My WISE-PaaS

An Advantech Magazine- iLogistics Issue 2020

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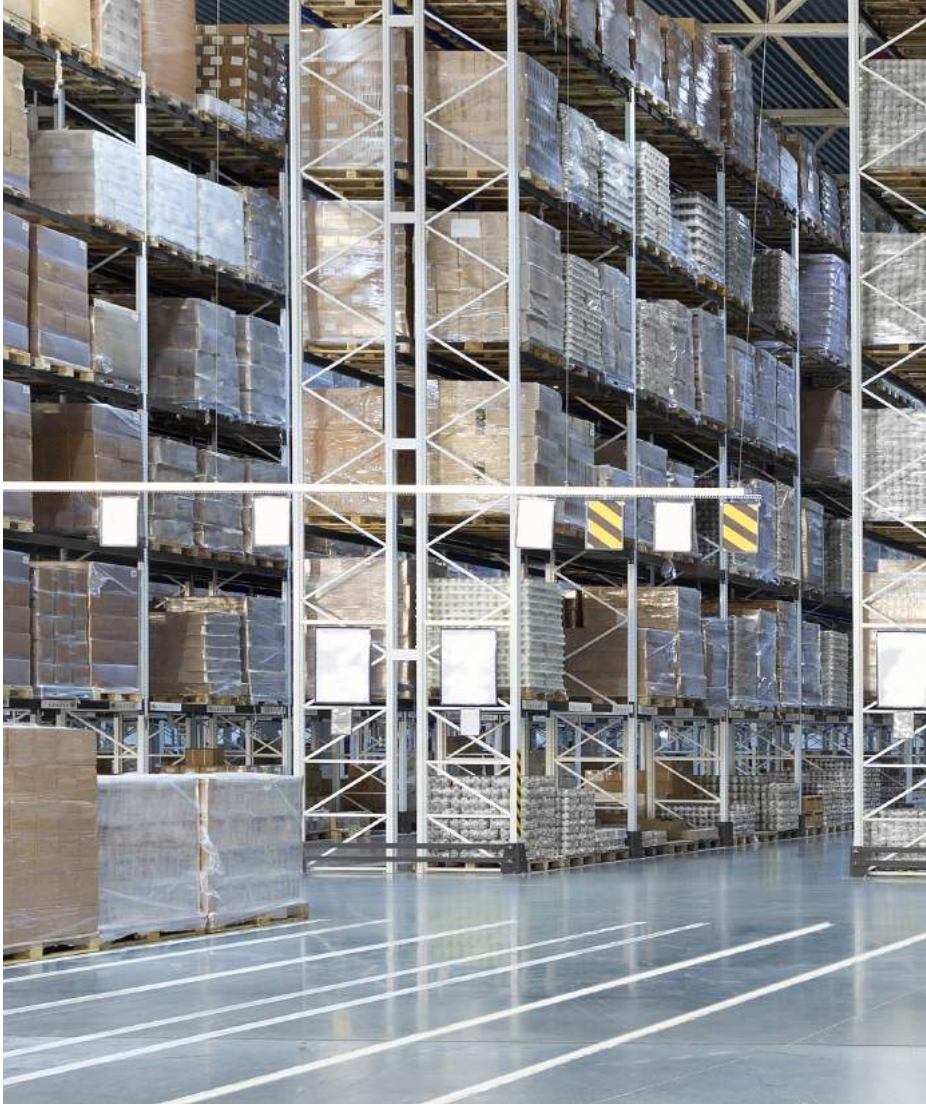

