultivation Program for Delaying Aging and Reducing Disability in Post-acute Care of the Elderly

▶ TECHNOLOGY INTRODUCTION

We integrate technological empowerment through intelligent risk assessment equipment, smart assistive devices, and empowerment exercise training systems to establish an innovative smart empowerment training model. The model enhances Post-Acute Care (PAC) and health promotion for older adults, supports the prevention and delay of age-related disabilities, and establishes the nation’s first demonstration site for delaying aging and reducing post-acute disabilities.

▶ INDUSTRIAL APPLICATIONS

Applicable to hospitals, Post-Acute Care (PAC) facilities, long-term care institutions, and community health promotion centers, the platform integrates a Smart Healthcare Information Platform with smart healthcare devices to support teaching, hands-on training, and professional education, while cultivating interdisciplinary professionals to meet the needs of the smart healthcare industry.



More Info ▲



▶ EXHIBITED TECHNOLOGY

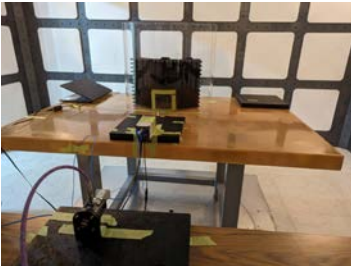
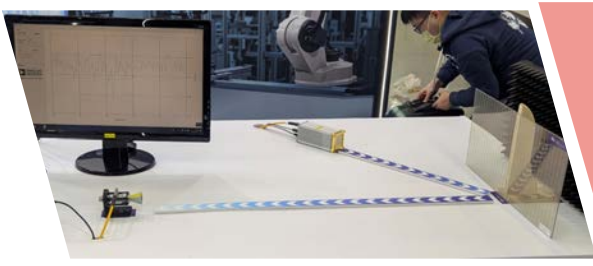
Optically Transparent Polymer-Based Millimeter-Wave Reflective Surface

▶ TECHNOLOGY INTRODUCTION

Jointly developed by Lunghwa University of Science and Technology (LHU) and BenQ Materials, this technology integrates an optically transparent polymer substrate with conductive thick-film microstructures to achieve passive directional reflection of 28 GHz millimeter-wave signals without external RF power or active control. Featuring optical transparency, low power consumption, and easy integration, it is suitable for building glass, vehicle windows, and LEO satellite ground communication systems.

▶ INDUSTRIAL APPLICATIONS

Featuring high optical transparency and passive directional reflection at 28 GHz, this technology requires no external RF power or active control. It can be integrated into LEO satellite ground equipment, architectural glass, and vehicle windows to improve millimeter-wave signal coverage while maintaining optical transparency. It offers strong application potential for 6G, non-terrestrial networks (NTN), and satellite communications.



▲ More Info

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Novel Metabolic Target: Modulating the Intestinal FcRn-IgG Axis to Reverse Metabolic Inertia & Lipid Dysregulation

This technology identifies the gut-wall FcRn–IgG axis as a novel therapeutic target underlying “metabolic inertia,” in which lipid dysregulation persists even after dietary improvement. Gut-directed disruption of FcRn–IgG interactions prevents post-diet triglyceride deterioration and may reset the gut’s metabolic memory. In vivo proof-of-concept studies further demonstrate metabolic benefits without detectable systemic IgG depletion, providing a mechanism-distinct therapeutic strategy for lipid dysregulation, obesity recurrence, and metabolic liver disease.

This technology enables development of gut-restricted therapeutics for post-weight-loss metabolic rebound, dyslipidemia, obesity, and metabolic liver disease. It is compatible with oral delivery platforms, including pH-dependent formulations, smart capsules, and small molecules. The platform offers opportunities for licensing, co-development, and expansion of FcRn therapeutics into metabolic indications beyond systemic IgG depletion.



Key Ministerial Projects

◆ Ministry of Health and Welfare

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EXHIBITED TECHNOLOGY

AI-Guided Phenotypic Response Surface Platform for Personalized Dose Navigation and Multimodal Therapy Optimization

TECHNOLOGY INTRODUCTION

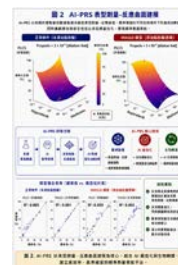
This platform integrates human cell models, zebrafish disease models, and AI-guided phenotypic response surfaces to optimize multidrug combinations and dose regimens under efficacy and safety constraints. It generates interpretable optimized dose windows to support personalized dose navigation and preclinical decision-making.

INDUSTRIAL APPLICATIONS

Applications include new drug and combination therapy development, drug repurposing, precision dosing, and dose optimization for health products and precision nutrition. The current platform is positioned for preclinical and research use and B2B collaboration, with planned progression toward clinical validation, including N-of-1 studies, and future clinical decision-support development.



More Info ▲



Key Ministerial Projects

◆ Ministry of Health and Welfare

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EXHIBITED TECHNOLOGY

Broad-spectrum cancer vaccine

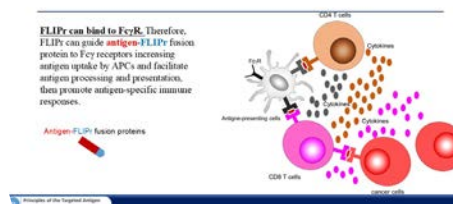
TECHNOLOGY INTRODUCTION

The Targeted Antigen Delivery System (TADS) is a new vaccine platform that precisely delivers antigens to immune cells, simultaneously inducing potent antibody and T-cell responses. It is applicable to cancer vaccines. Addressing the challenge of generating tumor-specific T cells in clinical immunotherapy, this technology combines tumor antigen survivin to develop the candidate vaccine rSur-FLIPr, successfully overcoming the challenge of insufficient immunogenicity of tumor antigens.

INDUSTRIAL APPLICATIONS

Broad-spectrum and precise: Survivin is highly expressed in over 80% of cancer types. rSur-FLIPr can break immune tolerance and induce a potent CD8+ T cell response, possessing the potential to become a "broad-spectrum cancer vaccine." cGMP process and GLP toxicology validation have been completed. TADS could be used for the development of various cancer or infectious disease vaccines with different targets in the future, generating long-term patent revenue through global licensing.

Principles of the Targeted Antigen Delivery System



Solutions for the unmet medical needs

Unmet medical needs	Proposed solution	Examples
<ul style="list-style-type: none">A significant challenge lies in the fact that many tumor-associated antigens are immunogenic.Identifying triggering robust immune responses to tumor-associated antigens is critical to cancer vaccine development.	Targeted antigen delivery system Antigen Antigen-presenting cells	<ul style="list-style-type: none">A novel recombinant Hs gamma receptor targeted vaccine combined with chemotherapy for efficient cancer treatment.Stemmedown, 2021 Oct 15/2021 Article number 806.
<ul style="list-style-type: none">Mutual vaccines offer the potential to trigger robust protective immune responses at the predominant sites of pathogen infection.Most of the vaccines are not optimal for inducing mucosal immunity.		<ul style="list-style-type: none">Submucosal vaccination with recombinant antigen-FLIPr fusion protein alone induces long-lasting systemic antibody responses and robust T cell responses.Frontiers in Immunology, 2023 Oct 15/2023 Article number 753863.



More Info ▲

◆ Ministry of Health and Welfare

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National Health Research Institutes

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▶ EXHIBITED TECHNOLOGY

AI-Driven Clinical Collaboration and Smart e-Form App for Home-Based Care

▶ TECHNOLOGY INTRODUCTION

This technology integrates a Smart e-Form App and an unstructured data lake to establish multimodal AI for wound recognition and speech summarization. It transforms home healthcare data into structured clinical insights. Wound segmentation and tissue quantification improve assessment consistency, while speech-to-summary AI automates medical records to save time. By incorporating explainable AI for reliable decision-making, it enhances overall home healthcare efficiency and quality.

▶ INDUSTRIAL APPLICATIONS

Centered on the Smart e-Form App, this technology integrates images, speech, medical records, and sensor data for home healthcare, long-term care, rural services, and chronic disease management. Through AI analysis, structured feedback, and remote decision support, it improves care efficiency and data consistency. Its modular design securely connects hospital systems, care units, and device vendors, fostering a highly scalable and AI-driven smart healthcare ecosystem.



More Info ▲

AI 驅動之在宅照護臨床協作與智慧電子表單APP-應用情境



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◆ Exhibitor
National Health Research Institutes

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▶ EXHIBITED TECHNOLOGY

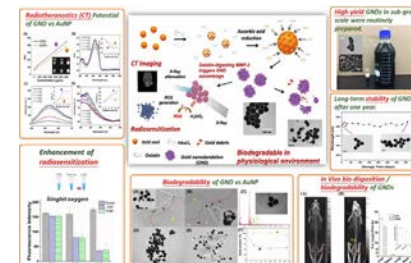
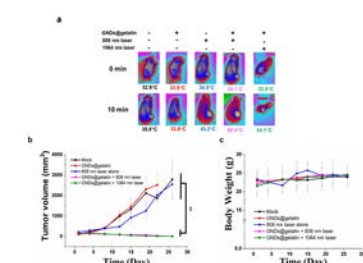
Green Chemistry-derived Nanodandelion Sensitizing Photothermal and Radiodynamic/Proton Immunotherapy

▶ TECHNOLOGY INTRODUCTION

The patented green synthesis of GND enables scalable manufacturing and facilitates clinical translation as a multifunctional theranostic platform. GND combines image-guided PTT, radiodynamic/proton therapy, and immunotherapy within a single system. By integrating multimodal treatments and analyzing factors associated with tumor metastasis and recurrence, GND supports optimization of therapeutic combinations and treatment sequences to improve antitumor efficacy and reduce recurrence risk.

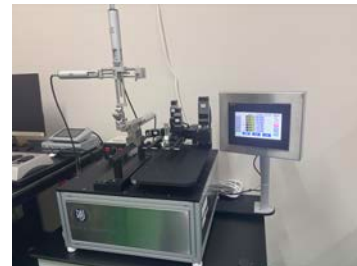
▶ INDUSTRIAL APPLICATIONS

Targeting the \$10B radiotherapy market by 2030, this intravenous GND theranostic platform overcomes NBTXR3's limits of invasive injection and single-mode action. Boasting a shelf life of over one year for industrial scalability, this single carrier integrates dual-mode imaging, photon/proton dual radiosensitization, PTT, and customizable drug delivery. It delivers superior therapeutic synergy and cost-effectiveness, offering strong market differentiation and clinical translation potential.



▲ More Info

▶▶ Key Ministerial Projects





◆ Ministry of Health and Welfare

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► EXHIBITED TECHNOLOGY

SpaRSA: A Cross-Scale Spatial Biology-Guided Platform for Liquid Biopsy and Dynamic Metastasis Risk Prediction in Pancreatic Cancer

► TECHNOLOGY INTRODUCTION

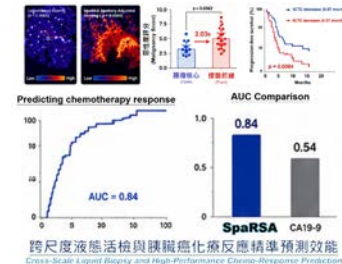
This platform integrates spatial biology and liquid biopsy for pancreatic cancer. SpaRSA corrects stromal contamination and identifies invasive front risk signals, achieving AUC=0.8409 for chemotherapy response prediction. The cross-scale framework translates spatial and single-cell signatures into clinically deployable bulk RNA assays. Dynamic CTC monitoring enables early detection of metastasis and MRD ($p=0.0092$), enabling real-time risk stratification and AI-driven IVD applications.

► INDUSTRIAL APPLICATIONS

This platform enables early detection, treatment response assessment, recurrence monitoring, and risk stratification in pancreatic cancer, and is scalable to other heterogeneous solid tumors. Compared with imaging and CA19-9 surveillance, it enables earlier detection of micrometastasis and MRD, improving real-time clinical decision-making. It shows strong potential for AI-assisted diagnostics, IVD and companion diagnostics, supporting clinical translation and commercialization.



More Info ▲



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► EXHIBITED TECHNOLOGY

Blocker Eye: Image-Guided Smart Lung Isolation Catheter

► TECHNOLOGY INTRODUCTION

This technology upgrades OLV from "blind insertion and repeated bronchoscopic confirmation" to a "visualized, guided, and monitorable" smart lung isolation system. Through the integration of flexible catheters, movable guidance structures, miniature CMOS imaging, and displacement warnings, physicians can instantly confirm position of the cuff and quickly correct deviations, reducing surgical interruptions and airway risks, and establishing a new generation of smart airway management technology.

► INDUSTRIAL APPLICATIONS

This technology targets OLV pain points in thoracic surgery by integrating a disposable smart catheter, real-time imaging, and displacement alerts. It may reduce repeated bronchoscope intervention and surgical interruption while improving anesthesia safety and OR efficiency. The platform can expand to pediatric airway devices, AI image interpretation, and smart ICU monitoring, supporting spin-off creation, international licensing, and precision health commercialization.



▲ More Info



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EXHIBITED TECHNOLOGY

Uni-EM Navigation and Image Fusion System for Ultrasounds

TECHNOLOGY INTRODUCTION

A universal ultrasound electromagnetic needle-tip navigation workstation that uses AI to calibrate two unknown transformation matrices in real time, enabling cross-brand empowerment for the 98% "navigation-orphan" ultrasound systems and delivering mm-level 3D needle-tip navigation, multi-modal image fusion, and real-time misalignment warning.

INDUSTRIAL APPLICATIONS

Software-Defined Navigation Workstation: the same hardware activates either the K-number (Standard) standalone workstation or the K-number (Brand) brand-specific accessory based on the running software — on-demand multi-machine sharing amortizes cost, and Apps Market avoids repeated clearance — targeting the US\$24-billion navigation market.



More Info ▲

3D姿態雙邊賦能：硬體器械導航，軟體影像融合



商業邏輯：外掛共用達10倍經濟效益



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EXHIBITED TECHNOLOGY

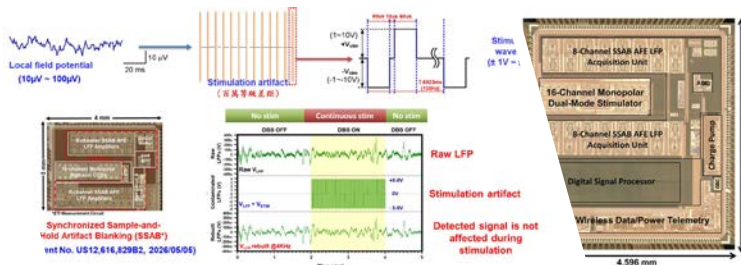
Synchronized Sample-and-Hold Stimulation Artifact Removal Technique for Intelligent DBS SoC to Achieve Precise Treatment of Parkinson's Disease

TECHNOLOGY INTRODUCTION

Addressing the sensing blind spots caused by stimulation artifacts in conventional closed-loop deep brain stimulation (DBS), our team integrates semiconductor with clinical medicine to develop an intelligent DBS system-on-chip (iDBS SoC) embedded with "Synchronized Sample-and-Hold Artifact Blanking (SSAB)" technology (US patent No. US12,616,829B2). iDBS utilizes the Parkinson's disease β oscillations as a biomarker to achieve precise treatment and real-time automated feedback stimulation.

INDUSTRIAL APPLICATIONS

The intelligent deep brain stimulation system-on-chip (iDBS SoC) breaks through the limitations of conventional DBS, which cannot perform simultaneous sensing and stimulation. Featuring our US-patented "Synchronized Sample-and-Hold Artifact Blanking (SSAB)" technology, it effectively resolves sensing blind spots. The iDBS system integrates sensing, computation, and stimulation into a single chip for autonomous operation, achieving low power consumption and precise treatment.



More Info ▲



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EXHIBITED TECHNOLOGY

GelAtlas: An Open–Close Hydrogel Microwell Organ-on-Chip Platform for Integrated Static and Dynamic 3D Tissue Drug Testing

TECHNOLOGY INTRODUCTION

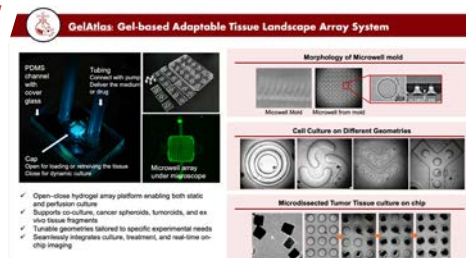
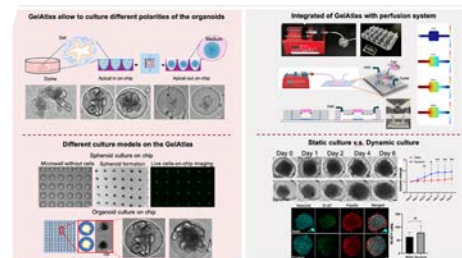
GelAtlas is an open–close hydrogel microwell platform for 3D tissue culture. Its addressable microwells maintain tumor spheroids, organoids, and tissue cuboids at defined locations, enabling long-term culture and longitudinal imaging. The platform switches between open culture and closed dynamic perfusion, and can be reopened after testing to recover tissues for downstream analysis, integrating culture, drug testing, and sample recovery within a single workflow.

INDUSTRIAL APPLICATIONS

GelAtlas initially targets research-use-only (RUO) 3D drug testing, supporting organoid and tumor tissue culture, dynamic drug testing, and longitudinal imaging in academic, CRO, and pharmaceutical R&D settings. Its modular design can further integrate with automated imaging and downstream molecular analysis. Looking ahead, GelAtlas has the potential to support New Approach Methodologies (NAMs) and more standardized preclinical drug development workflows.



More Info ▲



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EXHIBITED TECHNOLOGY

EphA2/EGFR Dual-Targeting Dual-Payload 2by2 ADC for Precision Cancer Therapy to Overcome Tumor Heterogeneity and Drug Resistance

TECHNOLOGY INTRODUCTION

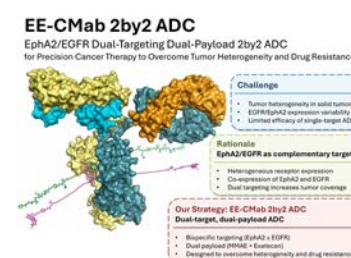
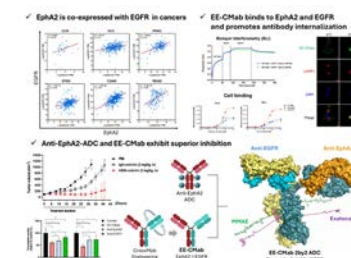
EE-CMab 2by2 ADC is a novel dual-targeting, dual-payload bispecific antibody-drug conjugate. By simultaneously recognizing EphA2 and EGFR, it precisely delivers MMAE and Exatecan. Combining tumor-selective targeting with multi-mechanistic cytotoxicity, this platform provides a breakthrough strategy to overcome tumor heterogeneity and drug resistance in cancer therapy.

INDUSTRIAL APPLICATIONS

EE-CMab 2by2 ADC addresses tumor heterogeneity and drug resistance through its innovative dual-targeting (EphA2/EGFR) and dual-payload (MMAE/Exatecan) architecture. This modular platform enhances therapeutic coverage and multi-mechanistic cytotoxicity. With strong First-in-class potential, it is optimized for global out-licensing and commercialization, positioning it as a leader in the next-generation precision oncology market.



▲ More Info



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► EXHIBITED TECHNOLOGY

DeepBT A+ Intelligent Brain Tumor MRI Reading Assistance System: Clinical Workflow Integration for Multi-task Lesion Analysis and Report Generation

► TECHNOLOGY INTRODUCTION

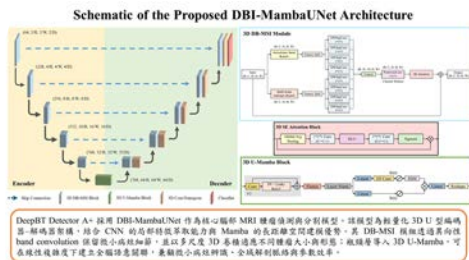
Detector A+, deployed on the Liger MedAI platform, is a brain MRI interpretation and reporting platform that detects suspected tumors, segments lesions, measures volume, localizes brain regions, and classifies five tumor types: neuroma, meningioma, brain metastasis, pituitary tumor, and glioma. Integrated with DICOM/PACS, it automatically selects T1W+C or T1W+C and T2W images for AI inference and, after physician confirmation, uses an LLM to draft reports, improving efficiency, consistency, and workflow integration.

► INDUSTRIAL APPLICATIONS

Detector A+, integrated with the Liger MedAI platform, supports radiology interpretation, premium health screening, neurosurgical preoperative assessment, radiation oncology planning, and brain tumor follow-up, improving brain MRI reading efficiency and report consistency. It can be integrated with PACS, AI PACS, imaging workstations, and clinical decision-support systems, enabling smart hospital deployment, medical device commercialization, on-premise implementation, and domestic or international market expansion.



More Info ▲



►► Bio-tech, New Drugs & Medical Devices

◆ National Science and Technology Council

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► EXHIBITED TECHNOLOGY

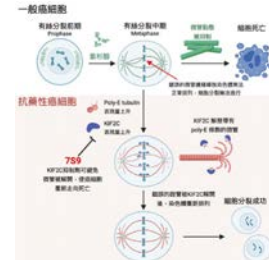
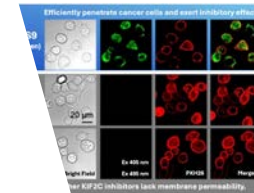
First-in-Class KIF2C Small-Molecule Inhibitors for Overcoming Tumor Multidrug Resistance

► TECHNOLOGY INTRODUCTION

7S9 is the first-in-class chemical inhibitor of KIF2C. By blocking microtubule depolymerization, 7S9 disrupts mitosis and induces apoptosis in chemoresistant cancer cells. 7S9 shows excellent cell penetration and cytotoxicity, boosting the efficacy of various chemotherapeutic agents by 5- to 200-fold. As the only chemosensitizer with high combination potential, 7S9 holds promising therapeutic impacts across female cancers.

► INDUSTRIAL APPLICATIONS

Targeting the global \$12.8 billion TNBC market, 7S9 is the only chemosensitizer on the market that combines high formulation compatibility with broad applicability, effectively enhancing the efficacy of chemotherapeutic agents. 7S9 can be developed as an oral drug and, in the future, expanded to multiple gynecologic cancers. Therefore, the application of 7S9 in tumor multidrug resistance holds substantial niche value and commercial opportunity, contributing to improved patient survival rates.



	7S9	Cd / analogues	DHP	SQAOs
Selective Inhibition	✓	ND	×	×
Cell Permeability	✓	×	×	×
SAR Validation	✓	×	×	×
In Vivo Animal Validation	✓	×	×	×
Predictical Development	Ongoing	×	×	×



▲ More Info



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EXHIBITED TECHNOLOGY

An automated microfluidic system for detecting cholangiocarcinoma cells in bile for early diagnosis and prognosis

TECHNOLOGY INTRODUCTION

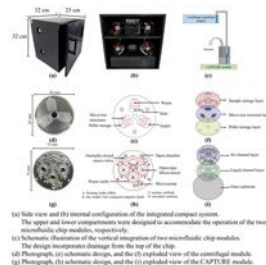
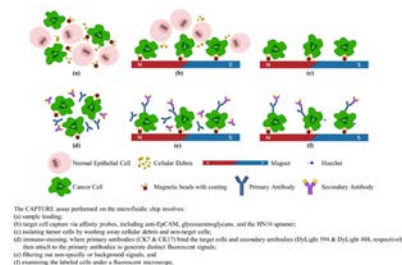
The automated microfluidic system enables early cholangiocarcinoma diagnosis using 1 mL bile in 3 hours. Integrating centrifugal and "CAPTURE" module, it uses anti-EpCAM, octasaccharides, and aptamers for triplex cross-validation. An over-100-case clinical single-blind trial achieved 92% accuracy, 93% sensitivity, and 88% specificity. By detecting cancer cells in inflammation-only patients, this low-cost, compact desktop device offers immense commercialization potential and clinical value.

INDUSTRIAL APPLICATIONS

To overcome imaging limits in early cholangiocarcinoma detection, we developed an automated microfluidic diagnostic system. An over-100-case single-blind trial achieved 92% accuracy, 93% sensitivity, and 88% specificity, successfully detecting cancer cells in patients previously diagnosed with severe inflammation. Using low-cost PDMS chips, this compact system delivers results in 3 hours. It is ideal for routine hospital health checks, offering immense commercial value for precision health.



More Info ▲



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EXHIBITED TECHNOLOGY

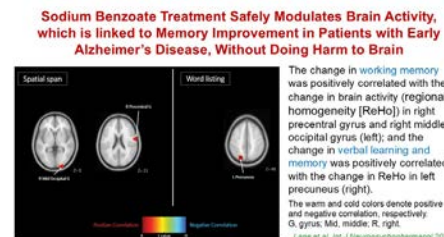
Rapid, safe, and efficacious novel therapy for Alzheimer's disease

TECHNOLOGY INTRODUCTION

Alzheimer's disease (AD) is a complex disease with multiple causes. Current drugs are unsafe and ineffective. This technology is a world-leading invention of a novel multi-target therapy for AD. Our team's trials have found that sodium benzoate can rapidly, safely, and effectively improve the cognition and overall function of patients with early AD through multiple actions, including enhancing NMDA receptor function, regulating sex hormones, increasing endogenous antioxidants, and reducing Aβ.

INDUSTRIAL APPLICATIONS

The dementia market is huge, and new drugs are urgently needed. This technology, leading globally, provides a new approach for Alzheimer's disease (AD). It is likely to benefit AD patients and to raise Taiwan's international visibility. This technology has great potential to be approved as a novel treatment for dementia in the future. The product also has the opportunity to be marketed globally, not only increasing employment opportunities but also promoting the development of related new drugs.



More Info ▲

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EXHIBITED TECHNOLOGY

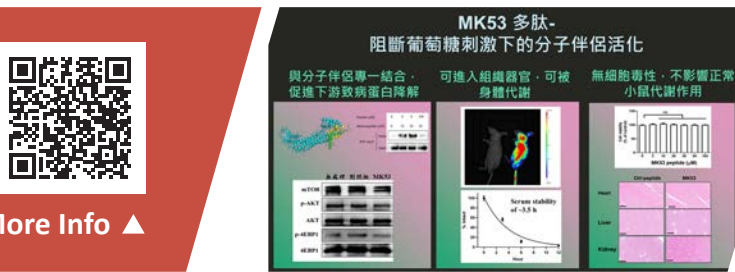
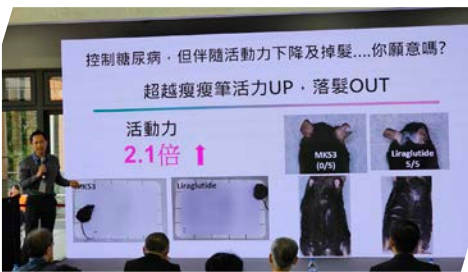
MK53 Peptide: Innovative Translational Applications for Type 2 Diabetes Mellitus and Its Comorbidities

TECHNOLOGY INTRODUCTION

MK53 is a novel, self-developed peptide designed to rectify metabolic imbalances by antagonizing ApoJ's chaperone activity. MK53 facilitates the degradation of pathological proteins and restores lipophagy. Preclinical data confirm its efficacy in lowering blood glucose, improving insulin sensitivity, and mitigating hepatic/renal lipotoxicity. With a high-purity synthesis platform and multi-national patents, MK53 offers high potential for both injectable and oral drug development.

INDUSTRIAL APPLICATIONS

MK53 targets critical clinical gaps in integrated metabolic therapy through its pioneering ApoJ modulation mechanism, fundamentally addressing comorbidities like T2DM, NAFLD, and nephropathy. Demonstrating robust preclinical translational energy and precision medicine value, its market potential spans high-growth sectors, including biopharmaceuticals, chronic care, and metabolic health management systems.



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EXHIBITED TECHNOLOGY

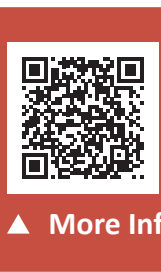
CatiPep® from Taiwan: An AI-Engineered Peptide with Clinical Translation and Commercialization Potential for Precision Osteoarthritis Therapy with Global Competitiveness

TECHNOLOGY INTRODUCTION

This Taiwan-first, AI-driven peptide drug development platform, centered on CatiPep®, integrates multi-omics analysis with mechanism-guided design. Supported by intellectual property protection and validated in large-animal goat preclinical studies, it promotes cartilage regeneration and suppresses inflammation. The platform is designed for disease-modifying osteoarthritis (DMOAD) and holds strong potential for clinical translation and commercialization.

INDUSTRIAL APPLICATIONS

This technology establishes an AI-driven peptide drug development platform centered on CatiPep®, addressing key industry challenges in osteoarthritis (OA), including the lack of disease-modifying therapies and low development efficiency. It is applicable to new drug development, clinical medicine, and veterinary markets, enhancing development efficiency, therapeutic efficacy, and scalability, while reducing costs and translational risks, demonstrating strong clinical and commercial potential.



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EXHIBITED TECHNOLOGY

EXHIBITED TECHNOLOGY

On-ear vagus nerve electrical stimulator for improving functional ileus after gastrointestinal surgery

AAV-based Gene Therapy for Hereditary Hearing Loss

TECHNOLOGY INTRODUCTION

TECHNOLOGY INTRODUCTION

This product is a non-invasive transcutaneous auricular vagus nerve stimulator (taVNS) that incorporates electrical neuromodulation technique. The working mechanism is that the taVNS, through the electrodes attached at the choncha and tragus, electrically stimulates the afferent branch of vagus nerve and, therefore, increases the parasympathetic tone to solve a long-standing and annoying clinical problem, the postoperative ileus.

Using high-inner-ear-tropism AAV vectors, this technology delivers therapeutic genes for Taiwan- and Asia-relevant hereditary hearing-loss genes, including SLC26A4 and PJKV. In mouse models, it improved auditory and balance functions while protecting hair cells and ganglion neurons, overcoming the limits of electronic devices that cannot restore biological hearing. It offers a one-time precision gene therapy platform for hereditary hearing loss.

INDUSTRIAL APPLICATIONS

INDUSTRIAL APPLICATIONS

Our technique, taVNS, targets postoperative ileus. It facilitates gastrointestinal motility and reduces the ileus recovery time and the days of hospitalization. Compared to the current therapy, mainly supportive, our technique has definite clinical benefits and reduces overall care costs. It can be integrated into the process of ERAS and can be applied to the postoperative care domain in the hospitals. The business models include sales of consumables and services of treatment course.

Current therapies for hereditary hearing loss rely on electronic devices and cannot correct the underlying pathology. This technology uses novel AAV vectors to precisely augment SLC26A4, common in Asian populations, and PJKV, associated with auditory neuropathy. Mouse studies show inner ear gene delivery that improves hearing and balance, supporting technology licensing and clinical translation.

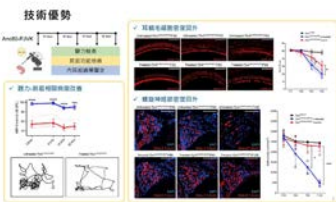
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EXHIBITED TECHNOLOGY

Efficient lung delivery and tumor penetration of boron neutron capture therapy

TECHNOLOGY INTRODUCTION

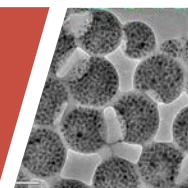
We developed the world's first Functionalized Lung-targeting Lipid Nanoparticle (F-LNP) platform for lung cancer BNCT. The smart nanoparticle selectively delivers boron-10 drugs into lung tumors with deep tumor penetration. Triggered by the acidic tumor microenvironment, F-LNP enhances cellular uptake and enables precise alpha-particle-mediated cancer cell destruction after neutron irradiation, offering a highly targeted and low-toxicity therapy for advanced lung cancer.

INDUSTRIAL APPLICATIONS

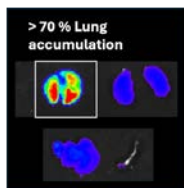
This technology overcomes the key limitation of BNCT in lung cancer by enabling efficient boron delivery and deep tumor penetration in lung tissues. It has strong potential for advanced lung cancer and metastatic tumor radiotherapy, and can be further expanded to pulmonary RNA therapeutics and gene delivery applications. The platform also offers high commercialization and global licensing potential within the rapidly growing BNCT market.



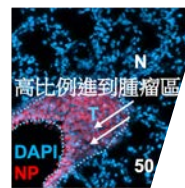
More Info ▲



Functional Solid Lipid NPs
Engineered for lung-specific delivery and tumor penetration



Lung Target
Efficient lung accumulation and BPA-complex delivery



Tumor Selective
Localized accumulation sites for BPA delivery



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EXHIBITED TECHNOLOGY

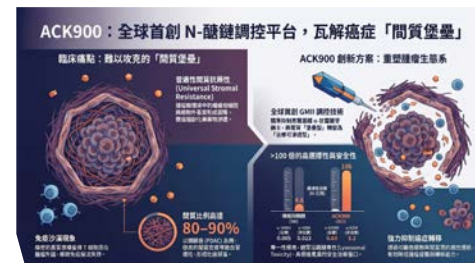
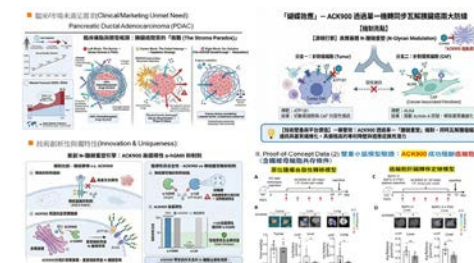
ACK900: A First-in-Class Therapeutic N-Glycan Modulation Platform for Stromal Reprogramming and Universal Stromal Resistance Remodeling

TECHNOLOGY INTRODUCTION

ACK900 is a first-in-class Therapeutic N-Glycan Modulation Platform that reprograms tumor stroma and fibrotic tumor microenvironments through precision N-glycan modulation. By overcoming "Universal Stromal Resistance," ACK900 converts therapy-resistant "stromal fortress tumors" into "therapy-permissive tumors," enabling enhanced combination therapy and anti-metastatic efficacy across fibrosis-associated solid tumors.

INDUSTRIAL APPLICATIONS

ACK900 is a first-in-class Therapeutic N-Glycan Modulation Platform that reprograms tumor stroma and fibrotic microenvironments through precision N-glycan modulation. By overcoming Universal Stromal Resistance, ACK900 enhances drug penetration, suppresses metastasis, and improves chemotherapy, targeted therapy, and immunotherapy efficacy. The platform has translational and commercial potential for stromal-resistant solid tumors, including PDAC, HCC, TNBC, gastric, and lung cancers.



More Info ▲





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► EXHIBITED TECHNOLOGY

Deep-Ultraviolet High-Entropy LED Light Engine: A Precision Photomedicine System for Brain Tumors

► TECHNOLOGY INTRODUCTION

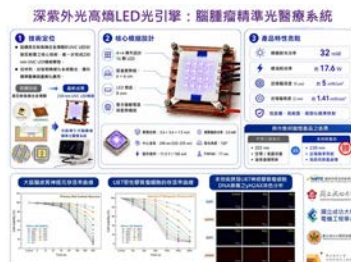
This technology uses Al-Zn-Co-Ni high-entropy reflective films to overcome deep-UV LED packaging bottlenecks, integrating a 230 nm UVC-LED with the LumiTraceX light-guided system. Supported by domestic and international invention patents and an NT\$5 million technology and patent transfer, hospital validation shows selective U87 tumor-cell inhibition, neuronal protection, and E. coli inactivation, advancing a precision photomedicine device system for surgery.

► INDUSTRIAL APPLICATIONS

This technology centers on a light-guided precision medical system for malignant brain tumors, integrating a 230 nm UVC source, adjustable optical dose, and fiber-optic treatment end for post-resection neurosurgical cavities to treat residual lesions locally and disinfect surgical sites in real time. Supported by hospital U87/neuron/E. coli data and an NT\$5 million technology and patent transfer with a major light-source module company, it upgrades precision medical devices for operating rooms.



More Info ▲



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► EXHIBITED TECHNOLOGY

COCHLEAR IMPLANTABLE CATHETER AND CELL DELIVERY DEVICE

► TECHNOLOGY INTRODUCTION

The device comprises a flexible, implantable catheter body and a delivery module. The central lumen of the catheter body can be loaded with therapeutic agents. The outer surface of the catheter features a guide groove that facilitates bending and implantation along the cochlear spiral structure. Multiple perforations in the catheter's outer surface connect to the central lumen, enabling the controlled, precise release of cells and agents under pressure from the delivery module.

► INDUSTRIAL APPLICATIONS

1. Smart Medical Devices: Combining regenerative repair with cochlear implants to improve hearing and providing customized catheter sizes to meet different needs.
2. Regenerative Medicine: Act as a standardized platform for the precise delivery of stem cells and gene vectors, maximizing efficacy while minimizing tissue trauma.
3. R&D & Diagnostics: Serve as an in vivo tool for pharmacokinetic testing and support "reverse sampling" of perilymph for advanced proteomic and diagnostic analysis.

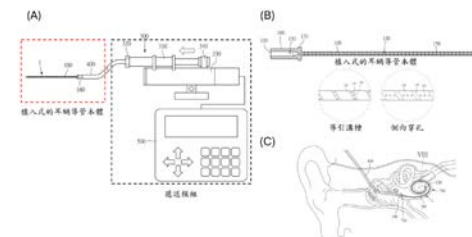
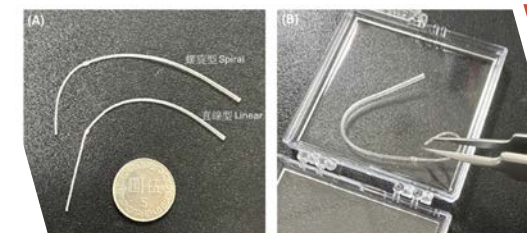


圖1: (A)耳蝸植入導管(紅色虛線方形框)及其連接模組(黑色虛線方形框)示意圖；(B)耳蝸導管的中心腔室及其外表面導引溝槽與側孔的設計；(C)耳蝸導管植入人體內耳耳蝸後可能發達處於耳蝸圖的示意圖。



4)兩款(螺旋型與直線型)耳蝸植入導管的實體圖；(B)具備高度可撓性的耳蝸植入導管操作示意圖。



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EXHIBITED TECHNOLOGY

A Tumor-Activated Immunocytokine Platform to Overcome Immune Checkpoint Resistance and Expand the Therapeutic Window of Cancer Immunotherapy

TECHNOLOGY INTRODUCTION

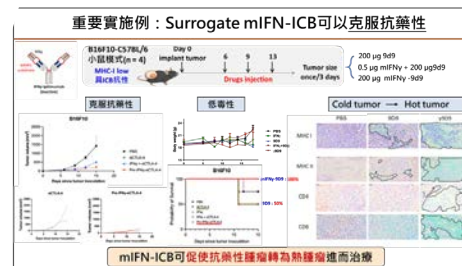
This technology develops a tumor microenvironment-activated immunocytokine platform using a dual-masking design that maintains low activity in normal tissues and selectively restores therapeutic function within tumors. This approach reduces the systemic toxicity of cancer immunotherapy while enhancing therapeutic efficacy against cold tumors and immune checkpoint-resistant cancers, demonstrating strong potential as a next-generation cancer immunotherapy and tumor-targeted therapeutic platform.

INDUSTRIAL APPLICATIONS

This technology addresses key limitations of current cancer immunotherapy, including low response rates in cold tumors and systemic toxicity. The IFN α -ICB platform enables tumor-selective activation to enhance antitumor immunity while reducing off-target toxicity. Its modular design supports multiple ICB targets and cytokine combinations, offering strong potential for pharmaceutical co-development, platform licensing, and next-generation immunocytokine applications.



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EXHIBITED TECHNOLOGY

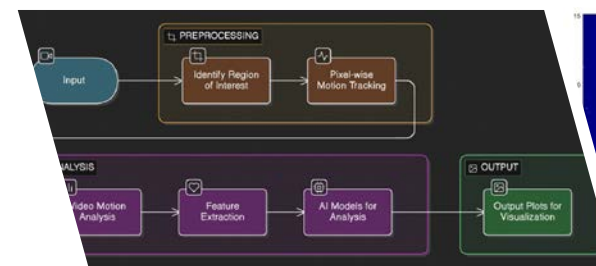
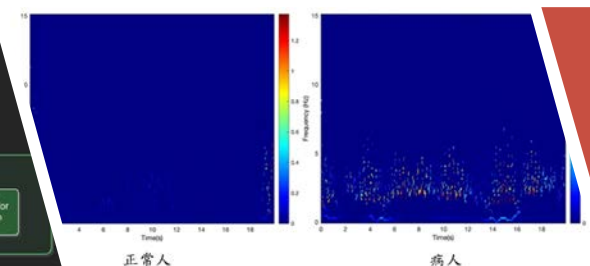
Novel AI Video Technologies for Detection of Heart Valve Diseases

TECHNOLOGY INTRODUCTION

We propose the world's first screening technology for heart valve diseases using a video camera. This technology uses AI video motion analysis to perform feature extraction and quantitative analysis. The screening process only requires a 20-second video clip from the subject's neck, with screening results completed in just five minutes. It provides the general public with rapid, accurate and affordable screening and can become the first-line of defense for preventive healthcare in the future.

INDUSTRIAL APPLICATIONS

Heart valve disease is a major cause of death, with 30 million patients worldwide. Currently, cardiac ultrasound is used for detection, but it is expensive and requires medical professional to operate. As a result, only symptomatic patients are qualified to test. Our technology is simple and quick. Anyone can operate it, which greatly lowers the bar to benefit the general public. In the future, we plan to work with health centers, hospitals, clinics, and pharmacies. The market potential is huge.



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EXHIBITED TECHNOLOGY

Ceria-based Antioxidative and Immunomodulatory Therapeutic Platform (CeAITP)

TECHNOLOGY INTRODUCTION

This technology establishes a long-lasting antioxidative and immunomodulatory platform using 20–30 nm CeO₂ with self-regenerating Ce³⁺/Ce⁴⁺ redox cycling. The platform scavenges ROS and inhibits NF-κB signaling. Animal studies demonstrate significant improvements in bladder pain and urinary frequency, as well as restoration of muscle strength and quantity in sarcopenia models. ISO 10993 safety validation and GMP manufacturing processes are completed, demonstrating commercialization potential.

INDUSTRIAL APPLICATIONS

This technology provides a long-acting antioxidative and immunomodulatory therapeutic platform for interstitial cystitis, sarcopenia, and other chronic inflammatory diseases. Compared with current short-acting analgesic and anti-inflammatory therapies, it offers disease-modifying and tissue-repair potential. With ISO 10993 safety validation and GMP manufacturing established, it supports commercialization through licensing, technology transfer, co-development, or startup formation.

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EXHIBITED TECHNOLOGY

Intelligent Precision-Adjustable Multi-Step Eccentric Rotational Instrument for Femoral Head Debridement

TECHNOLOGY INTRODUCTION

Taiwan currently lacks dedicated instruments for femoral head decompression surgery, with most procedures relying on curettes or imported devices that risk incomplete debridement and blade fracture. Our team developed Taiwan’s first “Smart Precision Adjustable Multi-Step Eccentric Rotational Femoral Head Debridement Instrument,” featuring multi-step eccentric expansion and a solid blade-head for precise debridement. The product has completed validation, patent transfer, and TFDA review.

INDUSTRIAL APPLICATIONS

This technology is the first developed in Taiwan to address incomplete debridement, blade fracture, and the high cost of imported devices, offering advantages in precision, safety, and efficiency. The product can be integrated with PRF centrifuge kits, sticky bone injectors, and artificial bone grafts to establish a precision treatment kit with greater cost competitiveness. The technology also has applications in orthopedics, spine surgery, sports medicine, and bone tumor debridement.



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EXHIBITED TECHNOLOGY

Smart Anti-Inflammation: Personalized Precision Treatment Testing for Rheumatoid Arthritis

TECHNOLOGY INTRODUCTION

Using multi-omics technology & big data analysis, we identified novel biomarkers & integrated into one-stop diagnostic platform (ELISA & multiplex PCR), which can obtain results within 4 hours. "Smart Anti-Inflammation" testing enables precision treatment with JAKi and maximizing clinical benefits. The product has been granted two domestic patents, won the 2024/2025 National Innovation Award and 2025 Taipei Biotech Awards completed a global patent layout, showing strong market competitiveness.

INDUSTRIAL APPLICATIONS

Smart Anti-Inflammation is the world's first platform predicting JAK inhibitor response in RA patients, targeting a \$2.6B global market. Entering via LDTs to bridge diagnostics and clinical use, it delivers high pharmaco-economic value to health insurance systems, medical centers, and patients by maximizing efficacy and reducing waste. Our core technology is protected by a Taiwanese patent and a comprehensive PCT international patent portfolio, ensuring a solid foundation for global expansion.

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EXHIBITED TECHNOLOGY

Onsite diagnosis of biopsies using rapid fresh pathology

TECHNOLOGY INTRODUCTION

Conventional pathology requires days for diagnosis, while frozen-section analysis suffers from freezing artifacts and tissue loss. We developed Rapid Fresh Pathology (RFP), integrating H&E whole-mount staining with the PATHOScope PS100 for real-time imaging. The platform images fresh tissues without freezing or sectioning while maintaining high resolution. RFP has been validated across more than 1,500 surgical specimens and 500 biopsy specimens, achieving diagnostic accuracies of 95–100%.

INDUSTRIAL APPLICATIONS

Rapid Fresh Pathology (RFP) enables rapid intraoperative diagnosis by generating high-resolution digital pathology images from fresh tissues without freezing or physical sectioning. The platform significantly reduces diagnostic time while preserving biopsy tissues for downstream molecular analysis. RFP is particularly valuable for lung cancer surgery, small biopsies, and precision medicine applications, with strong potential for widespread clinical deployment and future smart surgical workflows.

More Info ▲

Smart Anti-Inflammation: Personalized Precision Treatment Testing for Rheumatoid Arthritis

Smart Anti-Inflammation: Core Technology and Clinical Application

Onsite diagnosis of biopsies using rapid fresh pathology

Real-time Remote Digital Pathology Workflow

More Info ▲

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EXHIBITED TECHNOLOGY

A Multimodal Biosensing System-on-Chip with Integrated Wireless Transceiver and Power Management for Stress Monitoring

Ultra-High Density FinFET Dielectric RRAM in Advanced FinFET CMOS Logic Process

TECHNOLOGY INTRODUCTION

This work presents a 0.18- μm CMOS multimodal biosensing SoC for stress monitoring. It integrates ECG, PPG, GSR, and ECH AFEs, a 920-MHz WuRx, a 2.4-GHz Tx, and a PMU for long-term wearable use. Key techniques include a shared CBIA for ECG/ECH, an enhanced pre-charge method for PPG, and automatic feedback adjustment for GSR. The chip achieves 0.32 μVrms IRN, 130 dB CMRR, 113.9 dB PPG DR, 99 dB GSR DR, and 125.8 μW total AFE power.

With the increasing demand for eNVM in HPC, AI, and IoT systems, this project develops FinFET Dielectric RRAM (FinD RRAM) compatible with advanced FinFET CMOS logic processes. Utilizing the MG oxide dielectric as resistive switching layer, FinD RRAM requires no additional masks or process steps, while offering low power consumption, high-speed operation, high reliability, and strong potential for high-density 1.5T NOR and 1D1R crosspoint array design. This technology is a very promising solution for future eNVM applications in advanced FinFET CMOS logic platform.

INDUSTRIAL APPLICATIONS

This work can be applied to smart rings, wristbands, patches, and other wearable devices. It addresses the limited sensing coverage, high power consumption, and low integration of current stress-monitoring products by integrating multimodal biosignal sensing, wireless communication, and power management into a single chip. It is well suited for digital health, remote healthcare, homecare, and next-generation wearable medical electronics.

This FinD RRAM has been verified in TSMC 16, 7, and 5nm FinFET CMOS logic processes without extra masks or custom steps. With 1.5T NOR and 1D1R high-density arrays, it improves memory density and reduces cell area, making it suitable for logic eNVM, code storage, CPU, and AI memory applications.

More Info ▲

QR Code

Multimodal Biosensors
ECG, ECH, PPG, GSR,
1. ECG & ECH: shared CBIA
2. PPG: enhanced pre-charge

Wireless Communication
Tx, WuRx

Power Management
PMU

ECG – Patch Electrode

GSR – Ring-Type Electrode

PPG – Reflective Optical Probe

Sensing Platform
SoC

7nm FinD RRAM – Device Structure & Operation

5nm 1D1R FinD RRAM – Structure & Sneak-Current Control

More Info ▲

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EXHIBITED TECHNOLOGY

Mass-Produrable Light Field AR Display and Calibration Technology

Heterogeneous Integration Productivity Optimization via Multi-AI Agent and Digital Twin Technology to Empower More-than-Moore

TECHNOLOGY INTRODUCTION

Our light field (LF) AR display delivers continuous focal depth and natural viewing experience without the vergence-accommodation conflict. Moreover, our technology integrates the LF optical engine design, module calibration, and rendering engine to compensate for assembly errors. This integrated approach enables our light field AR display to go beyond prototype and become mass producible.

This technology integrates Multi-AI Agents and Digital Twin platforms to address the high-coupling challenges for heterogeneous integration. By synergizing related core modules including Capacity Allocation, Lot-Start Optimization, and Cycle Time Reduction via Quantum Annealing and Reinforcement Learning technologies for global orchestration of decisions. This solution can enhance smart manufacturing from experience-based to data-driven and AI-empowered to enhance decision resilience and competitive advantage for Blue Lakes Strategy.

INDUSTRIAL APPLICATIONS

By integrating optical engine design, module calibration, and the rendering engine, our technology establishes a practical productization pathway for LF AR from prototypes to commercial devices. Our LF display technology provides more comfortable visual experience and accurate depth perception, making it suitable for a wide range of applications, including healthcare, industrial use, education, and remote collaboration.

This technology will integrate digital twins and multi-agent AI agents to support cross-site capacity allocation, high-frequency line-change scheduling, and supply chain risk simulation to empower heterogeneous integration contexts including IC substrate and advanced packaging. Through real-time simulation and intelligent decision for smart manufacturing, the system can enhance resource utilization, delivery accuracy, and production resilience to enhance vertical integration.



More Info ▲

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EXHIBITED TECHNOLOGY

Development of Low-Power, Low-Latency Edge Intelligent Sensing Chips Using Embedded Analog Flash Programming for Event-Driven Sensing and Analog Recurrent Neural Networks with Direct Analog-to-Token Conversion

TECHNOLOGY INTRODUCTION

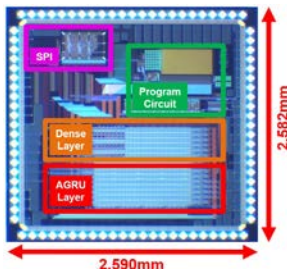
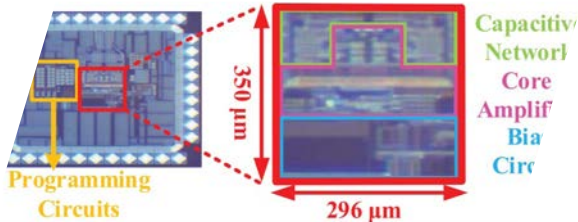
We develop fast-programming technology for embedded analog flash memories to design event-driven adaptive sensing front-end integrated circuits and an analog recurrent neural network chip that directly converts continuous-time analog sensor waveforms into tokens, eliminating the latency and power consumption associated with quantization and digital data movement. It meets edge-intelligent sensing requirements with ultra-low power, low-latency, and high-performance capabilities, suitable for wearable healthcare, industrial IoT, and autonomous vehicles.

INDUSTRIAL APPLICATIONS

This technology leverages flash memory and CMOS process to realize low-power, low-latency event-driven adaptive sensing circuits and an analog recurrent neural network chip, which directly processes continuous analog sensor signals and removes the power and latency bottlenecks caused by ADCs and data movement. It is suited for smart healthcare, edge IoT, autonomous vehicles, intelligent robotics, and industrial automation, enabling long-term monitoring, real-time alerts, and efficient edge inference.



More Info ▲



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EXHIBITED TECHNOLOGY

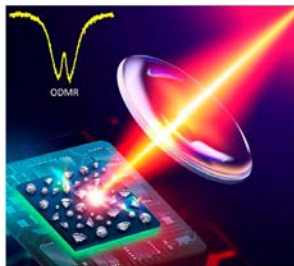
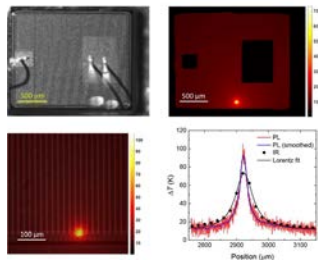
Quantum Sensing with Fluorescent Nanodiamonds for Advanced Semiconductor Applications

TECHNOLOGY INTRODUCTION

This technology utilizes electrospray deposition to coat ultrathin fluorescent nanodiamond films onto semiconductor devices. By integrating lock-in photoluminescence thermography and optically detected magnetic resonance, it enables nanoscale, real-time temperature and magnetic field sensing of operando devices. Achieving a hotspot localization precision of 30 nm, the method outperforms conventional infrared thermography, clearly demonstrating the advantages of quantum sensing technology.

INDUSTRIAL APPLICATIONS

Targeting advanced semiconductor thermal management and leakage localization, this technology provides a non-destructive, real-time, high-resolution failure-analysis tool. It enables nanoscale hotspot detection for both pre-packaging wafer-level defect screening and post-packaging thermal evaluation under real loads. Capable of upgrading or replacing current IR thermography, it helps foundries and IC designers shorten R&D cycles and significantly boost manufacturing yields.



More Info ▲

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EXHIBITED TECHNOLOGY

Ultra-Low-Thermal-Budget Cu/Dielectric Hybrid Bonding Using Area-Selective Metal Passivation Technology

TECHNOLOGY INTRODUCTION

Ultra-low-thermal-budget Cu/Dielectric hybrid bonding using area-selective metal passivation technology was developed based on diffusion theories. Metal passivation can achieve an ultra 120°C bonding temperature, even near room temperature under certain condition, with excellent bonding strength. Both Cu/SiO₂ and Cu/Polymer hybrid bonding were further demonstrated with the advantages of dishing compensation, excellent electrical characteristics (10⁻⁹ Ω·cm²), and JEDEC-qualified reliability.

INDUSTRIAL APPLICATIONS

By integrating Ag/Au passivation and area-selective technologies, this technology can be applied to both Cu/SiO₂ and Cu/Polymer hybrid bonding platforms. Through the suppression of Cu oxidation, the bonding temperature can be reduced to 120°C or even near room temperature, while enabling ultra-fast bonding within 10 seconds. The technology demonstrates excellent electrical performance with ultra-low contact resistance (10⁻⁹ Ω·cm²) and has successfully passed reliability verification.

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EXHIBITED TECHNOLOGY

CFETs and beyond

TECHNOLOGY INTRODUCTION

Transistor stacking is a key approach for extending advanced technology nodes. This technology demonstrates monolithic split-gate CFETs and 3-tier transistor stacking for design flexibility and area scaling. By enabling independent gate control and 3-tier transistor stacking, it improves circuit flexibility, supports threshold-voltage tuning, and realizes half-SRAM and tri-state inverter circuits with potential for advanced logic transistors.

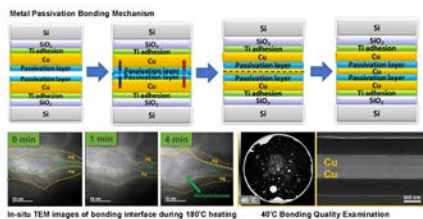
INDUSTRIAL APPLICATIONS

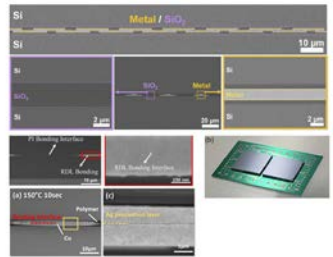
This technology improves PPA efficiency and extends Moore’s Law through monolithic transistor stacking. By using split-gate CFETs and 3-tier transistor stacking, it reduces cost, enhances design flexibility, enables threshold-voltage tuning, and realizes advanced logic devices with higher density, lower power consumption, and smaller area.

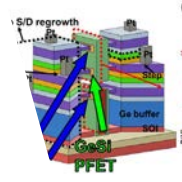
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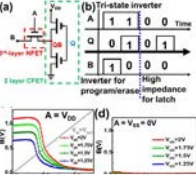
Metal Passivation Bonding Mechanism







(a) Tri-state inverter

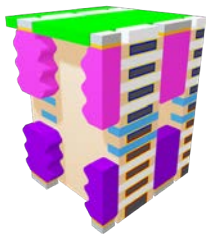


(b) Inverter for High program/erase impedance for latch



(c) NFET, PFET, Middle PFET, Bottom NFET





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Booth FF08

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EXHIBITED TECHNOLOGY

Together We Go Far: Long-distance multi-hop drone transmission system: integrating software radio and artificial intelligence

TECHNOLOGY INTRODUCTION

In order to increase the effective communication range, the research will extend from a single drone system to a multi-relay point (Multi-Hop) architecture. In addition, the research also applied the technology to Multi-Hop UAVs long-distance communication by using software-defined radio (SDR) to change its transmission protocol, frequency band, and modulation technology through software, so as to achieve dynamic perception and adaptive adjustment of interference.

INDUSTRIAL APPLICATIONS

This system uses multi-hop UAVs and SDR technology to establish aerial communication links in disaster/war zones without network infrastructure, transmitting high-definition imagery and supporting AI analysis for enhanced decision-making. Applied in earthquake, landslide rescue, and defense reconnaissance, it offers high scalability and flexibility. Aligned with 6G resilient communication trends, it strengthens Taiwan's disaster response and tech industry competitiveness.



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EXHIBITED TECHNOLOGY

OPC+ Universal Cloud Mask Correction Platform: GPU-Accelerated Computational Lithography as a Service Across i-line, KrF, ArF, and Silicon Photonics

TECHNOLOGY INTRODUCTION

OPC+ is the world's first universal cloud OPC platform spanning i-line, KrF 248nm, and ArF 193nm while natively supporting silicon photonics, metalenses, and metasurfaces from a single GPU-accelerated engine. Its CUDA Multi-Stream architecture delivers >50x speedup over CPU tools, and three modes (public, private, hybrid) remove multi-million-dollar EDA licensing barriers. Validated by a completed TSRI KrF 248nm tapeout, with tools under evaluation by ITRI, TSMC, and Texas Instruments.

INDUSTRIAL APPLICATIONS

OPC+'s three deployment modes—public, private, and hybrid cloud—serve SME foundries, fabless design houses, silicon-photonics startups, mask shops, and universities. Confirmed engagements include a TSRI private-cloud server (Q4 2026), TSMC and Texas Instruments tool evaluation, completed MRAM mask correction for a Japanese company, and silicon-photonic validation with the University of Southampton.



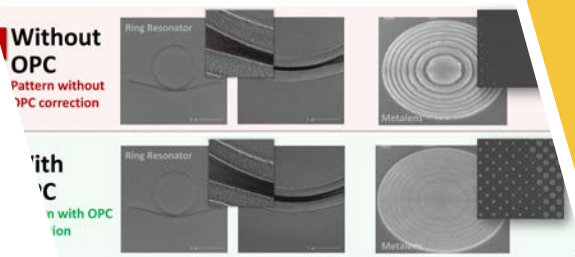
OPC+ Server

Flexible, Optimized, Scalable

Public Cloud
Access our 12+ GPU cluster with optimal job scheduling

Private Cloud
Custom on-premises deployment for maximum IP security

Hybrid Cloud
Combine public resources with private infrastructure



▲ More Info



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► **EXHIBITED TECHNOLOGY**

34.1 Tb/s megabit-level next-generation silicon photonics optical communication technology for AI data centers

► **TECHNOLOGY INTRODUCTION**

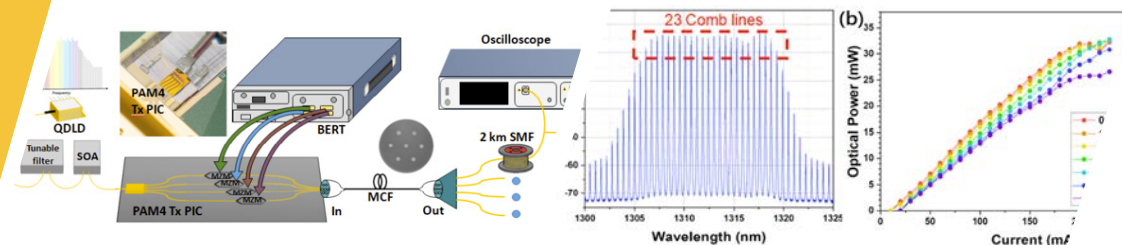
This technology integrates silicon photonic MZM, ultra-wideband QDLD, and MCF to achieve optical transmission up to 34.132 Tb/s. By utilizing a single comb laser source with multiplexing architectures, the system improves bandwidth density while reducing power consumption and packaging complexity. The technology is CMOS-compatible and suitable for mass production, making it promising for AI data centers, CPO, and next-generation high-speed optical interconnects.

► **INDUSTRIAL APPLICATIONS**

This technology addresses key challenges in AI data center interconnects, including limited bandwidth, high power consumption, and packaging density constraints. By integrating silicon photonics with a single QDLD architecture, the system enhances transmission capacity while reducing complexity. With CMOS-compatible manufacturing, the technology offers strong scalability and commercialization potential for CPO, optical transceivers, switches, and next-generation optical communication systems.



More Info ▲



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EXHIBITED TECHNOLOGY

LLM-Driven Lightweight AI Intrusion Prevention System for Industrial IoT

TECHNOLOGY INTRODUCTION

This technology pioneers an asymmetric AI architect

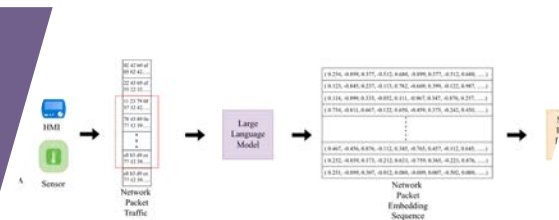
ure for IIoT. It uses an LLM to extract the semantics of complex industrial packets, then deploys a lightweight LSTM onto ORing's edge switches for real-time inference. Achieving a 0.99 F1-score, it blocks zero-day attacks without false positives. Additionally, its red teaming engine serves as an automated compliance tool, helping vendors meet CRA requirements and pass SEMI E187 certification.

INDUSTRIAL APPLICATIONS

Resolving the critical "false positive downtime" in OT environments, our technology has integrated with leading networking manufacturer ORing, embedding edge AI directly into industrial switches with no changes to existing machinery. Additionally, our red teaming engine functions as an automated compliance testing tool. This helps Taiwanese smart manufacturing and OT equipment vendors meet CRA requirements and pass SEMI E187 certification for global market export.



More Info ▲



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EXHIBITED TECHNOLOGY

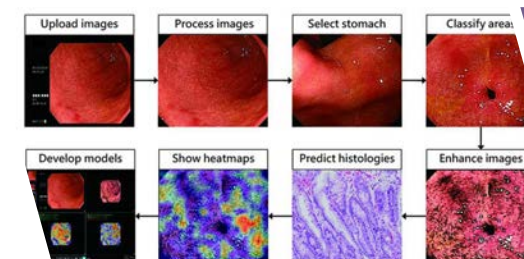
Deep Learning-Assisted Diagnosis of Helicobacter pylori Infection, Precancerous Gastric Lesions, and Gastric Cancer Risk Using Routine Upper Endoscopy Images

TECHNOLOGY INTRODUCTION

Upper endoscopy is a widely used screening tool. However, findings are often reported simply as "gastritis," without scientifically grounded evaluation. Large volumes of images are stored without effective utilization. Helicobacter pylori infection is frequently overlooked, and precancerous lesions are not assessed. This deep learning system can assist in detecting H. pylori infection and precancerous gastric conditions, supporting appropriate follow-up management and clinical recommendations.

INDUSTRIAL APPLICATIONS

Helicobacter pylori screening has been adopted as the national preventive health strategy in Taiwan and promoted worldwide for gastric cancer, making upper endoscopic imaging highly prevalent, with gastritis being a common diagnosis. Through integrating deep learning technologies, this innovation is developed into a practical, real-world solution, with feasibility already demonstrated in different settings. The system can provide rapid results and enabling efficient use in clinical practice.



More Info ▲

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EXHIBITED TECHNOLOGY

Pioneering Solution for Early Pancreatic Cancer Detection: PanMETAI — An Integrated ¹H NMR Metabolomics and AI Diagnostic Platform

TECHNOLOGY INTRODUCTION

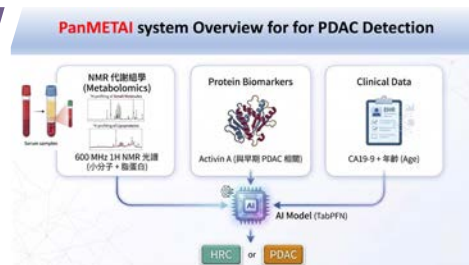
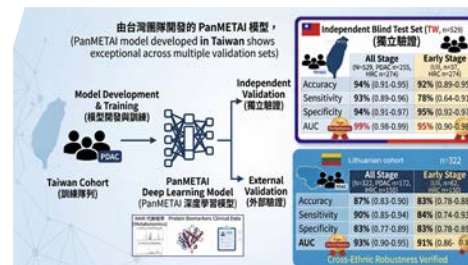
PanMETAI integrates ¹H NMR metabolomics with next-gen AI to provide a non-invasive, precision early screening solution for pancreatic cancer. Overcoming early detection barriers, it achieves a remarkable AUC of 0.95 for Stage I/II lesions. Backed by cross-national validation, standardized scalability, and a publication in Nature Communications, this pioneering platform holds immense commercial potential to revolutionize the global precision oncology market.

INDUSTRIAL APPLICATIONS

PanMETAI offers a non-invasive screening solution for early pancreatic cancer, addressing the limitations of CA19-9. Targeting high-risk groups, its "plug-and-play" ¹H NMR platform ensures global scalability for centralized lab services and CDSS. Validated by multinational cohorts (AUC >0.9) and published in Nature Communications, PanMETAI holds massive commercial potential with TW/US patents, ready to revolutionize global precision oncology screening and early intervention.



More Info ▲



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EXHIBITED TECHNOLOGY

Generative AI Spectral Intelligence Platform: Enabling Low-Cost Cross-Domain Non-Destructive Inspection with RGB Imaging

TECHNOLOGY INTRODUCTION

The Generative AI Spectral Intelligence Platform converts RGB images into high-dimensional spectral representations, reducing the cost, complexity and deployment barriers of hyperspectral/multispectral inspection. It supports low-cost, scalable and non-destructive state assessment for agriculture, medicine, food, materials, industry and remote sensing, bringing spectral sensing from specialized instruments to field, production-line and large-area applications.

INDUSTRIAL APPLICATIONS

The platform has completed commercial validation in rice contract farming, crop water-status assessment and AI Low-Carbon Rice, with 273 hectares of use. It can extend to medical edema screening, food quality inspection, materials and industrial defect detection, and satellite/UAV remote sensing. Bringing low-cost spectral assessment into field, production-line, high-frequency, large-area and non-destructive scenarios, it improves monitoring coverage, adoption feasibility and market scalability.



More Info ▲

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EXHIBITED TECHNOLOGY

Hb-CoPilot: AI-Assisted Hemoglobin Assessment System

TECHNOLOGY INTRODUCTION

“Intelligent Hemoglobin Assessment Assistance System (Hb-CoPilot)” is an AI-based hemoglobin assessment system for hemodialysis patients. Using smartphone images of extracorporeal dialysis tubing, the system combines color calibration and multimodal AI models to non-invasively assess hemoglobin (Hb) status and identify Hb <10 g/dL risk in real time. Hb-CoPilot requires no additional hardware and demonstrates strong multicenter validation and scalability for smart dialysis care.

INDUSTRIAL APPLICATIONS

Hb-CoPilot can be deployed in medical centers, regional hospitals, dialysis centers, and outpatient dialysis clinics to provide real-time, non-invasive hemoglobin assessment using only a smartphone. The system requires no dedicated hardware devices and offers a low-cost, highly scalable solution with strong advantages for cross-site deployment, helping healthcare institutions improve dialysis care efficiency and digital management capabilities.



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EXHIBITED TECHNOLOGY

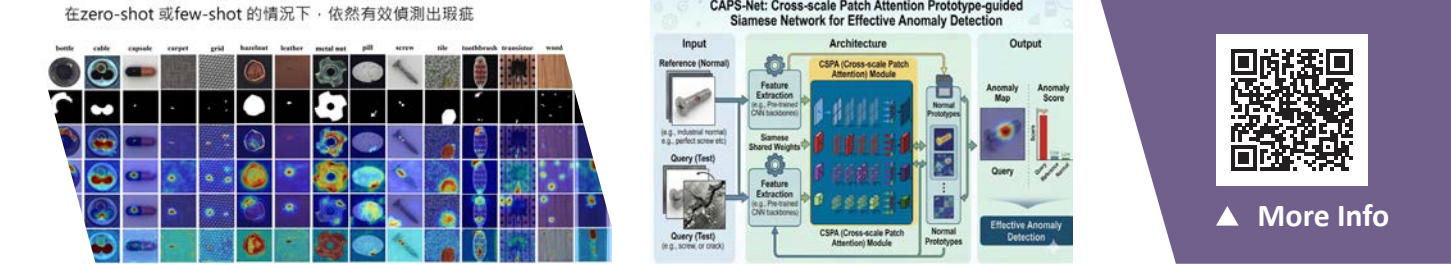
Defect Detection Technique Integrated with Root Cause Analysis and Few-shot Learning

TECHNOLOGY INTRODUCTION

This technology presents an AI-based defect inspection platform with root-cause analysis and few-shot learning capabilities. By integrating zero-shot learning and LLM-based reasoning, the system can perform real-time defect recognition and anomaly analysis even with limited defect samples. It effectively detects tiny irregular cracks and complex surface defects while maintaining highly reliable inspection performance under low-light and high-interference environments.

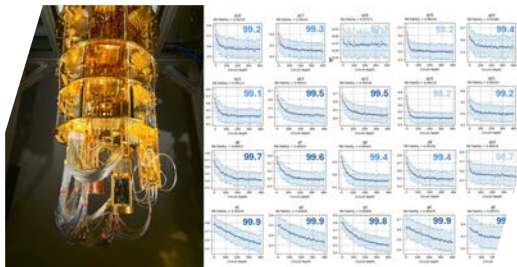
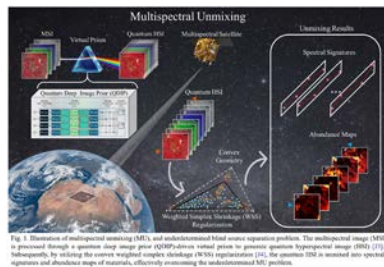
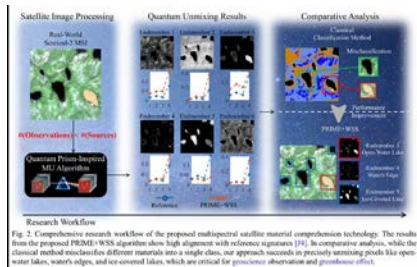
INDUSTRIAL APPLICATIONS

This technology addresses industrial inspection challenges in semiconductors, PCB, automotive electronics, and petrochemical industries, where tiny defects can cause product failure and yield loss. By integrating LLM reasoning, Zero-shot Learning, the system enables real-time defect detection, anomaly analysis, and root cause inference. It can detect ultra-small cracks and irregular defects while supporting Edge AI deployment, real-time inference, and smart manufacturing applications.





More Info ▶



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EXHIBITED TECHNOLOGY

CardioMirror: Azure-Integrated Health Digital Twin for Cardiovascular Risk Prediction

TECHNOLOGY INTRODUCTION

CardioMirror: world's only dual FDA-cleared rPPG (K223622 HR; K243966 RR). 40-second scan: HF screening AUC 0.90, 89.71% accuracy (Journal of Cardiology 2025, n=68) and world-first NT-proBNP biochemical prediction (AUC 0.90, n=246, R2->0.743). Multi-site validated: Taipei Veterans, Pingtung rural care, Chang Gung (NDA). Azure FHIR, HIPAA/GDPR. SNQ, NHQA, National Innovation Award, Forbes Asia 100. TRL 7.

INDUSTRIAL APPLICATIONS

Multi-site validated: Taipei Veterans (300 AF/HF enrolled), Pingtung veterans home rural validation complete, Chang Gung Hospital NDA signed for TFDA clinical pathway. Azure FHIR B2B platform for enterprise health management and insurtech underwriting. TFDA clearance targeted FY116. International expansion to the worldwide via dual FDA clearances through Microsoft Azure partner ecosystem, addressing aging-society cardiovascular screening gaps at scale.

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EXHIBITED TECHNOLOGY

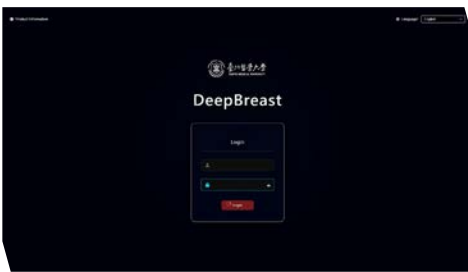
DeepBreast - Comprehensive Mammography AI screening system

TECHNOLOGY INTRODUCTION

We present an AI-powered mammography support system integrating a proprietary image standardization pipeline with MoEF architecture. The system unifies clinical labels into a continuous 1–100 risk scale ($R^2=0.90$), fusing DenseNet201, GCViT, and ConvNeXt models via a Multi-task Feature Fusion Adapter. It delivers end-to-end support including risk scoring, density classification, lesion detection, and auto BI-RADS reporting, validated by AUROC 0.9946, specificity 0.9756, and NPV 0.9986.

INDUSTRIAL APPLICATIONS

The mammography AI market (\$940M, APAC fastest-growing) is dominated by Western models (Lunit, iCAD, Hologic) lacking localization for Asia's dense breast tissue & workflows. Our system achieves AUROC 0.9974 (vs. Lunit's 0.96), auto-fills Taiwan's 3 mandatory MOHW forms, & supports mobile POC deployment. This builds localization barriers competitors cannot replicate, with clear expansion potential across dense breast populations in SE Asia.





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► EXHIBITED TECHNOLOGY

SentinEID: An End-to-End, Genomics-to-Bedside AI Platform for Streamlined Pandemic Biosurveillance and Precision Clinical Decision Support

► TECHNOLOGY INTRODUCTION

SentinEID is an end-to-end "genomics-to-bedside" AI platform for pandemic defense. It integrates an optimized local IDseq pipeline with Taiwanese epidemiological databases to automatically streamline raw mNGS signals into clinical data. Powered by an edge-deployed MedGemma LLM, Knowledge Graphs, and RAG, it tethers to authoritative guidelines to deliver immediate, evidence-based antibiotic recommendations. Built on SMART standards, it is ready to launch on Taiwan's healthcare marketplace.

► INDUSTRIAL APPLICATIONS

This technology targets the smart epidemic prevention and precision diagnostics markets. It facilitates rapid tracking and source tracing of emerging viral variants while providing AI-generated AMR alerts and clinical summaries. Ideal for hospital diagnosis, disease surveillance centers, and genomic testing services, the platform's multi-modal integration and dual-language support significantly enhance diagnostic efficiency and global collaboration potential.

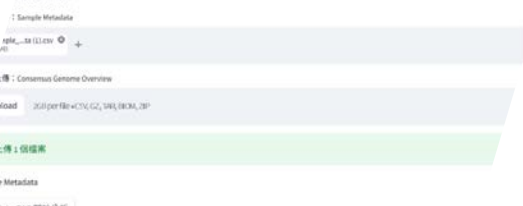


More Info ▲

Gemini IDSEQ 分析儀表板



專檔案



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► EXHIBITED TECHNOLOGY

CoVerify Vision II: Evidence-Chain and Human-AI Co-Review Platform for AI-Generated Media

► TECHNOLOGY INTRODUCTION

CoVerify Vision II turns misinformation verification into a credible workflow at scale: risk detection, degraded-image restoration, robust forensics, interpretable evidence, human review, and auditable records. It supports fact-checking, anti-fraud, and media literacy with multiple fact-checking partners. Developed with III, it is operationally deployed at a central government agency—the first domestic deepfake-forensics system built by an academic team and adopted in Taiwan's public sector.

► INDUSTRIAL APPLICATIONS

Applications span fact-checking, financial anti-fraud, content review, platform governance, and media literacy. The team integrates AI forensics, cognitive research, social-risk alerting, low-power deployment, policy collaboration, and real-world adoption. The system is deployed by a central government agency and validated with multiple fact-checking organizations; III and DTA connect industry and policy stakeholders, turning academic models into executable, auditable, and scalable workflows.



▲ More Info

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EXHIBITED TECHNOLOGY

NEXUS-AI: Non-Invasive Single Time Point Vital Sign AI Platform for Early Sepsis Prediction

TECHNOLOGY INTRODUCTION

NEXUS-AI is a non-invasive, single-time-point vital signs AI for early sepsis warning. Using only heart rate, oxygen saturation, body temperature, blood pressure, and respiratory rate, it provides alerts six hours before clinical diagnosis. It overcomes the reliance of current models on multimodal data from medical records. Trained on multicenter Taiwan data, it outperforms qSOFA, has been deployed at Taipei Veterans General Hospital, and has obtained QMS certification and Taiwan patents.

INDUSTRIAL APPLICATIONS

This technology supports early sepsis detection, clinical deployment, and home-based care. NEXUS-AI uses a modular Docker architecture to connect with HIS and has been deployed at Taipei Veterans General Hospital for hospital-wide early warning. It can also integrate with wearables and mobile apps for long-term care and home care. Clinically, it can combine with POCT biomarker testing for early precision detection and is being commercialized with Chunghwa Telecom.

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EXHIBITED TECHNOLOGY

Generative AI-Empowering Perception, Interactive Control, and Motion Planning Techniques of Autonomous Driving

TECHNOLOGY INTRODUCTION

In summary, this work develops a full-stack autonomous driving system comprising a smart labeling pipeline for dataset construction, a lightweight multi-task perception model, and a modular decision system. The edge deployment on the NVIDIA AGX platform demonstrates its practical viability for enhancing advanced driver-assistance systems (ADAS).

INDUSTRIAL APPLICATIONS

This full-stack autonomous driving system enhances ADAS via three innovations: 1) "Multi-task Intelligent Labeling" overcomes local data production bottlenecks. 2) "Gradient Balancing" resolves cross-task conflicts to achieve SOTA performance with high transfer potential. 3) "Modular Generative Path Planning" eliminates black-box flaws, drastically reducing real-world collisions and displacement errors. Together, they provide a highly safe, low-cost, premium self-driving solution.



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▶ EXHIBITED TECHNOLOGY

SiliconMind-V1: Multi-Agent Distillation and Debug-Reasoning Workflows for Verilog Code Generation

▶ TECHNOLOGY INTRODUCTION

SiliconMind-V1 is an open-source LLM and AI agent that automates Verilog generation, testing, and debugging for chip design. It features efficient data distillation (only requiring 1/9 of CodeV-R1's compute), three dynamic inference modes (Regular, Deep Thinking, Agentic), and Evolve optimization, which boosts PPA by 17% to 66% over expert designs. Offering 4B-8B lightweight models, SiliconMind-V1 enables secure, low-cost on-premise deployment to enhance industry competitiveness.

▶ INDUSTRIAL APPLICATIONS

SiliconMind-V1 automates RTL generation, testing and debugging via lightweight, on-premise models to 100% safeguard corporate IP. It further incorporates EvOLVE mode to leverage AI compute to drastically optimize chip PPA. Experimental results show that it significantly increases test pass rates while cutting API costs, making it the premier high-ROI solution for deploying trustworthy AI design automation in semiconductors.



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► EXHIBITED TECHNOLOGY

Intelligent bird deterrence system for runway take-off and landing areas to prevent aircraft bird strikes

► TECHNOLOGY INTRODUCTION

This work develops an omni-deterrence system to resolve the bird strike problem in airport. Through AI models, edge computing, dual telephoto lenses, and motor control, it can automatically identify and dynamically track birds, then plays sound to repel birds. The system integrates LLMs and RAG technologies to quickly obtain bird information and prevent risks. This design achieves automatic bird deterrence to reduce manpower requirements and decrease bird strike-related flight safety incidents.

► INDUSTRIAL APPLICATIONS

Having been successfully implemented in four major fields:

1. Airport: The system can effectively detect, track, identify, and deter birds;
2. Recreation centers and farms: To deter Formosan macaques without harming them;
3. Agriculture: In rice paddies and orchards, deter birds or monkeys only upon detection them;
4. Campus: Providing online monitoring of bird ecology and information is integrated to our iOS App, EEBirds.
5. Detection mAP: In average, higher than 90% in different applications.



More Info ▲



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► EXHIBITED TECHNOLOGY

Artificial Intelligence Robotic Welding for Multi-Layer Multi-Pass CJP Groove Welds

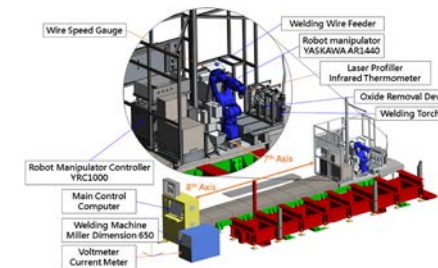
► TECHNOLOGY INTRODUCTION

To resolve welder shortages, this technology integrates robotic manipulators, welding equipment, laser profiler, and monitoring systems. By coupling optimization algorithms with a "Virtual Welder" AI model, trained on a 4,000-pass experimental database capturing the expertise of over a dozen professional welding engineers, an autonomous robotic platform was developed for CJP welds on continuity plates inside steel box columns. Full-scale column welding tests successfully verified the practical engineering value of this technology.

► INDUSTRIAL APPLICATIONS

Engineered for structural steel fabrication, this system integrates an 8-axis robotic manipulator, laser scanning, and stable wire feeding with a cloud-deployed AI expert system. The AI expert system from cloud service could dynamically optimize multi-pass parameters across diverse welding platforms. The welding quality was verified through a series of full-scale box column welding tests, demonstrating its direct industrial and engineering value.

The U.S. Utility Patent: Intelligent Automated Multi-Pass Welding Method (2025, Early Publication), US2025-0135587-A1.



▲ More Info





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EXHIBITED TECHNOLOGY

Design, Identification And Validation of Functional Therapeutic peptides In AI

TECHNOLOGY INTRODUCTION

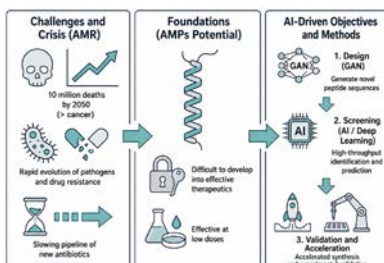
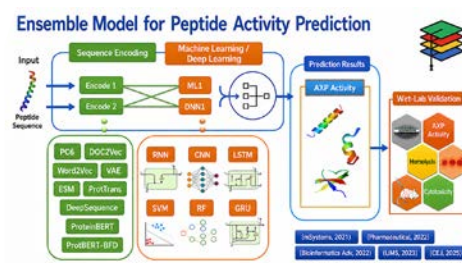
With the rise of drug-resistant superbugs, antimicrobial peptides (AMPs) are promising next-generation therapeutics. We developed an AI-driven peptide discovery platform integrating CNN prediction, modified wGAN generation, and toxicity screening to design novel low-toxicity peptides. Several candidates showed antimicrobial, antifungal, and anticancer activity with minimal hemolysis. This framework accelerates peptide drug discovery while reducing development time and cost.

INDUSTRIAL APPLICATIONS

This technology can be applied to antimicrobial drugs, smart wound dressings, antibacterial coatings, animal health, and precision medicine. The AI-integrated platform enables rapid design of low-toxicity functional peptides, reducing drug development cost and time while improving translational efficiency. It also has strong commercialization potential in biomedical, pharmaceutical, aquaculture, livestock, and biomaterial industries.



More Info ▲

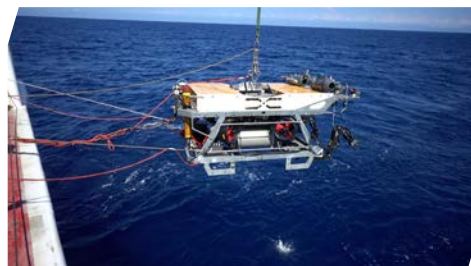


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Light Work-Class ROV

Marine research relies on imported underwater gear, leading to repair delays and limited customization. To fix this, TORI built a light-work-class ROV with a 500-meter depth rating. Featuring high-res cameras, lighting, and a 7-axis electric robotic arm, it greatly boosts underwater precision and flexibility, breaking the dependence on foreign imports.

Underwater Vehicle Manufacturing & Operations, Offshore Wind & Marine Engineering, Underwater Inspection & Exploration, Maritime Rescue & Safety, Ecological Observation & Science, Education Applications.



Booth FH01

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Booth FH02

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► EXHIBITED TECHNOLOGY

HUZU

► TECHNOLOGY INTRODUCTION

HUZU, a new-model academic-industry platform by STPI, is an AI system engineered to resolve Taiwan's research commercialization bottlenecks. Combining technical and business analysis, HUZU leverages integrated AI tools to generate business plan drafts in seconds. Furthermore, its built-in two-way translation mechanism effectively bridges the communication gap between academia and industry.

► INDUSTRIAL APPLICATIONS

HUZU accelerates the commercialization of research findings. For enterprises, it pinpoints high-potential technologies to resolve R&D bottlenecks; for startups, it substantially reduces business planning costs to fast-track market alignment. Ultimately, HUZU expedites technology industrialization, injecting dynamic innovation momentum into Taiwan's industry.



More Info ▲



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► EXHIBITED TECHNOLOGY

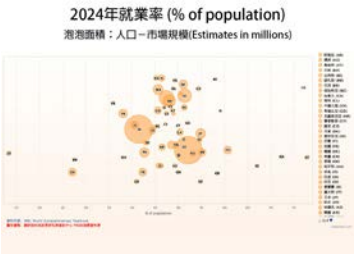
The Policy Research Indicators Database (PRIDE)

► TECHNOLOGY INTRODUCTION

The Policy Research Indicators Database (PRIDE) aggregates global data from domestic agencies and international organizations such as OECD and WEF. Spanning science, technology, economy and society, PRIDE features robust retrieval and visualization technologies, enabling users to convert complex data into line or bubble charts with one single click.

► INDUSTRIAL APPLICATIONS

For industry applications, PRIDE serves as an objective resource for corporate market assessment and strategic planning. Businesses can leverage its "Country Comparison" tool to track global R&D trends and competitiveness. These quantitative indicators provide authoritative empirical data, supporting strategic multinational layout and macro-environment evaluations.



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▶ EXHIBITED TECHNOLOGY

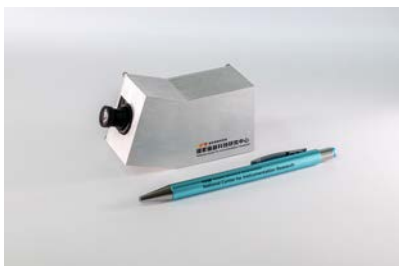
Miniature Pushbroom Hyperspectral Imager

▶ TECHNOLOGY INTRODUCTION

Hyperspectral imaging combines spatial and spectral information and is widely used in remote sensing and microscopic spectroscopy applications. This technology adopts a miniaturized structural design integrated with a push-broom imaging approach, enabling high-precision, continuous observation capabilities. It is primarily applied in the remote sensing of resources, including precision agriculture and forestry, environmental monitoring, material classification, and water quality management.

▶ INDUSTRIAL APPLICATIONS

This technology can be applied to precision agriculture, forestry management, environmental monitoring, and water resource analysis. Through hyperspectral remote sensing, it provides real-time information on crop health, forest dynamics, and water contamination, supporting governments and industries in resource management and environmental decision-making. It enhances monitoring efficiency and analytical accuracy while promoting the development of smart agriculture and sustainable environmental governance.



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▶ **EXHIBITED TECHNOLOGY**

Hyperspectral Microscopic Imaging System

▶ TECHNOLOGY INTRODUCTION

This analytical instrument integrates microscopic imaging and hyperspectral modules, employing AI-driven deep learning image analysis to interpret material spectral information. It features micrometer-scale positioning accuracy and high-resolution microscopic imaging capabilities, enabling quantitative hyperspectral image analysis. Unlike conventional hyperspectral systems that provide only qualitative analysis, this instrument is capable of measuring key physical parameters such as transmittance, reflectance, and absorbance. It is therefore well suited for the high-precision microscopic imaging and analysis of micro- and nano-scale materials as well as biological tissues.

▶ INDUSTRIAL APPLICATIONS

This technology can be applied to semiconductor process inspection, optoelectronic display material analysis, and biomedical imaging diagnostics. It supports the measurement of optical properties for wafers, thin films, and biological tissues. By integrating AI-based spectral analysis with microscopic hyperspectral imaging, the system can be deployed for in-line automated inspection and quality control. It accelerates new material development and process optimization, thereby improving yield and operational efficiency in the semiconductor and precision manufacturing industries.



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► EXHIBITED TECHNOLOGY

CubeSat Remote Sensing Payload Optical Assembly

► TECHNOLOGY INTRODUCTION

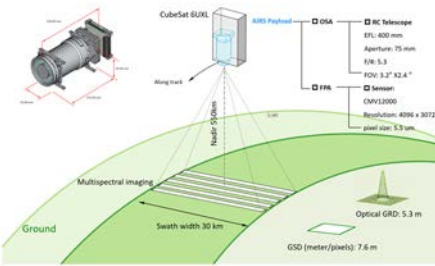
The National Center for Instrumentation Research (NCIR) has established an international-class precision optics R&D facility focused on CubeSat optical payloads and key optical components. Supporting Taiwan’s national space program and LEO satellite development, NCIR advances proprietary optical technologies through R&D, technology transfer, and industrial collaboration. These efforts strengthen Taiwan’s capabilities in satellite optical systems, manufacturing, and talent development, enhancing self-reliance and global competitiveness in the space industry.

► INDUSTRIAL APPLICATIONS

CubeSat-based remote sensing systems enable applications such as Earth observation, disaster response, and precision agriculture, delivering high-resolution imaging for environmental monitoring and infrastructure inspection. With expertise in ultra-precision optical manufacturing and advanced metrology, NCIR extends its technologies from space applications to semiconductor equipment, optical inspection, and advanced manufacturing. Through technology transfer and industrial collaboration, NCIR strengthens Taiwan’s capabilities in precision optics, manufacturing, and system integration, while fostering a competitive domestic space industry supply chain.



More Info ▲



► Program Results of Juristic Person Zone

◆ National Science and Technology Council

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► EXHIBITED TECHNOLOGY

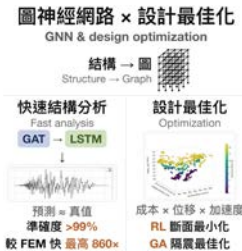
GraphStrux: A Graph-Driven System for Automated Building Structural Modeling, Rapid Analysis, and Design Automation

► TECHNOLOGY INTRODUCTION

In earthquake-prone Taiwan, seismic design is slowed by tedious workflows, and structural design firms face a manpower bottleneck. GraphStrux uses AI agents and graph neural networks to unify the drawing-to-design workflow—modeling, analysis, design, and code checking: guided by domain knowledge, it builds models, runs analysis and checks, and outputs design drawings. In tested cases, it compressed 3-4 weeks of iteration into about an hour, speeding up design while easing the shortage.

► INDUSTRIAL APPLICATIONS

GraphStrux serves structural design consultancies, construction, and seismic retrofit teams. Built on the design workflows and tools engineers already use, it enters practice with low friction and plugs directly into established operations. With its LLM agent, a structural consultancy can scale services that once depended heavily on senior experts—easing the industry’s chronic manpower bottleneck.



More Info ▲

National Science and Technology Council

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EXHIBITED TECHNOLOGY

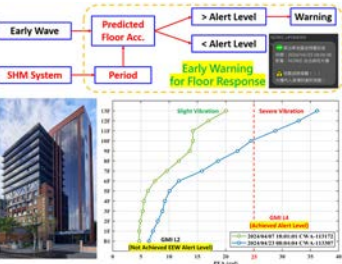
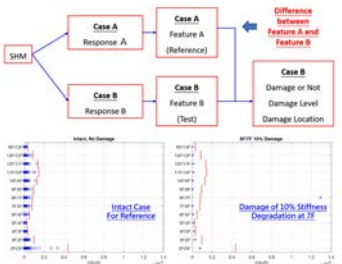
Smart Structural Monitoring and Alert Technology

TECHNOLOGY INTRODUCTION

Leveraging massive vibration datasets collected from structural monitoring systems installed on actual buildings across Taiwan, we are developing technologies for continuous anomaly detection to monitor structural and system status during normal operations, strong-motion early warning systems to issue alerts before the arrival of severe shaking for high-rise buildings, and post-earthquake alerts for seismic-induced structural damages. Through the scientific and intelligent approaches, these technologies optimize decision-making and comprehensively enhance the operational safety and integrity of building structures.

INDUSTRIAL APPLICATIONS

This technology holds significant potential for practical implementation and can be widely applied to existing structures, new construction projects, and critical public infrastructure. By utilizing key signal feature analysis and intelligent interpretation technologies, it reduces data processing loads and the need for manual analysis, thereby enhancing long-term operational efficiency and enabling large-scale deployment. The analysis system can be flexibly adapted to various building types and operational requirements, supporting routine structural and system health monitoring, earthquake early warnings, rapid post-earthquake assessments, and disaster mitigation decision-making. Furthermore, it can be extended to smart buildings, smart cities, and resilient infrastructure, ultimately improving building safety and urban disaster resilience.



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EXHIBITED TECHNOLOGY

5D Smart City Platform

TECHNOLOGY INTRODUCTION

The 5D Smart City Platform integrates BIM, GIS, AI, and IoT sensor data, enabling real-time monitoring of the seismic safety of bridges, street trees, utility lines, and buildings, to enhance the city's resilience to disasters.

INDUSTRIAL APPLICATIONS

The platform is applied to local government initiatives such as smart city development, public infrastructure management, disaster prevention and emergency response planning, urban renewal, and the integration of resources across departments (public works, water resources and transportation) to enhance governance efficiency.



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► EXHIBITED TECHNOLOGY

Organ-on-a-Chip Platform: Laser-Induced Thrombosis chip

► TECHNOLOGY INTRODUCTION

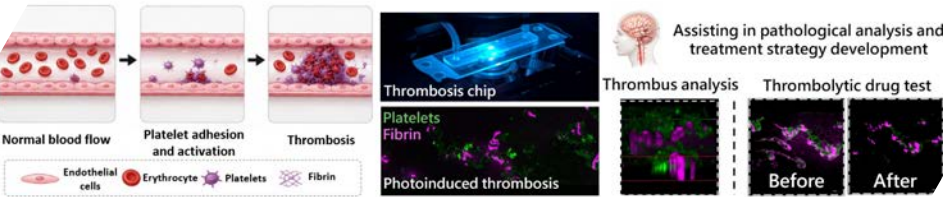
The Organ-on-a-Chip Platform is a cross-center, multidisciplinary collaboration platform. This platform integrates Taiwan industry pipelines for microfluidic chips, system integration, and manufacturing, also connect research teams to develop advanced biomodels for pharmaceutical and clinical applications. The Laser-induced thrombosis chip uses lasers to precisely control the location and extent of endothelial damage, reproducing thrombus formation with real-time analysis of platelet dynamics. Combined with in vivo animal models, this platform establishes an integrated in vitro–in vivo validation strategy to accelerate anti-thrombotic drug screening and translational development.

► INDUSTRIAL APPLICATIONS

In response to the needs of cardiovascular and cerebrovascular disease management and precision medicine in Taiwan, the photo-induced thrombosis organ-on-a-chip system provides a high-efficiency and reproducible in vitro platform for thrombotic disease evaluation. It supports preclinical assessment of anti-thrombotic drugs, novel therapies, and biomaterials, reducing animal study costs and accelerating drug development and translational biomedical applications.



More Info ▲



◆ National Science and Technology Council

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► EXHIBITED TECHNOLOGY

AI+MASH, AI-based pathology analysis platform

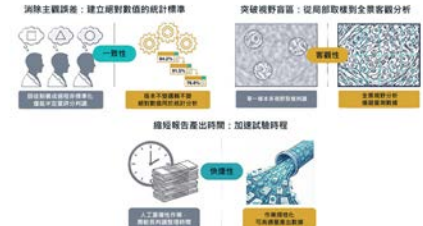
► TECHNOLOGY INTRODUCTION

AI+ MASH is designed for murine MASH studies, integrating four core AI models to analyze lipid accumulation, steatosis, inflammation, and fibrosis. Using deep learning, it transforms liver histology into structured, quantifiable data. Its cloud-based interface allows real-time access to study results, establishing a standardized pathological reporting framework for preclinical drug screening.

► INDUSTRIAL APPLICATIONS

AI+MASH significantly improves the efficiency of pathological analysis while delivering consistent and comparable quantitative results. It facilitates cross-study integration, enhancing the reliability and comparability of drug screen in preclinical study. Long-term accumulation of pathology data enables large-scale data-driven modeling for disease progression analysis and drug response prediction, forming a critical foundation for future biomedical research and precision medicine applications.

AI+MASH 協助提升脂肪肝炎病理分析量能



AI+MASH 建立客觀指標



▲ More Info

National Science and Technology Council

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EXHIBITED TECHNOLOGY

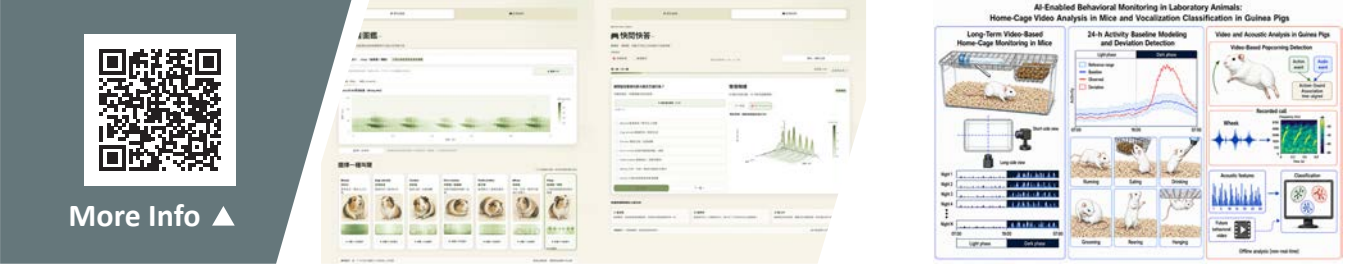
AI-Based Animal Behavior Recognition

TECHNOLOGY INTRODUCTION

Artificial intelligence (AI)-based image recognition allows computers to observe experimental mice and guinea pigs in video recordings and automatically identify behaviors such as eating, drinking, climbing, and jumping. AI can also be used to analyze guinea pig vocalizations by converting sound recordings into spectrograms—visual representations that show how sound frequency and intensity change over time. By examining these vocal patterns, researchers can investigate calls associated with different physiological or emotional states, including hunger, agitation, and stress. These technologies provide a faster and more objective way to assess animal behavior and condition, with potential applications in disease research, long-term health monitoring, and the improvement of laboratory animal care and welfare.

INDUSTRIAL APPLICATIONS

This technology may serve as a supporting analytical tool for laboratory animal research and care, providing long-term observational information that is not easily captured by conventional behavioral tests. Standardized processing of video and audio data may reduce part of the manual assessment workload while improving data consistency and traceability. The approach has potential applications in disease-model observation, pre- and post-intervention comparison, and animal welfare monitoring, and may provide a foundation for future preclinical analytical workflows and research services.



National Science and Technology Council

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EXHIBITED TECHNOLOGY

Negative-Carbon Offshore and Ocean Energy Computing Platform

TECHNOLOGY INTRODUCTION

The platform integrates geological databases with numerical carbon storage models to provide interactive 3D GIS visualization of simulation results. Through natural language queries and AI Agent services, users can rapidly access simulation results and visualize the temporal evolution of CO₂ storage. By supporting scientific analysis and site selection, the platform provides intelligent decision support for offshore carbon storage in Taiwan.

INDUSTRIAL APPLICATIONS

The platform supports carbon storage site selection, marine geological surveys, and net-zero decision-making. It enables governments, research institutions, and industry to evaluate subsurface geology and CO₂ storage potential. By integrating AI Agent services, 3D GIS visualization, and HPC simulation, it enhances planning efficiency, reduces assessment costs, and accelerates offshore carbon storage deployment, supporting Taiwan's net-zero transition and sustainable development.



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EXHIBITED TECHNOLOGY

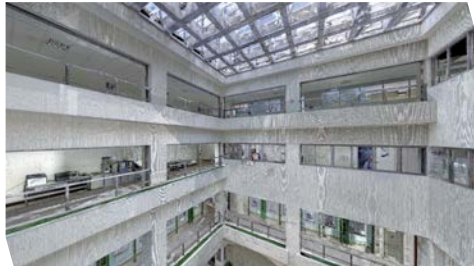
Digital Twin UAV AI Training and Validation Platform

TECHNOLOGY INTRODUCTION

This platform is built on NVIDIA Omniverse digital twin technology, integrating cloud-based UAV command and management with simulation and validation capabilities. It enables AI-based UAV control technologies to be tested and validated in high-fidelity 3D virtual environments. The platform provides real-time visualization of mission routes, flight trajectories, UAV attitude, and flight status, while supporting AI applications such as target tracking. Through a safe and repeatable virtual environment, the platform supports AI model training, mission validation, flight behavior analysis, and virtual-to-real integration and validation.

INDUSTRIAL APPLICATIONS

The platform can be applied to smart UAVs, logistics delivery, inspection and monitoring, disaster response, smart city services, and autonomous mobile systems. It can connect with real UAVs and map their position, attitude, flight status, and mission data into virtual environments in real time, providing a foundation for cloud-based command and management and multi-UAV coordination. By integrating LLMs and AI Agents, natural-language missions can be transformed into mission plans, UAV commands, and execution workflows to support multi-UAV collaboration and swarm operations.



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▶ EXHIBITED TECHNOLOGY

Chip-Level Advanced Packaging & Heterogeneous Integration Platform

▶ TECHNOLOGY INTRODUCTION

TSRI's chip-level advanced packaging technology combines 2.5D interposers, 3D stacking and chiplet-based heterogeneous integration. It integrates computing, memory, silicon photonics, sensors and high-speed interfaces in one package, enabling high performance, low power consumption and flexible system design.

▶ INDUSTRIAL APPLICATIONS

Applicable to AIoT, 5G and high-frequency communications, automotive electronics, smart healthcare, silicon photonics and quantum computing. An open design and verification platform can lower entry barriers for academia and startups, accelerate commercialization and strengthen Taiwan's system-integration capability.

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▶ EXHIBITED TECHNOLOGY

Gallium Nitride (GaN) Semiconductor Heteroepitaxy & Device Process Platform

▶ TECHNOLOGY INTRODUCTION

Establishing an research platform of GaN epitaxy and device process in Taiwan to provide researchers with advanced research environment for demonstrating next-generation concept of GaN epitaxy and HEMT device on Si and SiC wafers.

▶ INDUSTRIAL APPLICATIONS

Supports the “great South New Silicon Valley” initiative by providing high-quality epitaxy wafers, promoting advanced technologies in electric vehicles (EV) and 5G/6G communications.



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Monolithic 3DIC Process Service Platform (Novel 3D DRAM Architecture)

Co-developed by TSRI and Macronix, this novel 3D Dynamic Random Access Memory (3D DRAM) architecture provides a high-bandwidth and high-density memory solution specifically designed for Artificial Intelligence (AI) chips.

This technology demonstrates strong international competitiveness, with its development leading major industry players in Japan, the United States, and South Korea. This achievement highlights Taiwan's leading position in next-generation memory technologies and further strengthens its strategic position in the global AI chip landscape.



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EEGDeep - Low-Power AI Chip for Real-Time EEG Analysis

A low-power AI chip designed specifically for real-time EEG analysis, serving as the core engine for next-generation Brain-Computer Interface (BCI) solutions. It supports multi-channel configurations with a compact and precise design.

Widely applicable to lightweight wearable devices for scenarios such as motor imagery, home health monitoring, attention tracking, and BCI control, driving the rapid advancement of smart healthcare and wearable technologies.



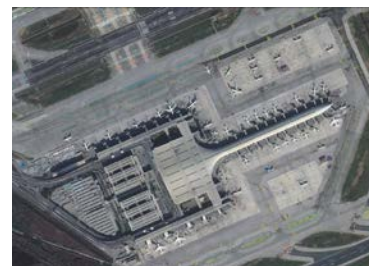
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FORMOSAT-8

The first satellite of the FORMOSAT-8 constellation, Zeppelin Satellite, was launched in 2025 and began its imaging mission in January. These images meet the 1-meter resolution standard and can be enhanced to 0.7 meters through post-processing. Both MTF and SNR exceed design expectations, demonstrating performance beyond our original targets. It also demonstrates that Taiwan has the capability to manufacture sub-meter-class space telescopes, key components of satellite, and propulsion systems.

Zeppelin Satellite has completed in-orbit verification of domestically developed components, with image quality exceeding design expectations. It shows strong application potential in agriculture, environmental monitoring, land security, and disaster prevention. The project also advanced industry-academia-research collaboration, established a scalable satellite platform and verification model, and strengthened the foundation for the national space industry supply chain and future missions.

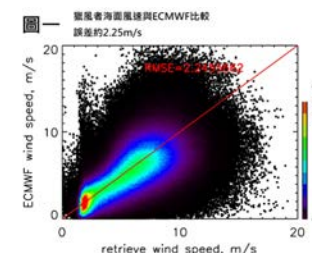
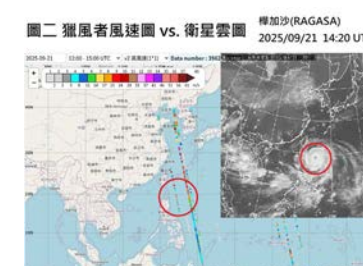


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Ocean surface wind speed process system of Triton

Data process system of Triton has released v2.1 ocean surface wind speed product in mid-2026. The root mean square error of wind speed is around 2.25 m/s. Furthermore, high wind mode product for typhoon region also has been released. The users can obtain the ocean surface wind speed product of Triton from the website of CWA/TACC. The product not only can be used for Ocean-Atmosphere Interaction but also for weather forecasting accuracy improvement.

The Triton ocean surface wind speed products are applicable to both weather forecasting and environmental monitoring. In weather forecasting, Triton's wind speed data can be integrated into models via data assimilation to refine wind field analysis and improve forecast accuracy. In environmental monitoring, the broad spatial and temporal coverage of these products benefits the blue economy by supporting shipping route optimization and site selection for offshore wind farms.



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HTP propulsion module (Gen 2, 18 liter tank)

The second-generation 18-liter high-test peroxide (HTP) propulsion system builds upon the foundation of the first-generation system by increasing the propellant tank capacity to meet the ever-growing demand for orbital adjustments. Material optimization has also been implemented to further enhance its strength and compatibility.

The propellant tank is an indispensable component of a satellite. This specially developed aluminum alloy tank can not only be used in high-test peroxide propulsion systems but also has the potential to be applied to other green fuel propulsion systems in the future, making the market quite considerable.



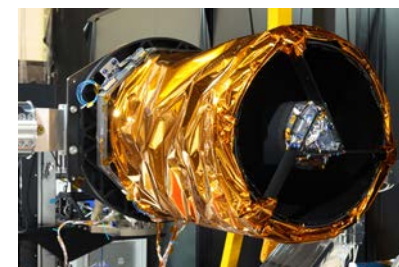
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FS8A/B Remote Sensing Instrument(RSI) Optical System Assembly (OSA)

The Optical System Assembly (OSA) in the FORMOSAT-8A optical remote sensing instrument is equipped with a high-resolution Ritchey–Chrétien optical system with 396mm aperture and 3927mm effective focal length. This system can capture high-resolution images with ground sampling distance of 1.0 meter, using a 7 μ m pixel-size image sensor while orbiting at an altitude of 561km (0.7m GSD with post image processing).

Based on the technologies developed from the FS8A/B RSI OSA, it can be made available for the development of small-space optical systems in the optical industry.



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► EXHIBITED TECHNOLOGY

Formosat-8 Focal Plane Assembly (FPA)

► TECHNOLOGY INTRODUCTION

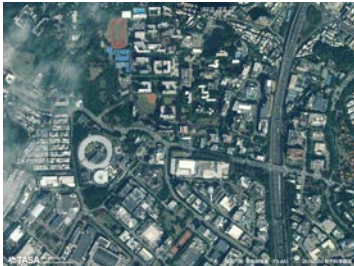
The FORMOSAT-8 focal plane assembly is the core imaging component of the satellite payload. Using linear time delay integration image sensor technology, it provides one panchromatic and six multispectral bands with 1-meter and 2-meter image resolution. Dual panchromatic channels with a half-pixel offset and ground image reconstruction further enhance the effective resolution to approximately 0.7-meter sub-meter imagery.

► INDUSTRIAL APPLICATIONS

The developed high-resolution linear TDI imaging technology can be applied to low-light automated optical inspection, wafer inspection, panel inspection, and smart manufacturing. The technology improves image quality and defect detection capability for high-speed inspection applications, providing strong potential for advanced industrial imaging and precision measurement systems.



More Info ▲



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► EXHIBITED TECHNOLOGY

Multi-functional EU EBB for Image Compression and Mass Storage

► TECHNOLOGY INTRODUCTION

The Electronics Unit (EU) receives image data from five input channels (PAN1, PAN2, MS12, MS34, and MS56) at an aggregate input data rate of 7 Gbps. The received image data are processed by the Image Processing Module (IPM), which performs JPEG2000 compression, including Discrete Wavelet Transform (DWT) and entropy coding. The compressed image data are subsequently stored in the Solid-State Recorder (SSR), which provides:

- 16 Tbits of NAND flash memory capacity.
- Storage for up to 1,024 files.
- Built-in Error Correction Code (ECC) for data integrity protection.
- Image data output via eight 100-MHz LVDS channels.

The EU has an approximate mass of 14 kg and an average power consumption of 250 W.

► INDUSTRIAL APPLICATIONS

The JPEG2000 compression IP employs Discrete Wavelet Transform (DWT) to achieve high compression efficiency for satellite remote sensing imagery. A single FPGA is capable of performing JPEG2000 compression for all spectral bands, including the panchromatic (grayscale) band. Integrated with the Solid-State Recorder (SSD), it provides high-capacity onboard image storage.



▲ More Info

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▶ EXHIBITED TECHNOLOGY

Variable Speed Control Moment Gyroscope (VSCMG)

▶ TECHNOLOGY INTRODUCTION

- 16 Tbits of NAND flash memory capacity.
- Storage for up to 1,024 files.
- Built-in Error Correction Code (ECC) for data integrity protection.
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◆ **Exhibitor**
Taiwan Space Agency

▶ EXHIBITED TECHNOLOGY

Liquid-Propellant Rocket Engine

▶ TECHNOLOGY INTRODUCTION

The first stage of the launch vehicle is clustered with 9 engines, while the second stage is equipped with a single vacuum-optimized version featuring a high expansion ratio nozzle.



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▶▶ Program Results of Juristic Person Zone

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EXHIBITED TECHNOLOGY

A Satellite Attitude Control Verification Platform with Inertia Compensation Capability

TECHNOLOGY INTRODUCTION

Air-bearing platforms provide a gravity-free operating environment and are thus commonly used to validate satellite attitude control capabilities in space environments. However, this approach requires the platform to change its attitude along with the satellite under test. Since the platform's moment of inertia is typically several times larger than that of the satellite, this method is only suitable for validating attitude control precision, rather than dynamic response. Nonetheless, the dynamic response of a control system is crucial for low Earth orbit (LEO) and small satellites to successfully execute their missions.

INDUSTRIAL APPLICATIONS

A satellite's attitude control system directly determines its capability for tasks such as solar charging, imaging, and communication, making it critical to mission success. Given the high cost of rocket launch, ground-based validation of the satellite's attitude control system is indispensable. In recent years, with the rapid growth of LEO satellites and their demanding requirements for attitude control bandwidth—combined with the current lack of suitable verification platforms—this technology is poised to capture substantial market opportunities.

More Info ▲

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Future Tech, Leading Your Life.

▶▶ Program Results of Juristic Person Zone

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EXHIBITED TECHNOLOGY

Extended Platform of Satellite Imagery Processing and Applications / E Book 、AR 、VR

TECHNOLOGY INTRODUCTION

An educational platform is based on extended reality techniques is designed about the basic earth remote sensing knowledge , image processing and applications development. In order to introduce comprehensive information about satellite imagery and application, two topics related to FORMOSAT satellite mission including long-term landscape changing and environmental monitoring are delivered, and with checkpoint game to engagement the experiment of users.

More Info ▲

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EXHIBITED TECHNOLOGY

Taiwan Data Cube

TECHNOLOGY INTRODUCTION

This study integrates multi-temporal satellite imagery from the Taiwan Data Cube, the Sudden Landslide Identification Product (SLIP), and the DeepLabv3 deep learning model to develop an automated workflow for landslide detection. The proposed approach offers substantial practical value for disaster risk reduction. Compared with conventional manual interpretation, it enables the rapid generation of landslide distribution maps, thereby improving post-disaster mapping efficiency and ensuring consistency in interpretation. These results provide critical support for emergency decision-making, transportation accessibility assessment, and disaster response operations.

Program Results of Juristic Person Zone

National Science and Technology Council

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EXHIBITED TECHNOLOGY

Disaster Intelligence Network:
AI-enabled Disaster Intelligence Integration and Decision Support Platform

TECHNOLOGY INTRODUCTION

The Disaster Intelligence Network integrates meteorological, hydrological, seismic, transportation, CCTV, disaster reports, and news data into a unified platform. By combining GIS, Generative AI, and 3D visualization technologies, it provides natural language queries, disaster event summaries, spatial analysis, and decision support. The platform helps emergency operation centers quickly understand disaster situations, improve cross-agency information sharing, and enhance emergency response efficiency.

INDUSTRIAL APPLICATIONS

The technology could be applied to national and local emergency operation centers, fire departments, police agencies, water resources management, transportation management, and smart city applications. It could also support infrastructure monitoring and enterprise emergency management.

More Info ▲

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EXHIBITED TECHNOLOGY

Climate Change Platform

TECHNOLOGY INTRODUCTION

Facing the impacts of climate change, scientific data is crucial for decision-making. NCDR's 'High-Resolution Climate Data and Adaptation Application Platform' fully visualizes complex observations and future projections. By combining interactive tools with local case stories, it translates raw data into actionable insights, empowering the public and leaders to master Taiwan's climate risks and adaptation strategies.

INDUSTRIAL APPLICATIONS

With newly integrated local climate profiles, the platform provides interactive charts across lowland and alpine terrains, projecting key metrics like temperature, extreme rainfall, and droughts. It empowers businesses to manage localized risks across specific sites or supply chains, and equips local governments with tailored data for disaster mitigation—effectively turning scientific charts into actionable climate adaptation tools for both public and private sectors.



More Info ▲



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EXHIBITED TECHNOLOGY

Firefly Rain Bell

TECHNOLOGY INTRODUCTION

Firefly Rain Bell is an AI-powered rainfall nowcasting and weather advisory system that integrates real-time weather radar observations, the TAIDE Large Language Model (LLM), and open meteorological data. By combining weather radar, FORMOSAT-7 satellite observations, and government open data with data assimilation and radar reflectivity extrapolation techniques, the system updates rainfall forecasts every 10 minutes and provides precipitation nowcasts for the next three hours. Through the TAIDE LLM, users can access intelligent weather interpretation and interactive question-and-answer services in both Mandarin and Taiwanese. The system enhances situational awareness and supports timely decision-making for the public and businesses, improving resilience against extreme weather events.

INDUSTRIAL APPLICATIONS

This system delivers high-frequency 3-hour rainfall nowcasting and real-time risk insights across multiple industries. It helps transportation authorities manage traffic and disaster response to reduce accidents, enables finance and insurance sectors to improve risk assessments and claims predictions, and allows the energy and logistics industries to proactively optimize supply chains.



More Info ▲



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EXHIBITED TECHNOLOGY

AI-Assisted Earthquake Damage Assessment Technology

TECHNOLOGY INTRODUCTION

This technology integrates Artificial Intelligence (AI), big data analytics, and earthquake scenario simulation to rapidly estimate post-earthquake building damage and identify high-risk hotspots. By automating damage assessment and spatial analysis, it provides timely decision-support information, enabling emergency agencies to prioritize resource allocation, improve response efficiency, and enhance post-disaster resilience.

INDUSTRIAL APPLICATIONS

The technology has been implemented in the earthquake emergency decision-support system of the National Science and Technology Center for Disaster Reduction (NCDR). It enables rapid post-earthquake damage assessment and can be extended to government agencies, engineering consulting, insurance, construction, and smart city applications to support disaster management, risk assessment, and resilient governance.



More Info ▲



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EXHIBITED TECHNOLOGY

Typhoon and Flood Disaster Risk Reduction Education Interactive Learning System

TECHNOLOGY INTRODUCTION

The Typhoon and Flood Disaster Risk Reduction Education Interactive Learning System integrates scenario simulations, interactive decision-making, and real-time feedback to systematically guide users through critical disaster management phases. This includes daily preparedness, emergency supply planning, residential mitigation measures, emergency response, and evacuation judgment. By effectively translating risk knowledge into actionable steps, the system elevates public awareness and strengthens self-protection capacity.

INDUSTRIAL APPLICATIONS

This system can be applied to government disaster risk reduction campaigns, community resilience programs, and digital learning platforms. Through accessible interaction and visual feedback, it supports wider public communication of typhoon and flood risk knowledge and promotes practical disaster preparedness in daily life.



▲ More Info



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EXHIBITED TECHNOLOGY

National Science and Technology Center for Disaster Reduction LINE Official Account

TECHNOLOGY INTRODUCTION

The National Science and Technology Center for Disaster Reduction (NCDR) LINE Official Account is a one-stop, mobile-based disaster reduction portal developed through public-private partnership. It integrates 48 categories of alert information from agencies, localized observation data such as temperature, rainfall, and environmental radiation. By introducing disaster application services and social data, it provides the public with convenient and diversified disaster information.

INDUSTRIAL APPLICATIONS

This Official Account can be applied by local governments, frontline disaster reduction personnel at the township and village levels, and the general public, enabling them to grasp real-time disaster information anytime and anywhere, both during ordinary times and in times of crisis.



More Info ▲



Program Results of Juristic Person Zone

◆ National Science and Technology Council

◆ Exhibitor
National Science and Technology Center for Disaster Reduction

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EXHIBITED TECHNOLOGY

GPU-Accelerated Second-Level Smart Tsunami Early Warning System

TECHNOLOGY INTRODUCTION

The moment an earthquake occurs, the system automatically activates and integrates real-time USGS global seismic data. Within 30 seconds, it completes tsunami simulation, warning generation, and visualization — delivering end-to-end results from the open ocean to Taiwan's coastlines for rapid decision support.

Linked to global USGS seismic data, it completes simulation, warning, and visualization in under 30 seconds—from the open ocean all the way to your shoreline.

INDUSTRIAL APPLICATIONS

Previously limited by CPU performance, tsunami simulations were time-consuming and often forced to use reduced nearshore resolution, making it difficult to balance basin-wide and coastal accuracy. With GPU acceleration, computational speed improves by 4–7x, enabling simultaneous basin-wide propagation and high-resolution nearshore modeling in a single run. This significantly shortens warning generation time while enhancing the accuracy of coastal wave height and inundation risk assessments.



More Info ▲

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Synchrotron Radiation for Precision Medicine: 3D Imaging and Analysis from Atoms to Cells and Tissue

This exhibit showcases the applications of synchrotron radiation in precision medicine, featuring multiscale structural analysis and 3D imaging from molecules to cells and tissues. Topics include protein structure determination, cellular organelle imaging, infrared spectroscopy for disease diagnosis, small-angle X-ray scattering (SAXS) for drug delivery research, and photonic chip technologies for biomedical diagnostics. These advanced techniques demonstrate the vital role of synchrotron radiation in biomedical research and biotechnology innovation.

Synchrotron radiation technology provides high-resolution structural analysis and advanced imaging capabilities for applications in drug discovery, biomarker detection, medical device development, and precision diagnostics. By enabling detailed characterization of biomolecular structures, drug delivery systems, and advanced materials, it enhances R&D efficiency and product performance, accelerating technology validation, commercialization, and innovation in the biomedical industry.



National Science and Technology Council

Exhibitor
National Synchrotron Radiation Research Center

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EXHIBITED TECHNOLOGY

Multi-Point Active Optical Element

TECHNOLOGY INTRODUCTION

The 25-point bender developed by NSRRC enables high-precision control of mirror surface profiles, actively optimizing beam quality and focusing performance from the EUV to soft X-ray regime. This technology enhances measurement sensitivity and stability, supporting advanced beamlines and accelerating research in semiconductors, quantum materials, and emerging energy technologies.

INDUSTRIAL APPLICATIONS

This technology enhances beam quality and focusing performance in the EUV to soft X-ray regime, enabling applications in semiconductor inspection, advanced materials characterization, and quantum device development. By improving measurement precision and experimental efficiency, it accelerates R&D processes and strengthens the capabilities of synchrotron beamlines for scientific and industrial innovation.

National Science and Technology Council

Exhibitor
National Synchrotron Radiation Research Center

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EXHIBITED TECHNOLOGY

Future Innovations through the Coupling of Cryogenics and Magnetic Fields

TECHNOLOGY INTRODUCTION

Permanent magnets have higher remanent flux density (B_r) at low temperatures, while HTS tapes, with high operating temperatures and critical fields, are widely used in high-field devices. Amid global helium shortages, developing liquid-helium-free cooling technologies has become a key trend. Utilizing its advanced light source facilities, NSRRC develops HTS magnets and cryogenic permanent magnet undulators, establishing key technologies in cryogenic magnet design, mechanical and thermal analysis, and precision field measurement to promote diverse applications in scientific research and industry.

INDUSTRIAL APPLICATIONS

HTS tapes exhibit superconductivity above 77 K with high critical fields, while cryogenic permanent magnets significantly enhance magnetic intensity, making them ideal for low-loss power transmission and high-field devices. Recently, HTS tech has been applied in power systems, energy storage, wind generators, medical accelerators, maglev trains, fusion energy, electron microscopes, and MRI.



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EXHIBITED TECHNOLOGY

EXHIBITED TECHNOLOGY

Real-Time Biofeedback Intelligent Training System for Lumbar-Pelvic Motion Control

EWova EduGen: AI-Powered Immersive Education System

TECHNOLOGY INTRODUCTION

TECHNOLOGY INTRODUCTION

This technology is a real-time biofeedback system for lumbopelvic motor control training. By integrating wearable sensing, motion analysis, and visual feedback, it detects compensatory movement and provides immediate correction during training. The system has been validated in baseball players and applied in patients with degenerative lumbar disease, showing potential for rehabilitation, sports training, and injury prevention.

EWova is an immersive virtual reality collaborative learning platform. Simply speak, and a 3D model instantly appears; want to make international friends? No language barrier!

Instant cross-language translation allows direct communication between Taiwanese and Japanese learners. Too shy to ask about schoolwork? Ask an AI tutor for accurate and reliable answers.

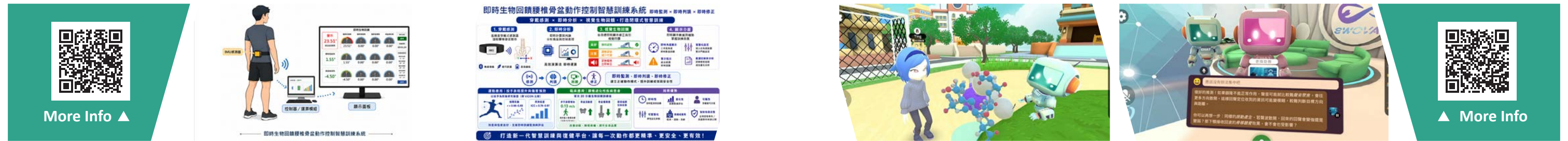
A visual learning progress dashboard clearly records your progress, showing at a glance which students need more attention.

INDUSTRIAL APPLICATIONS

INDUSTRIAL APPLICATIONS

This technology can be applied in rehabilitation, physical therapy, older adult functional training, sports science, team training, and digital health care. By providing real-time measurement, interpretation, and visual biofeedback, it improves movement quality, training efficiency, and injury prevention. It also has strong potential for smart rehabilitation services, scalable training solutions, and product commercialization.

Solving real-world educational challenges: Teachers overwhelmed with lesson preparation? AI teaching assistants help, offering one-click copying of high-quality courses; Students have questions? AI tutors are available 24/7, answering only questions related to the curriculum's scope; Language barriers in cross-cultural communication? Real-time translation allows Taiwanese students and Japanese teachers to converse directly, as demonstrated in numerous real-world examples. Every classroom interaction is automatically converted into a visual learning path, allowing teachers to instantly grasp each child's progress.



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AI Wearable System for Sports Injury Risk Assessment and Movement Feedback

An edge-AI wearable movement feedback system that combines IMUs, RGB pose estimation, and portable force signals to estimate knee loading, landing risk scores, and movement suggestions. It translates laboratory biomechanics into field-ready sports training and precision-health applications.

The system can be deployed in sports teams, gyms, schools, and sports science centers to provide fast movement-risk scores and feedback using portable, lower-cost sensing modules.



▲ **More Info**

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National Science and Technology Council

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EXHIBITED TECHNOLOGY

EXHIBITED TECHNOLOGY

Autonomous Materials Intelligence Platform for Predictive Materials Design

CONTINUE-MOF: A Continuous Green Processing and Circular Manufacturing Platform for Scalable MOF Manufacturing

TECHNOLOGY INTRODUCTION

TECHNOLOGY INTRODUCTION

Next-generation batteries require higher energy density, faster charging, greater safety, longer lifetime, and lower cost. We develop a computation-guided experimental approach for predictive battery technologies to identify performance bottlenecks, predict battery performance and failure, determine optimal solutions, and validate them in practical battery cells, accelerating performance breakthroughs and the development of new battery technologies.

CONTINUE-MOF integrates continuous synthesis, real-time purification, mother-liquor recovery, and precursor reuse, transforming MOF production from conventional batch processing into a low-waste, cost-efficient, and scalable circular manufacturing platform for sustainable production of materials used in carbon capture, water treatment, gas purification, and advanced materials.

INDUSTRIAL APPLICATIONS

INDUSTRIAL APPLICATIONS

This technology has been applied to all-solid-state batteries and other next-generation battery technologies. It can reduce trial-and-error, R&D cost, and development time; enable earlier prediction of performance and failure; and rapidly identify optimal solutions, accelerating the development of batteries with higher energy density, faster charging, greater safety, and longer lifetime.

CONTINUE-MOF can be integrated into pilot or mass-production lines for MOFs and key porous materials. It has achieved 96% material recovery, 78% product purity, ~92% ligand recovery, and ~81% ligand cost reduction, supporting sustainable manufacturing for carbon capture, water treatment, gas purification, catalysis, and advanced semiconductor process materials.

More Info ▲

計算引領實驗之可預測材料設計智慧平台
Defining the Future of Materials Innovation
自主材料智慧實驗平台 | Autonomous Materials Intelligence Platform

ADVANCED ENERGY MATERIALS

More Info ▲

CONTINUE-MOF
連續式綠色製程與循環製造平台

未來應用場景

CONTINUE-MOF如何運作？



◆ National Science and Technology Council

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National University of Kaohsiung

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► EXHIBITED TECHNOLOGY

Got you! The applications of artificial antibody composite materials in biosensors!

► TECHNOLOGY INTRODUCTION

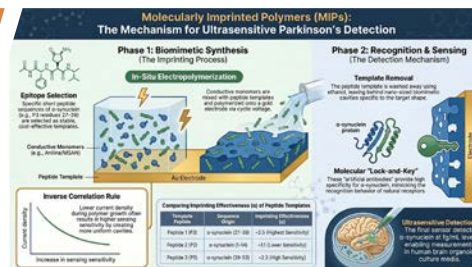
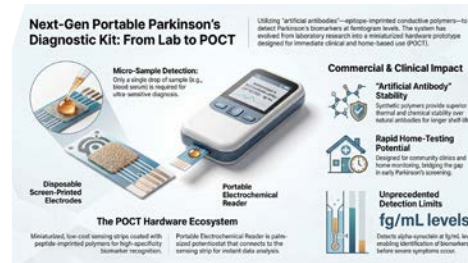
This technology introduces 2D material-doped peptide-imprinted polymers for ultra-sensitive Parkinson's detection. Merging epitope imprinting with MXenes/TMDs, we create a biomimetic platform targeting alpha-synuclein and LRRK2. It delivers high sensitivity, low detection limits, and superior stability compared to natural antibodies. This cost-effective electrochemical sensor is ideal for rapid point-of-care testing (POCT), facilitating early diagnosis and personalized PD management.

► INDUSTRIAL APPLICATIONS

This technology solves the high cost and fragility of traditional Parkinson's antibody tests. Our 2D material-doped imprinted polymers enable ultra-sensitive, rapid point-of-care testing (POCT). Ideal for hospitals, home care, and drug screening. Currently partnered with Biotech Corp. and advancing a Lithuania joint project, this scalable platform holds immense commercial value, accelerating the realization of accessible precision neuro-diagnostics.



More Info ▲



◆ National Science and Technology Council

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► EXHIBITED TECHNOLOGY

New generation of green and environmentally friendly magnesium alloy anti-corrosion coating technology

► TECHNOLOGY INTRODUCTION

We provides high-quality, high-efficiency, and environmentally friendly surface treatment solutions: 1. High carbon emissions; 2. High pollution; 3. High cost. Our aim is to develop forward-looking magnesium alloy corrosion protection technologies that combine high efficiency and environmental friendliness:

1. Chromium-free, fluorine-free, and phosphorus-free environmentally friendly systems.
2. Unaffected by workpiece size/specifications.
3. Room temperature operation, simple and fast process.

► INDUSTRIAL APPLICATIONS

Our core technology is chromium-free, fluorine-free, and phosphorus-free environmentally friendly magnesium alloy coating. Under conditions of no heavy metals and low pollution emissions, it achieves extremely low energy consumption of only 0.25 kWh/batch. The coating has excellent uniformity and high adhesion. We have collaborated with the Chinese Academy of Sciences to carry out the introduction and verification of military UAV structural components and expanded to the exoskeleton industry.



▲ More Info

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▶ **EXHIBITED TECHNOLOGY**

Edge AI Perception Computing System

▶ TECHNOLOGY INTRODUCTION

AzureWave provides a complete AI vision platform integrating AI computing modules, smart cameras, and vision aggregation solutions. With up to 50+ TOPS AI performance, multi-camera support, SLAM, obstacle avoidance, and sensor fusion, it enables rapid deployment of autonomous drones, robotics, smart surveillance, and edge AI systems.

▶ INDUSTRIAL APPLICATIONS

Designed for drones, robotics, AMR/AGV, smart surveillance, and edge AI systems, AzureWave's AI vision platform enables autonomous navigation, obstacle avoidance, SLAM, and real-time AI perception for next-generation intelligent applications.



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AI Vision Chip-Based 4-Camera Autonomous Navigation and Real-Time Trajectory Planning Technology

▶ TECHNOLOGY INTRODUCTION

The technology runs on the Taiwan-made AI vision module developed under this project, which delivers AI computing performance on the order of one hundred TOPS together with 8K high-resolution image processing, and provides a Reference Design Kit (RDK), SDK and ROS2 software framework that substantially lower the barrier to AI development for UAVs and robots.

▶ INDUSTRIAL APPLICATIONS

This technology is widely applicable to unmanned aerial vehicles (UAVs), robotics, intelligent inspection, smart logistics, precision agriculture, and public safety applications. By integrating AI-powered computer vision, autonomous navigation, and obstacle avoidance technologies, it enables autonomous inspection, monitoring, and target recognition in complex indoor and outdoor environments. The solution significantly reduces operational risks and labor costs while improving operational efficiency, safety, and mission reliability. Furthermore, the platform provides a comprehensive hardware and software development ecosystem, including a complete AI development framework, enabling domestic manufacturers and system integrators to rapidly develop and commercialize intelligent autonomous systems. This accelerates innovation and promotes the growth of the UAV and intelligent autonomous systems industries.



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Booth FL03

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▶ **EXHIBITED TECHNOLOGY**

Taiwan Native-Chip Drone Flight Control Ecosystem

▶ TECHNOLOGY INTRODUCTION

- **Tech Innovation:** Powered by MediaTek Genio 720 (4 TOPS AI) with a domestic Linux GCS running open-source software for smart obstacle avoidance.
- **Competitive / IP Edge:** 100% Taiwan non-red supply chain with cost advantage; patenting dynamic bandwidth and multi-frequency switching.
- **Key Achievements:** ORing applies industrial networking and operational resilience expertise to drones, meeting strict industrial standards.

▶ INDUSTRIAL APPLICATIONS

Powered by Taiwan MediaTek chips and long-range comms, our integrated avionics ecosystem solves subsystem fragmentation for drone OEMs. Combining plug-and-play hardware, open-source software, and on-chip AI for vision and obstacle avoidance, it enables fast mission customization, lowers costs, and shortens testing time for military, industrial, and non-red supply chain applications.



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Booth FL04

National Science and Technology Council

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EXHIBITED TECHNOLOGY

Development Project for Gallium Nitride (GaN) Power Semiconductor Technology in High-Efficiency Power over Ethernet (PoE) Switches and Power Electronic Products

TECHNOLOGY INTRODUCTION

This PoE power module integrates GaN HEMT devices, totem-pole PFC, and a high-frequency GaN CLLC converter. It targets 500 W output, 92% efficiency, and 16 W/in³ power density. High-speed switching, low loss, and compact design reduce power loss and cooling demand in AI data center racks. It is suitable for PoE switches, AI server racks, and high-efficiency networking power systems.

INDUSTRIAL APPLICATIONS

As power demand grows in semiconductor equipment, AI data centers, and high-power industrial systems, efficiency, power density, and dynamic response have become critical. Conventional multi-stage AC/DC and DC/DC conversion causes power losses. By using GaN devices, this technology improves conversion efficiency and is suitable for high-power applications such as AI data centers and industrial electronic systems.



National Science and Technology Council

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EXHIBITED TECHNOLOGY

eAI-SIM: An Edge AI Model Simulation and Deployment Platform

TECHNOLOGY INTRODUCTION

- Cross-Platform Simulation and Hardware Abstraction (Performance Modeling)
Builds performance models for different Edge AI hardware targets (e.g., NPU, GPU, DSP), including constraints such as memory bandwidth, compute throughput, and latency. Enables realistic simulation of AI model execution on selected platforms without physical hardware. Supports configurable parameters (input resolution, batch size, quantization level) to accurately estimate FPS, latency, power consumption, and memory usage.
- Model and System-Level Co-Simulation (End-to-End Pipeline)
Simulates not only individual models but the entire AI pipeline, including pre-processing, inference, and post-processing. Supports real-world application scenarios (e.g., ADAS, DMS, smart surveillance) to evaluate end-to-end latency, multi-model scheduling, and task contention. Helps identify bottlenecks early, such as I/O blocking or suboptimal NPU utilization.
- Automated Deployment and Configuration Generation (Toolchain Integration)
After simulation, automatically generates deployment configurations tailored to the target platform, including model conversion, quantization, and runtime settings. Provides one-click deployment (CI/CD-like workflow) to seamlessly deploy AI models and system designs onto designated Edge AI devices. Compatible with mainstream toolchains such as TensorRT, TFLite, ONNX Runtime, and vendor-specific SDKs, reducing porting and optimization effort.

INDUSTRIAL APPLICATIONS

eAI-SIM provides developers with a customizable AI development and testing environment that supports precise simulation and validation of model and system behavior under diverse deployment configurations. Developers can define virtual execution environments based on the target edge AI chipset, operating system, resource allocation (compute performance, memory, bandwidth), and intended application conditions, then directly evaluate AI model performance and overall system load within these environments. This allows developers to complete model tuning and system configuration planning without relying on physical development boards or fully integrated firmware, laying a solid foundation for subsequent deployment to real devices. Once validation is complete, developers can use a one-click operation in the platform to automatically synchronize and deploy the models and associated system settings to the designated chipset, ensuring a seamless transition to on-device execution and real-world deployment.



未來科技館
Future Tech, Leading Your Life.

▶▶ Taiwan Chip-based Industrial Innovation Program

◆ National Science and Technology Council

◆ Exhibitor
Academia Sinica / National University of Tainan / National Yang Ming Chiao Tung University / Chung Yuan Christian University

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▶ EXHIBITED TECHNOLOGY

Multimodal Smart Home Care: Lightweight Vision-Language Models for Real-Time Event Awareness and Anomaly Response

▶ TECHNOLOGY INTRODUCTION

Our system is built around lightweight Vision-Language Models (VLMs) designed for real-time understanding of continuous visual streams and multimodal information in home environments. It enables continuous awareness of daily activities, environmental changes, and potentially abnormal events, while maintaining computational efficiency and supporting privacy-conscious deployment for long-term smart care applications.

1. Lightweight and Efficient Multimodal Models: Through model compression and efficient inference techniques, MASU reduces computational and hardware requirements, enabling multimodal AI deployment in homes, on edge devices, and in resource-constrained environments.
2. Continuous Understanding of Streaming Visual Events: Rather than focusing only on individual image recognition, MASU continuously analyzes streaming visual data and temporal context to understand daily activities and event transitions, including activity patterns, routines, and unusual behaviors.
3. Anomaly Awareness and Real-Time Response: By integrating visual, language, and other in-home sensor information, MASU can identify potential risks such as falls, prolonged inactivity, or unusual movement, and provide event summaries, alerts, and relevant information to support timely responses.

▶ INDUSTRIAL APPLICATIONS

Our technology can be applied to smart homes, long-term care, elderly care, healthcare, and safety monitoring. Its lightweight multimodal models reduce the computational cost of continuous audiovisual monitoring while transforming raw sensor data into semantically meaningful descriptions of daily activities and abnormal events, helping caregivers quickly understand situations that require attention.

The technology can also be extended to care facilities, smart hospitals, telecare, public safety, and other domains requiring continuous event monitoring, serving as a core technology for real-time environmental understanding, anomaly detection, early warning, and AI-assisted decision support.

More Info ▲

Booth FL07

Organization

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▶▶ Taiwan Chip-based Industrial Innovation Program

◆ National Science and Technology Council

◆ Exhibitor
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▶ EXHIBITED TECHNOLOGY

AI-Powered Noise Reduction Medical-Grade Hearing Aid / Military-Grade AI Noise Reduction Active Hearing Protection Headset

▶ TECHNOLOGY INTRODUCTION

Hearing Aid:Chip Platform: Powered by the Airoha AB1595H 12 nm low-power Bluetooth audio chip with an integrated AI computing core, supporting AI noise reduction, scene recognition, and beamforming.

Audio Processing: Provides 48-channel frequency compensation and 10 kHz wideband processing, with feedback cancellation, impulse noise suppression, and wind noise reduction, all processed in approximately 5 ms.

Personalized Fitting: Supports user self-fitting and multiple international hearing-loss fitting formulas to deliver personalized hearing compensation.

Hearing Protector:Impulse Noise Protection: Attenuates sudden high-SPL impulse noise by more than 15 dB within 1 ms, with an average noise reduction of 28 dB, reducing the impact of gunshots, blasts, and other hazardous sounds.

AI Speech Enhancement: Uses AI-based speech enhancement and noise suppression to preserve critical voice commands while reducing background interference, supporting both communication and situational awareness.

Tactical Communication Integration: Supports broadcast and mesh networking technologies to enable closed tactical communication groups for shooting training, law-enforcement operations, and high-noise industrial environment.

▶ INDUSTRIAL APPLICATIONS

This hearing aid solution integrates a low-power Bluetooth audio chip, edge AI audio processing, and app-based self-fitting to provide a complete smart hearing care experience, from hearing assessment and compensation setting to daily listening optimization. With AI noise reduction, automatic scene recognition, beamforming, feedback cancellation, and multi-channel sound compensation, the device helps users improve speech clarity and listening comfort in conversations, outdoor settings, restaurants, and noisy environments. Potential applications include over-the-counter hearing aids, remote hearing care, hearing aid retail fitting, pharmacy- or channel-based hearing services, and age-friendly hearing health solutions.

This hearing protection solution is designed for high-noise and impulse-noise environments, integrating active hearing protection, AI speech enhancement, noise suppression, and tactical communication functions. The headset rapidly reduces the impact of hazardous sounds such as gunshots, blasts, and metal impacts while preserving speech commands and essential environmental cues. This enables users to maintain communication and situational awareness while their hearing is protected.

Applications include military and law-enforcement operations, shooting training, defense communication, manufacturing, construction, mining, airport ground operations, and other high-noise workplaces where hearing safety, team coordination, and rapid field response are critical.

More Info ▲

Booth FL08

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► TECHNOLOGY INTRODUCTION

1. **Intelligent Education:** Integrate multilingual interactions in Taiwanese, English, and Japanese with generative AI technologies to promote the internationalization of local language learning.
2. **Leisure and Tourism:** Empower tour guides and food-ordering robots to provide enhanced multilingual services in hotels, accommodation facilities, restaurants, and local tourist attractions.
3. **Industrial Training:** Support deployment in small and medium-sized enterprises (SMEs) and manufacturing environments, helping new employees quickly acquire industry-specific terminology and operational knowledge.
4. **Cultural Preservation:** Support the digital archiving and preservation of local languages and cultural heritage in Malaysia and other Southeast Asian countries.
5. **Healthcare:** Customize automatic speech recognition (ASR) models for healthcare and long-term care settings, providing voice-based education and interactive support to help older adults manage chronic diseases and medications.



◆ National Science and Technology Council

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ShareGuru Intelligence Technologies Inc.

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▶ EXHIBITED TECHNOLOGY

ShareQA Enterprise AI Knowledge Agent Platform

▶ TECHNOLOGY INTRODUCTION

ShareQA Enterprise AI Knowledge Agent Platform combines ShareGuru’s Agentic Workflow technology with Taiwan AI RAP sovereign computing power to transform enterprise documents and databases into a searchable, traceable, and continuously evolving internal AI knowledge service. The platform supports use cases such as customer support, internal knowledge search, and data analysis, helping enterprises accelerate AI adoption and intelligent knowledge service deployment.

▶ INDUSTRIAL APPLICATIONS

This technology can be applied to customer service centers, enterprise knowledge management, IT operations support, R&D document search, policy and compliance Q&A, training, and data analysis. By integrating enterprise documents, databases, and Wiki knowledge, the system helps users quickly retrieve reliable answers, trace information sources, and continuously accumulate new knowledge in the knowledge base, reducing manual workload while improving service efficiency, internal collaboration, and decision-making quality.



More Info ▲





◆ National Science and Technology Council

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National Central University

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EXHIBITED TECHNOLOGY

The technique development of using weather radar observational data to retrieve the thermodynamic fields over complex terrain (TPTRS) and its application in weather monitoring and research.

TECHNOLOGY INTRODUCTION

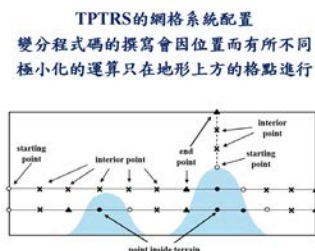
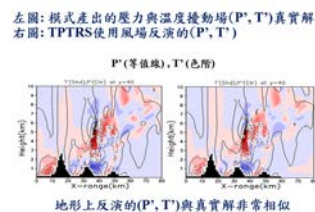
TPTRS is currently the only technique capable of directly performing thermodynamic retrieval over complex terrain. It uses the three-dimensional momentum and thermodynamic equations with a variational approach to obtain optimized thermodynamic structures. The retrieved fields can support severe weather monitoring, studies of convective development and terrain interactions, and improve numerical precipitation forecasting through data assimilation.

INDUSTRIAL APPLICATIONS

TPTRS demonstrates strong potential for meteorological and disaster prevention applications. It can be used for real-time monitoring and analysis of severe weather systems, such as heavy rainfall, while providing high-resolution three-dimensional thermodynamic fields for weather forecasting, disaster prevention, and emergency response. The technique can also support data assimilation and AI-based weather forecasting to improve short-term heavy rainfall prediction and severe weather warnings.



More Info ▲



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EXHIBITED TECHNOLOGY

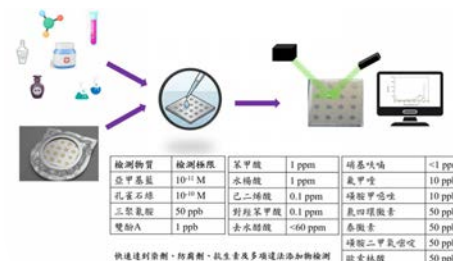
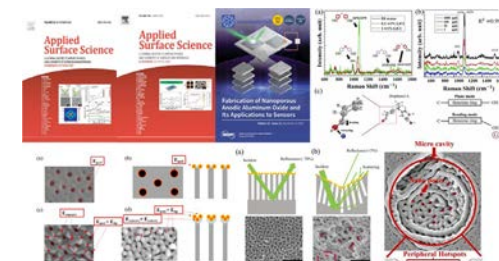
Novel unique nanoporous composite SERS substrates for preservatives and antibiotics detection and its application

TECHNOLOGY INTRODUCTION

This technology utilizes the electric field effect around AAO pores to effectively enhance SERS spectral signals, with additional enhancement occurring at inter-pore gaps, sharp tips, and pore peripheries. Low detection limits have been achieved for methylene blue, malachite green, melamine, bisphenol A, as well as various preservatives and antibiotics. The outcomes include four granted domestic patents and three granted international patents, and publications of five high-impact journal papers.

INDUSTRIAL APPLICATIONS

Most commercially available SERS substrates currently rely on MNPs, which result in poor stability and reproducibility, limiting their practical applications. We have developed a porous metal nanofilm SERS substrate that offers higher sensitivity, stability, uniformity, and reproducibility. It is well-suited for large-scale production, with low cost and the capability for high-throughput analysis, making it highly applicable to environmental and food safety.



▲ More Info

◆ National Science and
Technology Council

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Academia Sinica

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► EXHIBITED TECHNOLOGY

Pollen Revive: HOPA-Based Active Restoration Technology

► TECHNOLOGY INTRODUCTION

Pollen viability is vital for fruiting, but it declines during storage and under thermal stress, hindering seed production. This technology utilizes a novel small molecule, HOPA, to treat pollen. It significantly boosts pollen germination and tube growth, effectively rescuing pollen damaged by prolonged storage or extreme temperatures. Broadly applicable to various species, HOPA provides a high-value, efficient solution for precision breeding, stable fruit set, and long-term germplasm conservation.

► INDUSTRIAL APPLICATIONS

This technology uses HOPA to actively restore pollen viability, addressing yield losses from extreme weather and breeding storage bottlenecks. At a low cost (NT\$0.16/ml), it integrates seamlessly with automated facilities or robotic systems, replacing costly manual pollination. As a natural regulator, it aligns with green agriculture and simplifies regulatory approval. It is ideal for high-value fruit growers and seed companies to ensure stable food production and economic returns.



More Info ▲

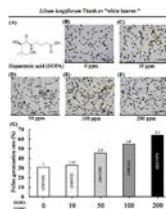


Figure 1. Hesperadin acid (HOPA) significantly stimulates *Ficus bly* pollen germination. (A) Chemical structure of HOPA. (B-E) Lower left: *Ficus bly* pollen grains germinated in culture medium containing 0 ppm (B), 10 ppm (C), 50 ppm (D), and 200 ppm (E) of HOPA at 25 °C for 2 hours. (F) Their corresponding germination rates. Pollen grains used in this experiment were stored at 4 °C for one week. Numbers inside the bars are the rates of germinated pollen divided by total pollen, and numbers on top of each bar are 95% fiducial intervals to recall, which were not in 1. Scale bars = 5 μm.

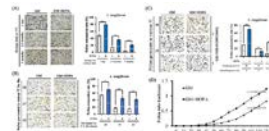


Figure 2. HOPA significantly restored the life germination vitality lost during long-term storage and extreme temperatures and promoted pollen tube growth. (A-D) *Ficus bly* pollen grains stored at 4 °C for 1 day, 2 weeks, and 5 months were pre-treated in culture medium with or without 100 ppm HOPA at 25 °C for 2 hours (left) or without; corresponding germination rates (right). (E) *Ficus bly* pollen grains stored at 4 °C for 1 day were subjected to pre-treatments at 25, 37, and 42 °C for 4 hours, then germinated in culture medium with or without 100 ppm HOPA at 25 °C for 2 hours (left) or without; corresponding germination rates (right). (F) *Ficus bly* pollen was pre-treated in culture medium with or without 100 ppm HOPA at 25 °C for 1 hour, and at 15 °C for 3 and 5 hours (left) to obtain their corresponding germination rates (right). (G) *Ficus bly* pollen was pre-treated in culture medium with or without 100 ppm HOPA at 25 °C for different time intervals to calculate their average pollen tube length. Numbers inside the bars represent germinated pollen divided by total pollen, and numbers on top of each bar reflect the relative germination to each, which was set to 1. Scale bars = 1 mm. The asterisks indicate significant differences at $P < 0.05$ between treatments (three biological replicates) using ANOVA with Tukey's test.



► Nature & Sustainable Tech





National Science and Technology Council

Exhibitor
Ming Chi University of Technology

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EXHIBITED TECHNOLOGY

Dynamic Phosphorus

TECHNOLOGY INTRODUCTION

This technology develops a graphene/layered double hydroxide (LDH) composite material with highly selective phosphate adsorption capability and excellent desorption performance. By controlling the applied voltage, phosphate can be electrically desorbed and recovered, enabling rapid, effective, and low-energy removal and recovery of phosphate from electroplating wastewater, with an adsorption capacity of up to 244.1 mg-PO₄ g⁻¹. Moreover, the electrode material can be regenerated and reused.

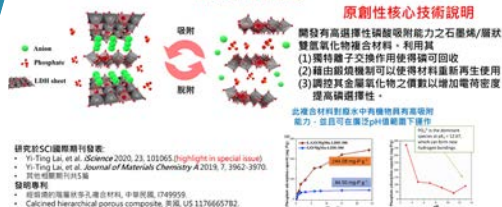
INDUSTRIAL APPLICATIONS

To ensure a stable supply of phosphorus resources, the government will enforce phosphate discharge limits. A recent survey indicates that 352 companies in science parks exceed the regulatory threshold. In response, we have developed a 10 L-scale prototype system, with a collaborative MoU with AUO to leverage patent-protected electrodes integrated with a CDI module. We will further develop a 500 L-scale on-site pilot unit for practical validation, operation, and testing at AUO wastewater plant.

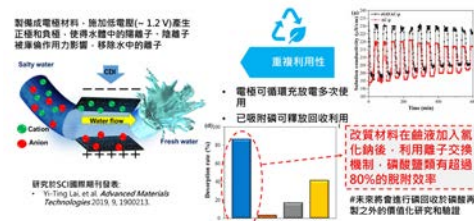


More Info ▲

▲ 決方案：基於層狀雙氫氧化物/石墨烯複合電極之電容去離子技術於選擇性磷回收



有效達成磷酸物質循環經濟之系統



National Science and Technology Council

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EXHIBITED TECHNOLOGY

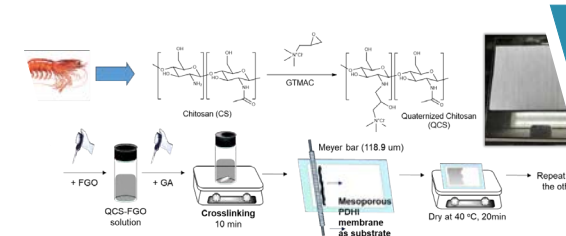
Breaking the Green Hydrogen Cost Ceiling: A Next-Gen "20% Energy-Saving" Dual-Benefit AEM Electrolysis System

TECHNOLOGY INTRODUCTION

Disrupting water electrolysis, this tech couples a Value-Added Anodic Reaction (VAAR) with hydrogen evolution, replacing oxygen evolution with high-value FDCA from bio-based HMF. This dramatically lowers the potential, cutting energy consumption to 3.63 kWh/m₃ H₂ (20%+ energy savings). Using a green chitosan composite AEM and noble-metal-free catalysts, it achieves material autonomy and shatters cost barriers via a dual-benefit business model.

INDUSTRIAL APPLICATIONS

This ampere-scale MEA system shatters green hydrogen cost barriers through a dual-benefit business model. It lowers power bills with 3.63 kWh/m₃ low-energy operation, while the anode co-produces high-value FDCA (a bio-plastic raw material) to cross-subsidize hydrogen costs and shorten ROI. Featuring seamless integration with chemical plants and total material autonomy (domestic chitosan AEM and noble-metal-free catalysts), it secures supply chain resilience.



▲ More Info

National Science and Technology Council

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EXHIBITED TECHNOLOGY

Non-destructive estimation method for soil organic carbon content

TECHNOLOGY INTRODUCTION

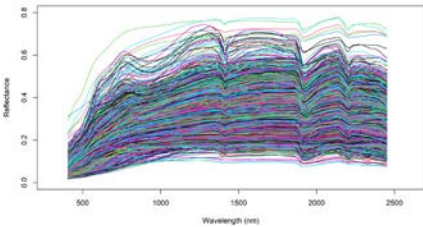
This technology integrates a portable visible and near-infrared spectrometer (Vis-NIR) with machine learning to rapidly and non-destructively estimate soil organic carbon (SOC) content and stable fraction of organic carbon (mineral-associated organic carbon, MAOC) within two seconds. It requires no chemicals, produces no wastes or carbon emissions, and provides a sustainable, rapid, and cost-effective solution for large-scale monitoring of both the quantity and quality of SOC.

INDUSTRIAL APPLICATIONS

This technology rapidly and non-destructively measures SOC and MAOC content, providing a waste-free analytical solution for agricultural research and extension stations, fertilizer manufacturers, waste recycling companies, environmental testing laboratories, ESG departments, and government research institutions. It significantly reduces analytical costs and improves carbon accounting, carbon credit evaluation, and carbon trading efficiency.



More Info ▲



National Science and Technology Council

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EXHIBITED TECHNOLOGY

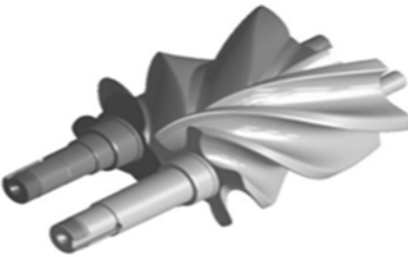
Optimization Design of the Variable-lead Screw Rotor for Twin-screw Compressors

TECHNOLOGY INTRODUCTION

Twin-screw compressors are widely used in industry for their reliability and efficiency. This study examines variable lead rotor designs to improve volumetric and isentropic performance. A thermodynamic model in Mathematica was developed to analyze leakage, pressure variation, and power consumption. Lead curves were optimized using uniform design, RBF prediction, and global optimization. Results demonstrate enhanced performance and an effective approach for rotor design optimization.

INDUSTRIAL APPLICATIONS

This study provides the air compressor industry with an optimized design methodology integrating high efficiency, low vibration, and manufacturability. It supports energy-efficient compressor development, reduces energy consumption and leakage, and improves performance and reliability. The approach can be directly applied to product design, shortening development time and lowering costs, thereby enhancing product value and international competitiveness.



▲ More Info



National Science and
Technology Council

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National Taiwan University

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EXHIBITED TECHNOLOGY

Passive Helical Vapor–Liquid Separation Technology for Cross-Gravity Advanced Thermal Management

TECHNOLOGY INTRODUCTION

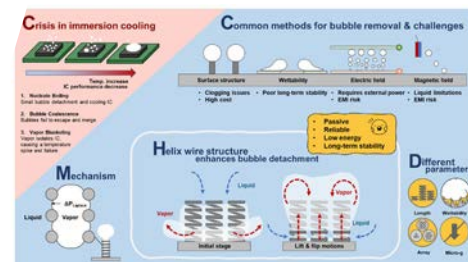
Pool boiling promises ideal high-power thermal management, yet simultaneous improvement of heat flux ceiling and efficiency remains unsolved. This technology uses helix wires to set all-time records for both in saturated water pool boiling—fully passive, zero external energy. Validated for AI chip cooling and confirmed effective in microgravity testing for space electronics. TRL 7, protected by a Taiwan invention patent. Target: the cross-gravity two-phase thermal design reference.

INDUSTRIAL APPLICATIONS

Two-phase immersion cooling holds under 2% market penetration due to clogging, degradation, and high parasitic power in existing methods. This technology's passive geometric flow structure delivers zero additional energy, no degradation, and low cost, breaking commercial deployment barriers. Applications span AI chip cooling, NCHC supercomputing upgrades, and TASA satellite thermal management. Compatible with Taiwan's existing supply chain at a fraction of comparable costs.



More Info ▲



National Science and
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EXHIBITED TECHNOLOGY

Air-Captured Green Ammonia and Its Derived High-Valued Chemicals

TECHNOLOGY INTRODUCTION

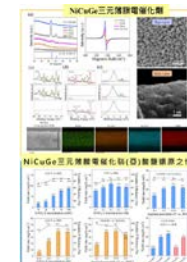
Green ammonia is a crucial green energy source. Here, our team has developed a direct air-capture electrochemical reduction technology that operates under ambient conditions. By activating air with plasma, we obtain a precursor solution that is electrochemically reduced to produce green ammonia for broad applications. This technology transforms ubiquitous air into high-value chemicals, bypassing the need for nitrogen separation, green hydrogen, and high-temperature/high-pressure conditions.

INDUSTRIAL APPLICATIONS

Our technology uses air plasma capture and electrochemical reduction to prepare green ammonia for fertilizers, ammonia fuels, hydrogen storage carriers, the low-carbon chemical industry, and resource recycling. At the 2025 World Economic Forum, "green" nitrogen fixation technology was among the top 10 emerging technologies, indicating that our technology is at the forefront globally and is expected to drive market value for low-carbon chemicals and the emerging green ammonia industry.



More Info ▲



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National Science and Technology Council

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EXHIBITED TECHNOLOGY

Next-Generation GED-ICP-MS High-Temporal-Resolution Atmospheric Trace Metal Monitoring Technology

EXHIBITED TECHNOLOGY

From Carbon Capture to Energy Storage: CO₂-Derived Biomass Porous Carbons for Sustainable Supercapacitors

TECHNOLOGY INTRODUCTION

The "GED-ICP-MS real-time trace metal monitoring system" integrates a Gas Exchange Device with Inductively Coupled Plasma Mass Spectrometry to deliver continuous five-minute monitoring of ten trace metals in airborne particulate matter, with detection limits down to 0.05 ng/m³. Field-validated in an urban environment, the system overcomes both the temporal lag of filter sampling and the sensitivity limit of XRF, offering a next-generation solution for urban air quality management.

TECHNOLOGY INTRODUCTION

With the global shift toward net-zero emissions and renewable energy, this study converts biomass wastes into high-performance porous carbon through high-temperature pyrolysis and CO₂ physical activation. The process avoids corrosive chemicals, reduces wastewater, and enables pore structure control for supercapacitors and sodium-ion batteries, offering a sustainable pathway for green energy storage materials.

INDUSTRIAL APPLICATIONS

Aligned with 2050 net-zero policies, the technology addresses three pressing needs: non-exhaust emission management in the electric-vehicle era, real-time environmental enforcement, and exposure early warning for sensitive populations. It can be deployed in mobile monitoring vehicles, roadside stations in traffic hotspots, and alert systems near schools and hospitals, providing scientific evidence for regulatory enforcement and policy verification.

INDUSTRIAL APPLICATIONS

This technology establishes an innovative C2V model integrating carbon capture, resource circularity, and energy storage. Using low-pollution in situ physical activation, CO₂ and biomass wastes are converted into high-value porous carbons for supercapacitors and sodium-ion batteries. With zero chemical wastewater, strong carbon-reduction benefits, and compatibility with existing equipment, it shows strong global green energy potential.



◆ National Science and Technology Council

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▶ EXHIBITED TECHNOLOGY

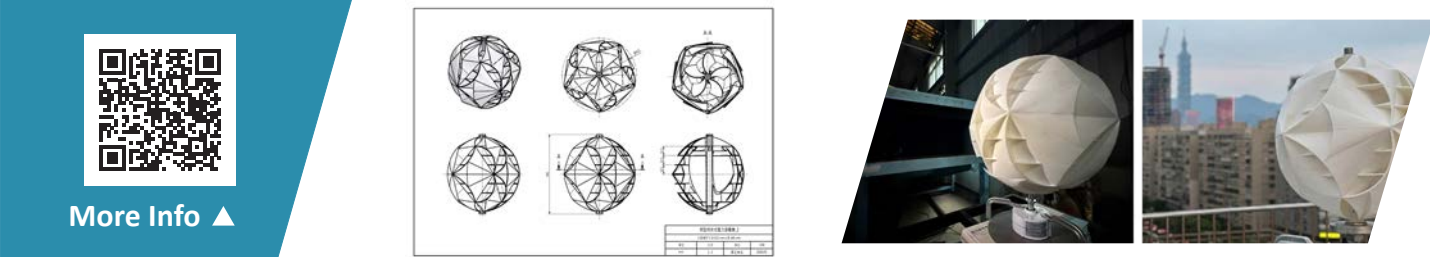
Omnidirectional Spherical Micro-Wind Energy Harvester with Guided Stator and Curved Rotor

▶ TECHNOLOGY INTRODUCTION

This technology develops an omnidirectional spherical micro-wind energy harvesting system with a guided stator and curved rotor for low-speed, multidirectional, and highly turbulent urban winds. The spherical guiding shell and convergent passages improve inflow stability and startup potential while reducing safety concerns from exposed blades. With low-noise and omnidirectional features, it is suitable for building-integrated wind energy, remote auxiliary power, and net-zero energy networks.

▶ INDUSTRIAL APPLICATIONS

This technology addresses the noise, visual intrusion, and safety concerns of conventional horizontal- and vertical-axis wind turbines in cities. Its spherical guided design offers low-noise potential, improved safety, and architectural integration. Applications focus on building-integrated micro-wind energy, low-power smart city nodes, and disaster-resilient auxiliary power, helping buildings and public facilities become resilient micro-energy nodes.





智慧永續館

SMART SUSTAINABILITY PAVILION

The Smart Sustainability Pavilion brings together the R&D achievements of six government ministries and agencies. Centered on the theme “Smart Resilience for a Sustainable Future,” the pavilion is organized into three sub-themes: “Smart Innovation,” “Digital Empowerment,” and “Circular Sustainability.” It highlights cutting-edge technological advancements, cross-domain integration of digital technologies, and applications in resource circulation and sustainable development. The pavilion aims to foster a secure and prosperous society through smart connectivity, resilient food systems, advanced national defense capabilities, and sustainable resource management.



- MND : Ministry of National Defense
- MOA : Ministry of Agriculture
- MODA : Ministry of Digital Affairs

- MOENV : Ministry of Environment
- MOL : Ministry of Labor
- NDC : National Development Council



Multi-Orbit, Multi-Constellation Heterogeneous Network Integration and Emulation Technologies

MODA

Exhibitor

Industrial Technology Research Institute, Institute for Information Industry

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TECHNOLOGY INTRODUCTION

- The Multi-Orbit Satellite Gateway integrates multi-orbit connectivity, delivering uninterrupted backup service without impacting existing equipment. The Multi-Orbit Satellite Emulator provides a maritime multi-orbit network emulation environment, allowing application verification without the need for at-sea deployment.
- This technology enables an immediate upgrade to multi-orbit backup without replacing existing equipment, while also emulating maritime satellite connectivity right in the lab, significantly reducing verification costs.
- The multi-orbit satellite gateway and emulation platform showcase cross-satellite integration and high-resilience communication capabilities.
- Technology Partners: Pyras Technology Inc. and Field Delivery Service Co., Ltd.

INDUSTRIAL APPLICATIONS

Multi-orbit satellite gateways and emulation platforms support maritime communications, in-flight connectivity, and broadband access in remote regions. By enabling heterogeneous LEO/MEO/GEO network integration, intelligent route selection, and dynamic handover, they enhance service continuity across satellite systems. The gateway performs real-time multi-orbit network selection and switching, while the emulation platform simulates latency, link blockage, and operational scenarios for equipment validation, network stress testing. Together, they accelerate satellite network deployment and commercialization.



MORE INFO ▲



“DeepRad.AI” DeepLung-CAC 100

NDC

Exhibitor

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TECHNOLOGY INTRODUCTION

Transforms a routine LDCT scan from solely detecting lung cancer into a multi-disease screening tool, identifying early anomalies, enabling preventative care, eliminating redundant tests, expanding hospital capacity, and reducing unnecessary radiation. Certified in Taiwan and Japan and deployed in over 30 medical institutions, global awards including the InnoVEX Grand Prize and third place at SelectUSA.

INDUSTRIAL APPLICATIONS

By integrating deep learning and multi-module AI, it repurposes standard LDCT scans—traditionally limited to lung cancer screening—to detecting multiple diseases at once. It automatically quantifies lesions, stratifies risks, and generates reports to aid clinical decision-making. Scalable across hospitals, insurance networks, and public health initiatives, redefining the efficiency of preventative medicine.



MORE INFO ▲



AI Floral Pathway – Smart Production and Marketing Technology for Protected Floriculture

MOA

Exhibitor

APHIA,TARI, Taoyuan DARES, Tainan DARES, Kaohsiung DARES, FIIC

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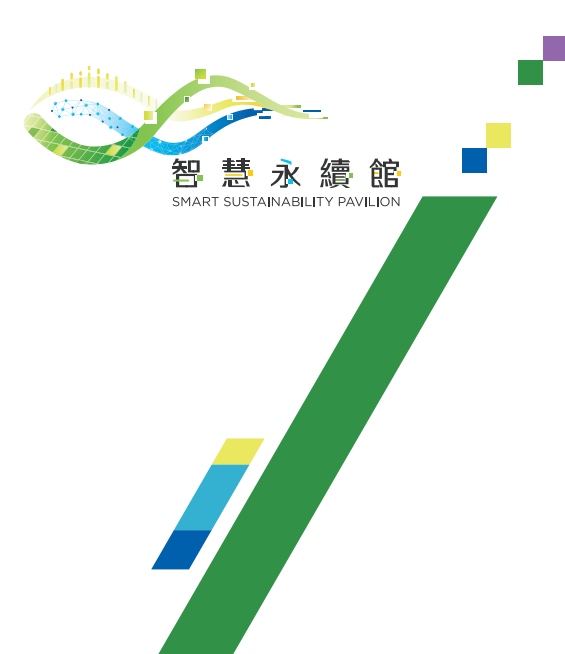
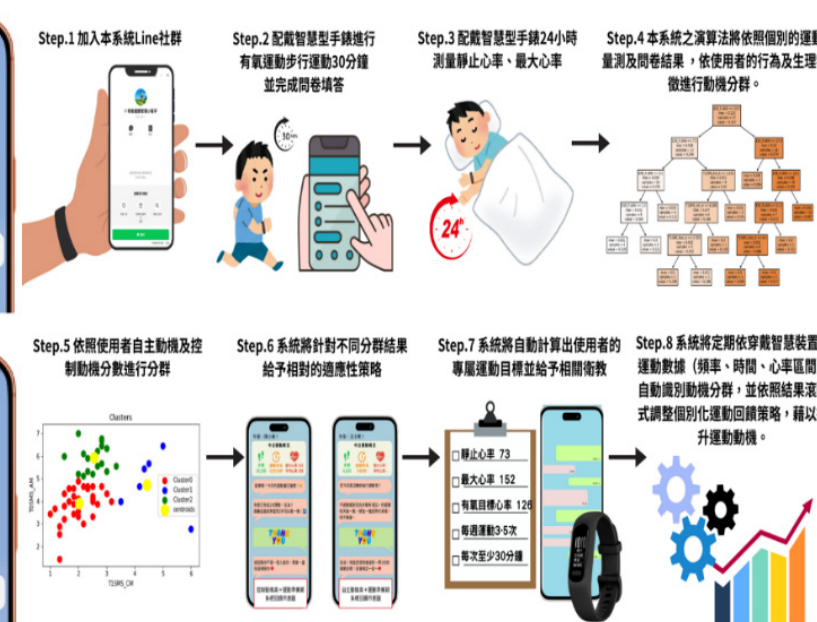
TECHNOLOGY INTRODUCTION

With intelligence and sustainability at its core, AI Floral Pathway integrates four key pillars: superior varieties, protected cultivation, smart management, and export biosecurity. By incorporating artificial intelligence (AI), the Internet of Things (IoT), digital management, and circular resource utilization, it establishes an end-to-end smart production and marketing system for protected floriculture, linking farms with international markets.

Beginning with the breeding of high-quality flower varieties that meet market demands, the system combines protected cultivation technologies—including alternative circular growing media and smart bottom irrigation—to provide a solid foundation for stable production. It further incorporates smart management technologies such as AI-based image recognition, crop growth monitoring, integrated production and marketing management platforms, carbon footprint assessment, and flowering quality

prediction, enabling precise and sustainable decision-making.

In addition, it integrates end-to-end export biosecurity management, post-harvest preservation, and international certification to enhance the quality of domestically produced flowers, strengthen export supply resilience, and improve competitiveness in international markets.



AI-Powered Personalized Exercise Feedback System

MND

Exhibitor

National Defense Medical University

Contact

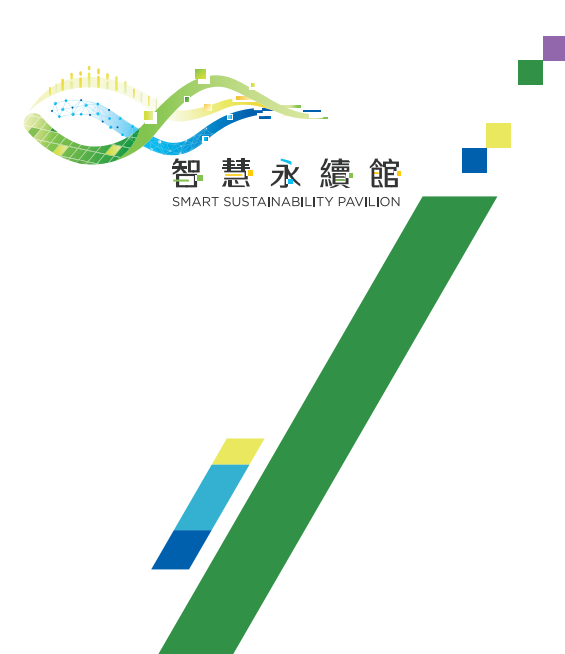
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TECHNOLOGY INTRODUCTION

This invention presents an AI-based personalized exercise feedback system that boosts exercise adherence through human-centered motivational coaching. Using wearable activity and physiological data, it identifies each user's exercise state and behavior patterns, then delivers real-time, tailored recommendations and encouragement. By incorporating psychological motivation profiles and machine-learning user segmentation, the system continuously adapts its feedback style to keep users engaged. It is suitable for home rehabilitation, elderly care, and health promotion.

INDUSTRIAL APPLICATIONS

- (1) AI Coach for Home-based Rehabilitation (Medical B2B2C): Provides remote monitoring and motivational feedback post-discharge to improve rehabilitation adherence and completion rates.
- (2) Exercise Promotion for the Elderly (Long-term/Day Care): Features low-barrier interactions and personalized incentive strategies to boost exercise participation and self-care.
- (3) InsurTech Module for Incentive-linked Policies: Integrates wearable devices and motivational feedback to support health management and risk stratification.
- (4) Corporate Wellness Module (B2B): Offers personalized exercise recommendations and real-time health feedback or challenge mechanisms to enhance engagement and health outcomes.



益鈞專屬專利技術
Yi Chun Exclusive Patented Technology



- 氣味處理/水循環處理
Odor treatment/Water recycle treatment
 - 破碎分解
Shredding
 - 原料還原再精製
Material restored & refined
- 製程中使用的水透過專利技術回收再利用。
 - Water used in the process are recycled through a patented process.
 - 利用低耗能的物理分選方式來分離原料，取代現有焚化處理。
 - Replacing conventional incineration with a low-energy physical separation process that recovers valuable materials for reuse.



MORE INFO ▲



Circular Recycling Technology for Absorbent Hygiene Products

MOENV

Exhibitor

Yi Chun Green Technology

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TECHNOLOGY INTRODUCTION

This proprietary patented technology transforms used disposable diapers into valuable secondary resources through an integrated process of shredding, washing, disinfection, and material separation. The recovered materials include cellulose fibers, plastics, and superabsorbent polymers (SAP). By reducing reliance on incineration and maximizing resource recovery, this solution promotes a circular economy and helps healthcare institutions and long-term care facilities achieve their net-zero carbon objectives.

INDUSTRIAL APPLICATIONS

Recovered cellulose fibers, plastics, and superabsorbent polymers (SAP) from used disposable diapers are converted into valuable secondary resources. These materials can be reused in various paper products (such as business cards, notebooks, paper bags, and hand towels), PP/PE plastic products (including card holders, chipboards, and pallets), and related agricultural or industrial applications, ensuring that what was once waste is properly and effectively utilized.



MORE INFO ▲



Maritime Operation UAV and Relay Platform Collaborative Operation System

MOL

Exhibitor

Institute of Labor, Occupational Safety And Health, Ministry of Labor

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TECHNOLOGY INTRODUCTION

1. Equipped with a UAV take-off and landing platform, enabling UAV-based offshore structural inspection operations.
2. Expandable payload/inspection module configuration, allowing integration of marine meteorological sensors as required by the inspection mission (e.g., wind speed and direction measurement on the water surface, and water temperature and current speed measurement underwater).
3. Adapted for offshore operations, capable of navigating and operating in Sea State 1 (Beaufort/wave scale) conditions.

INDUSTRIAL APPLICATIONS

This system integrates a UAV take-off/landing platform with a relay carrier for structural inspection of offshore wind farms, marine engineering structures, and port facilities—replacing conventional manual inspection at height, on water, and underwater, thereby significantly reducing worker exposure to fall, drowning, and adverse sea-condition hazards. Its expandable payload configuration supports meteorological and hydrological sensors for real-time monitoring of wind speed, direction, water temperature, and current speed, enhancing both inspection safety and data reliability. Operable in Sea State 1 conditions suited to the Taiwan Strait's variable seas, the system improves labor safety while boosting maritime infrastructure maintenance efficiency.

Technology for eco-friendly oyster shell seedling pots and their application in strawberry propagation

TECHNOLOGY INTRODUCTION

This technology establishes a field application management system for composite materials made from oyster shell powder and biodegradable plastics. Pots with different wall thicknesses are first tested for physical strength to ensure adequate mechanical performance during storage and handling. Fertilizer formulations and selected microbial strains are then introduced to accelerate degradation. Tests conducted under simulated nursery environments, and farmers' fields confirm that external management measures can maintain pot strength during seedling production while promoting rapid disintegration after transplanting. The technology addresses the inadequate application stability of biodegradable materials and provides practical cultivation and handling guidelines that can be readily adopted by the industry.



▲ MORE INFO



Booth SA01

◀ 410 ▶

Technology for converting agricultural and forestry residues into building materials

TECHNOLOGY INTRODUCTION

The core concept of this technology is to replace part of the petrochemical raw materials with lignin, a natural aromatic component of plant cell walls. Liquefaction treatment improves lignin's poor solubility and processability, allowing it to react with formaldehyde to produce lignin based phenolic resin. Plywood made with some formulations achieves bonding strength close to that of conventional phenolic resin, while its free formaldehyde content meets the national F1 standard for low formaldehyde building materials. The technology increases the utilization value of lignin, reduces the use of petrochemical phenol and process energy consumption, and raises the biomass based content. It can also be applied to impregnated laminates, furniture panels, and building panels.



▲ MORE INFO



Booth SA02

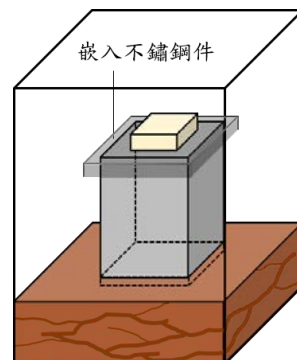
◀ 411 ▶

Environmentally friendly termite prevention and control methods and technologies for buildings made with domestic timber

TECHNOLOGY INTRODUCTION

This study presents a termite barrier system (incorporating embedded stainless-steel barriers) developed for the connection between the foundation and timber components of wooden buildings. The proposed technology aims to employ a purely physical method to prevent termite intrusion into timber components without the use of chemical preservatives, thereby reducing the energy consumption associated with preservative treatment processes for wood and minimizing reliance on chemical termite control.

Based on current laboratory evaluations, the prototype barrier system provided effective termite exclusion for at least 4 months. Following design optimization, the exclusion period was extended to more than 18 months. These results demonstrate the potential of the proposed barrier system for practical applications by extending inspection intervals and increasing the service life of timber components.



Natural processing and functional property enhancement technology for domestically grown pineapples

TECHNOLOGY INTRODUCTION

This technology uses domestically grown pineapples as raw materials and applies natural green processing techniques that combine drying pretreatment with constant temperature and high humidity aging. The process promotes the biotransformation of pineapple components, increases polyphenol content and antioxidant activity, and improves flavor quality. It also extends product shelf life, enhances added value, and supports sustainable agricultural development. The processed pineapple materials can be further used in micronized powders, liquid extracts, and functional foods. By expanding product applications and improving functional quality, the technology helps create higher value pineapple products and strengthens the overall competitiveness of Taiwan's pineapple industry.



Seafood by-product upcycling technology for pet food development

TECHNOLOGY INTRODUCTION

This technology focuses on upcycling seafood processing by-products by integrating raw material safety testing, nutritional composition analysis, enzymatic hydrolysis, and product formulation. Fish skin, bones, connective tissues, and fish trimmings are converted into high-value pet food ingredients for use in complete meat purées, liquid palatability enhancers, fish skin crisps, and freeze-dried treats. The resulting products feature high protein content, collagen, omega-3 fatty acids, good palatability, and sustainable waste reduction. By creating value from underused seafood materials, the technology demonstrates strong potential for the circular seafood economy and the expanding market for functional pet food products.



▲ MORE INFO



Booth SA05

◀ 414 ▶

Cultivation and management technology for edible <Asplenium setoi>

TECHNOLOGY INTRODUCTION

<Asplenium setoi> is a high value specialty edible fern and ornamental foliage plant in Taiwan. However, its spores have an extremely low germination rate under natural conditions, and commercial planting materials have traditionally relied heavily on wild collection. Existing methods, including simple spore sowing, tissue culture, and division propagation, face problems such as uneven germination, high contamination rates, expensive culture equipment, demanding technical requirements, and high subculture costs. This technology removes impurities that inhibit germination and potential pathogens, thereby improving spore germination uniformity and seedling survival. The resulting perennial A. setoi seedlings can be widely used for premium vegetable production and marketing, as well as for developing indoor ornamental foliage plants.



▲ MORE INFO



Booth SA06

◀ 415 ▶

Technology for comprehensive utilization of seaweed and development of functional products

TECHNOLOGY INTRODUCTION

This technology advances complete resource utilization and circular sustainability by using diverse seaweeds, including *Undaria pinnatifida*, *Botryocladia leptopoda*, and *Sarcodia suae*. Through polysaccharide separation, peptide production, and probiotic fermentation, the entire biomass is converted into fucoidan, health and cosmetic products, and sleep-supporting functional products. Fermentation extracts and residual algal biomass are further processed into natural health-promoting aquafeed. Trials show that these products significantly stimulate the non-specific immunity of fish and shrimp, improve survival and feed conversion efficiency, and reduce dependence on antibiotics. The technology supports safe, zero-waste, green, low-carbon aquaculture and offers strong competitiveness across multiple markets.



▲ MORE INFO



Booth SA07

◀ 416 ▶

Seed production technology for whitebarred goby (*Amblygobius phalaena*) and Banggai cardinalfish (*Pterapogon kauderni*)

TECHNOLOGY INTRODUCTION

This technology integrates artificial propagation and seed production protocols for whitebarred goby (*Amblygobius phalaena*) and Banggai cardinalfish (*Pterapogon kauderni*), establishing key techniques for broodstock conditioning, fertilized egg incubation, and larval rearing. Captive-bred fish are better adapted to home aquaria, resulting in lower mortality while maintaining their ornamental appeal and ecological functions. The technology also reduces reliance on wild-caught specimens, alleviates harvesting pressure on natural populations, and improves product quality in the marine ornamental fish industry. It creates high-value aquarium organisms that deliver both economic benefits and ecological sustainability, thereby supporting the long-term development of a responsible and competitive ornamental aquaculture sector.



▲ MORE INFO



Booth SA08

◀ 417 ▶

Chicken manure compost preparation and granulation technology

TECHNOLOGY INTRODUCTION

This technology provides customized technical guidance to poultry farmers for converting chicken manure into livestock manure compost (5-09) through composting and fermentation, or into processed chicken manure fertilizer (5-08) through drying and granulation. It covers the selection of bulking materials, formulation design, and recommendations for equipment and production process planning. Major nutrients, including nitrogen, phosphorus, and potassium, as well as copper and zinc concentrations, are analyzed and monitored to ensure that finished products comply with fertilizer category standards. After obtaining a fertilizer registration certificate, producers may sell their own fertilizer products, avoid outsourced manure removal costs, rapidly process chicken manure on site, and generate additional income.



▲ MORE INFO



Booth SA09

◀ 418 ▶

Manufacturing technology for electric shock traps designed to attract and kill fruit flies and melon flies

TECHNOLOGY INTRODUCTION

Designed according to the phototactic and upward flying behavior of fruit flies and melon flies, this device combines a high voltage, low current electric grid mounted at the bottom with a trap base containing attractant materials. When flies attempt to approach the attractant, they are electrocuted and fall to the ground. Because the insects do not contact the attractant, its service life is effectively extended. The dead insects do not enter the trap, eliminating the need to remove insect bodies. The bottom mounted grid also improves operational safety. Deploying the device with male and female attractants can enhance area wide control of fruit flies and melon flies in agricultural fields.



▲ MORE INFO



Booth SA10

◀ 419 ▶

Production and release technology for the predatory mite *Neoseiulus longispinosus*

TECHNOLOGY INTRODUCTION

Spider mites reproduce rapidly and often cause severe crop losses. This technology establishes mass production and release procedures for *Neoseiulus longispinosus*, a predatory mite that specializes in feeding on spider mites. Heat tolerant and highly adaptable, it preys on spider mite eggs, nymphs, and adults and actively searches leaf undersides and vein crevices that are difficult to reach with pesticides. Its rapid reproduction allows field populations to become established within 1–2 weeks after release. An innovative condiment bottle dispenser enables rapid, uniform release regardless of cultivation system or plant height, covering 50 meters in only one minute. The technology reduces pesticide use, crop damage, and labor requirements, supporting environmentally friendly agriculture.



▲ MORE INFO



Booth SA11

◀ 420 ▶

Production of bio-compost utilizing phosphate-solubilizing *Bacillus licheniformis* TCLigB

TECHNOLOGY INTRODUCTION

Bacillus licheniformis strain TCLigB effectively decomposes lignin/cellulose, solubilizes phosphorus, and produces IAA for agricultural use. It can be cultivated via liquid fermentation using agro-industrial waste such as rice bran, soybean, oatmeal, and rice husk ash; being an approved safe strain, allows for rapid commercialization of high-density microbial fertilizers. Co-inoculation with *Trichoderma* spp. facilitates efficient composting of fruit tree prunings and substrate development.



▲ MORE INFO



Booth SA12

◀ 421 ▶

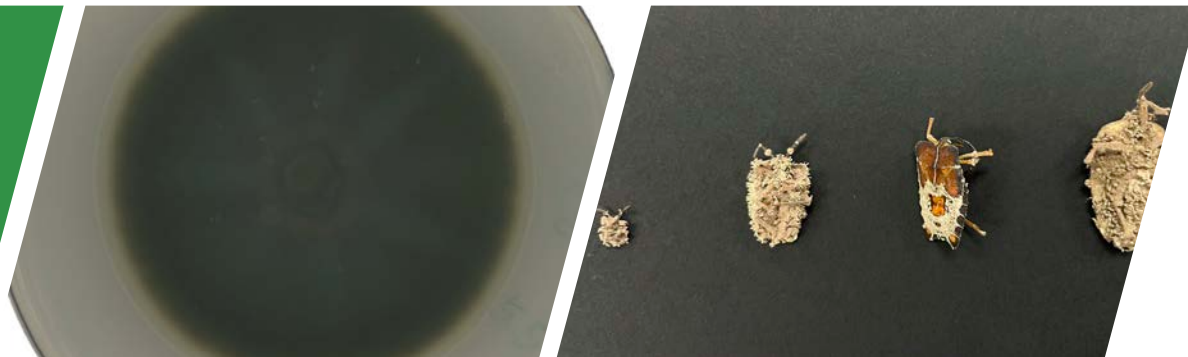
Mass production technology for *Purpureocillium takamizusanense*: safe and effective bioinsecticide development

TECHNOLOGY INTRODUCTION

Mass production technology for strain TNZZS6 has three key advantages. First, it supports low cost production with high viable spore counts through both liquid and solid state fermentation. Liquid fermentation yields up to 10^9 CFU/mL, while solid state fermentation reaches 10^{10} CFU/g. Second, the strain has been formulated as a wettable powder that remains stable for at least one year under refrigerated storage. Third, the standardized scale up process shortens production by approximately two to three days compared with conventional manufacturing processes for entomopathogenic fungi. These features support efficient commercial production and the development of safe, effective biological insect control products.



▲ MORE INFO



Booth SA13

◀ 422 ▶

Organic fertilizer application technology for cultivation of melons and other cucurbit crops

TECHNOLOGY INTRODUCTION

This technology uses fully composted livestock and poultry manure as the main material. Considering that watermelons are often cultivated in gravelly riverbed soils, mixed organic fertilizers are formulated by combining the nutrient characteristics and mineralization rates of different fertilizers with results from previous watermelon fertilization trials. Because composted manure mineralizes slowly, it is blended with faster mineralizing organic materials and commercial slow release fertilizers. This combination reduces fertilizer use while maintaining watermelon yield and quality. The steadier and more continuous nutrient release also improves cultivation stability and helps reduce production risks caused by increasingly frequent extreme weather.



▲ MORE INFO



Booth SA14

◀ 423 ▶

◆ MOA ◆ Exhibitor Tea and Beverage Research Station, Ministry of Agriculture ◆ Contact Chiou Chiao Sung chiou-sung@tbrs.gov.tw

Coffee bean adsorption technology for natural floral and fruity aromas

TECHNOLOGY INTRODUCTION

Unstable processing parameters can result in inconsistent coffee flavor. Inspired by traditional tea scenting, this technology first subjects coffee beans to a cell wall disruption treatment. The beans are then mixed with fresh aromatic materials or byproducts from domestically produced fruits, fragrant flowers, and herbs under specified process conditions, allowing them to adsorb natural aromas. The process gives conventional coffee beans distinctive floral and fruity flavor notes that they do not normally possess, while promoting the secondary use of agricultural byproducts. It enables the development and stable mass production of flavored coffee beans with authentic, natural aromas and consistent product quality.



▲ MORE INFO



Booth SA15

◀ 424 ▶

◆ MOENV ◆ Exhibitor Advanced Materials Co., Ltd. ◆ Contact Donovan donovan@u-champion.com

Bamboo Fiber Bio-Composite Materials for Semiconductor Electronic-Grade Packaging Applications

TECHNOLOGY INTRODUCTION

Upgrades natural bamboo fiber into a low-carbon key material for semiconductor and electronics use, with antistatic control and recyclability.

Natural binder technology and proprietary formulations create technical barriers, with mass-production compatibility and ESG data value.

Received the 24th MOEA Business Startup Award in 2025.

INDUSTRIAL APPLICATIONS

Applicable industries include food packaging, electronics, semiconductors, and future medical materials. Applications include cutlery, straws, cups, IC Trays, Chip Trays, wafer boxes, and other protective packaging. The materials offer temperature resistance, Embedded Antistatic Control, recyclability, and compatibility with extrusion and injection molding.



▲ MORE INFO



Booth SA16

◀ 425 ▶

GreenPlax® CloudLoop Pillow

TECHNOLOGY INTRODUCTION

Innovation:
Guided by "Air Embrace, Comfortable Support," the GreenPlax® CloudLoop Pillow features a 100% rTPEE 3D mesh core with >90% air volume that rapidly expels heat and humidity. Ergonomically contoured to cervical curves for dynamic pressure relief, it combines a smooth 100%TENCEL™ cover with fully washable, anti-mold, and anti-mite protection, bridging circular materials and sleep science.

Advantages:
Solving the stiffness of traditional elastomers and the sag of memory foam, our patented structural layout delivers high breathability, lasting rebound durability, and zoned dynamic pressure relief.

Achievements:

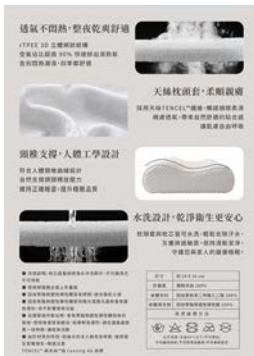
Ccilu's innovations have won top honors, including Red Dot, iF, and A' Design Awards, and earned recognition among Global Business Leaders' 30 Most Inspiring Companies to Watch.\

INDUSTRIAL APPLICATIONS

This technology upcycles recycled PET bottles (rPET) into a 100% rTPEE 3D mesh elastic material, successfully commercialized as the GreenPlax® CloudLoop Pillow. Featuring an ultra-breathable, heat-dissipating design with over 90% air volume, it offers precise cervical ergonomic support along with anti-mold, anti-dust mite, and fully washable properties. Beyond home and premium bedding markets, this material can be broadly applied to anti-decubitus medical mattresses, long-term care pressure-relief pads, automotive seat cushions, and outdoor furniture cushions—delivering a next-generation innovative solution that combines carbon reduction with circular economy value for traditional textiles, bedding, and healthcare industries.



▲ MORE INFO



Booth SA17

◀ 426 ▶

Black Soldier Fly Organic Resource Biorefinery System

TECHNOLOGY INTRODUCTION

- 1.InnoRs uses an automated continuous conveyor system instead of traditional tray farming, improving efficiency and scalability while reducing labor.
- 2.Farming parameters are adjusted by season and climate, lowering dependence on costly climate-control systems.
- 3.Its proprietary seed-stock system integrates larval rearing, population estimation, and precise dosing to ensure stable supply and accurate production management.

INDUSTRIAL APPLICATIONS

InnoRs' automated continuous farming system reduces labor needs in large-scale black soldier fly production while improving capacity and stability. Climate-responsive parameters enable deployment across regions. The resulting insect protein, insect oil, and organic fertilizer reduce reliance on imported feed and agricultural inputs, strengthening domestic food resilience.



▲ MORE INFO



Booth SA18

◀ 427 ▶

Raw food waste recycling and regeneration system

TECHNOLOGY INTRODUCTION

- Technology Innovation No heating required during the food waste recycling process, resulting in zero wastewater discharge and virtually odor-free operation. Capable of processing up to 100 kg of food waste per hour, ensuring high operational efficiency and rapid equipment turnover. Designed with low noise and low vibration, making it suitable for installation in schools, factories, commercial facilities, and other indoor or outdoor environments.
- Competitive Advantage & Intellectual Property The core technology is protected by a Taiwan Invention Patent (Patent No. I880856), demonstrating the company's technological innovation and competitive edge.
- Major Achievements & Awards 2022 2nd Place, Strategies Innovation & Entrepreneurship Competition Bronze Award, HSH Innovation & Entrepreneurship Competition Potential Award, Startup Pegasus Elevator Pitch Competition 2nd Place (Social Enterprise Division), 7th Yunus Social Innovation & Entrepreneurship Competition Silver Award, Yilan Startup Competition Finalist, IMV ESG Innovation Proposal Competition (Energy Saving & Carbon Reduction Category) Bronze Award, Asian Innovation & Entrepreneurship Development Competition
- Milestones Continued 2023 Finalist, Industrial Development Administration, Ministry of Digital Affairs – Public Welfare Innovation Program Bronze Award, Yilan Startup Competition Best Innovation Award, FamilyMart Sustainability Innovation Awards Fuxing Elementary School, Tainan adopted the Food Waste Circular Recycling System, and the project received the Government Innovative Procurement Special Award.
- Recent Recognition 2024 Finalist, Skyline Accelerator Program Finalist, AWE Women Entrepreneurship Accelerator Finalist, Standard Chartered Women in Entrepreneurship Awards 2025 Finalist, NTU Garage Accelerator Finalist, TACC CREAT Accelerator Finalist, Green Technology Accelerator

INDUSTRIAL APPLICATIONS

The Raw Food Waste Recycling System is suitable for various settings, such as schools, restaurants, food processing plants, communities, and farms. Its fully enclosed design significantly reduces operational noise while enhancing safety, making it ideal for use in high-traffic or sensitive areas. This system can create a circular economy model and promote environmental education, supporting sustainable development and resource regeneration within the community.



▲ MORE INFO



Booth SA19

◀ 428 ▶

PCR & Circular Materials to Carbon Neutrality: Reshaping the Sustainable Beauty Value Chain

TECHNOLOGY INTRODUCTION

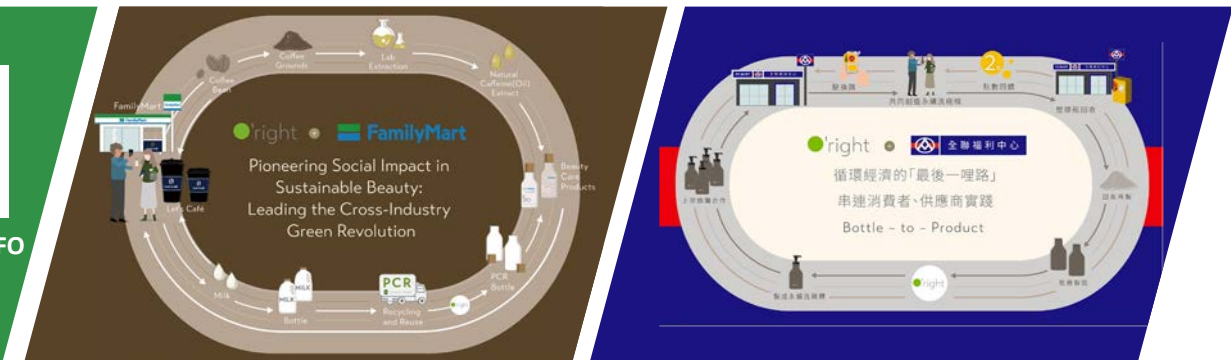
Integrates post-consumer PCR packaging with petroleum-free ingredients across a five-stage carbon system: materials, production, logistics, use and recycling. As designer, O'right directly integrates retail, recycling and manufacturing partners into a green value chain competitors cannot easily replicate. SGS/BSI verified carbon neutral for years; RE100 since 2023; Japan Good Design, Reuters Global Sustainability, and Taiwan Excellence Awards.

INDUSTRIAL APPLICATIONS

O'right partners with FamilyMart, Taiwan's leading convenience store chain, transforming in-store collected coffee grounds and milk bottles into beauty ingredients and packaging, cutting carbon meaningfully and lifting FamilyMart's ESG standing among Taiwan's listed companies. PX Mart has taken this further, using a PCR-recycling loyalty program to engage members in co-creating a water- and resource-saving mousse cleanser for modern small households. This designer-led green supply chain model is replicable across drugstore chains in Japan, community supermarkets in Europe, and similar retail settings worldwide.



▲ MORE INFO



Booth SA20

◀ 429 ▶

Recycled Material Application Technology for Food Packaging

TECHNOLOGY INTRODUCTION

This technology focuses on applying recycled plastic materials to thermoformed food packaging. By integrating material formulation, process optimization, and lightweight structural design, KYF develops recyclable packaging solutions with stable forming performance, product strength, and safety. It supports customers in reducing virgin plastic use and promoting a circular packaging model.

INDUSTRIAL APPLICATIONS

The technology can be applied to food manufacturing, foodservice, retail channels, central kitchens, and meal supply chains. It is suitable for food trays, containers, lids, and other thermoformed packaging. By adopting recycled materials, lightweight design, and recyclable structures, it helps brands reduce packaging waste, support ESG goals, and build a more sustainable supply chain.



▲ MORE INFO



Booth SA21

◀ 430 ▶

Intelligent Medical Waste Recycling and Circular Utilization System

TECHNOLOGY INTRODUCTION

- Technological Innovation –Established an integrated medical plastic recycling process combining sterilization, AI-assisted sorting, purification, and remanufacturing to convert PP, PVC, PS, PC, PE, and PSF into high-value PCR resins, composite materials, and recycled products.
- Competitive or Intellectual Property Advantages – Proprietary patented technologies, AI-assisted sorting, and automated processing enable efficient medical plastic recycling. Licensed for infectious medical waste treatment, recycling, and waste management, providing a comprehensive circular resource solution.
- Important Achievements / Awards – Taiwan's first company to commercialize infectious medical plastic recycling. Recipient of Innovation Technology, Golden Peak Award, Taiwan Circular Economy Awards, and Resource Circulation Outstanding Enterprise - Silver Award.

INDUSTRIAL APPLICATIONS

AI-powered robotic systems integrate computer vision, deep learning, and robotic manipulators to identify and sort medical plastics with high accuracy. The technology improves sorting efficiency, reduces human exposure to infectious waste, minimizes misclassification, and increases recycling purity. It also supports standardized, traceable operations, lowers labor costs and carbon emissions, and promotes sustainable medical waste management and a circular economy.



▲ MORE INFO



Booth SA22

◀ 431 ▶

Vest with cooling (heating) and fan modules

TECHNOLOGY INTRODUCTION

- Technological Innovation – Utilizing a cooling chip and fan, external airflow is confined within the clothing by the non-breathable fabric and flows through the cooling chip area, effectively lowering body temperature.
- Competitive or Intellectual Property Advantages –New Product No. 675779.
- Important Achievements / Awards – None.

INDUSTRIAL APPLICATIONS

Due to climate change and global warming, outdoor workers in our country are suffering from heat-related injuries and deaths. Cooling chips and fan systems, combined with non-breathable clothing, can be used to address this issue. This technology is being applied to outdoor workers both domestically and internationally, including those in agriculture, construction, and transportation.



▲ MORE INFO

具製冷（熱）及風扇模組之背心(新型專利)



具製冷（熱）及風扇模組之背心(新型專利)



Booth SA23

◀ 432 ▶

Superhydrophobic photocurable polymer coating

TECHNOLOGY INTRODUCTION

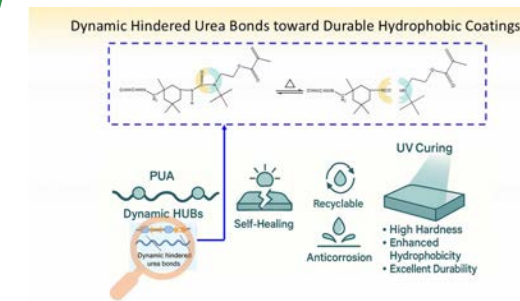
This exhibit presents a superhydrophobic UV-curable polyurethane coating featuring rapid curing, high water repellency, and self-healing capability. The coating reduces contaminant adhesion, improves decontamination efficiency, and restores surface functionality through simple heating, offering a durable solution for military and industrial protective coatings.

INDUSTRIAL APPLICATIONS

A superhydrophobic, self-healing UV-curable coating that improves decontamination efficiency, enables rapid repair, enhances durability, and extends service life for military and industrial protective applications.



▲ MORE INFO



Booth SA24

◀ 433 ▶

Large-fruited tomato growth simulation software

TECHNOLOGY INTRODUCTION

Current smart agriculture largely focuses on environmental monitoring, with limited value added applications, while foreign crop models cannot be directly applied to domestic greenhouse conditions. Based on the classical TOMGRO model, this technology was calibrated using multi year growth and environmental data for indeterminate large fruited tomatoes collected by the Taiwan Agricultural Research Institute, and validated across multiple years, varieties, and greenhouse trials. The Python program requires only temperature and light intensity data for the simulation period to accurately predict daily node number, leaf area index, fruit load, and yield. It converts environmental data into a flexible digital cultivation decision support tool with strong practical and commercial value.



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Booth SB01

◀ 434 ▶

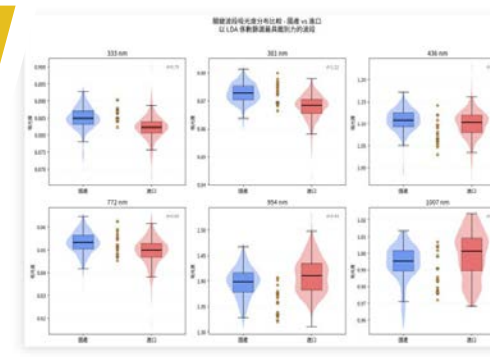
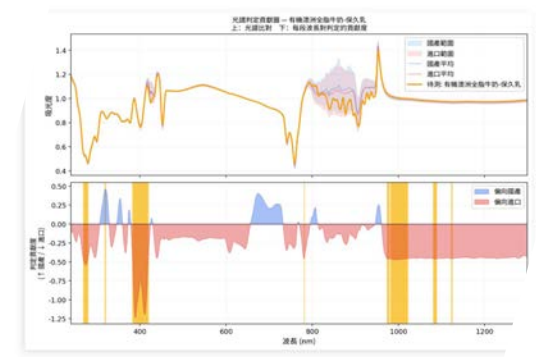
Rapid identification technology for determining the geographical origin of cow's milk samples

TECHNOLOGY INTRODUCTION

“Rapid milk origin authentication technology” uses Fourier transform infrared spectroscopy (FTIR) to obtain spectral fingerprints of milk and combines them with data on milk fat, protein, lactose, total solids, and milk urea nitrogen. Machine learning models are then used to distinguish domestically produced milk from milk produced overseas. The technology provides rapid analysis, requires no reagents, does not damage samples, and supports high throughput screening. Its identification reliability can be further improved by expanding the database and retraining the models. Applications include dairy origin verification, brand anti-counterfeiting, government inspections, and import monitoring, thereby strengthening product traceability and market supervision.



▲ MORE INFO



Booth SB02

◀ 435 ▶

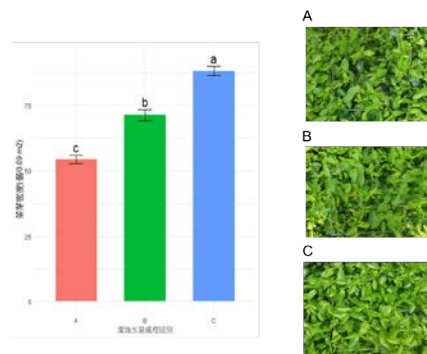
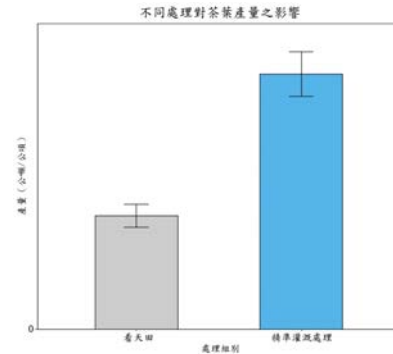
Smart precision drip irrigation technology for tea plantations

TECHNOLOGY INTRODUCTION

This technology integrates a drip irrigation system, meteorological data, and soil moisture sensors to establish a smart precision irrigation decision module that automatically supplies an appropriate amount of water according to tea plant requirements. During drought or water shortages, the system maintains tea plant growth, mitigates water stress damage, and improves yield and plant vigor recovery in the following season. When rainfall is unevenly distributed, it precisely regulates irrigation to maintain tea yield, quality, and flavor. The technology also improves water use efficiency, conserves water resources, reduces irrigation costs, and supports smart and sustainable tea plantation management.



▲ MORE INFO



Intelligent production and sales management system for vegetable seedlings

TECHNOLOGY INTRODUCTION

This system is a production and sales management platform designed for professional vegetable nurseries producing plug seedlings. Based on customer orders, it supports seedling production planning, scheduling, cultivation management, shipment, and payment collection. Handheld devices can also be used for on-site task management, enabling users to accurately track and control each stage of the vegetable seedling production and sales process. The system adopts a modular design, allowing users to select and deploy the functional modules that best meet their operational needs. Its flexible configuration can be adjusted according to different production processes, nursery scales, and management requirements.



▲ MORE INFO



蔬菜育苗智慧化產銷管理系統-APP行動版

◆ 隨時隨地快速查詢-客戶、訂單、種苗庫存、出貨



Shipboard Personnel Overboard Monitoring System

TECHNOLOGY INTRODUCTION

The system can be configured on a vessel and includes a micro wireless radio-frequency (RF) beacon transmitter, which is bound to an operator and attached to the operator's body to actively broadcast an RF beacon. And a plurality of RF beacon receivers, which are externally connected to the ship's main control computer and distributed throughout the vessel to receive the RF beacon.

The man-overboard management software is equipped with a detection mechanism to determine whether the RF beacon signal strength continuously falls below a threshold. If the signal strength remains below the threshold, the software determines that a man-overboard event has occurred and executes an alert procedure.

INDUSTRIAL APPLICATIONS

To be used on domestic coastal fishing vessels, enhancing and protecting fishermen's operational safety.



▲ MORE INFO



AI Edge-XR Fusion Sphere Edge AI × 5G × Satellite XR Interactive System

TECHNOLOGY INTRODUCTION

- AI Edge-XR Fusion Sphere is a generative AI-powered multimedia interactive system designed for large-scale immersive XR applications. By integrating sensing, AI inference, 4K content generation, and synchronized multi-device interaction into a unified platform, it streamlines the entire deployment process from approximately 12 hours to just 80 minutes. The system effectively addresses latency and synchronization challenges while enabling stable, real-time interactive experiences. Supporting venues with up to 10,000 participants, it improves user experience stability by 30% and reduces deployment costs by 40%, providing an efficient, scalable, and cost-effective solution for exhibitions, entertainment, and smart venue applications.
 - Integrating multimodal AI, Edge AI, and integrated terrestrial-satellite communications, the system delivers real-time interaction, extensive coverage, and ultra-low latency, offering a unique competitive advantage that is difficult for comparable technologies to match.
 - Recipient of the Bronze Award in the Lifestyle, Entertainment & Design category at the 39th Edison Awards, recognizing AI Edge-XR Fusion Sphere for its innovation in immersive XR experiences and Taiwan's leadership in cultural technology.
- Technology Partners: NTTU, NTCUST

INDUSTRIAL APPLICATIONS

"This technology has been successfully deployed in the performing arts and cultural exhibition sectors, creating new possibilities for immersive interactive experiences. In collaboration with the National Theater & Concert Hall and the Taipei Male Choir, III integrated AI-powered voiceprint-driven real-time visual generation into the "**Cheers to Life**" 5G immersive performance. By analyzing vocal volume, frequency, and timbre in real time, the system dynamically generates synchronized visual effects, transforming music into a visible artistic experience and pioneering a new model for the digital transformation of performing arts.

The technology has also been showcased at the "**Taiwan Lantern Festival**" through a 5G XR LED mobile stage. Combining XR interactive technologies with a mobile immersive venue, visitors can instantly become characters from well-known Taiwanese films and animations, shifting from passive audiences to active participants. This innovative approach significantly enhances audience engagement, immersion, and cultural experiences while demonstrating the broad application potential of XR technologies in the cultural and creative industries."



▲ MORE INFO



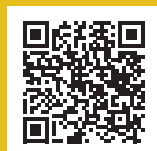
AR glasses-based pitaya flower thinning and disease recognition system

TECHNOLOGY INTRODUCTION

- This system integrates Wi-Fi HaLow communication, AI-based image recognition, and AR glasses to provide real-time assistance for pitaya disease identification, flower thinning, fruit maturity assessment, and yield estimation. Compared with conventional approaches that rely heavily on farmers' experience and manual judgment, the system can automatically identify disease categories or flower conditions and instantly display the analysis results on AR glasses or mobile devices.
- Establishes a dedicated pitaya disease and flower-thinning database, integrating AI recognition and AR glasses technologies to reduce reliance on experience and improve operational efficiency.
- Technology Partners: TransNet, Jorjin, STUST

INDUSTRIAL APPLICATIONS

This system uses Wi-Fi HaLow, AI-based recognition, and AR-assisted guidance to support pitaya disease monitoring, flower-thinning management, and harvest timing and yield forecasting. It provides instant diagnoses and recommendations, improving operational efficiency and consistency while reducing reliance on experienced farmers. It can also significantly shorten the training period for new workers, which traditionally takes up to two months, and be extended to other smart agriculture applications.



▲ MORE INFO

火龍果AI影像疾病分類

請點擊下方按鈕啟動相機拍照

點擊拍照並辨識



分類結果: 偵測到: 潰瘍病 (100.0%) (綜合信心度: 100.0%)

辨識火龍果花苞 (疏花)



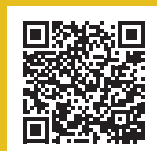
Mission Critical Network Based on Swarm Control of Unmanned Vehicles

TECHNOLOGY INTRODUCTION

- By integrating cross-disciplinary technologies—including autonomous collision avoidance, MIT MOOS-IvP multi-vessel swarm control, Federated Learning image recognition, and GNSS-Denied navigation—the system breaks through the limitations of traditional rule-based navigation. It enables autonomous learning and real-time decision-making in complex sea conditions while supporting multi-vessel collaborative operations, achieving a fully indigenous, full-domain maritime system for national defense autonomy.
- JetSea AI holds multiple proprietary patents covering real-time collision avoidance, trajectory guidance, and reinforcement learning-based navigation, along with exclusive licensing of six core technologies from NYCU. The system incorporates MIT's marine autonomy framework with U.S. Navy-validated swarm control capabilities, and has completed paid proof-of-concept projects with domestic partners — establishing high technical barriers that are difficult to replicate.
- Won the Special Jury Award at the 2025 Satellite Digital Application Innovation Competition. Achieved full autonomous navigation from Kaohsiung to Xiaoliuqiu, including a complete island circumnavigation and return; successfully integrated multiple unmanned vessels to execute collision avoidance and swarm tracking missions.

INDUSTRIAL APPLICATIONS

Deployable across defense, coast guard, scientific research, and commercial sectors:
 Defense & Coast Guard: Supports fleet swarm control, surveillance, and law enforcement interception, enhancing Maritime Domain Awareness (MDA).
 Scientific Research & Mapping: Integrates multibeam sonar for underwater topography mapping and target identification.
 Offshore Wind Power: Provides wind turbine inspection and environmental monitoring to reduce operational risks.
 Port Security: Executes autonomous patrols and anomaly detection.
 Furthermore, it supports cross-domain collaboration between UAVs and USVs, constructing an integrated air-sea intelligence and reconnaissance network.



▲ MORE INFO



Satellite Communication Network Attack and Cybersecurity Assessment Technology

TECHNOLOGY INTRODUCTION

- Develops vulnerability analysis and detection technologies by simulating threat scenarios and their impact on satellite communication networks, focusing on key security risks such as signal jamming, eavesdropping, and unencrypted data transmission.
- Integrates the latest satellite security updates from international standards, including 3GPP and NIST, together with cybersecurity threats and attack scenarios facing satellite communications, to provide practical testing environments and customized security assessment services.
- Participated in the 2025 "Non-Terrestrial Network (NTN) Communication Resilience Solution" project led by Fong Shin Technology, jointly developed with the Cyber Security Technology Institute (CSTI) of the Institute for Information Industry, National Taipei University of Technology, Astronics International, and KeyNet Corporation. The solution integrates LEO satellite VoIP communications with a resilient security architecture and is fully developed by Taiwanese teams.
- Technology Partners: National Taipei University of Technology (NTUT)

INDUSTRIAL APPLICATIONS

Applicable to satellite communication systems, the technology provides cybersecurity threat practical testing and security assessment. It supports applications in remote communications, maritime communications, and disaster response scenarios, helping enhance system security and communication resilience.



▲ MORE INFO



Booth SB09

◀ 442 ▶

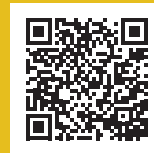
AI RAN ISAC Application in Smart Harbor Management

TECHNOLOGY INTRODUCTION

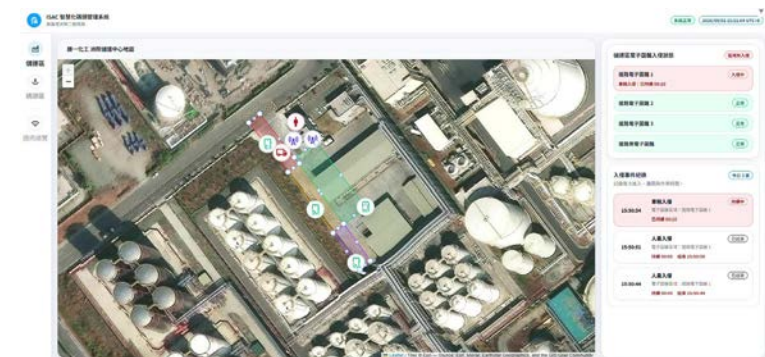
- Transform 5G base stations into sensing-enabled infrastructure with ISAC, powering Taiwan's first smart port e-fence for intelligent supervision.
- Enable 6G ISAC on commercial 5G equipment with AI-powered sensing applications to reduce sensor costs and enhance monitoring efficiency.
- Taiwan's first AI-RAN ISAC smart port, validated with Chunghwa Telecom and Pegatron at Kaohsiung Port.
- Technology Partners: Chunghwa Telecom, PEGATRON

INDUSTRIAL APPLICATIONS

- Transform 5G base stations into sensing-enabled infrastructure with ISAC, powering Taiwan's first smart port e-fence for intelligent supervision.
- Enable 6G ISAC on commercial 5G equipment with AI-powered sensing applications to reduce sensor costs and enhance monitoring efficiency.
- Taiwan's first AI-RAN ISAC smart port, validated with Chunghwa Telecom and Pegatron at Kaohsiung Port.
- Technology Partners: Chunghwa Telecom, PEGATRON

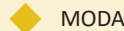


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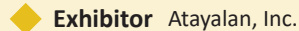


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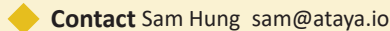
◀ 443 ▶



MODA



Exhibitor Atayalan, Inc.



Contact Sam Hung sam@ataya.io

5G AP+ Cloud Core (AWS) Services

TECHNOLOGY INTRODUCTION

- Ataya Chorus Cloud and Network + 5G AP: 1) A 5G wireless access device designed specifically for enterprises, making private network deployment faster, simpler, and more cost-effective. Chorus features “zero-touch installation,” requiring no additional hardware integration or complex configuration processes, with a total cost that is just one-fifth that of traditional solutions. 2) Chorus received the 2025 Cloud Computing Product of the Year award from Cloud Computing Magazine. Simply connect the Chorus AP to the internet to instantly establish a 5G network—a plug-and-play solution that can be deployed in minutes and is fully cloud-managed through local traffic control. By managing enterprise traffic locally, costs are reduced while ensuring low latency, data privacy, and enhanced security.
- Ataya Chorus is positioned as a “Plug & Play Private 5G Access Point.” By integrating 5G RAN, Edge UPF, Cloud Management, and Security, it simplifies traditional, complex private 5G networks into an enterprise-grade wireless connectivity solution that businesses can deploy quickly.
- 1.All-in-One Design (All-in-One Private 5G Solution) 2.Plug & Play / Zero-Touch Deployment 3.Significantly Reduces Private 5G TCO 4.Cloud-Native Architecture 5.Edge Computing & Low Latency 6.Supports O-RAN / Open Ecosystem 7.Remote Site & LEO Satellite Ready
- Important Achievements / Awards 1.Frost & Sullivan new product innovation award 2023 2.GARTNER COOL VENDOR 2023 3.Cloud Computing Magazine Announces Winners 2025 4.Global Mobile heroes Winner

INDUSTRIAL APPLICATIONS

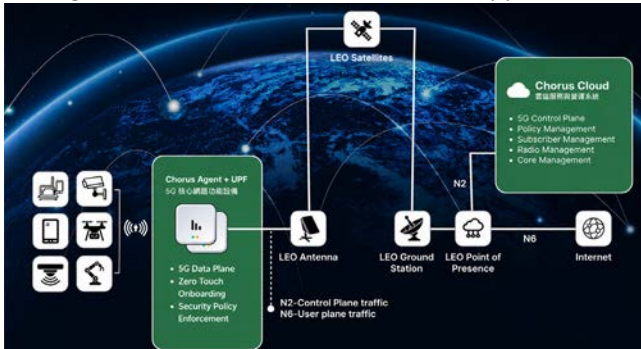
Chorus™ is a cloud-managed, lightweight 5G private network solution designed specifically for small and medium-sized businesses and outdoor environments, offering advantages such as low cost and the elimination of the need to set up traditional, complex core network servers.

Key Industry Applications

- Smart Manufacturing (Smart Factory / Industry 4.0), AMR / AGV Automated Material Handling
- AI Vision (AI Video Analytics), paired with EDGE AI to provide real-time recognition of high-definition video.
- Smart Logistics and Warehousing (Smart Logistics / Warehouse), integrating POS systems with AMR / AGV for automated freight delivery.
- Ports and Parking Lots: Provides high-definition video surveillance and security protection for large outdoor areas.

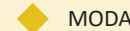


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Booth SB11

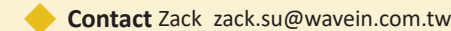
◀ 444 ▶



MODA



Exhibitor WAVE-IN COMMUNICATION



Contact Zack zack.su@wavein.com.tw

Constructing an AI Digital Application Platform via Integrated Satellite and 5G Networks for Maritime

TECHNOLOGY INTRODUCTION

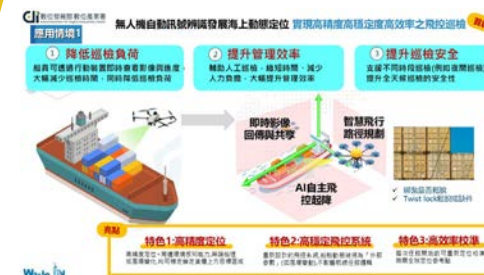
- Core Comms: WAN/LAN Plus integrates Starlink and Inmarsat with automatic shore-4G switching, isolating P5G and Wi-Fi for top security. GenAI Platform: Powered by RAG, the Shipping Agent unifies data for quick regulatory queries and alerts. Drone Inspection: Pioneering P5G flight control and AI assistance enhance safety and drastically cut inspection time.
- Wave-In's smart communication and digital application solutions feature a modular design that encompasses core communication and intelligent application components, including satellite communications, P5G, and RAG Agents. In addition to meeting the demands of large-scale shipping companies and deep-sea fishing vessels, these components can be flexibly combined into customized communication and digital application solutions tailored to various client sites and operational scenarios.

INDUSTRIAL APPLICATIONS

- Core Comms: WAN/LAN Plus integrates Starlink and Inmarsat with automatic shore-4G switching, isolating P5G and Wi-Fi for top security. GenAI Platform: Powered by RAG, the Shipping Agent unifies data for quick regulatory queries and alerts. Drone Inspection: Pioneering P5G flight control and AI assistance enhance safety and drastically cut inspection time.



▲ MORE INFO



Booth SB12

◀ 445 ▶

◆ MODA ◆ Exhibitor Institute for Information Industry ◆ Contact Eric ericyang@iii.org.tw

Energy-QoS AgentRAN Platform for ESG Driven Sustainable Network Infrastructure

TECHNOLOGY INTRODUCTION

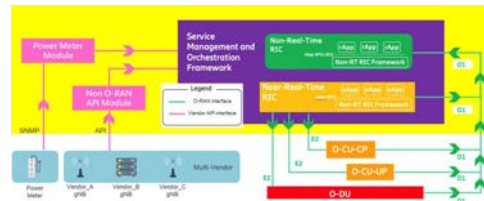
- Enables real-time analytics and AI modules, cutting base station energy use by 10%+ while advancing ESG, net-zero, and smart green sites.
- Integrates gNB, O-RAN base stations, and IoT data with AI for performance optimization, energy management, and fault prediction.
- Awards
 - Gold Medal – DIS International Invention Show & Moscow “Archimedes” International Invention Salon
 - Gold Medal & Special Prize – EUROINVENT, European Exhibition of Creativity and Innovation, Romania
 - ASOCIO Digital & AI Awards

INDUSTRIAL APPLICATIONS

The platform reduces 5G private network energy costs by up to NT\$300,000 per site annually. It integrates energy management and anomaly detection, using standardized 5G power and communication data for AI training to improve O&M efficiency. Supporting ESG and net-zero goals, it offers strong integration and commercial potential for system integrators and equipment vendors.



▲ MORE INFO



Booth SB13

◀ 446 ▶

◆ MODA ◆ Exhibitor Atayalan, Inc. ◆ Contact Sam Hung sam@ataya.io

5G & Edge AI for Smart Healthcare

TECHNOLOGY INTRODUCTION

- Technological Innovation Ataya Harmony is the industry's first heterogeneous private network and smart management platform, featuring three core capabilities: heterogeneous network convergence, ultra-fast deployment, and zero-trust security. It seamlessly integrates 5G private networks, Wi-Fi, and wired networks into a single management interface, helping healthcare institutions rapidly establish secure, efficient, and low-latency smart healthcare and telemedicine environments.
- Key Features
 - Heterogeneous Network Integration (Universal Connectivity) oSeamlessly compatible with existing medical devices without requiring reconfiguration of the hospital's existing network infrastructure.
 - Ultra-Fast and Flexible Deployment oSupports cloud-native or on-premises deployment, meeting the high standards for healthcare data privacy and regulatory compliance.
 - Zero-Trust and High Security oEnsures that sensitive medical images and patient records remain secure during transmission.
 - Supports Advanced Medical Applications oProvides low latency and high bandwidth, suitable for - Emergency room patient and bed monitoring, - Enables 3D remote ultrasound diagnosis and remote clinical medical education. - Integrates with AMR humanoid robots and robotic arms to address shortages of medical staff.
- Important Achievements / Awards
 - Frost & Sullivan new product innovation award 2023
 - GARTNER COOL VENDOR 2023
 - Cloud Computing Magazine Announces Winners 2025
 - Global Mobile heroes Winner

INDUSTRIAL APPLICATIONS

- Ataya Harmony primarily delivers core value in areas such as heterogeneous network integration, smart healthcare, smart factories, edge AI, and cybersecurity.
- Smart Healthcare / Smart Manufacturing and Factory Automation
 - AGV/AMR Applications: Supports 5G and Wi-Fi dual connectivity and application slicing to ensure uninterrupted signal transmission for autonomous mobile robots (AMRs).
 - Cybersecurity and Edge AI
 - Zero Trust and Micro-segmentation: Implements Zero Trust Network Access (ZTNA) through micro-segmentation and granular traffic control mechanisms.
 - Edge AI Enablement: Combined with edge computing, it supports enterprises in the large-scale deployment of AI applications and real-time data stream management across sectors such as manufacturing, logistics, and critical infrastructure.



▲ MORE INFO



Booth SB14

◀ 447 ▶

AI Health Care Passport

TECHNOLOGY INTRODUCTION

- Built on LINE, the AI Health Care Passport integrates care records for accurate cross-facility transmission, realizing "data follows the person." Modular APIs lower integration barriers, helping providers rapidly enter the smart care market and co-create an ecosystem.
- Through AI analysis, massive amounts of daily care data are transformed into a 1-page "AI Care Summary." This enables doctors to quickly grasp patients' out-of-hospital status, thereby elevating the overall quality of care.
- Provides an API-based AI vision module to extract blood pressure data via photos. It requires no specific hardware and can integrate into any service.
- Technology Partners: XingYong Digital Tech

INDUSTRIAL APPLICATIONS

This technology is applicable to scenarios including home care, day care, and long-term care facilities. By leveraging LINE as the interface to build AI Health Data Passport and integrating 4G/5G communications, it connects medical professionals, caregivers, and family members, realizing the vision of "data follows the person."

It not only effectively reduces the documentation time for frontline caregivers and helps families monitor the individual's status, but also assists doctors in clinical assessments using an AI 1-page summary. Furthermore, built with common data standards and standard modules, it facilitates cross-system integration within the care industry, achieving cross-domain continuity of care.



▲ MORE INFO



Real-Time Motion Capture Detection Technology and Applications

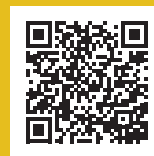
TECHNOLOGY INTRODUCTION

- Technological Innovation
 1. 4-camera synchronous capture; no markers or specialized clothing required.
 2. Reconstructs high-precision 3D joint coordinates from 2D images.
 3. Wireless and cable-free, achieving microsecond-level 4-camera time sync and transmission.
 4. Setup cost is only 1/10 of traditional marker-based systems.
- Competitive or Intellectual Property Advantages
 1. No markers or specialized clothing required.
 2. Skeleton tracking accuracy exceeds 95%.
 3. Low-cost with high privacy protection.
 4. Comprehensive reports generated within 5 minutes.
- Important Achievements

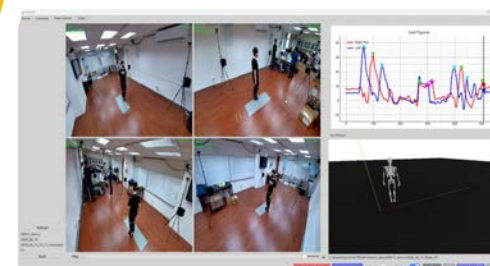
Collaborated with Taipei City Hospital for real-world validation at the Wanhua Juguang Social Housing
- Technology Partners: DeepBrain Tech"

INDUSTRIAL APPLICATIONS

- Primary Care and Long-Term Care: Brings advanced gait analysis down to community clinics and care centers to support elder disability prevention.
- Mitigating Clinical Staff Shortages: Replaces tedious manual visual observation with automated testing, freeing up the capacity of physical therapists.
- Sports Training and Commercial Expansion: Offers high portability, allowing the system to be deployed across multiple fields for accelerated commercial output.



▲ MORE INFO



◆ MODA ◆ Exhibitor Institute for Information Industry ◆ Contact Carrie Huang carrie.huang@iii.org.tw

AI-Powered Multimodal Real-Time Digital Scene Generation for Cognitive Rehabilitation

TECHNOLOGY INTRODUCTION

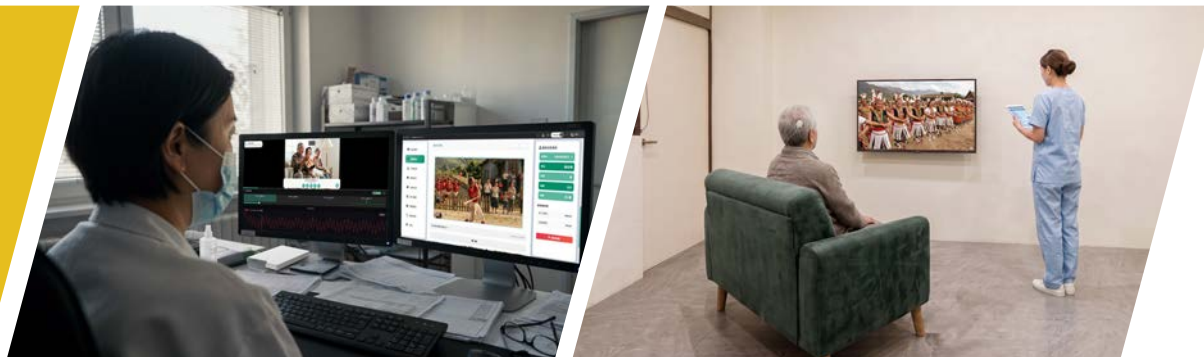
- Develop a multimodal real-time digital scene generation platform that integrates image generation, voice cloning, semantic understanding, and audio-visual synchronization technologies. The platform enables caregivers to rapidly create personalized dementia rehabilitation content, systematically track rehabilitation progress, improve care quality and outcomes, and accelerate AI adoption in dementia care settings.
- This technology leverages Generative AI to create personalized rehabilitation scenarios in real time, enhancing dementia care outcomes and user engagement while reducing care costs. Its proprietary algorithms and data assets establish strong technological barriers and market competitiveness.
- Technology Partners: Creative Gold Point

INDUSTRIAL APPLICATIONS

1. AI-Powered Non-Pharmacological Dementia Care
Generates personalized reminiscence experiences to stimulate memory, improve emotional well-being, and enhance cognitive engagement.
2. Real-Time Personalized Rehabilitation
Creates customized rehabilitation scenarios based on individual life histories, increasing participation and rehabilitation effectiveness by over 40%.
3. Enhanced Care Efficiency
Delivers standardized yet personalized therapy content, reducing caregiver workload while improving care quality and operational efficiency.



▲ MORE INFO



Booth SB17

◀ 450 ▶

◆ MODA ◆ Exhibitor Point Media Technologies Co.,Ltd ◆ Contact Alex Chen alex@point.tv

dodo — Eldercare Voice Companion AI

TECHNOLOGY INTRODUCTION

- Three-layer long-term memory + real-time voice dialogue lets dodo remember seniors across days, proactively share, mentor in reverse, and shift personality by detected emotion.
- Multi-layer patient-safety guardrails, an emergency hot-path, CQRS-based memory, and deep Traditional-Chinese senior-voice tuning set it apart.
- Technology Partners: NTTU

INDUSTRIAL APPLICATIONS

For long-term care, senior companionship, and facility/home care. In facilities, dodo is a daily voice companion that eases loneliness, detects emotional and safety risks, and surfaces status, reminders, and emergencies to caregivers via a console. At home, it helps seniors keep routines and stay connected. Extensible to community and day-care centers.



▲ MORE INFO



Booth SB18

◀ 451 ▶

BlueDot Smart Water Safety Network: AIoT Offline Positioning and Rescue Coordination System

TECHNOLOGY INTRODUCTION

- BlueDot combines LoRa mesh positioning, geofencing and edge AI to detect disconnection, route deviation and abnormal stops without cellular networks.
- Its offline coordination, event-detection algorithms and field data reduce deployment costs and create scalable technical barriers.
- Important Achievements / Awards
 - 2025 Satellite Digital Application Innovation Competition — Gold Award
 - 2026 National Entrepreneurship Competition — Champion, Technology Application Category
 - 2026 Yilan Innovation and Entrepreneurship Competition — Award-Winning Team
 - 2026-1 FITI Program — Selected Team

INDUSTRIAL APPLICATIONS

BlueDot serves diving, SUP, kayaking, rafting, yacht and coastal operators through wearable trackers, gateways, geofencing and SOS alerts. It can extend to hiking, remote mobility, large events and disaster response, supporting offline coordination, incident records, rescue APIs, insurance risk control and environmental data services through hardware rental, maintenance and SaaS.



▲ MORE INFO

情境一 日常近岸安全追蹤

LoRa 主模式：低成本、高頻率

適用對象：潛水員、潛店、SUP 教練、衝浪客，活動範圍在近岸 0~15 公里內。
運作機制：優先使用 LoRa 低功耗技術，每 10 分鐘回報一次加密 GPS 座標。
電子圍籬：當學員超出預設安全範圍，岸上潛店與教練 App 立即收到告警訊息。
關鍵效益：實現零通訊費的高頻率追蹤，適合商業活動與日常訓練。



情境二 通訊斷鏈自動備援

衛星備援模式：永不斷線的最後防線

觸發條件：遭遇離岸流被帶離岸邊 (>15km)，或連續 3 次 LoRa 封包發送失敗且未收到 ACK。
無縫切換：裝置自動喚醒 Iridium 低軌衛星模組，進入備援狀態。
關鍵數據：每 15 分鐘發送一次小於 20 Bytes 的精準座標短報文。
核心價值：將海難搜救的「黃金時間」，從數小時的盲搜縮短為數分鐘的精準定位。



PortShield-Sat: Satellite-Enabled Port Resilience & Emergency Response System

TECHNOLOGY INTRODUCTION

- By leveraging 5G, AIoT, UAVs/USVs, and satellite communications, this system establishes a highly redundant port resilient connectivity and emergency response framework. It ensures critical infrastructure remains operational under extreme scenarios. Through multi-agent sensing, AI image recognition, and digital twins for port damage assessment, the system delivers real-time situational awareness to support decision-making and Return-to-Operation (RTO), effectively minimizing downtime and reducing operational risks.
- Integrates satellite communications, 5G, AI, and unmanned systems to build a highly resilient smart port platform with strong integration barriers and competitive differentiation.
- 2025 Satellite Digital Application Innovation Competition Gold Award

INDUSTRIAL APPLICATIONS

Featuring an open API and modular architecture, this solution seamlessly integrates with existing IoT, CCTV, and port management systems. It establishes a replicable and scalable "Port Resilience as a Service" model, boosting the developmental momentum of both smart ports and resilient cities.



▲ MORE INFO



SatChain Trusted Monitoring and Auditing System for Cold Chain Transportation

TECHNOLOGY INTRODUCTION

- Integrating edge sensing, LEO satellite transmission, and trusted verification, this architecture combines encryption, hashing, blockchain evidence, and SOC monitoring to build a traceable, auditable, and alert-capable end-to-end IoT cybersecurity protection framework.
- Integrating edge encryption, satellite transmission, trusted verification, and blockchain evidence, this solution builds a differentiated, auditable, and scalable cybersecurity framework for space IoT, creating strong competitive value and defensible intellectual property potential.
- 2025 Satellite Digital Application Innovation Competition Gold Award

INDUSTRIAL APPLICATIONS

"This project, "SatChain: A Trusted Monitoring and Audit System for Cold Chain Transportation," integrates low Earth orbit satellites, edge sensing, and cybersecurity mechanisms to address the lack of real-time visibility and verifiable data in high-value cold chain cargo transportation across international waters.

The system enables temperature and cargo status data to be transmitted in real time via satellite links. It also applies digital signatures and blockchain technology to ensure that monitoring records are tamper-resistant, traceable, and auditable. By combining real-time alerts with trusted data verification, SatChain provides a secure and intelligent cold chain monitoring platform that supports early risk detection, evidence-based auditing, and reliable decision-making throughout the transportation process.



▲ MORE INFO



Hydropower Network – Satellite Cybersecurity Zero-Trust Access Control & Core Service Protection Platform

TECHNOLOGY INTRODUCTION

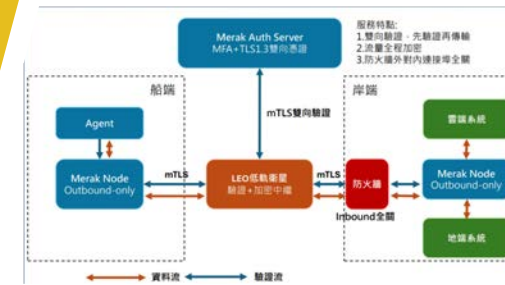
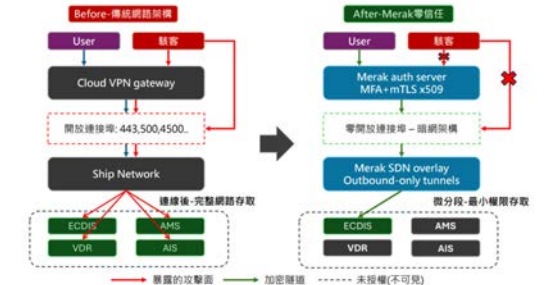
- Hai-Jie-Bao Network is a Zero Trust satellite cybersecurity platform based on NIST 800-207 and SDP 2.0, using mTLS, AES-256 encrypted VPNs, and least-privilege access.
- Proprietary Zero Trust satellite cybersecurity technology integrating multiple core security mechanisms, delivering strong system integration, high technical barriers, and competitive advantage.
- 2025 Satellite Digital Application Innovation Competition Gold Award

INDUSTRIAL APPLICATIONS

The platform supports four deployment scenarios—fleets, vessels, maritime operations, and unmanned vehicles. It effectively blocks external scanning and malicious probing, significantly reduces the attack surface of heterogeneous multi-orbit satellite networks, and enhances overall cybersecurity resilience.



▲ MORE INFO



◆ MODA ◆ **Exhibitor** Taiwan Optical Platform, EBM Technologies Incorporated, ASKEY Computer Corporation, National Yang Ming Chiao Tung University ◆ **Contact** Chu, Chia-Pao top-marketing6619@topmso.com.tw

LEO Satellite and 5G-Based Mobile Disaster Response and AI-Powered Mobile Medical Support System

TECHNOLOGY INTRODUCTION

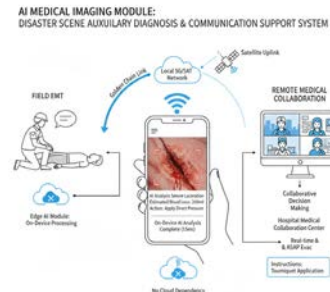
- Integrates LEO satellites, private 5G networks, and AI-powered mobile healthcare to create a rapidly deployable resilient disaster communication system. Satellite backhaul ensures uninterrupted connectivity, while AI-assisted triage, real-time data sharing, and remote medical collaboration improve emergency response during the critical rescue period.
- Integrates three 5G deployment modes (backpack, vehicle-mounted, and UAV), LEO satellites, and edge AI for resilient communications and AI-assisted disaster response.
- 2025 Satellite Digital Application Innovation Competition Gold Award

INDUSTRIAL APPLICATIONS

The system integrates LEO satellites, 5G, UAVs, and AI technologies for disaster response, emergency healthcare, remote connectivity, and critical infrastructure applications. Its rapidly deployable resilient communication architecture enhances emergency response and information sharing while fostering cross-industry collaboration in satellite communications, 5G, AI, and UAV technologies, with strong potential for domestic and international markets. The platform is well positioned to support resilient communications initiatives and future pilot deployments.



▲ MORE INFO



◆ MODA ◆ **Exhibitor** Wave-In communication, National Taiwan University of Science and Technology ◆ **Contact** Peter Jean peter.jean@wavein.com.tw

Reefer Guard – Satellite AI Cold Chain Monitoring & Early Warning System

TECHNOLOGY INTRODUCTION

- The core highlight lies in its ability to actively detect equipment anomalies through edge computing, combined with blockchain technology to ensure data immutability, thereby establishing a trusted data chain for cross-border logistics. This solution not only assists shipping companies and cargo owners in grasping cargo quality in real time, but also integrates the needs of insurance claims, customs inspections, and regulatory authorities to create a comprehensive smart monitoring ecosystem. Through the integration of Taiwan's self-developed technologies, the proposal demonstrates practical implementation value for achieving low-latency, highly reliable monitoring in signal-free ocean environments.
- 2025 Satellite Digital Application Innovation Competition Gold Award

INDUSTRIAL APPLICATIONS

This technology is primarily applied to the global maritime logistics and high-end cold chain (such as fresh produce and pharmaceuticals) industries.

The main application scenario is ocean freight container transport. By integrating multi-orbit satellites and shipborne 5G private networks, the system successfully bridges maritime communication dead zones. It utilizes Edge AI to proactively issue early warnings for equipment anomalies before any temperature control failure occurs, effectively transforming passive "black boxes" into intelligent nodes.

This project is expected to be implemented first in the real-world operational environment of Yang Ming Marine Transport. The technology is projected to reduce cold chain cargo damage by 50% and manual inspection costs by 25%. Furthermore, by integrating blockchain technology to generate an immutable "digital passport," it assists the marine insurance industry in eliminating cross-border claims disputes and helps customs expedite clearance processes. Ultimately, this solution will comprehensively enhance the international influence and competitiveness of Taiwan's maritime AIoT technology.



▲ MORE INFO



◆ MODA

◆ Exhibitor Asia Eastern University of Science and Technology,
National Taipei University of Technology

◆ Contact Yi-Hsueh Tsai
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Advancing Maritime Telemedicine Through SeaMed-Sat LEO Satellite Technology

TECHNOLOGY INTRODUCTION

- Key innovations include medical-grade image compression, edge AI-assisted annotation, multi-satellite hybrid communication auto-switching, and blockchain zero-knowledge proof security. SeaMed-Sat leverages LEO satellites for high-bandwidth, low-latency transmission supporting 4K real-time imaging. AI voice guidance enables non-medical crew to perform exams, allowing shore-based physicians to make rapid decisions while ensuring image quality, privacy, and vessel safety.
- SeaMed-Sat outperforms traditional VSAT with LEO satellites, medical image compression, edge AI, and blockchain ZKP security. Unique multi-satellite switching and AI voice guidance have no direct market substitutes. Strong patent potential and technical barriers significantly reduce maritime medical costs and risks.
- 2025 Satellite Digital Application Innovation Competition Gold Award

INDUSTRIAL APPLICATIONS

The SeaMed-Sat LEO satellite telemedicine system is designed to address the medical isolation challenges faced by Taiwan's distant-water fishing fleet. Using LEO satellites for high-bandwidth, low-latency connectivity, it enables real-time transmission of high-quality medical images (ultrasound, endoscopy, ECG) from remote vessels to shore-based physicians at hospitals like NTU for instant diagnosis, surgical guidance, and evacuation decisions. Integrated AI voice guidance and edge computing allow non-medical crew to perform examinations effectively, significantly reducing decision time, the 15.3% fatality risk, and NT\$4.2 million per ineffective evacuation cost. Applicable to distant-water fishing vessels, offshore platforms, and research ships, it can extend to international



▲ MORE INFO



Booth SB25

◀ 458 ▶

◆ MODA

◆ Exhibitor Field Delivery Service Co., Ltd, High Tech Computer Corporation,
REIGN Technology Corporation, National Sun Yat-sen University,
Kaohsiung Medical University

◆ Contact Howard Chung
howardchung@fhnet.com.tw

Intelligent Satellite Telemedicine Platform for Offshore Fishing Fleets

TECHNOLOGY INTRODUCTION

- Dedicated AI-assisted triage pathways for cardiology and hepatobiliary diseases enable standardized initial assessment of acute symptoms at sea. Integrated with LEO satellites and 5G NTN, the platform supports continuous AI triage, telemedicine, e-prescriptions, and medication management, ensuring uninterrupted medical services beyond terrestrial network coverage.
- Integrates LEO satellites, 5G, AI, and a smart medicine cabinet to deliver a complete maritime telemedicine solution with strong system integration.
- 2025 Satellite Digital Application Innovation Competition Gold Award

INDUSTRIAL APPLICATIONS

Integrating LEO satellites, private 5G networks, AI-assisted medical triage, and a smart medicine cabinet, the platform addresses limited medical resources and communication constraints on distant-water fishing vessels. Through onboard AI triage, remote physician consultation, and e-prescription-enabled medication dispensing, it delivers 24/7 maritime telemedicine, improving crew health, reducing emergency evacuation risks, and strengthening Taiwan's leadership in maritime human rights and international governance.



▲ MORE INFO



Booth SB26

◀ 459 ▶

AI-driven image compression for disaster prevention and inspection

TECHNOLOGY INTRODUCTION

Core Concept:

The core of this creative concept involves an AI-driven image compression and decompression system designed to enable the transmission of ultra-highly compressed images.

Disaster Prevention Inspection and Reconnaissance:

Unmanned Aerial Vehicles (UAVs): During beyond-visual-line-of-sight (BVLOS) flights, UAVs leverage this proprietary ultra-high image compression technology to transmit high-resolution imagery back to the command center over narrow-band networks, such as GEO/LEO satellites or DECT NR+ networks.

Competitive or Intellectual Property Advantages

1. Patented AI-driven image compression deployment.

2. Mastery of DECT NR+ and related network technologies

2025 Satellite Digital Application Innovation Competition Gold Award"

INDUSTRIAL APPLICATIONS

1. UAV Beyond-Visual-Line-of-Sight (BVLOS) Inspection (Narrowband Transmission): Combining DECT NR+ network technology with a distilled Vision-Language Model (VLM) AI recognition model on edge devices enables UAVs to successfully transmit ultra-highly compressed images over narrowband bandwidth during BVLOS flights.

2. Massive Storage Optimization for Messaging Apps (e.g., LINE): Targeting common issues in messaging apps—such as expired media being inaccessible or exorbitant server hosting costs—this provides a deeply integrated solution to significantly optimize cloud storage spaces for ISPs and IDCs.

3. On-Device Storage Expansion for AI Smartphones: By running generative AI decompression directly on mobile platforms, photo albums can be stored in a low-dimensional latent space tensor format at just 4% of their original size, delivering a massive 10-to-20-fold expansion in storage capacity for AI smartphones.



▲ MORE INFO



Booth SB27

◀ 460 ▶

Celestial Sentinel: UAV-Deployed Satellite IoT for All-Terrain Landslide Early Warning

TECHNOLOGY INTRODUCTION

Airdrop with Monitoring: Drones deliver supplies precisely, overcoming the challenge of roadless disaster areas for rapid deployment. Bionic Self-Rising Mechanism: A unique multifaceted design ensures automatic righting and anchoring upon landing. Satellite Direct Connection and AI Sensing: Satellite chips can communicate independently; simultaneously, visual, auditory, and tactile sensors are integrated for edge AI cross-interpretation, reducing false alarm rates.

It features pioneering features such as direct satellite connection via airdrop, a unique bionic return mechanism, multimodal AI to prevent false alarms, extreme communication resilience, and a low-cost data service business model that requires no construction.

2025 Satellite Digital Application Innovation Competition Gold Award

INDUSTRIAL APPLICATIONS

B2G/B2B Dual-Engine Drive:

Government Side: Addressing the pain points of political accountability by providing data subscription and maintenance services, creating long-tail stable revenue for 1,700 potential debris flow streams across Taiwan.

Enterprise Side: Solving the pain points of industrial safety risks for large construction companies and actuarial claims for property insurance companies.

Unlimited Replicability: Not just for mountains, the underlying technology can be directly replicated to the maintenance of a wide range of infrastructure, including bridge structures, offshore wind turbine foundations, and reservoir flood control.

Global Deployment: Packaged disaster prevention technology for complete plant export, exporting the plug-and-play Sky Sentinel system to countries in the Pacific Ring of Fire with similar climates and terrains, creating a "Taiwanese Space Disaster Prevention National Team" with billions in export value.



▲ MORE INFO



Booth SB28

◀ 461 ▶

Smart poultry health patrol robot

TECHNOLOGY INTRODUCTION

The smart poultry health inspection assistant is an automated inspection robot designed for water curtain cooled, multi tier caged layer houses. It integrates navigation, positioning, environmental and gas monitoring, AI analysis, and a cloud data platform. The robot automatically moves through the poultry house to measure temperature, humidity, wind speed, and other microclimate data, while monitoring carbon dioxide, ammonia, and hydrogen sulfide concentrations. AI image analysis evaluates egg production and bird health, enabling early detection of abnormal birds. Inspection data are transmitted to the cloud in real time for analysis, trend assessment, abnormality alerts, and management adjustments, supporting automated, data driven, and intelligent poultry house management.



▲ MORE INFO



Booth SC01

◀ 462 ▶

Green onion transplanter

TECHNOLOGY INTRODUCTION

This semi automatic green onion transplanter integrates bed forming, land preparation, and transplanting functions in a single machine. It is attached to the rear of a tractor using a three point hitch and is suitable for a cultivation system with a 1.5 m bed span and a bed height of 30 cm. Two operators can simultaneously transplant four rows of green onion seedlings. The transplanting mechanism is driven by a ground wheel. Plant spacing can be adjusted from 15 to 30 cm by replacing the sprockets, while row spacing is fixed at 20 cm. Compared with manual transplanting, the machine improves operating efficiency by approximately 50%, reduces labor requirements, and enhances transplanting quality and consistency.



▲ MORE INFO



Booth SC02

◀ 463 ▶

Non-destructive Spectroscopic Techniques for Fish Meat Quality Assessment

TECHNOLOGY INTRODUCTION

This technology combines near infrared spectroscopy (NIR) and hyperspectral imaging (HSI) with partial least squares discriminant analysis (PLS-DA) and a one dimensional convolutional neural network (1D-CNN) to establish a nondestructive model for assessing fish flesh quality. By scanning the scaled exterior of whole fish, the model can detect abnormalities such as off-odor flesh in tilapia and estimate their locations. With broader applicability and lower equipment costs, the technology could screen out abnormal fish before filleting, reducing product returns and transportation and storage costs. It can also help aquaculture producers strengthen quality management and support smarter production practices and technological upgrading across the aquaculture industry.



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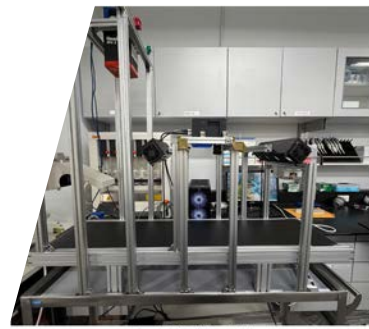


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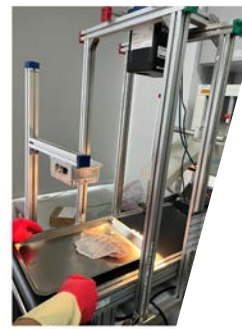


掃描探槍

魚片外側掃描示意



高光譜影像系統



魚片高光譜影像攝

Smart production and sales management for rice seedlings

TECHNOLOGY INTRODUCTION

The rice seedling production and sales management module is designed for rice seedling production and marketing. Its five core functions cover customer records, rice seed distribution, order and shipment management, seedling inventory, and grain delivery traceability, integrating production, sales, and traceability workflows. The modular system helps nursery operators track seed sources, seedling inventory, and farmers' planting information, improving management efficiency, reducing manual operating costs, and establishing a complete traceability mechanism. It is suitable for rice seedling nurseries, farmers' associations, agricultural enterprises, and smart agriculture information service providers. The module can also be rapidly integrated into smart agriculture platforms and offers strong potential for broader adoption and commercial application.



▲ MORE INFO



Production technology for an inactivated *Riemerella anatipestifer* vaccine for use in waterfowl

TECHNOLOGY INTRODUCTION

This technology establishes a complete production process for an inactivated trivalent vaccine against *Riemerella anatipestifer* infection in waterfowl, covering serotypes 1, 2, and 6. Key procedures include bacterial culture, inactivation, vaccine formulation, and potency testing. The vaccine provides protection against all three target serotypes and has a shelf life of up to 24 months. Its use can effectively reduce economic losses caused by *R. anatipestifer* infection and decrease reliance on antibiotics in waterfowl production. With a standardized manufacturing process, broad serotype coverage, and extended storage stability, the vaccine has strong potential for commercialization and practical application in the waterfowl industry.



▲ MORE INFO



Booth SC05

◀ 466 ▶

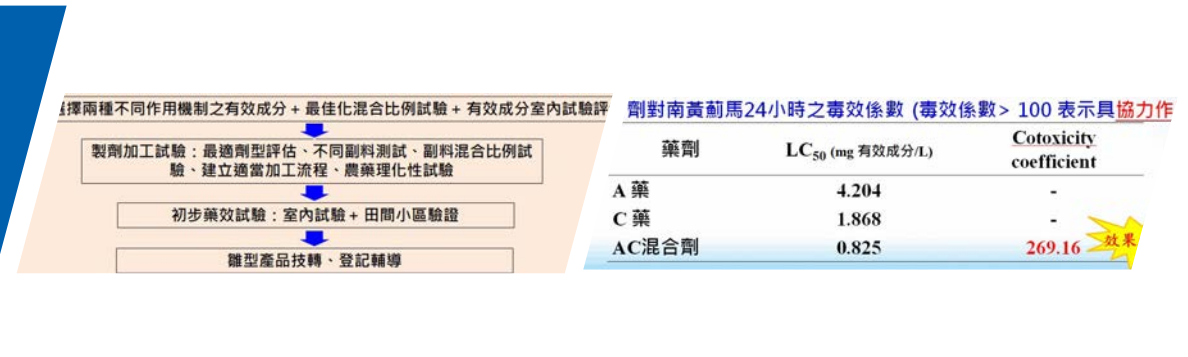
Broad-spectrum Insecticidal Mixture Formulation

TECHNOLOGY INTRODUCTION

This technology establishes a complete production process for an inactivated trivalent vaccine against *Riemerella anatipestifer* infection in waterfowl, covering serotypes 1, 2, and 6. Key procedures include bacterial culture, inactivation, vaccine formulation, and potency testing. The vaccine provides protection against all three target serotypes and has a shelf life of up to 24 months. Its use can effectively reduce economic losses caused by *R. anatipestifer* infection and decrease reliance on antibiotics in waterfowl production. With a standardized manufacturing process, broad serotype coverage, and extended storage stability, the vaccine has strong potential for commercialization and practical application in the waterfowl industry.



▲ MORE INFO



Booth SC06

◀ 467 ▶

Integrated postharvest processing technology for vanilla beans

TECHNOLOGY INTRODUCTION

This technology establishes an integrated postharvest processing system for vanilla bean curing, combining key procedures such as washing, killing, sweating, and drying with automated machinery. It is designed to meet the growing processing demand resulting from the rapid expansion of domestic vanilla cultivation and production. Compared with traditional manual processing, the system increases overall processing capacity by five to ten times and can handle more than one metric ton of green vanilla beans per day. It also maintains consistent and stable product quality, shortens processing time, reduces reliance on manual labor, and helps preserve the aroma quality of the finished vanilla beans.



▲ MORE INFO



Booth SC07

◀ 468 ▶

Remote diagnostic system for crop diseases and insect pests

TECHNOLOGY INTRODUCTION

The remote diagnostic system for crop diseases and insect pests, hereinafter referred to as the System, integrates image transmission and information integration technologies to provide farmers with real time diagnosis and pesticide use recommendations. By capturing high resolution images and collecting information on documented symptoms of crop diseases and insect pests, the System supports diagnostic assessment and decision making. Based on the diagnosis, it recommends appropriate pesticides, application dosages, and methods of use. The System helps farmers quickly understand crop health conditions, improve the efficiency of disease and pest control, and enhance the quality of agricultural management through timely access to professional diagnostic information and practical treatment guidance.



▲ MORE INFO



Booth SC08

◀ 469 ▶

Adlay bioactive compound extraction and application technology for mitigating metabolic aging

TECHNOLOGY INTRODUCTION

Metabolic aging associated with advancing age is a major contributor to chronic diseases such as diabetes, hyperlipidemia, and cardiovascular disease, creating a substantial healthcare burden. Animal studies and human clinical trials have demonstrated that this technology promotes AMPK protein phosphorylation and activates cellular metabolic functions. Its effects include reducing glycosylated hemoglobin (HbA1c) and insulin resistance (HOMA-IR), lowering blood lipids (TC and TG) and liver injury markers (AST and ALT), improving fatty liver, and slowing muscle loss. The related technology has been granted patents in Taiwan, Japan, and the United States, demonstrating its potential for applications in metabolic health and healthy aging.



▲ MORE INFO

抗代謝老化之 薏仁機能成分萃取與應用技術

Anti-metabolic aging:
Adlay functional component extraction & application
研發機關：農業部臺中區農業改良場
研發人員：陳裕星、黃瑋、唐謹良、邱富中



農業部臺中區農業改良場
Taichung District Agricultural Research and Extension Station,
Ministry of Agriculture

我國人口變化趨勢



農業部臺中區農業改良場
Taichung District Agricultural Research and Extension Station,
Ministry of Agriculture

Booth SC09

◀ 470 ▶

Autonomous robotic mower

TECHNOLOGY INTRODUCTION

The machine uses a flail mowing mechanism with a working width of 80 cm and an electric cylinder for adjusting the cutting height. Crawler tracks enable operation on uneven soft and hard field surfaces. A side wing weeding mechanism mounted at the rear simultaneously removes weeds between plants. The machine travels at up to 1.2 km/h and is equipped with two 48 VDC, 100 Ah batteries that separately power movement and mowing, providing up to three hours of operation. Tests confirm that it can operate on slopes of up to 35 degrees. Its GNSS-RTK positioning and navigation system supports on site route planning and fully autonomous mowing operations.



▲ MORE INFO



Booth SC10

◀ 471 ▶

Precision bee pollination system for passion fruit under protected cultivation

TECHNOLOGY INTRODUCTION

This technology develops an automatic opening and closing mechanism for beehive entrances, integrating a powered drive with timed control to precisely regulate when bees leave the hive for pollination according to passion fruit flowering schedules. In protected passion fruit cultivation, it directs bee activity toward the optimal pollination period, improving pollination efficiency, fruit set, fruit quality, and fruit size uniformity. Compared with conventional bee pollination without hive entrance control, automated precision management using this technology can further increase fruit yield by approximately 30%. It also substantially reduces the labor demand and operating costs of traditional hand pollination, thereby improving overall production efficiency.



▲ MORE INFO



Booth SC11

◀ 472 ▶

Manufacturing technology for a GPS positioning device for deploying spherical objects at designated sites

TECHNOLOGY INTRODUCTION

This technology integrates a spherical deployment device with an unmanned aerial vehicle, GPS positioning, and a cloud based operating platform. It automatically plans deployment routes and sphere distribution according to field boundaries, and calculates release density and locations based on crop area and pest control needs. Used with parasitoid wasp spheres designed for successful emergence, the system effectively controls pests such as the Asian corn borer and fall armyworm. It covers 5–10 hectares per hour with an approximately 90% deployment success rate. Compared with manually fastening parasitoid wasp cards, it improves operating efficiency by about sixfold while reducing labor costs and providing precise, uniform, and intelligent pest management.



▲ MORE INFO



Booth SC12

◀ 473 ▶

Dual-mode electric agricultural spraying vehicle for remote-control and ride-on operations

TECHNOLOGY INTRODUCTION

This technology integrates swappable batteries, an electric motor, a specialized airflow spraying system, and a dual-mode chassis for both remote-control and ride-on operation. The airflow system replaces a conventional fan-type blower, reducing blower power demand. Fully charged batteries can be exchanged at any time, providing operating convenience comparable to that of conventional fuel-powered sprayers. Oscillating spray and electrostatic devices improve pesticide deposition and coverage. Remote-controlled spraying and real-time video monitoring further reduce operators' direct contact with pesticides, enhancing operational safety. The resulting electric sprayer combines flexible operation, energy efficiency, improved application performance, and reduced occupational exposure during agricultural spraying.



▲ MORE INFO



Booth SC13

◀ 474 ▶

Intelligent Image Recognition Safety Monitoring System for Crane Operations and Hoisting

TECHNOLOGY INTRODUCTION

To prevent accidents during crane hoisting operations, the Labor Safety Institute has developed a safety control monitoring system.

This system utilizes intelligent image recognition technology to monitor hazardous areas during operations.

It includes features such as range setting, monitoring of objects (events) within the designated area, and the activation of message notifications, alarms, and system alerts.

The technology is also expected to be further extended for use in monitoring various hazardous areas on construction sites, such as window edges, elevator openings, stairwells, and other areas where there is a risk of falls during labor activities.



▲ MORE INFO



Booth SC14

◀ 475 ▶

Comfortable Respirator

TECHNOLOGY INTRODUCTION

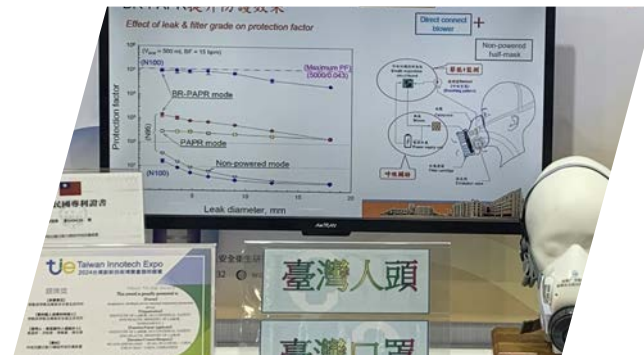
In order to enhance the dignity of work, we have developed a breath-responsive powered air-purifying respirator(BR-PAPR). It provides better protection and reduces the troubles of high temperature, high humidity and breathing difficulties. It has obtained a Taiwan invention patent and won the silver medal in the 2024 Taiwan Innovation and Technology Expo. It has been verified and evaluated on-site in the labor working environment.

INDUSTRIAL APPLICATIONS

A batch of test samples have been produced to verify the feasibility of design and production. Workers exposed to high dust have been asked to assist in the evaluation, which has increased the protection by 7 times, reduced the accumulation of carbon dioxide and temperature inside mask. and greatly improved the satisfaction. It has been proven that it can be mass-produced and applied to benefit workers.



▲ MORE INFO



Booth SC15

◀ 476 ▶

Hearing Protector with performance self-assessment function and sensing device and method

TECHNOLOGY INTRODUCTION

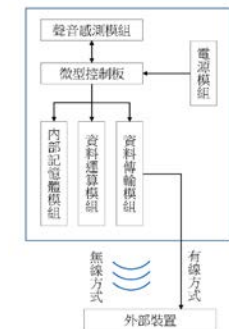
In order to evaluate the performance of hearing protectors after wearing, a miniature sound sensing evaluation device has been developed. It can measure the internal exposure volume and noise exposure dose after wearing and can be used to evaluate the actual protective effect of hearing protectors in noisy workplaces after wearing it.

INDUSTRIAL APPLICATIONS

The device can be installed in the earmuff-type hearing protectors. Without destroying the structure and function of the hearing protectors, it can actually measure the internal exposure volume and noise exposure dose after wearing and can be used to evaluate the actual protective effect of hearing protectors in noisy workplaces after wearing it.



▲ MORE INFO



Booth SC16

◀ 477 ▶

Real-time monitoring and collection of invisible airborne biological threats

TECHNOLOGY INTRODUCTION

Bridging stationary and mobile bio-surveillance, this system deploys a precise early-warning defense across biohazard zones. Utilizing advanced aerodynamic flow-guiding technology, it overcomes the limits of traditional samplers. A proprietary deflector design ensures stable air intake during both transit and fixed-facility operations. Eliminating bulky structures, it perfectly integrates into CBRN reconnaissance vehicles and critical facility HVAC monitoring systems. Delivering continuous monitoring and sampling, it leaves bioaerosol threats nowhere to hide.

INDUSTRIAL APPLICATIONS

Air deflectors can be applied to mobile vehicles (such as automobiles and trains), observation or research stations, and the ventilation ducts of critical facilities for the purpose of air monitoring and collection.



▲ MORE INFO



Booth SC17

◀ 478 ▶

Cochlear Implantable Catheter And Cell Delivery Device

TECHNOLOGY INTRODUCTION

Present invention discloses a cochlear implantable catheter and a cell delivery device. Wherein, the prior one includes: a catheter body, a central lumen, a proximal end and a leading tip, outer surface having at least one helical grooves, and a plurality of lateral openings extending from outer surface of the catheter body to the central lumen; the catheter body is configured to penetrate into a patient's cochlea of the inner ear and bend along the patient's cochlear turns, cells or therapeutic agents can be penetrate into the cochlea through the central lumen and the lateral openings.

INDUSTRIAL APPLICATIONS

Potential future industrial applications:

1. Autologous cell transplantation or therapeutic delivery of biological agents in compliance with regenerative medicine regulations

2. Medical device manufacturing

Potential future products for development or application:

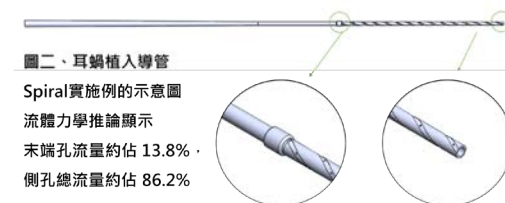
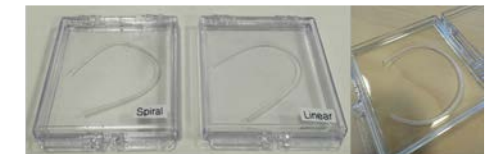
1. Cochlear implant electrode arrays

2. Inner ear cell implantation systems

3. Inner ear regenerative medicine therapies for treating inner ear hearing loss



▲ MORE INFO



圖三、使用3D列印耳蝸導管

Booth SC18

◀ 479 ▶

Brain Organoid Models for Antiviral Drug Screening

TECHNOLOGY INTRODUCTION

This invention uses human induced pluripotent stem cells (iPSC)—derived organoids as a development platform for anti-encephalitis virus drugs. Human organoids replicate the three-dimensional structure and diverse cellular composition of real organs, providing a closer approximation to the physiological environment. This study successfully demonstrates that brain organoids can be infected by neurotropic viruses, and that treatment with interferons and antiviral drugs effectively suppresses viral infection, highlighting their high potential as a platform for antiviral drug screening.

INDUSTRIAL APPLICATIONS

Centered on human 3D brain organoids derived from iPSCs, this technology offers diverse development potential. It can be applied to antiviral drug screening, enhancing clinical relevance while reducing animal usage, and extended to neurological disease modeling to simulate pathologies such as encephalitis, neurodegeneration, or gut-brain axis disorders. In the realm of precision medicine, it enables the generation of patient-specific organoids for personalized drug response testing; additionally, it serves as a vital tool for early-stage drug development by facilitating toxicology and safety assessments. Characterized by high reproducibility and scalability, the platform holds significant value for commercialization and industrial translation.



▲ MORE INFO



Booth SC19

◀ 480 ▶

Composite Metal Bioenergy Textile

TECHNOLOGY INTRODUCTION

This patented Composite Metal Bio-Energy Textile is a decade-long R&D achievement driven by clinical needs identified by Prof. Meng En, Urologist at Tri-Service General Hospital. Using patented titanium-germanium fiber technology, it emits far-infrared rays to boost circulation and maintain warmth. Applied to protective gear and apparel, it delivers health benefits through daily wear. It improves male physiological and prostate health, while alleviating menstrual discomfort and intimate discharge concerns in women.

INDUSTRIAL APPLICATIONS

This patented technology has broad applications in the fields of functional textiles and personal healthcare. By utilizing far-infrared fibers to provide therapeutic care to key areas—such as the groin and abdomen—the technology can be further extended to medical-grade textiles. Its scope of application includes post-operative recovery care, such as providing warmth and alleviating discomfort in the affected areas following prostate surgery for men or pelvic surgery for women. Additionally, it can serve as an assistive garment for patients with chronic conditions within long-term care systems; by promoting peripheral circulation, it aids in the clinical prevention of conditions such as pressure ulcers.



▲ MORE INFO



圖1：本專利內褲成品及實施樣態示意圖



Booth SC20

◀ 481 ▶

Nurse AI Intelligent Nursing Support System

TECHNOLOGY INTRODUCTION

By integrating HIS data with Generative AI and RAG, this system helps nurses quickly generate shift handovers, bilingual test explanations, and health education content, while enabling real-time clinical guideline queries to boost efficiency.

To realize the 'military-civilian dual-use' value, this system, though developed in military hospitals, can be seamlessly deployed in civilian ones. Addressing universal pain points like nursing shortages and paperwork overload, it reduces administrative burdens, allowing nurses to refocus on patient care and elevating overall healthcare quality.

INDUSTRIAL APPLICATIONS

This technology applies across the healthcare industry, covering military hospitals, public and private hospitals, clinics, and long-term care facilities. By integrating HIS data with Generative AI and RAG technology, it helps nurses rapidly produce shift handovers, bilingual health education, and test explanations, while enabling real-time clinical guideline queries to ease nursing shortages and paperwork overload. Its "military-civilian dual-use" architecture can be seamlessly deployed in civilian medical institutions, and further extended to remote care, smart hospitals, and international medical services—comprehensively enhancing operational efficiency and patient care quality.



▲ MORE INFO



Booth SC21

PSD-250 small turbojet engine

TECHNOLOGY INTRODUCTION

PSD-250 small turbojet engine integrates a high-pressure ratio centrifugal compressor and high efficiency turbine. It is developed entirely in-house which ensures a high level of technological autonomy while reducing dependence on external supply chain. Also, the engine designed-focuses on cost control and supply chain flexibility, which allows it to meet the growing globe demand for diverse UAVs.

INDUSTRIAL APPLICATIONS

PSD-250 engine is a compact and cost-effective propulsion solution positioned to support a wide range of advanced UAV platforms, including high-speed unmanned systems and target drones.



▲ MORE INFO



Booth SC22

G-LOC Prediction Platform for Pilot Training

TECHNOLOGY INTRODUCTION

The EEG Monitoring System and HMI Platform provides real-time G-LOC prediction and early warning support for anti-G training

Applications:

Military:

Applicable to anti-G training for pilots, providing real-time monitoring of EEG changes.

Civilian:

The EEG monitoring system is providing real-time anesthesia depth monitoring for general surgery, aesthetic medicine, dental procedures.

INDUSTRIAL APPLICATIONS

In the field of military training, it can serve as a real-time monitoring and early-warning tool for pilots undergoing anti-G training.

In the medical industry, it can be applied to clinical settings such as general surgery, aesthetic medicine, and procedural sedation, providing real-time anesthesia depth monitoring to assist medical personnel in assessing patients' state of consciousness.



▲ MORE INFO



Booth SC23

Augmented Reality Head-mounted Display System

TECHNOLOGY INTRODUCTION

Integrates a helmet-mounted display optical projection module with head-position tracking sensors, together with an optical observation system.

By utilizing panoramic

imaging to search for surrounding enemy forces and potential targets, the system can interface with the turret fire-control system to detect, track, and engage designated target.

INDUSTRIAL APPLICATIONS

Military:

(1) Directly perceive the external environment from inside the vehicle and maintain awareness of battlefield conditions

(2) Interface with the turret fire-control system to detect, track, and engage designated target.

Civilian:

(1) Can be installed on a safety helmet and can display information such as navigation and distance.

(2) Can be a smart glasses, display camera footage.



▲ MORE INFO



Booth SC24

AI Radar Low-Altitude Target Identification Platform

TECHNOLOGY INTRODUCTION

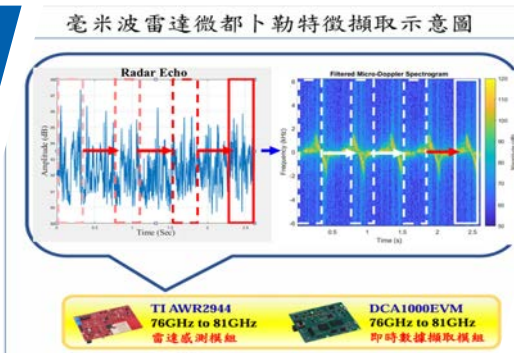
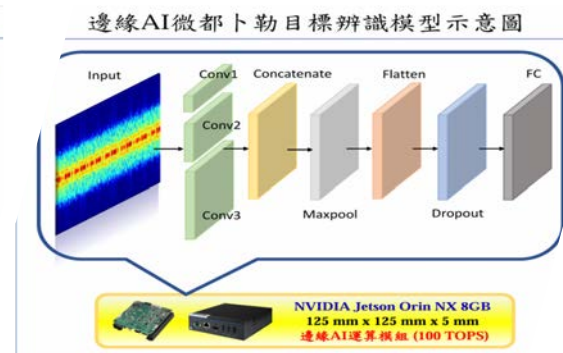
This demonstration presents an aerial target identification system integrating millimeter-wave radar and AI. By analyzing micro-Doppler signals, it identifies aircraft, drones, and birds in real time. With Jetson Orin NX edge computing, it enables fast on-site inference, improves accuracy, reduces false alarms, and supports efficient airspace monitoring.

INDUSTRIAL APPLICATIONS

This technology can be applied in both military and civilian fields. In military use, it supports drone defense and battlefield monitoring by identifying potential threats in real time. In civilian use, it can enhance airport security, low-altitude airspace monitoring, critical facility protection, ecological observation, and smart city development.



▲ MORE INFO



Autonomous Quadruped Inspection Robot with NIRO Embodied AI Brain

TECHNOLOGY INTRODUCTION

- Innovation: Quadruped runs Nexuni's own NIRO universal AI brain — embodied intelligence uniting perception, decision and motion; a self-trained RL controller handles gait and balance to cross stairs and slopes autonomously.
- Advantage: Fully self-developed; NIRO ports across robots.
- Achievements: NVIDIA Inception; GTC 2026 AI supply-chain list; daily Singapore mall patrols since Jan 2026.

INDUSTRIAL APPLICATIONS

Quadruped with NIRO targets security patrol and large-site inspection. Unlike fixed cameras or wheeled robots, the quadruped moves actively, climbs stairs and slopes, understands the scene and generates task decisions, running 24/7 facility inspection and security monitoring while cutting high-risk, repetitive labor. Fit for malls, plants, campuses and public facilities.



▲ MORE INFO



Morale AI: 製造業 AI Agent Platform

TECHNOLOGY INTRODUCTION

Morale AI Platform is a decision infrastructure for knowledge assets, intelligent workflows, and quantifiable benefits.

GenAI & Reasoning: RAG and fine-tuned LLMs for unstructured text processing.

Semantic Retrieval: Multi-dimensional vectorization enabling cross-modal search.

Manufacturing ML: Time-series and ML for predictive maintenance and parameter optimization.

System Integration: On-premise/cloud deployment interfacing with MES, ERP, and QC.

INDUSTRIAL APPLICATIONS

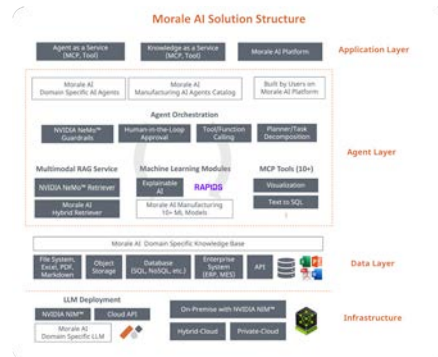
Morale AI Platform is an evolving decision infrastructure engineered for enterprises to build accumulative knowledge assets, replicable intelligent decision workflows, and quantifiable operational improvements.

1. Generative AI & Knowledge-Augmented Reasoning
2. Semantic Database & Intelligent Retrieval
3. Multi-Modal Processing & Manufacturing-Oriented Machine Learning
4. Enterprise-Grade AI System Integration (MES, ERP)



▲ MORE INFO

AI Agent 驅動下一代智慧機台：讓每一台機台都擁有 AI Agent



Booth SC27

Nuta Cross-Floor Delivery Robot, Vida Service Robot

TECHNOLOGY INTRODUCTION

•Technical Innovation:Taiwan's first vertical logistics robot. Equipped with LiDARs for 360° perception and smart obstacle avoidance. It integrates with elevators and auto-doors, featuring intelligent backup routing and auto-docking to achieve autonomous cross-floor delivery.

•Competitive & Intellectual Property Advantages:Backed by 8 national patents (M629957, D219395, etc.). Features a pioneering 4-cabin independent password-unlock mechanism to prevent medication misdelivery. Its 20kg payload doubles the industry average, with MIT design ensuring top-tier information security.

•Key Achievements & Awards:Successfully deployed in leading Taiwanese hospitals and care facilities, expanding into smart building. It significantly reduces physical labor for staff, backed by a professional real-time after-sales service team.

INDUSTRIAL APPLICATIONS

Healthcare & Long-term Care: Nuta's independent, secure password-locked cabins effectively prevent the misdelivery of controlled medications, specimens, and medical supplies. Meanwhile, Vida utilizes its large touchscreen and interactive voice capabilities to conduct bedside health education, effectively filling nursing labor shortages.

Public & Commercial Spaces: Equipped with MQTT cross-floor elevator integration, these robots are ideal for secure document distribution in major exhibition halls, educational institutions, and government agencies, delivering high-efficiency logistics upgrades.



▲ MORE INFO



Booth SC28

LumineOne AI

TECHNOLOGY INTRODUCTION

LumineOne AI, self-developed by UNI-PIC, integrates image recognition, similarity matching, and VLM technology across two pharmacy applications:

1. AI Prescription Recognition: Automatically parses uploaded prescriptions and matches nearby pharmacies to reduce wait times.
2. AI Six-Side Inspection: Automates verification of drug batch numbers, expiration dates, and integrity with 90%+ accuracy, minimizing manual errors.
3. Closed-Loop Ecosystem: Connecting supply chain to patient experience, these applications demonstrate LumineOne AI's efficacy in smart healthcare.

INDUSTRIAL APPLICATIONS

Integrating AI vision and VLMs, this solution leverages OPENPOINT APP ecosystem and 10,000+ community platforms. It is highly adaptable across smart pharmacies, logistics, community care, and digital health.

1. Consumers: Prescription recognition matches nearby pharmacies to streamline dispensing.
2. Logistics & Pharmacies: Six-side inspection automates verification of drug batch numbers, expiration, and integrity.
3. Scalability: Adaptable to medical devices and dietary supplements, driving cross-industry smart warehousing with high commercial potential.



▲ MORE INFO



Booth SC29

◀ 490 ▶

Thermal Management Solutions: From Earth to Space

TECHNOLOGY INTRODUCTION

Tech Innovation

Pioneers AI+Materials cooling via Tefnut AI & Trahvo. Cuts thermal verification by 80% for chips & AI servers.

Competitive Edge

Sole team using AI to define hardware & materials instantly. Breaks physical limits to build a strong IP moat.

Achievements

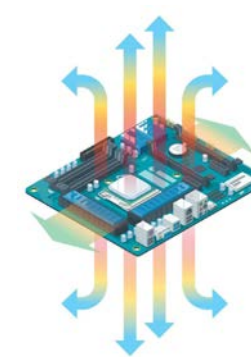
Top 30 in NDC 2026 Blossoming Entrepreneurship, SMEA deep tech award & joined Wistron Accelerator.

INDUSTRIAL APPLICATIONS

Integrating Tefnut AI and Trahvo metamaterials, this extreme cooling solution tackles high-temperature bottlenecks in intense computing. It generates optimal cooling structures via AI, applying directly to next-gen semiconductor advanced packaging and high-compute AI servers. This technology can expand to electric vehicle power modules, aerospace equipment, and green data centers.



▲ MORE INFO



Booth SC30

◀ 491 ▶

5G + AI UAV Submarine Cable Protection System

TECHNOLOGY INTRODUCTION

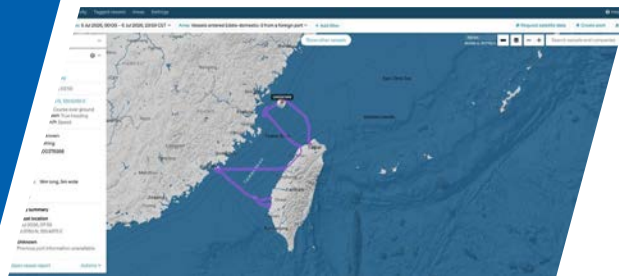
This exhibit features a 5G + LEO Satellite + AI + UAV-enabled submarine cable protection solution, integrating 5G private networks, AI multimodal maritime monitoring, UAV patrols, Edge AI, and abnormal event alerts. It supports real-time monitoring, vessel detection, UAV dispatch, image transmission, evidence collection, and event traceability to enhance submarine cable, port, energy site, and critical infrastructure security.

INDUSTRIAL APPLICATIONS

This system integrates 5G private networks, LEO Satellite communication, AI image recognition, UAV patrols, and edge computing for security monitoring around submarine cables, ports, offshore wind farms, energy sites, and major infrastructure. It can detect abnormal vessels or suspicious activities in real time, dispatch UAVs for patrols, transmit images, and collect evidence, helping operators quickly assess on-site conditions and respond effectively. The system can also be expanded to maritime security, industrial inspection, disaster response, and critical infrastructure protection.



▲ MORE INFO



DigitwinFFR AI-Flow Analysis System (DT FFR AI-FAS)

TECHNOLOGY INTRODUCTION

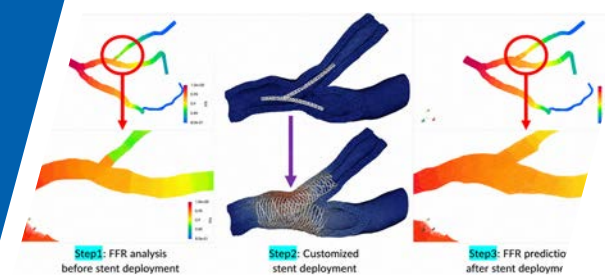
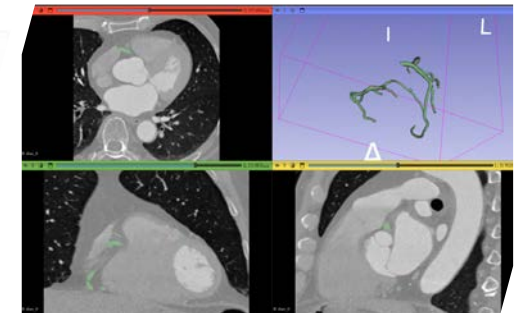
- Innovation: Digitwin FFR builds a digital twin of the coronary arteries from one CCTA scan via AI segmentation, then uses CFD to non-invasively derive per-vessel CT-FFR

INDUSTRIAL APPLICATIONS

Digitwin FFR serves cardiology and cardiovascular imaging. Instead of invasive catheter-based FFR, it derives functional CT-FFR from an existing CCTA scan, helping physicians decide whether a lesion needs intervention and reducing unnecessary invasive procedures. Deployed on-premise, it suits cardiology, radiology, and cath-lab settings and extends to pre-stent planning.



▲ MORE INFO



LiveMore Sense Fall Detection System

TECHNOLOGY INTRODUCTION

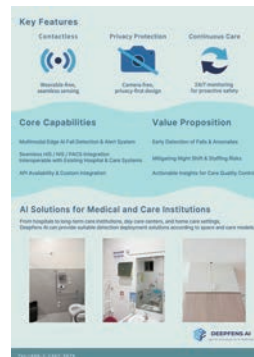
LiveMore Sense is the world's first multimodal edge AI fall detection system specifically designed for bathrooms and restrooms, powered by mmWave radar AI motion recognition, LiveMore Sense integrates speech recognition and voice-based emergency detection through a cross-modal verification mechanism.

INDUSTRIAL APPLICATIONS

This project has strong industrial applicability across long-term care facilities, day care centers, hospitals, senior housing, home care, and privacy-sensitive public spaces. By integrating mmWave radar, large language models, and AI agents, the system enables contactless and privacy-preserving sensing for fall risk, near-fall events, mobility patterns, night activity, sleep quality, and abnormal behavior. Sensor data can be transformed into understandable care summaries, risk alerts, and automated notification workflows. This supports safer elderly care, reduces caregiver workload, improves early risk detection, and upgrades traditional care services into proactive, intelligent, and scalable smart care solutions.



▲ MORE INFO



5G AI Pharmacy + Drone – Innovation Project for Rural Drone Delivery and Smart Pharmacy Remote Care

TECHNOLOGY INTRODUCTION

Led by BenQ Healthcare, Askey, TinTin Pharmacy, and FamilyMart, the project uses 5G O-RAN and AI to tackle rural medical scarcity, elderly care, and pharmacist shortages. Indoors, it offers 24/7 AI assistants, AI glasses, and a DSS for automated inventory. Outdoors, 5G commands drones for rapid emergency medical delivery, creating a digital health ecosystem to realize health equity.

INDUSTRIAL APPLICATIONS

Linking telecom, medical and logistics: Indoor smart pharmacies use AI assistants, AI glasses and DSS for 24/7 education and auto-inventory, easing pharmacist workloads. Outdoor 5G drones rapidly deliver medical supplies to rural areas for health equity and disaster relief. Driving digital transformation, this modular solution boasts huge export potential for Japan, ASEAN and Australia.



▲ MORE INFO



國際區 INTERNATIONAL AREA



國際區匯聚由 12 個部會推薦的 14 國 45 家國際廠商，集中展示創新技術，呈現跨國技術鏈結與多元創新能量。

The International Area brings together 45 exhibitors from 14 countries, recommended by 12 ministries and agencies, to collectively showcase innovative technologies from around the world.



EXHIBITOR

igus® SE & Co. KG

CONTACT

Thilo Schultes tschultes@igus.net Ministry of Agriculture

EXHIBITED TECHNOLOGY

Injection moulded frames-plastics frame e-bike



TECHNOLOGY INTRODUCTION

A RECO bicycle frame is created from the advanced composite granulate using complex injection moulding technology. At the end of its life, this can simply be ground up, melted down and manufactured into a new frame or component. Completely without waste

- Made in Germany
- Sustainable mobility solution
- Carbon composite 100% recyclable frame

INDUSTRIAL APPLICATIONS

1. Urban Logistics & Last-Mile Delivery
2. Corporate & Campus Mobility
3. Rental & Tourism
4. Sports & Recreation (High-End Consumer)
5. Sustainable Urban Development & Smart Cities Initiatives
6. Research & Development (Materials/Mobility)



▲ More Info

EXHIBITOR

igus® SE & Co. KG

CONTACT

Sascha Mais smais@igus.net Ministry of Agriculture

EXHIBITED TECHNOLOGY

ReBeL KID



TECHNOLOGY INTRODUCTION

The ReBeL KID expands the Cobot family with a small but no less functional robot. The robot is particularly suitable for small installation spaces and use in the education sector.

This is where the name KID comes from: Kinematics in Didactic. It is ideally suited for overhead applications, as it is very space-saving thanks to the control integrated in the base.

With over 1 million test cycles in the automation laboratory, its resilience and durability have been proven.

Thanks to its 4 kg weight, the ReBeL® KID is easy to transport.

INDUSTRIAL APPLICATIONS

1. Education & Training
2. Small-scale Automation & Light Manufacturing
3. Laboratory Automation & Medical Assistance
4. Quality Inspection & Measurement
5. Remote Operation & Maintenance
6. Product Development & Prototyping
7. Service Robotics - Specific Applications



▲ More Info



EXHIBITOR

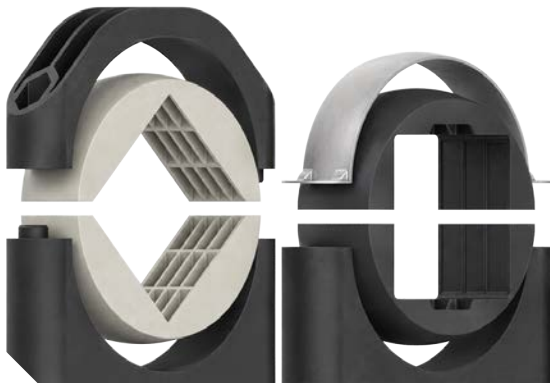
igus® SE & Co. KG

CONTACT

Richard Won rwon@igus.net Ministry of Agriculture

EXHIBITED TECHNOLOGY

ESQM



TECHNOLOGY INTRODUCTION

Split pillow block bearings for square profiles in solar trackers are designed for harsh solar industry conditions. Features include lightweight design, high load capacity, misalignment compensation, and easy assembly/disassembly. They are lubrication-free, maintenance-free, and ensure a long service life. Innovative split design allows easy assembly/disassembly, compensates misalignment, and supports high static loads.

Competitive or Intellectual Property Advantages:

Free from lubrication and maintenance, our bearings provide durability, reliability, and quick assembly, saving time.

Important Achievements / Awards:

Proven to extend product life under extreme solar industry conditions; trusted for high-performance applications.

INDUSTRIAL APPLICATIONS

This product is widely applicable in the solar energy industry, particularly in single-axis solar trackers, as it is designed to endure harsh environmental conditions with long service life. Additionally, it is ideal for use in agricultural machinery, providing high load capacity, lightweight design, and compensation for misalignment, making it suitable for demanding outdoor applications.



▲ More Info



EXHIBITOR

Control Union Taiwan Co., Ltd.

CONTACT

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EXHIBITED TECHNOLOGY

ISCC 國際永續性與碳驗證：從廚餘到永續航運生質能源的驗證服務



TECHNOLOGY INTRODUCTION

ISCC is a global sustainability certification standard for materials like used cooking oil, agricultural residues, and waste plastics. It utilizes mass balance and GHG calculations to ensure supply chain traceability. As a leading certification body, Control Union provides rigorous auditing to help businesses prevent greenwashing and connect with global green supply chains.

INDUSTRIAL APPLICATIONS

Industries:

- Agriculture & Waste Management: agriculture processing and waste/residue recycling
- Transportation: Aviation, shipping, and biofuels
- Manufacturing: Chemicals, plastics, textiles, and paper

Scenarios:

- Converting used cooking oil and food waste into biodiesel, biomethane, or Sustainable Aviation Fuel
- Securing global green supply chains and tracing materials from point of origin.



▲ More Info



EXHIBITOR
Control Union Taiwan Co., Ltd.

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EXHIBITED TECHNOLOGY
**VERRA VSC + CCB/ Gold Standard 國際碳權與生物多樣性專案
確證與查證服務**



TECHNOLOGY INTRODUCTION

VCS & Gold Standard (GS) are leading standards in the voluntary carbon market. VCS ensures additionality and permanence, with CCB as an optional add-on highlighting biodiversity co-benefits. Meanwhile, GS specializes in certifying SDG impacts. As a trusted VVB, Control Union delivers precise validation and verification services, helping businesses ensure market integrity across these pathways.

INDUSTRIAL APPLICATIONS

- Industries
- Land Use & Nature: Forestry, sustainable agriculture, and blue carbon.
 - Energy & Circular Economy: Renewable energy, methane capture, and clean technologies.
- Scenarios
- Meeting international supply chain net-zero mandates.
 - Adding biodiversity & social co-benefits to boost voluntary carbon credit market value.
 - Transforming eco-projects into certified international carbon assets.



▲ More Info



EXHIBITOR
SEMIQA SP. Z O.O.

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EXHIBITED TECHNOLOGY
Analog Neural Network (ANN1000)



TECHNOLOGY INTRODUCTION

- Technological Innovation: Analog Neural Network AI accelerator integrated with custom memristive materials for low-power, high-speed edge AI processing.
- Competitive or Intellectual Property Advantages: Proprietary memristor technology offering ultra-fast processing, compact footprint, and extreme energy efficiency over digital GPUs.
- Important Achievements / Awards: Gold Award @ AI Award/IC Design (TCA, Taiwan)

INDUSTRIAL APPLICATIONS

Industries: Defense & Security, Aerospace/Drones, Retail & Smart Infrastructure.
Scenarios: Real-time target recognition, autonomous guidance, and tracking for aerial/underwater drones. Plug-and-play smart vision for retail automation (e.g., convenience store automation) and edge AI computing requiring low-power, high-speed processing without heavy digital infrastructure.



▲ More Info

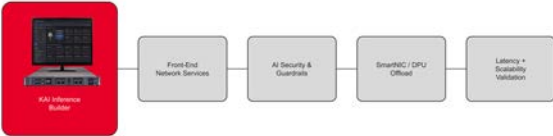


EXHIBITOR
Keysight Technologies

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Thomas Kuo thomas.kuo@keysight.com Ministry of Digital Affairs

EXHIBITED TECHNOLOGY

Validate and Optimize AI Inference Infrastructures



TECHNOLOGY INTRODUCTION

By using realistic prompts to test AI services and combining telemetry data from AI servers, Keysight can provide comprehensive performance metrics and identify potential bottlenecks. This enables organizations to mitigate bottlenecks and optimize their AI services.

In addition, Keysight provides a variety of realistic scenarios, including law firms, financial services, academia, and healthcare.

INDUSTRIAL APPLICATIONS

Keysight’s solutions serve the wireless communications, semiconductor, automotive, aerospace, and defense industries, enabling AI- and 6G-related design, emulation, and validation across R&D and production. They support device-, network-, and system-level testing to ensure real-world performance and regulatory compliance.



▲ More Info



EXHIBITOR
Senai

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EXHIBITED TECHNOLOGY

ISenai Video Intelligence - iNNOTRUST



TECHNOLOGY INTRODUCTION

Geofenced Surveillance at Scale: Allows users to set up "geofences" for any specific region worldwide, capturing trending or newly uploaded short videos (e.g., TikTok, YouTube, Instagram) within that area in real-time.

Multidimensional Video Content Analysis: Goes beyond text to deeply analyze visual symbols, gestures, background landmarks, voice tones, and even lighting angles, thereby detecting potential threats or identifying the precise coordinates of the content creator.

Narrative Detection and Influence Analysis: Automatically identifies cross-platform narrative trends (e.g., propaganda, disinformation, extremist rhetoric) and leverages AI to analyze sentiment and dissemination pathways.

INDUSTRIAL APPLICATIONS

- Defense and National Security: Used for intelligence gathering, battle damage assessment (BDA), and enemy activity monitoring in conflict zones.
- Public Safety and Law Enforcement: Monitoring riots and public protests, or providing early warnings for fraudulent activities targeting vulnerable groups (such as migrant workers).
- Government Intelligence Agencies: Tracking cognitive warfare and psychological operations conducted by foreign adversaries, as well as the evolution of public opinion and societal trends.



▲ More Info



EXHIBITOR
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Administration, Ministry of
Economic Affairs

EXHIBITED TECHNOLOGY

BraveJIG



TECHNOLOGY INTRODUCTION

By utilizing wireless, battery-powered sensor modules, sensors can be easily retrofitted to existing machinery in factories, simplifying the transition to IoT and DX.

Our devices are highly affordable and available as a one-time purchase. And our proprietary application BraveJIG PLUG is available for free download.

The sensor modules and routers share a unified casing design.

INDUSTRIAL APPLICATIONS

Empowering IoT and DX for factories, offices, and agriculture. Achieve instant data visualization by easily retrofitting sensors right where you need them on existing equipment. Whether you need to monitor older machinery or track environmental conditions within your facilities, we provide versatile sensor solutions to meet your specific needs.



▲ More Info

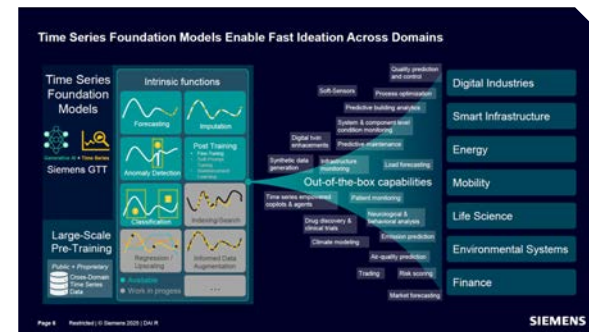


EXHIBITOR
Siemens Limited

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Industrial Development
Administration, Ministry of
Economic Affairs

EXHIBITED TECHNOLOGY

Siemens GTT (General Time Transformer)



TECHNOLOGY INTRODUCTION

Time Series Foundation Models (TSFMs) are advanced AI models designed for handling and processing time series data across different domains. Unlike traditional Narrow AI solutions that are limited to specific use cases, these models are trained on broad data and can handle various types of time series data and useful for tasks like forecasting, anomaly detection, editing, exploration, search, and classification.

INDUSTRIAL APPLICATIONS

Optimization of core equipment process parameters; predictive maintenance of equipment; prediction of key process parameters such as energy consumption, load and chiller temperature.

Time series forecasting, anomaly detection, time series generation, imputation, and classification.



▲ More Info



EXHIBITOR

QT Medical, Inc.

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Industrial Development
Administration, Ministry of
Economic Affairs

EXHIBITED TECHNOLOGY

PCA500 12-lead ECG System and QHeart® Sensor



TECHNOLOGY INTRODUCTION

Technological Innovation

PCA 500® is the world's most compact 12-lead ECG, FDA-cleared for in- and out-of-hospital use with QHeart® Sensor to overcome traditional limits.

Competitive or Intellectual Property Advantages

Its intuitive UI and patented multi-size QHeart® Sensor enable 12-lead ECG in 1 minute across different clinical settings : hospitals, EMS, telehealth, aviation, and remote care.

Important Achievements / Awards

FDA, CE, TFDA; NIH Research Award(2013), Tibbetts Award Winner(2020), Taiwan MOHW/MOEA and Taipei Biotech Awards(2021). Digital Health Awards Finalist (2024).

INDUSTRIAL APPLICATIONS

PCA 500® is applicable to digital health, medical devices, telemedicine, emergency care, EMS, aviation medicine, sports medicine, CROs, nursing homes, and remote patient monitoring. It supports 12-lead ECG testing in hospitals, clinics, ambulances, aircraft, athlete screening programs, home care, community screening, and remote care settings.



▲ More Info



EXHIBITOR

SteraVision Co.,Ltd

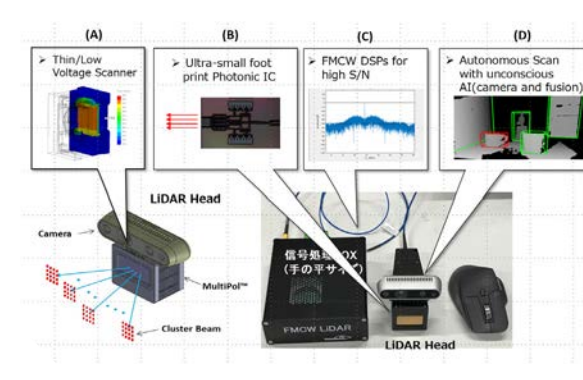
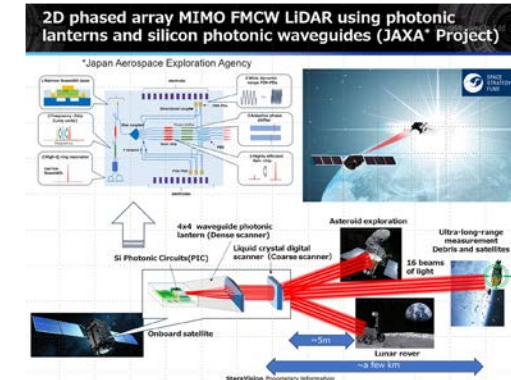
CONTACT

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Industrial Development
Administration, Ministry of
Economic Affairs

EXHIBITED TECHNOLOGY

FMCW LiDAR and Optical Switch



TECHNOLOGY INTRODUCTION

LiDAR uses a digital solid-state scanner, a type of optical switch, to detect objects with the required precision.

Also, optical switches are ideal for next-generation hyperscale data centers.

Current bottlenecks in LiDAR is real-time processing by AI due to the heavy data. Our solution solves this problem. Also, our optical switches are very fast compared to current.

Patents have been granted.

INDUSTRIAL APPLICATIONS

Our LiDAR can be used from terrestrial to space fields. In the autonomous driving, we will not directly sell LiDAR, but rather operate on a royalty basis. In other areas (space/defense markets), we aim to become a top niche player. Meanwhile, regarding optical switches, we aim to become the world's only high-speed OCS (Optical Circuit Switches) supplier for next-generation hyperscale data center.



▲ More Info



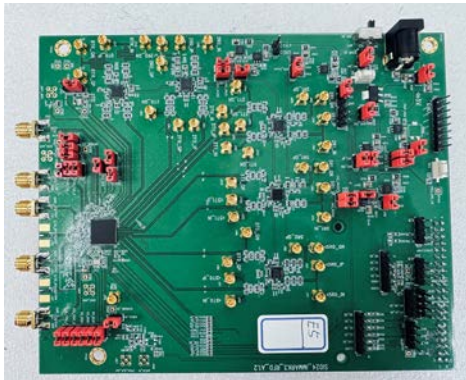
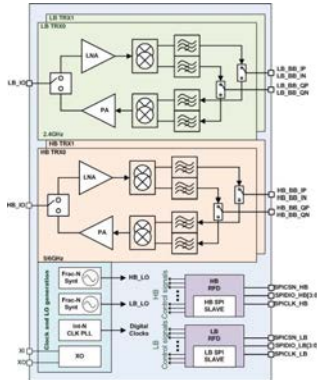
EXHIBITOR
Sirius Wireless PTE. LTD.

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Industrial Development
Administration, Ministry of
Economic Affairs

EXHIBITED TECHNOLOGY

WiFi 7 2x2 Tri-band Transceiver IP in TSMC 22uLL (Silicon Proven IP)



TECHNOLOGY INTRODUCTION

Technological Innovation: Wi-Fi 7 (802.11be) 2x2 160MHz RF transceiver IP, silicon-proven in TSMC 22uLL. Tri-band 2.4/5/6 GHz, 4K-QAM, MLO, 46 Gbps (4.8x Wi-Fi 6), sub-ms latency.

Competitive & IP Advantages: Modular 1x1/2x2 for SoC integration in consumer electronics, smart home, industrial automation, AI edge computing.

Achievements: APAC CIO Outlook Top Wireless Solutions 2024. CEVA partner.

INDUSTRIAL APPLICATIONS

Applicable across consumer electronics (smartphones, tablets, AR/VR/XR, 4K/8K streaming), smart home and IoT, industrial wireless automation, and AI edge computing. MLO and multi-Gbps throughput enable real-time on-device AI inference and cloud synchronization. Empowers IC design and semiconductor companies to integrate Wi-Fi 7 into SoCs with lower cost, risk, and time-to-market versus in-house RF



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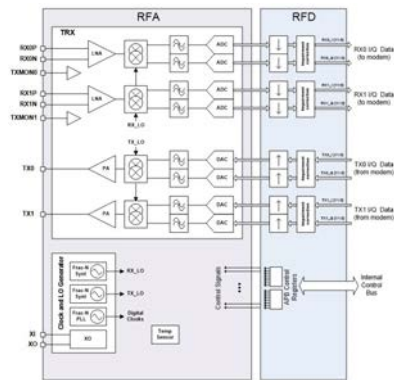
EXHIBITOR
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Industrial Development
Administration, Ministry of
Economic Affairs

EXHIBITED TECHNOLOGY

5G NTN 2x2 Transceiver IP S/L-Band in TSMC 22uLL (Silicon Proven IP)



TECHNOLOGY INTRODUCTION

Technological Innovation: 5G NTN 2x2 transceiver IP per 3GPP Rel-17/18. Band n255 (L-band), n256 (S-band).

Competitive & IP Advantages: Silicon-proven in TSMC 22uLL. L-band for IoT; S-band for broadband. Single IP for 5G NR ecosystem.

Achievements: APAC CIO Outlook Top Wireless Solutions 2024. Validated per 3GPP Rel-17/18 NTN.

INDUSTRIAL APPLICATIONS

Applicable across maritime and aviation communications, remote logistics and cargo tracking on transoceanic routes, emergency response, smart agriculture, mining automation, and dispersed IoT infrastructure. NB-IoT data via NTN feeds real-time AI analytics for predictive maintenance and autonomous systems. Enables terminal manufacturers to enter the high-growth 5G NTN satellite broadband market.



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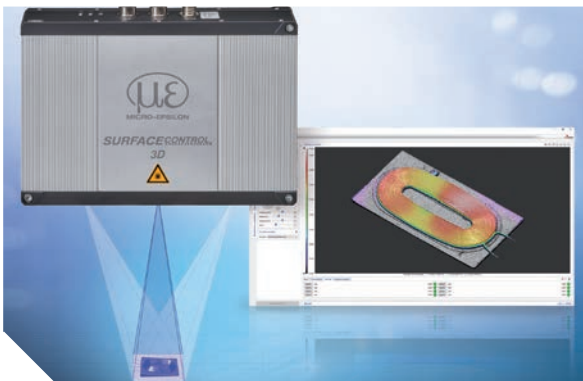
EXHIBITOR
Micro-Epsilon

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Industrial Development
Administration, Ministry of
Economic Affairs

EXHIBITED TECHNOLOGY

surfaceCONTROL



TECHNOLOGY INTRODUCTION

Break free from bulky controllers. Our new SMART 3D snapshot sensor is the first metrology-grade 3D software in the market. No external IPC nor controller required—
Only precise 3D measurement in a single and smart device.

- Highest precision up to 0.25 μm
- Max. FOV: 240 $\times$ 150 mm
- Up to 2.2 million 3D points/second
- Fast 3D measurement from 0.2 s

INDUSTRIAL APPLICATIONS

Our next-generation 3D sensor redefines efficiency by removing the dependency on additional PCs and controllers. This compact, standalone design reduces both footprint and total cost of ownership. With embedded software and onboard processing, it's a complete, ready-to-use 3D metrology system suitable for inline 3D metrology in industrial environment.



▲ More Info



EXHIBITOR
A&D Company, Limited

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Industrial Development
Administration, Ministry of
Economic Affairs

EXHIBITED TECHNOLOGY

AND Electron Beam Colum System



TECHNOLOGY INTRODUCTION

Key Technology for Advanced Semiconductor Manufacturing

A&D develops high-performance electron beam systems for advanced semiconductor manufacturing. Combining electron gun technology with high-speed, high-precision beam control, A&D solutions are used in mask fabrication, wafer inspection, and direct-write lithography, supporting the continued advancement of semiconductor miniaturization.

INDUSTRIAL APPLICATIONS

A&D electron beam technology is used in photomask manufacturing, wafer inspection, direct-write lithography, and semiconductor process equipment. It supports advanced semiconductor and AI chip production through high-resolution imaging and precise beam control. The technology is also applied in surface analysis instruments, research laboratories, and next-generation microfabrication systems.



▲ More Info



EXHIBITOR
A&D Company, Limited

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Ministry of Economic Affairs

EXHIBITED TECHNOLOGY

AND Weighing module for smart manufacturing systems



TECHNOLOGY INTRODUCTION

High-precision weigh modules designed for built-in applications. They enable accurate mass measurement to improve product quality and support factory automation. The compact design allows easy integration into equipment, while high-resolution sensing technology enhances efficiency and system flexibility. Multiple communication interfaces ensure seamless connectivity with industrial control system.

INDUSTRIAL APPLICATIONS

AD-4212 Series is designed for semiconductor, pharmaceutical, biotechnology, and chemical industries requiring precise mass measurement. Its compact design enables integration into automated equipment, dispensing systems, robots, and cleanrooms. With mg-level accuracy, high stability, and vibration-resistant performance, it improves process control, reduces waste, and supports smart manufacturing.



▲ More Info



EXHIBITOR
YASKAWA Electric Corporation

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Council

EXHIBITED TECHNOLOGY

Next-Generation AI Robotics for Intelligent Smart Factory Automation



TECHNOLOGY INTRODUCTION

This technology leverages AI-driven real-time data integration and cross-system control to enable dynamic optimization, predictive maintenance, and intelligent automation. Powered by YASKAWA's robotics and motion control technologies, it delivers high precision, reliability, and seamless integration, and is widely adopted in manufacturing and showcased at iREX.

INDUSTRIAL APPLICATIONS

This technology is applicable across semiconductor, electronics, automotive, and precision manufacturing industries. It enables automation in material handling, assembly, inspection, and high-precision processes. By integrating AI-driven control and real-time data, it supports smart factory development, improves efficiency, and enables flexible, high-mix production.



▲ More Info



EXHIBITOR

Faclon Labs

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National Science and Technology Council

EXHIBITED TECHNOLOGY

Faclon Intelligence Platform



TECHNOLOGY INTRODUCTION

Technological Innovation

AI-native platform integrating industrial data with GenAI for predictive maintenance, anomaly detection, energy forecasting, and AI copilots.

Competitive or Intellectual Property Advantages

Fast deployment with PLC/SCADA integration, flexible edge-cloud architecture, proprietary AI models, BruceDB, and patent-pending MuSTO.

Important Achievements / Awards

2025 Elecrama Runner-up, NineSigma & ENTICE 2.0 Winner; Vedanta Spark and UNIDO-CII awardee.

INDUSTRIAL APPLICATIONS

Falcon Intelligence Platform serves manufacturing, energy, utilities, oil & gas, and smart infrastructure. It integrates data from PLCs, SCADA, IoT, and enterprise systems to enable predictive maintenance, energy optimization, anomaly detection, real-time monitoring, and AI-powered operational decision-making through a unified industrial intelligence platform.



▲ More Info



EXHIBITOR

HanuAI Private Limited

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National Science and Technology Council

EXHIBITED TECHNOLOGY

RoadAthena



TECHNOLOGY INTRODUCTION

Technological Innovation

Edge AI platform combining NVIDIA, GIS, cameras, and AI vision for real-time road monitoring and predictive maintenance.

Competitive or Intellectual Property Advantages

Proprietary Edge AI models, GIS analytics, patent-pending technologies, and cloud-independent processing for scalable infrastructure monitoring.

Important Achievements / Awards

TiE50 Global Winner, NASSCOM Emerge 50, STPI Startup of the Year, Forbes Top 100 Startup.

INDUSTRIAL APPLICATIONS

HanuAI serves transportation, infrastructure, smart city, and public utility sectors. Its Edge AI platform enables automated road monitoring, asset mapping, infrastructure inspection, and predictive maintenance through AI, GIS, and sensing technologies. The solution improves maintenance efficiency, reduces costs, and supports digital infrastructure, smart mobility, and urban asset management.



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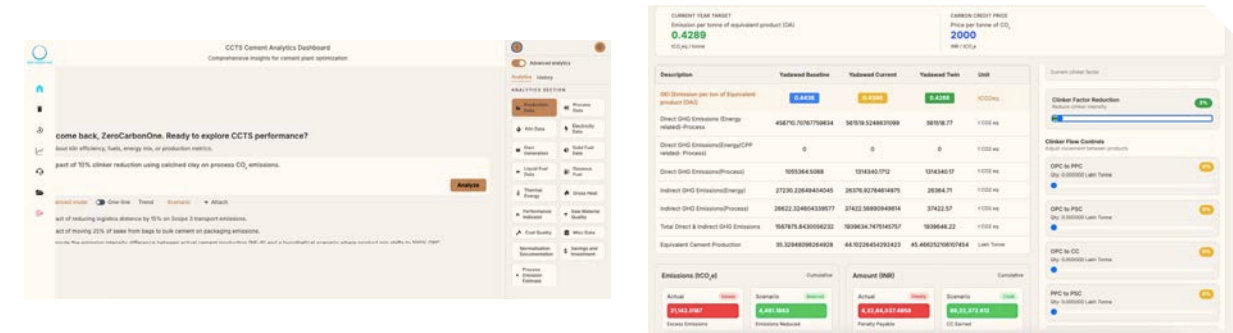


EXHIBITOR
Zero Carbon One

CONTACT
Abhinav kaushal abhinav@zerocarbon.one National Science and Technology Council

EXHIBITED TECHNOLOGY

Zero Carbon One: Agentic AI Decarbonization Platform



TECHNOLOGY INTRODUCTION

Technological Innovation
Agentic AI combining industrial SLMs, digital twins, and ERP/IoT integration for automated MRV, compliance, and decarbonization.

Competitive or Intellectual Property Advantages
Proprietary industrial AI models, digital twins, and AI workflows with ERP/SCADA integration for traceable MRV and optimization.

Important Achievements / Awards
Stanford Seed startup; incubated by T-Hub & NCB; collaborating with TERI and WWF on decarbonization.

INDUSTRIAL APPLICATIONS

Zero Carbon One serves cement, steel, manufacturing, chemicals, and other emissions-intensive industries. It integrates ERP, SCADA, and IoT data to automate carbon accounting, digital MRV, ESG/CBAM compliance, and energy optimization. Digital twins and Agentic AI enable decarbonization planning, operational intelligence, and cost-efficient emissions reduction.



More Info

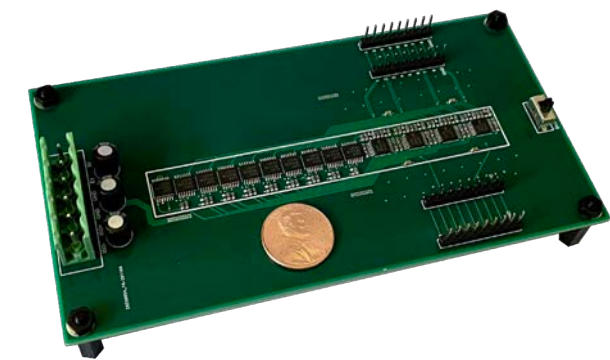


EXHIBITOR
Vellex Computing, Inc.

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EXHIBITED TECHNOLOGY

Vellex Platform



TECHNOLOGY INTRODUCTION

1. Vellex Platform uses analog circuits physics instead of digital brute force for AI training, delivering a 17,000x speedup at ultra-low power.
2. Backed by 4 patents & Stanford exclusive IP. Vellex patented architecture is purpose-built for low-power, AI training at the edge.
3. Raised \$1.47M to date. US NSF, NASA, & DOE funded. Activate Fellowship. Winner of ICTGC & PnP Taiwan Award.

INDUSTRIAL APPLICATIONS

- Core Tech: Low-power, on-device AI training to combat model drift without cloud dependency.
- Robotics & Drones: Adapting autonomous navigation mid-flight.
 - Satellites: On-orbit training to filter data, saving bandwidth.
 - Energy & Industrial IoT: Sensors learning predictive maintenance and detecting gas leaks.
 - Defense: Secure, off-grid continuous learning.



More Info



EXHIBITOR

Tohoku University
Chulalongkorn University/Forge Reality CO., LTD.

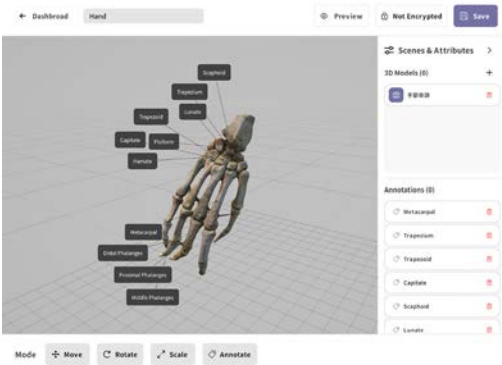
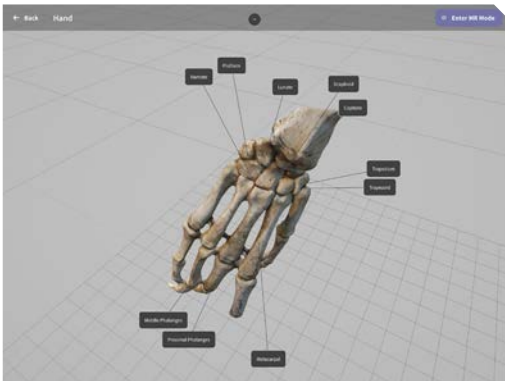
CONTACT

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National Science and Technology Council

EXHIBITED TECHNOLOGY

IRIX



TECHNOLOGY INTRODUCTION

IRIX is an XR platform designed to transform 2D textbooks and static knowledge into interactive 3D learning experiences. With spatial computing and smart annotation tools, IRIX enables users to annotate and share 3D content within a single intuitive environment, supporting reusable digital assets and flexible deployment for education and training.

INDUSTRIAL APPLICATIONS

IRIX is currently being piloted in higher education institutions, with active testing conducted in medical education and veterinary science programs. It is especially useful for anatomy teaching, 3D model annotation, and academic exchange, where complex spatial knowledge must be explained clearly and repeatedly. The platform has been demonstrated overseas, receiving positive feedback regarding its potential applications in learning, collaboration, and digital resource management.



▲ More Info



EXHIBITOR

NeoSapien (ZenithZephyr Wellness Private Limited)

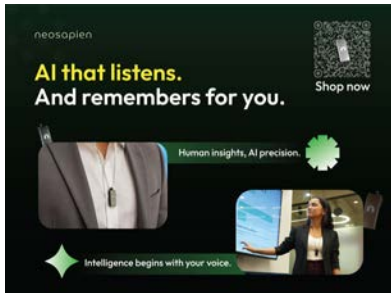
CONTACT

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National Science and Technology Council

EXHIBITED TECHNOLOGY

Neo 1 — Ambient AI Wearable & Conversation Operating System



TECHNOLOGY INTRODUCTION

Technology Introduction :Neo 1 is an ambient AI wearable pendant that passively captures real-world conversations, builds persistent memory, and triggers automated workflows — hands-free, screen-free, and privacy-first with zero audio storage and AES-256 encryption.

Technological Innovation :Ambient-first AI that captures real-world conversations passively, with patented audio annihilation in 500ms and native Indic language support.

Competitive & IP Advantages :Full-stack ownership across hardware, OS, SDK. 1 patent granted, 8 filed. Privacy-by-design moat competitors cannot structurally replicate.

Important Achievements / Awards :Grafana 2026, TOI Gadgets Now 2025, Panasonic Ignition 2024–25. \$2M raised. Shark Tank India.

INDUSTRIAL APPLICATIONS

Enterprise Sales: Auto-captures client conversations, generates CRM logs, and reduces manual follow-up work — improving deal closure rates.

Retail: Captures customer preferences during store visits, enabling personalised follow-ups and stronger customer relationships.

Healthcare: Auto-generates clinical notes from doctor-patient conversations, reducing administrative burden.

Education: Captures training interactions, enabling personalised coaching and performance tracking at scale.

Automobile: Records field conversations, improving after-sales service compliance and workforce training.



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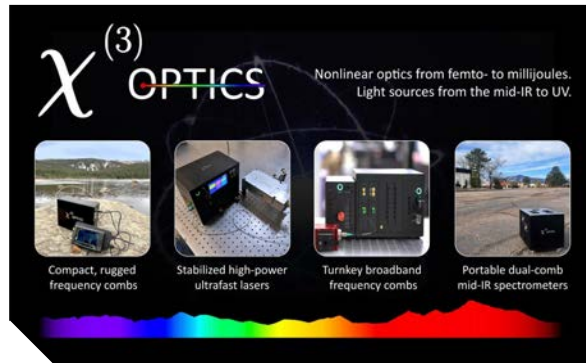
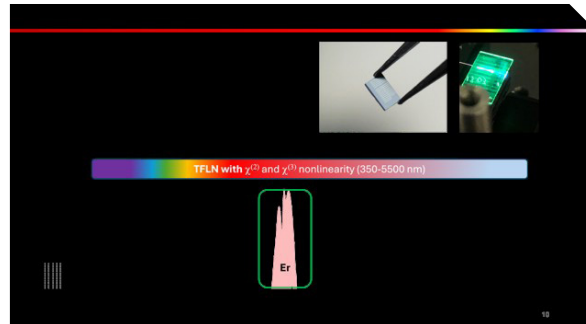


EXHIBITOR
Chi3 Optics LLC

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EXHIBITED TECHNOLOGY

Integrated Nanophotonic Frequency Comb Platform for Precision Sensing, Quantum Technologies, and Aerospace Applications



TECHNOLOGY INTRODUCTION

Technological Innovation

Thin-film lithium niobate (TFLN) and silicon photonic integration enables chip-scale frequency combs with broadband wavelength generation and ultrafast optical processing.

Competitive or Intellectual Property Advantages

Replaces bulky optical components with nanophotonic devices, delivering low-SWaP, high-performance frequency comb systems for portable precision sensing and quantum applications.

Important Achievements / Awards

Advanced integrated photonic platform for precision sensing, quantum technologies, aerospace systems, and optical metrology.

INDUSTRIAL APPLICATIONS

Applicable across quantum technologies, aerospace and defense, environmental monitoring, semiconductor manufacturing, telecommunications, and precision instrumentation.

Applications include trace-gas sensing, industrial process monitoring, optical atomic clocks, quantum networking, precision metrology, autonomous sensing, and compact airborne or space-based photonic systems requiring high accuracy, low power consumption, and reliable operation.



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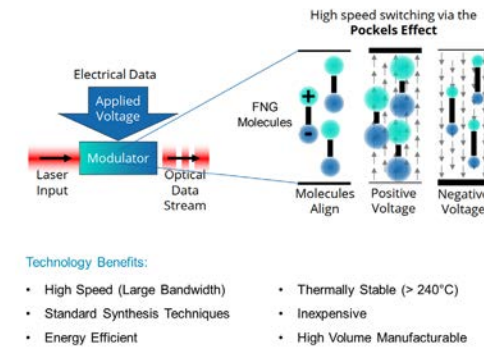


EXHIBITOR
Polaris Electro-Optics

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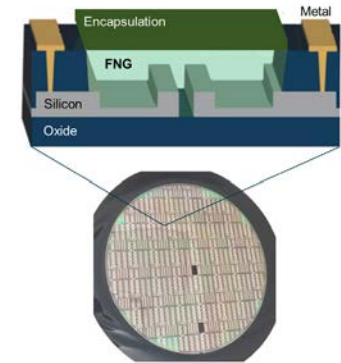
EXHIBITED TECHNOLOGY

Silicon Photonic High-Speed Modulators for 400Gbps+/Lane Enabled by Ferroelectric Nematic Glass



Technology Benefits:

- High Speed (Large Bandwidth)
- Standard Synthesis Techniques
- Energy Efficient
- Thermally Stable (> 240°C)
- Inexpensive
- High Volume Manufacturable



TECHNOLOGY INTRODUCTION

Polaris Electro-Optics is pioneering high-speed silicon-organic modulators to overcome data rate bottlenecks in conventional silicon photonics. Our proprietary Ferroelectric Nematic Glass (FNG) material exploits the Pockels effect and unique silicon photonic modulator design to enable fast, energy-efficient optical modulation.

INDUSTRIAL APPLICATIONS

Our technology is developed to address the surging demand for high-speed data transfer across data centers, telecommunications, AI infrastructure, and optical computing. FNG is integrated onto silicon photonic ICs post-foundry, without modifying standard fabrication processes, delivering superior performance, manufacturability, and scalability.



▲ More Info



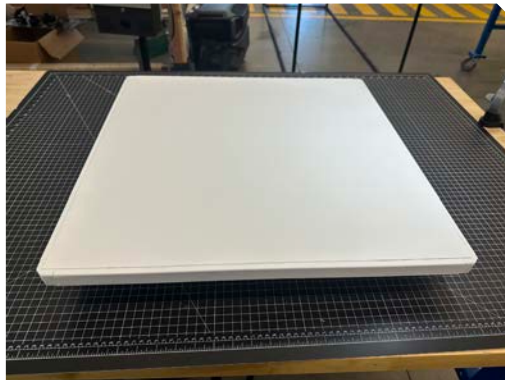
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National Science and Technology Council

EXHIBITED TECHNOLOGY

LATCHES™ (Large-Area Transactive Cooling & Heat Energy Storage)



TECHNOLOGY INTRODUCTION

Introducing LATCHES™ (Large-Area Transactive Cooling & Heat Energy Storage), the world's most compact thermal battery for HVAC peak demand management. By integrating directly with existing Building Management Systems (BMS), LATCHES reduces commercial HVAC energy loads by 20% to 60% while unlocking a Tesla Megapack's worth of electrical headroom within commercial buildings.

INDUSTRIAL APPLICATIONS

Real Estate, AI Data Centers, Utilities, and EV Infrastructure.

HVAC Shifting: Cutting peak heating and cooling behind the meter to bypass utility queues.
AI & EV Infrastructure: Unlocking panel headroom for fast chargers without hardware upgrades.



▲ More Info



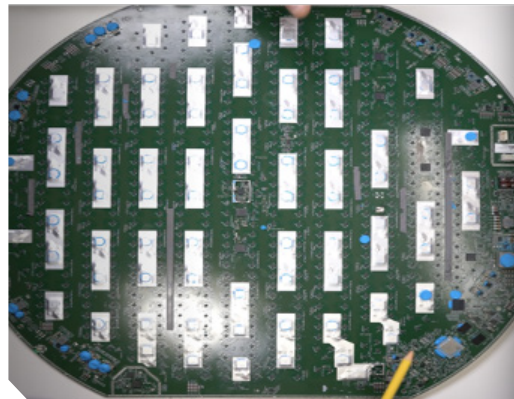
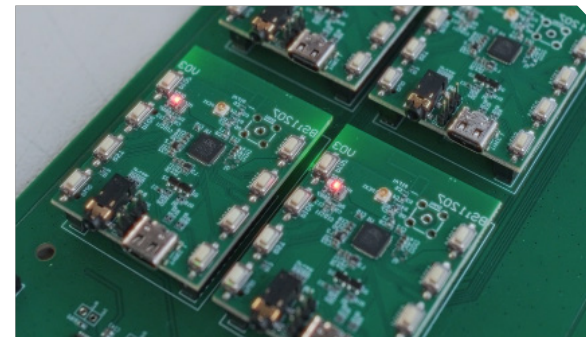
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Department of Industrial Technology,
Ministry of Economic Affairs

EXHIBITED TECHNOLOGY

Ka/Ku-Band LEO Satellite ASIC Platform



TECHNOLOGY INTRODUCTION

Celes GmbH provides a next-generation Ka/Ku-band LEO Satellite ASIC Platform designed to accelerate the deployment of satellite communication terminals and network infrastructure. The platform combines custom ASIC development, beamforming technologies, phased-array antenna architectures, RF front-end integration, and satellite communication expertise into a scalable silicon solution.

The platform supports high-throughput broadband connectivity, low-latency communications, dynamic beam steering, and power-efficient operation for Low Earth Orbit (LEO) satellite networks. Key capabilities include Ka/Ku-band RF transceivers, beamformer integration, RF front-end modules (RFFE), reference AESA architectures, and integrated PA/LNA solutions. Beyond silicon products, Celes provides end-to-end ASIC design services covering system architecture, RF design, digital implementation, IP integration, tape-out support, and production enablement. This enables customers to significantly reduce development risk and shorten time-to-market for next-generation satellite communication systems. Compared with conventional satellite communication solutions, the platform delivers higher integration, improved power efficiency, reduced system complexity, and greater flexibility for customer-specific implementations.

INDUSTRIAL APPLICATIONS

The technology is applicable across satellite communications, aerospace, defense, telecommunications infrastructure, maritime connectivity, aviation broadband, emergency communications, and next-generation wireless networks.

As global demand for resilient connectivity and Non-Terrestrial Networks (NTN) continues to grow, the platform enables operators, equipment vendors, and system integrators to develop advanced satellite communication solutions with improved performance and lower deployment costs.

The solution also supports government and enterprise applications requiring secure and reliable communications in remote or underserved regions. Through customizable ASIC architectures and RF subsystems, customers can rapidly develop differentiated products tailored to specific satellite constellations and service requirements.



▲ More Info



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EXHIBITED TECHNOLOGY

Advanced ASIC Design Services & RF/Edge AI Connectivity Platform



TECHNOLOGY INTRODUCTION

Celes GmbH delivers comprehensive ASIC design services and RF connectivity solutions for next-generation intelligent devices. The platform combines custom ASIC development, RF IP licensing, Bluetooth Audio AI SoCs, proprietary 2.4GHz connectivity solutions, low-power wireless technologies, and Edge AI integration capabilities.

Supported wireless technologies include Bluetooth®, BLE, Zigbee®, proprietary RF protocols, and next-generation Wi-Fi connectivity solutions. Customers can leverage reusable RF IP blocks and proven ASIC development methodologies to accelerate product development while minimizing technical risk.

The platform enables intelligent sensing, wireless communications, localization, smart automation, and Edge AI applications across consumer, industrial, and enterprise markets. Celes also provides turnkey ASIC development services, including architecture definition, IP integration, front-end and back-end implementation, tape-out support, and production enablement.

Compared with traditional development approaches, the platform significantly shortens design cycles and enables rapid deployment of differentiated wireless and AI-enabled products.

INDUSTRIAL APPLICATIONS

The technology supports a broad range of applications including smart buildings, industrial IoT, smart metering, wearables, robotics, drones, asset tracking, intelligent automation, and Edge AI systems. By combining RF connectivity and AI processing capabilities, the platform enables real-time sensing, predictive analytics, and intelligent decision-making at the network edge. The solution is particularly suitable for organizations seeking to develop customized wireless products without building large internal semiconductor development teams.

The platform also supports digital transformation initiatives across manufacturing, logistics, smart cities, and Industry 4.0 ecosystems.



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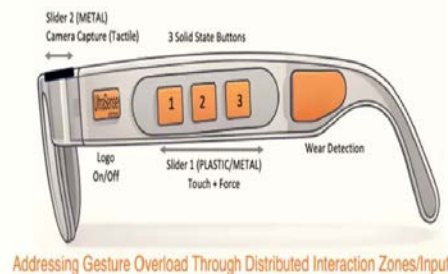
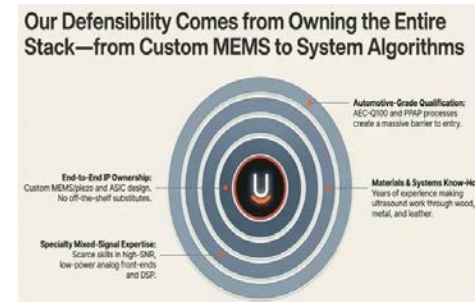


EXHIBITOR
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Ministry of Economic Affairs

EXHIBITED TECHNOLOGY

Ultrasound Intelligent Platform for Automotive, Smart Glasses, and Smart Rings



TECHNOLOGY INTRODUCTION

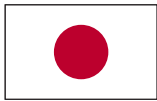
UltraSense Systems develops solid-state human-machine interface solutions powered by a vertically integrated Ultrasound Intelligent Platform. This platform integrates MEMS ultrasound transducers, mixed-signal ASICs, firmware, algorithms, and complete modules. The same core technology serves three business segments: automotive smart surfaces, camera and control interfaces for smart glasses, and discreet wearable interfaces for smart rings. UltraSense's key differentiator is unique ultrasound touch and force sensing that works through challenging materials like metal, glass, ceramic, plastic, wood, leather, and hidden ShyTech surfaces. By co-designing MEMS and ASIC technology in-house, we enables thin, reliable, always-available controls that combine touch, slide, press, and force input while preserving premium industrial design.

INDUSTRIAL APPLICATIONS

Automotive: solid-state HMI for steering wheels, center consoles, doors, overhead consoles, and other interior or exterior smart surfaces. Smart glasses: compact camera and control interfaces that add intuitive press, slide, zoom, and mode switching to eyewear without bulky trackpads or awkward gestures. Smart rings: premium wearable and IoT interfaces for ambient and spatial computing, enabling discreet, high-precision control within jewelry-like industrial designs. The platform is applicable to automotive OEMs and Tier-1s, AR/AI device makers, consumer electronics brands, wearable/IoT companies, and industrial equipment makers seeking compact, sealed, and durable interfaces.



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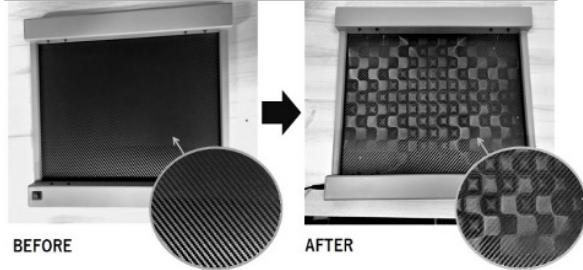


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Ministry of Economic Affairs

EXHIBITED TECHNOLOGY

Advanced Particle Control Technology



TECHNOLOGY INTRODUCTION

In recent years, particle contamination has become a significant factor affecting manufacturing yield across various industries. This issue is particularly critical in semiconductor manufacturing, where continued device miniaturization has made particle control increasingly important.

Leveraging our long-established expertise in electrostatic chuck technology, we have developed an advanced particle collector based on electrostatic adsorption principles. This technology efficiently captures particles generated during manufacturing processes by utilizing controlled electrostatic forces.

Our particle collector is designed to operate effectively in both atmospheric and vacuum environments, making it suitable for integration into a wide range of process conditions. By actively capturing particles during processing, the system helps reduce contamination risks and contributes to improved yield and process stability.

With its robust design and proven electrostatic technology, our solution provides an effective approach to particle management in modern semiconductor manufacturing and other high-precision industrial processes.

INDUSTRIAL APPLICATIONS

The particle collector is designed for a wide range of industrial environments where particle contamination can negatively impact product quality and manufacturing yield. It is particularly suitable for semiconductor manufacturing, where advanced device miniaturization requires strict particle control throughout the production process.

In semiconductor fabrication facilities, the system can be integrated into process equipment, vacuum chambers, and transfer modules to capture particles generated during processing or wafer handling. By actively removing particles within the process environment, the technology helps reduce contamination risks and contributes to improved yield and process stability.

Beyond semiconductor manufacturing, the particle collector can also be applied in other high-precision industries such as flat panel display production, electronic component manufacturing, and optical device fabrication, where even microscopic particles can affect product performance.

The technology is also suitable for research laboratories, advanced material processing, and other clean manufacturing environments that require effective particle management under both atmospheric and vacuum conditions.



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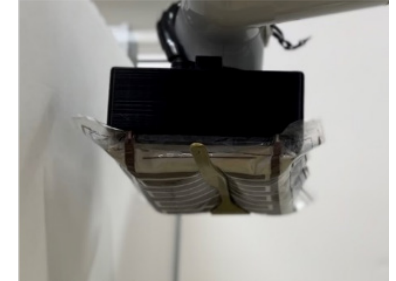


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EXHIBITED TECHNOLOGY

Robotic Handling Solutions



TECHNOLOGY INTRODUCTION

No mIn industrial manufacturing, vacuum-based gripping systems are widely used for material handling applications. However, conventional vacuum suction systems require significant energy consumption and often generate noise due to compressed air usage during operation. These issues have become increasingly important as industries pursue more energy-efficient and sustainable production methods.

To address these challenges, we have developed a novel multi-gripper that combines a jamming gripper with electrostatic chuck technology. By integrating these two gripping mechanisms, the system can securely handle a wide variety of objects with different shapes and surface characteristics.

Unlike conventional vacuum systems, our technology operates with extremely low power consumption and does not require compressed air, resulting in completely silent operation. This significantly reduces energy usage while improving the working environment on the production floor.

As carbon neutrality and sustainable manufacturing become global priorities, this innovative gripping technology offers a promising solution for next-generation material handling systems in industrial production.ore than 400 words

INDUSTRIAL APPLICATIONS

The multi-gripper is designed for a wide range of industrial applications where reliable and energy-efficient material handling is required. By combining a jamming gripper with electrostatic chuck technology, the system can securely handle objects with various shapes, sizes, and surface properties.

This technology is particularly suitable for high-precision manufacturing environments such as semiconductor fabrication, electronic component production, and advanced materials processing, where gentle yet stable handling of delicate parts is essential.

Because the system operates without compressed air, it significantly reduces energy consumption and eliminates the noise typically associated with vacuum-based gripping systems. This makes it especially beneficial for automated production lines seeking to improve energy efficiency and workplace conditions.

The multi-gripper can also be applied in industries that rely on vacuum-based material handling, including electronics assembly, precision manufacturing, and laboratory automation. By providing a low-power and silent gripping solution, the technology offers a sustainable alternative for next-generation manufacturing systems.



▲ More Info



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EXHIBITED TECHNOLOGY

Ion Pad Gripper



TECHNOLOGY INTRODUCTION

This product is a retrofit IoT device for legacy machine tools without network connectivity. Using camera-based image processing, it captures operating data from machine displays and control panels. By linking machine data with worker movements and process information, it automatically records production time and labor input, enabling data-driven management and cost-effective smart factory transformation.

INDUSTRIAL APPLICATIONS

Many legacy industrial machines without network connectivity still operate worldwide, accounting for about 70% of equipment. This technology uses image recognition and IoT to capture data from existing machines without modification, enabling digitalization without replacing equipment. It visualizes operations, improves productivity, and preserves manufacturing know-how for future generations.



▲ More Info



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Department of Industrial
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EXHIBITED TECHNOLOGY

Development of a Thermal Myofascial Release Device



TECHNOLOGY INTRODUCTION

This technology is a thermal myofascial release device that applies heat and compression directly to muscles and fascia. Unlike conventional moxibustion, which focuses on acupuncture points, this device targets muscles to enable efficient myofascial release. A hemispherical brass head (approx. 50 mm) provides high thermal conductivity and stable contact pressure. Precise temperature control ensures safe and consistent thermal stimulation, making it suitable as a professional healthcare device developed with acupuncture practitioners.

INDUSTRIAL APPLICATIONS

As the global workforce declines, maintaining productivity with limited labor has become a major challenge for industry. Preventive healthcare is increasingly important to address physical discomfort before illness occurs. This thermal compression myofascial release device helps relieve muscle fatigue and tension, supporting workers' physical condition and improving health and productivity in labor-intensive industries such as manufacturing, logistics, and construction.



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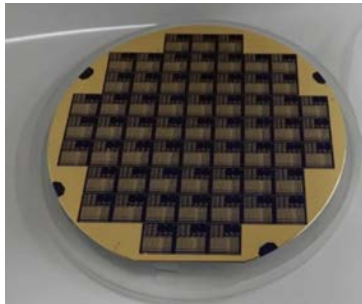


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EXHIBITED TECHNOLOGY

Graphene EUV Pellicle



TECHNOLOGY INTRODUCTION

EUV lithography requires a pellicle — a thin membrane placed over the photomask — to protect it from contamination during high-volume manufacturing. As the industry advances to High-NA EUV for next-generation nodes, pellicle requirements become significantly more demanding: higher EUV transmittance, greater thermal durability under elevated source power, and sustained mechanical integrity over extended operating lifetimes. Existing pellicles are approaching their material limits under these conditions.

Graphene is theoretically and practically the ideal pellicle material. It provides inherently high EUV transmittance; its exceptional thermal conductivity enables heat dissipation under high-power EUV illumination; and its in-plane mechanical strength ensures durability even at extreme thinness. These properties make graphene uniquely suited to the demands of High-NA EUV environments.

However, industrializing graphene pellicles has proven extremely difficult. Many countries have invested heavily in graphene-based solutions, yet most efforts have stalled at the synthesis or handling stage — graphene membranes of the required size and quality have been nearly impossible to produce reliably at scale.

AirMembrane has addressed both barriers with proprietary technology: a plasma CVD synthesis and a world-first automated mechanical transfer technology. The company is currently scaling toward full pellicle frame size, with both technologies providing the foundation for high-quality graphene pellicle production at commercially viable throughput.

INDUSTRIAL APPLICATIONS

The EUV pellicle is a critical bottleneck in advanced semiconductor manufacturing. Without a reliable pellicle, photomasks are exposed to particle contamination, causing defects that directly impact wafer yield and manufacturing economics. This bottleneck intensifies as the industry moves to High-NA EUV — where higher source power and tighter process margins place greater demands on the pellicle than any existing material can sustain.

AirMembrane's graphene pellicle technology directly enables leading foundries to scale High-NA EUV production without the yield and uptime compromises imposed by current pellicle limitations. The EUV pellicle market is driven by a small number of leading semiconductor manufacturers globally. AirMembrane is pursuing relationships with key players in this ecosystem.



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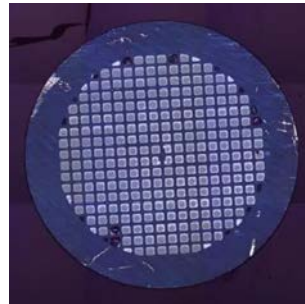
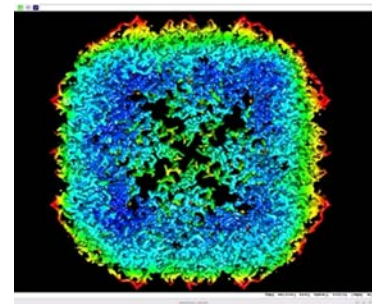


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EXHIBITED TECHNOLOGY

Graphene TEM Grid



TECHNOLOGY INTRODUCTION

AirMembrane has developed two structurally distinct graphene TEM grid products: a Bilayer Graphene TEM Grid optimized for cryo-TEM applications, and a Single-Hole Graphene TEM Grid suited to a wide range of electron microscopy needs.

Graphene TEM grids offer four key advantages over conventional amorphous carbon substrates:

- Low background signal: graphene's ordered crystal lattice provides significantly higher imaging contrast than amorphous carbon
- High electron transparency: the single-atom-thick structure minimizes beam scattering
- Chemical inertness: graphene is non-reactive and does not interact with or alter specimens
- High thermal conductivity: graphene efficiently dissipates heat generated by the electron beam, reducing ice sublimation in cryo-TEM — a critical benefit for preserving vitrified specimen integrity during imaging

The Bilayer Graphene TEM Grid features two stacked graphene layers, providing enhanced mechanical stability that reduces membrane rupture risk during cryo-specimen preparation. It is particularly well-suited to cryo-TEM workflows. AirMembrane's bilayer grid has demonstrated resolution capability reaching 1.29 Å in apoferritin imaging — a standard benchmark for cryo-EM substrate validation.

The Single-Hole Graphene TEM Grid features a single graphene monolayer suspended over a precisely defined aperture, maximizing electron transparency and minimizing background signal for atomic-resolution materials characterization and advanced structural analysis across a broad range of applications.

INDUSTRIAL APPLICATIONS

Graphene TEM grids serve materials scientists, pharmaceutical researchers, semiconductor manufacturers, and national laboratories requiring high-resolution structural characterization.

The Bilayer variant addresses the cryo-EM market — a rapidly growing segment driven by pharmaceutical and structural biology research. In cryo-EM, imaging of biological macromolecules such as proteins and cellular structures at near-atomic resolution is increasingly central to drug discovery pipelines. The demonstrated 1.29 Å resolution in apoferritin imaging confirms the bilayer grid's readiness for demanding cryo-EM applications.

The Single-Hole variant serves the broad TEM user base including semiconductor defect analysis, materials science, and general-purpose advanced microscopy, where a reliable graphene substrate with low background and high transparency provides a significant imaging quality improvement over conventional amorphous carbon grids.



▲ More Info



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EXHIBITED TECHNOLOGY

eSyncLife™: Non-Invasive Power for Life-Saving Devices



TECHNOLOGY INTRODUCTION

eSyncLife is a metamaterial-assisted wireless power platform for implantable medical devices. The system combines wireless power transfer, bidirectional data communication, and closed-loop safety monitoring to enable safe battery recharging. Unlike conventional wireless charging systems, it supports adaptive power control, and enables up to 2.4x faster charging while maintaining safety.

INDUSTRIAL APPLICATIONS

eSyncLife can be applied to rechargeable implantable medical devices, starting with cardiac pacemakers. It enables semiconductor, medical device, and packaging companies to develop safer, longer-lasting connected implants. Expected implementation includes integration with device manufacturers, advanced packaging, and clinical validation, reducing surgery burden and healthcare costs.



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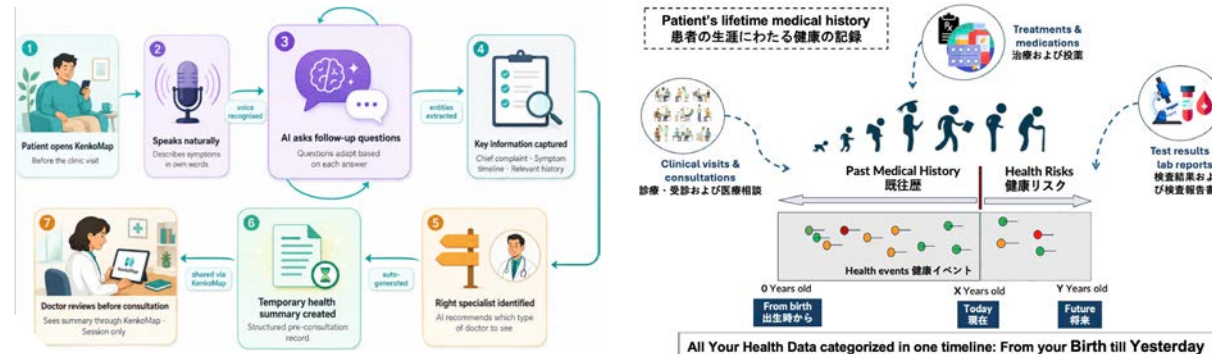


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EXHIBITED TECHNOLOGY

KenkoMap: see your past, understand your present and protect your future health



TECHNOLOGY INTRODUCTION

KenkoMap is a zero-storage healthcare platform that enables secure, patient-controlled access to electronic health records across multiple institutions. Using HL7 FHIR standards and AI-powered relevance filtering, it presents clinicians with the most relevant patient information, improving care continuity, clinical efficiency, and interoperability without replacing existing EHR systems.

INDUSTRIAL APPLICATIONS

KenkoMap is designed for hospitals, clinics, and public health agencies using digital EHR systems. It enables secure cross-institution health record sharing for chronic disease management, aging care, and mobile healthcare without replacing existing infrastructure. The platform also supports population health analytics, hospital quality improvement, and public health planning across interoperable healthcare networks.



▲ More Info



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EXHIBITED TECHNOLOGY

Agentic AI-Centric Remote Collaborative Decision Support Platform for Agriculture



TECHNOLOGY INTRODUCTION

This Agentic AI-centric remote collaboration platform for smart agriculture integrates edge computing, Vision-Language Models (VLM), and Retrieval-Augmented Generation (RAG). Using AR smart glasses or IP cameras to capture the user's Region of Interest (ROI), lightweight edge models perform data summarization and key frame cropping, significantly reducing transmission bandwidth and latency. The system leverages an agricultural expert knowledge base to achieve autonomous perception, reasoning, and task-oriented capabilities. By combining a remote human expert verification mechanism with real-time feedback to the AR glasses, the platform creates a highly scalable, closed-loop architecture of on-site perception, intelligent reasoning, and expert collaboration to optimize agricultural operations.

INDUSTRIAL APPLICATIONS

This technology is highly applicable to smart agriculture scenarios, including pest and disease diagnosis, equipment inspection, cultivation management, and emergency response. Through real-time image analysis and the remote expert collaboration model, it assists on-site personnel in executing tasks quickly and accurately. This effectively addresses critical industry pain points such as agricultural labor shortages and the difficulty of transferring professional domain knowledge. Furthermore, due to its highly scalable system architecture, this solution is not limited to agriculture; it can be readily extended and applied to other industrial inspection, manufacturing, or equipment maintenance fields that require real-time guidance and decision support from remote experts.



▲ More Info



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EXHIBITED TECHNOLOGY

Biomass-to-Methanol and Hydrogen Production Technology via Simple Catalytic Reactions



TECHNOLOGY INTRODUCTION

We have developed a simple catalytic platform that converts biomass-derived resources into valuable chemicals such as methanol and hydrogen under mild conditions. Using this approach, we have demonstrated methanol production from lignin and hydrogen production from alcohols and biomass feedstocks. The technology aims to establish sustainable and decentralized chemical manufacturing systems.

INDUSTRIAL APPLICATIONS

The technology is applicable to biomass utilization, green chemical manufacturing, renewable hydrogen production, and circular economy industries. It converts lignin, agricultural residues, and organic waste into methanol and hydrogen using low-cost catalysts. Suitable for paper and pulp, chemical, energy, and waste management sectors, it supports carbon-neutral production and sustainable biomass utilization.



▲ More Info



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EXHIBITED TECHNOLOGY

Kyushu University Open Innovation Platform



TECHNOLOGY INTRODUCTION

Kyushu University OIP is the technology commercialization and industry-academia collaboration platform of Kyushu University. It bridges cutting-edge university research with industry by supporting technology transfer, intellectual property licensing, startup creation, joint R&D, and open innovation. Through an integrated ecosystem, OIP accelerates the social implementation of research outcomes and connects global partners with innovative technologies across healthcare, AI, robotics, sustainability, advanced materials, and semiconductors.

INDUSTRIAL APPLICATIONS

Healthcare & Medical Technology, Artificial Intelligence, Robotics, Semiconductors, Advanced Materials, Green Energy & Sustainability, Smart Manufacturing, Deep Tech Startups, Technology Transfer, Open Innovation & Industry-Academia Collaboration.



▲ More Info



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EXHIBITED TECHNOLOGY

Next-Generation Pilot Training



TECHNOLOGY INTRODUCTION

Technological Innovation: The company is involved in extensive research, development, manufacturing, and integration of advanced virtual and mixed reality simulators.
Competitive Advantages: Vrgineers is the only company in the world to design, develop and manufacture both VR/MR headsets and aircraft simulators.
Intellectual Property Advantages: Patents of headset electronics and advanced algorithms in US & EU

INDUSTRIAL APPLICATIONS

Vrgineers is at the forefront of cutting-edge simulation technologies, with a team of experts in virtual and mixed reality dedicated to creating immersive tools for professionals and military clients.



▲ More Info



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EXHIBITED TECHNOLOGY

SKILLED WORKER



TECHNOLOGY INTRODUCTION

Skilled Worker is an AI technology used in combination with shrink tunnel TORNADO. It registers data from the shrinking process and result to adjust the settings of TORNADO. This results in an efficient way of improving shrinking results. It requires little knowledge and time, and keeps on learning from other TORNADO's thanks to the cloud.

INDUSTRIAL APPLICATIONS

Skilled worker can be used on any TORNADO. TORNADO can be used to shrink any kind of shrink film and any kind of container. It makes for a clean result allowing designs to be made on the packaging. It's main usages are sleeve, cap, R-seal and full body shrinks of products from food, beverage, cosmetics, healthcare and daily life sectors.



▲ More Info



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EXHIBITED TECHNOLOGY

TORNADO



TECHNOLOGY INTRODUCTION

TORNADO: hot air shrink tunnel delivering a clean finish with minimal resources.
3 main features:
TORNADO method – hot air blown in a tornado-like pattern for an even, fast finish.
Hot air circulation system for efficient energy use.
Easy operation via touch panel, flawlessly shrinking any container shape or film type.

Delivers steam-tunnel quality while smaller, cheaper, and boiler-free.

INDUSTRIAL APPLICATIONS

TORNADO can be used to shrink any kind of shrink film and any kind of container. It makes for a clean result allowing designs to be made on the packaging. It's main usages are sleeve, cap, R-seal and full body shrinks of products from food, beverage, cosmetics, healthcare and daily life sectors.



▲ More Info

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EXHIBITED TECHNOLOGY

Mini and Spectrum EO/IR/LRF ISR Series for Gimbal Camera Block solutions with integrated video processing for land and sea vehicles



TECHNOLOGY INTRODUCTION

The Mini series is a family of lightweight UAV payloads, while the Spectrum series is an advanced multi-sensor UAV payload line. Spectrum series is a next-generation ISR UAV payloads designed for intelligence, surveillance, reconnaissance (ISR), and situational awareness missions. Integrating EO, thermal imaging, optional laser range finding, and advanced stabilization technologies, the system delivers high-performance target detection and observation while maintaining a compact SWaP profile. The payloads are ITAR-free, NDAA-compliant, and suitable for multirotor, VTOL, and fixed-wing UAV platforms.

INDUSTRIAL APPLICATIONS

Defense and security, border surveillance, homeland security, public safety, critical infrastructure monitoring, disaster management



▲ More Info

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EXHIBITED TECHNOLOGY

Precision Liquid Dispensing System



TECHNOLOGY INTRODUCTION

- Technological Innovation – Proprietary valves with multi-axis motion enable nano/pico-liter jet dispensing and precise 3D conformal coating across wide viscosities.
- Competitive / IP Advantages – Nozzles, syringes, controllers, and robots all developed in-house, backed by extensive patents and decades of expertise.
- Achievements – Over 80% share in semiconductor dispensing; 10,000+ client companies worldwide.

INDUSTRIAL APPLICATIONS

Musashi's precision dispensing systems serve multiple industries: ultra-precise adhesive and solder paste application in semiconductors and electronics; liquid gasket and EV battery assembly in automotive; accurate reagent dispensing in medical and biotech; and precise filling and decoration in food — improving yield, reducing waste, and enhancing automation.



▲ More Info



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EXHIBITED TECHNOLOGY

Onshore renewable and energy storage solutions



TECHNOLOGY INTRODUCTION

Solar power is resilient, reliable and predictable. As a locally-produced, sustainable and secure form of energy, this passive technology provides affordability and reliability during periods of peak electricity demand, makes it an ideal low carbon energy source for today's world. Lightsource bp's approach is built on technical expertise, financial capabilities and a commitment to safety and quality.

INDUSTRIAL APPLICATIONS

Lightsource bp delivers safe, value-driven renewable projects to support the global energy transition. Our first project in Taiwan - a 115MWp fishery solar farm in Budai and Yizhu, Chiayi County - is under construction and will be connected to the grid in phases. We are honored to bring world-class solar expertise to Taiwan and committed to building a long-term partnership with Taiwan and its communities.



▲ More Info



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EXHIBITED TECHNOLOGY

Residential Energy Storage Solution



TECHNOLOGY INTRODUCTION

- **Technological Innovation**
Powered by Tesla Powerwall, this solution integrates residential batteries, solar PV, and cloud-based management into a distributed home energy network. Intelligent algorithms automatically optimize load allocation and backup strategies, maximizing energy autonomy and empowering proactive residential energy management.
- **Competitive or Intellectual Property Advantages**
As a certified system installer, GreenRock delivers a premier energy storage solution designed to optimize electricity costs through off-peak charging, peak discharging, and maximized self-consumption. Its flexible, modular architecture scales up to 10 units, enabling customized configurations that perfectly fit any scale from residential to micro-C&I applications.
- **Important Achievements/Award Records**
With over 1 million units deployed globally, this market-proven, industry-leading residential energy storage solution has been successfully implemented by GreenRock across numerous projects in Taiwan—building secure, low-carbon residential microgrids that significantly enhance smart home asset value.

INDUSTRIAL APPLICATIONS

Optimized for smart residential developments, small-to-mid C&I facilities, and temperature-controlled retail, the Tesla Powerwall maximizes energy autonomy and asset protection.

In the residential market, it integrates seamlessly with solar PV networks to anchor low-carbon architecture, driving robust grid independence for modern households. Commercially, the system provides automated, millisecond-level backup transition during grid disturbances for boutique hospitality, micro-studios, and cold-storage operations. By safeguarding critical infrastructure—including HVAC, refrigeration, and security systems—it delivers a high-tier solution for both business continuity and corporate decarbonization.



▲ More Info



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Energy Administration, Ministry of
Economic Affairs

EXHIBITED TECHNOLOGY

Behind-the-Meter Energy Storage Solution



TECHNOLOGY INTRODUCTION

• Technological Innovation

Beyond conventional backup power, our Behind-the-Meter (BTM) Energy Storage Solution integrates with Virtual Power Plant (VPP) architecture to aggregate distributed energy storage resources into dispatchable capacity. This enables bidirectional interaction between users and the grid, allowing energy storage systems to deliver energy savings, backup power, and grid support services.

• Competitive or Intellectual Property Advantages

GreenRock delivers comprehensive EPCM and O&M turnkey services, from initial design to long-term asset management. Our Behind-the-Meter (BTM) energy storage solution maximizes operational resilience: optimizing electricity costs via peak shaving and contract capacity management, mitigating penalty risks through demand control, and ensuring business continuity with reliable backup power and stabilized power quality.

• Important Achievements/Award Records

GreenRock empowers enterprises with Behind-the-Meter energy storage to optimize power structures and reduce costs. Our solutions accelerate carbon reduction to fulfill RE30/RE100 supply chain commitments, meet international sustainability standards, and elevate green brand competitiveness.

INDUSTRIAL APPLICATIONS

Our BTM energy storage solutions serve high-energy manufacturing (semiconductors, steel, chemicals), logistics, premium commercial buildings, healthcare, and academia, while empowering multinational supply chains to fulfill RE100 and ESG mandates.

In daily operations, the system executes strategic peak shaving and valley filling—charging during off-peak hours and discharging during peak times—to optimize contracted capacity, prevent costly penalties, and minimize electricity expenses. For operational resilience and sustainability, it provides immediate emergency backup power to protect production lines from voltage drops or unexpected outages. Furthermore, it seamlessly integrates with on-site solar PV systems to store surplus daytime green power for nighttime use, maximizing renewable self-consumption and fortifying corporate net-zero carbon strategies.



More Info



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Economic Affairs

EXHIBITED TECHNOLOGY

AI-Powered Facility Energy Management System



TECHNOLOGY INTRODUCTION

• Technological Innovation

Powered by AI and big data analytics, our system provides centralized energy management across multiple sites and devices. It seamlessly integrates diverse energy assets and operational data, leveraging AI-driven forecasting and centralized control to transform traditional passive monitoring into proactive energy management, significantly improving dispatch efficiency and intelligent asset operations.

• Competitive or Intellectual Property Advantages

Featuring AI-driven energy optimization, our system delivers predictive management and rapid anomaly detection to identify energy waste. By dynamically adjusting equipment loads and enabling group control, it provides real-time decision-making and optimal energy dispatch—simplifying management complexity while maximizing operational efficiency.

• Important Achievements/Award Records

Successfully deployed across diverse C&I sectors, our market-proven AI-Powered facility energy management system drives tangible carbon reduction and accelerates ISO 50001 certification. Through intelligent scheduling, it stands as the premier solution for corporate low-carbon transformation.

INDUSTRIAL APPLICATIONS

GreenRock Energy's AI-Powered facility energy management system serves as the strategic decision-making core for corporate digital transformation and ESG sustainability. Engineered for multi-industry deployment, the platform optimizes energy operations across high-energy manufacturing, semiconductor fabs, large-scale warehousing, retail chains, and smart buildings.

For commercial and industrial sectors, the system directly addresses operational pain points for multi-site enterprises facing volatile electricity tariffs. Through intelligent scheduling, it enables active participation in grid demand response programs—transforming passive utility expenditures into proactive cost-arbitrage opportunities. By eliminating over-capacity penalties and safeguarding high-value production lines, it delivers an uncompromised solution for both operational resilience and carbon reduction.



More Info

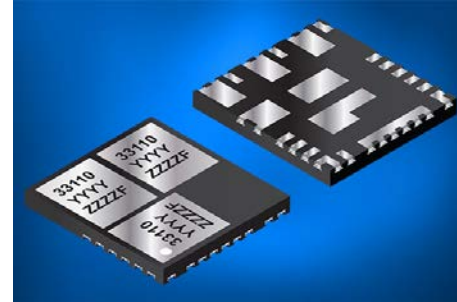


EXHIBITOR
Efficient Power Conversion Corporation

CONTACT
黃培城 pei-cheng.huang@epc-co.com Industrial Development Administration,
Ministry of Economic Affairs

EXHIBITED TECHNOLOGY

The leading provider of enhancement-mode Gallium Nitride (eGaN®) semiconductor fabless design house



TECHNOLOGY INTRODUCTION

Technological Innovation :
EPC eGaN® FETs and ICs switch up to 10x faster and are significantly smaller than silicon MOSFETs, offering ultra-low parasitic inductance.
Competitive & IP Advantages :
EPC holds a massive, dominant global patent portfolio in enhancement-mode GaN. Their proprietary chip-scale packaging yields unmatched power density.
Achievements & Awards:
Recognized globally with multiple industry-leading EDN and World Electronics Awards.

INDUSTRIAL APPLICATIONS

EPC GaN technology serves Automotive (LiDAR/Time-of-Flight), AI Data Centers (High-Density AC-DC/DC-DC), Robotics (Motor Drives), and Telecom.
Scenarios:
LiDAR: Driving ultra-fast pulse lasers for 3D mapping in autonomous vehicles.
AI Servers: Converting 48V to 1V directly on the motherboard to minimize power distribution losses.
Drones/Robotics: Shrinking motor drive inverters to reduce weight and extend battery life.



▲ More Info



EXHIBITOR
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EXHIBITED TECHNOLOGY

Drone-Based Nano Coating System for Solar Panels and Smart Buildi



TECHNOLOGY INTRODUCTION

Technological Innovation: AI-assisted drone spraying applies self-cleaning nano coatings to solar panels and buildings for fast, safe, and uniform large-area treatment.
Competitive or Intellectual Property Advantages: Proprietary nano coating integrated with drone automation and AI enables efficient deployment, lower maintenance costs, and scalable protection.
Important Achievements / Awards: ASPA Excellent Prize 2025, Cyberport Incubation, CAIEC 3rd Prize, BlackStorm Global Award.

INDUSTRIAL APPLICATIONS

The technology is applicable to solar power plants, rooftop solar systems, buildings, and large infrastructure. The nano coating improves energy efficiency, reduces dust accumulation, and lowers maintenance costs. Drone-based application enables safe and efficient treatment of large or hard-to-access surfaces, supporting smart infrastructure, sustainable operations, and ESG-driven facility management.



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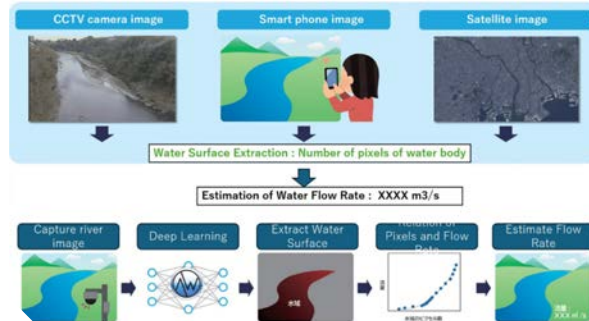
Kokusai Kogyo Co., Ltd.

CONTACT

Dr. Masako Teramoto masako_teramoto@kk-grp.jp, service@thinktronltd.com Ministry of National Defense

EXHIBITED TECHNOLOGY

Aqua Watch: AI-Based Smart Water Monitoring



TECHNOLOGY INTRODUCTION

Aqua Watch uses AI and deep learning to extract water surfaces from single CCTV, smartphone, or satellite images. By correlating water-surface pixel counts with river discharge, it enables real-time, non-contact flow estimation without in-water sensors. This cost-effective approach reduces installation constraints and supports scalable smart water monitoring and disaster prevention.

INDUSTRIAL APPLICATIONS

Applicable to water authorities, river management agencies, local governments, and disaster-management organizations. It supports real-time river flow estimation, flood monitoring, watershed management, and smart hydrological operations, especially where conventional in-water sensors are costly or difficult to install.



▲ More Info



EXHIBITOR

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EXHIBITED TECHNOLOGY

Shamen-net Vision: AI Remote Infrastructure Monitoring



TECHNOLOGY INTRODUCTION

Shamen-net Vision combines communication-enabled fixed cameras with robust AI image analysis to remotely monitor slopes and structures. It reduces interference from lighting changes, rainfall, shadows, and vegetation, enabling reliable monitoring in hazardous or hard-to-access areas where sensor installation is risky or deformation locations are difficult to predict.

INDUSTRIAL APPLICATIONS

Applicable to slope management, roads, railways, retaining structures, and other critical infrastructure. It supports remote monitoring in hazardous or hard-to-access areas, enabling earlier anomaly detection, improved inspection efficiency, reduced maintenance costs, and stronger disaster warning and infrastructure resilience.



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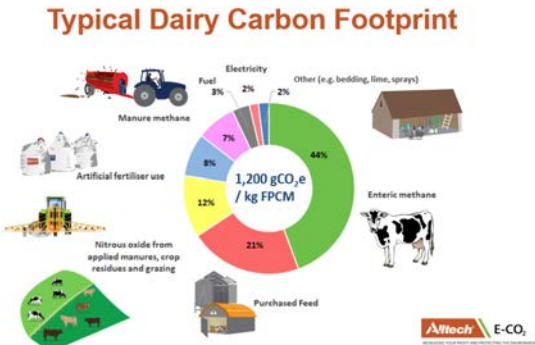
Alltech Inc.

CONTACT

Lillian Chang lchang@alltech.com Ministry of National Defense

EXHIBITED TECHNOLOGY

E-CO2 program



TECHNOLOGY INTRODUCTION

Alltech E-CO2’s certified Footstep assessments capture a wealth of in-depth data on animal production, health, feed, fertiliser, water, energy and resource use. Clear and concise information is delivered via reports and online programmes for producers and industry, together with on-farm consultancy advice.

By turning complex environmental data into simple, practical actions.

INDUSTRIAL APPLICATIONS

The 4-step approach to sustainable farming combines on-farm expertise, advanced analytics and tailored consultancy.

Alltech E-CO2 expertise in:

- Improving agricultural sustainability and profitability
- Certified on-farm environmental assessments
- Benchmarking and improving efficiency
- Carbon footprinting
- Providing comprehensive advice and tools



▲ More Info



EXHIBITOR

TOMRA Collection Solutions

CONTACT

Sancho Lee sancho.lee@tomra.com Ministry of Environment

EXHIBITED TECHNOLOGY

AI-powered Resource Recognition, Sensor-based Sorting, and Circular Data Management Technology



TECHNOLOGY INTRODUCTION

TOMRA’s technology integrates AI-powered image recognition, advanced multi-sensor technology, material identification, intelligent sorting and on-site compaction systems, cloud-based data management, and the market’s only fully transparent, open, and flexible consumer rewards platform. The solution accurately identifies recyclable containers such as PET beverage bottles and aluminum cans, while also supporting customizable product take-back programs. By enabling high-quality, traceable material recovery, it connects brand owners, retailers, and the recycling industry to establish a digital infrastructure for the circular economy.

INDUSTRIAL APPLICATIONS

AI-powered intelligent collection and circular management technology can be widely deployed across retail chains, convenience stores, supermarkets, educational institutions, corporate campuses, transportation hubs, and public spaces to establish an intelligent collection infrastructure, increasing consumer participation while making recycling more convenient and accessible.

Through high-quality material recovery and digital data management, the technology enables brand owners to establish closed-loop recycling systems and meet the growing demand for recycled materials. It also provides the data foundation required for governments and businesses to achieve and manage ESG objectives, advance circular resource management, and support carbon accounting and reporting. By connecting collection, sorting, and material recycling across the value chain, the solution enhances the value of recovered resources, accelerates the development of the circular economy, and creates a smart circular ecosystem that delivers both environmental and commercial value.



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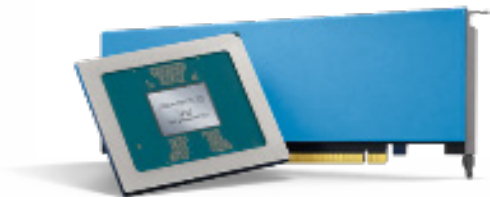


EXHIBITOR
HyperAccel Co., Ltd.

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EXHIBITED TECHNOLOGY

HyperAccel LPU



TECHNOLOGY INTRODUCTION

HyperAccel LPU is an inference-specialized AI accelerator fabricated on Samsung's 4nm process, using LPDDR5X memory to maximize throughput per watt for LLM serving.

Delivers 3x power efficiency and 10x cost efficiency versus Nvidia H100, using an LPDDR5X-based architecture instead of costly HBM memory.

Winner, ICTGC (Taiwan) AI Chip Award, Sep 2025; WAIC 2026 FUTURE TECH Pitching Competition.

INDUSTRIAL APPLICATIONS

HyperAccel offers two product lines. The data center line targets data centers, cloud providers, and enterprise AI companies running large-scale LLM inference. The edge line targets on-premise and embedded deployments needing low-power, local LLM inference, including robotics and home appliances.



▲ More Info



EXHIBITOR
3M Company

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EXHIBITED TECHNOLOGY

3M Personal Protective Equipment



TECHNOLOGY INTRODUCTION

3M™ Secure Click™ Reusable Half Mask Respirator HF-800 Series

3M™ Secure Click™ Half Facepiece protects against particulates, gases, and vapors. It features the Secure Click connection for proper filter installation and a one-touch seal check to confirm correct fit.

3M™ Nano-Lok™ Light (PICO)

3M™ Nano-Lok™ Light Self-Retracting Lifeline (PICO) is 48% lighter than traditional products, can be used from heights as low as 2–3 meters, and provides a stable locking function.

3M™ Speedglas™ G5-03 Welding Helmet

G5-03 series offers tap-to-switch grind/cut mode, variable color auto-darkening, and Natural Color Technology to reduce eye strain. It is lighter in weight; provides 11% more protective coverage; and supports app-based usage tracking.

INDUSTRIAL APPLICATIONS

3M personal protective equipment helps address various occupational hazards, such as:

- (1) protecting workers from particulate matter, various gases, and vapors;
- (2) preventing falls during work at heights, even as low as 2–3 meters;
- (3) providing specialized and multifunctional protection during cutting and welding tasks.



▲ More Info



Taiwan Innotech Expo
台灣創新技術博覽會

Smart Sustainability

Innovation Economy

Future Tech

Jointly Participated by 12 Ministries

Innovation Economy Pavilion | Ministry of Economic Affairs



經濟部

Ministry of Economic Affairs

Future Tech Pavilion (FUTEX)



National Science and
Technology Council



教育部

Ministry of
Education



衛福部

Ministry of Health and
Welfare



運動部

Ministry of Sports



中央研究院

Academia Sinica

Smart Sustainability Pavilion



農業部

Ministry of
Agriculture



國發會

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Council



國防部

Ministry of National
Defense



數發部

Ministry of Digital
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環境部

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AI-Powered Innovation | Driving a Sustainable Future