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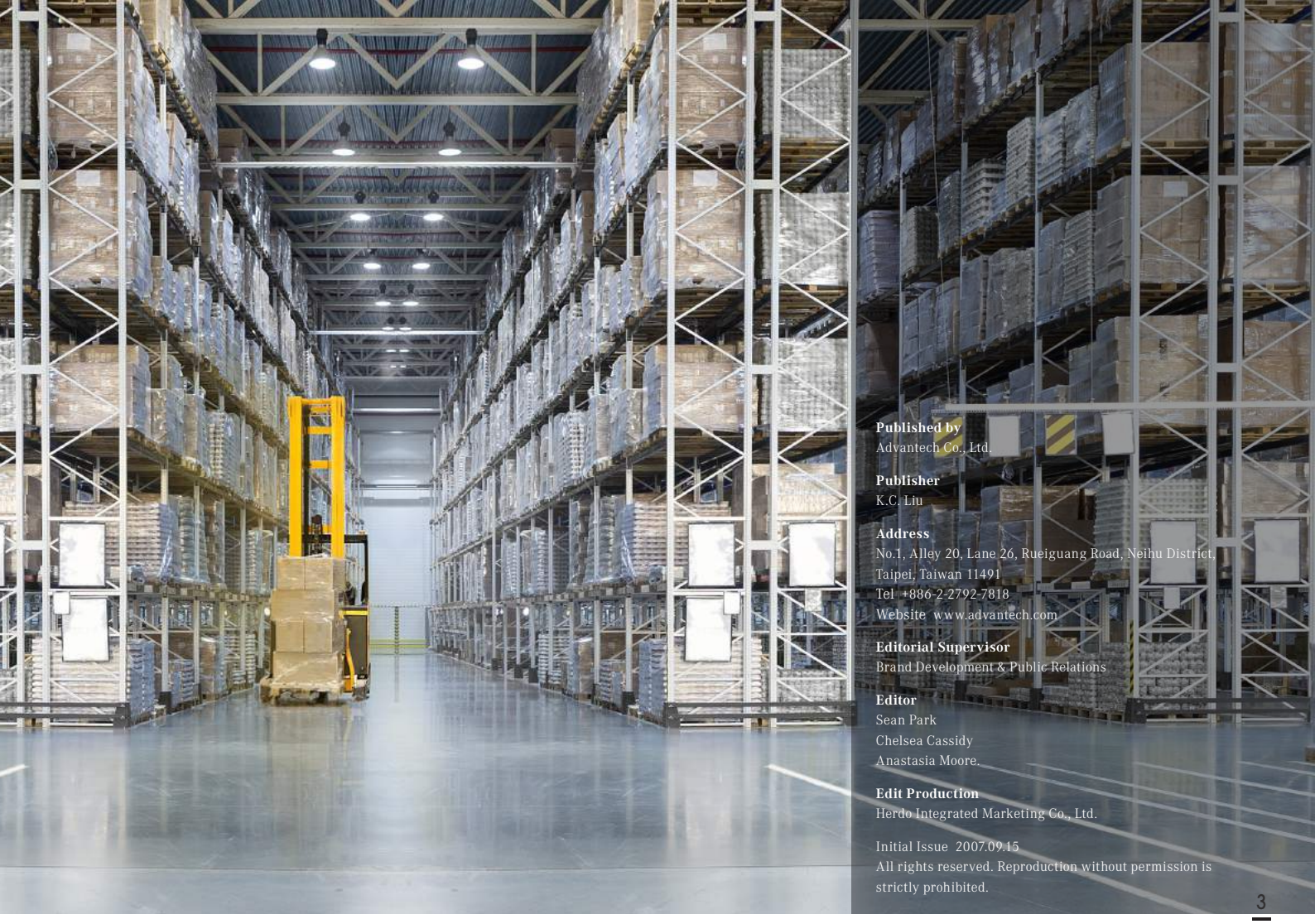

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Real-time alerts and reporting of exceptions

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WISE-PaaS
AIoT Solutions & Marketplace

ADVANTECH
Enabling an Intelligent Planet

DLT-V7210 KD
Defroster VMT for Cold Storage

TREK-120
LoRa Cold Chain Sensor

LEO-S
NB-IoT Cold Chain Sensor

LEO-D51
ePaper Display

TREK-530
Vehicle-Grade LoRa/4G Gateway

PWS-472 Infrared Thermometer
5" Industrial-Grade Handheld

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Intelligent Logistics Driving Industry Competitiveness

Trade is the key to economic and industrial development, and logistics play a vital part in trade, especially in this era where information and communication technology has ignited the growth of intelligent logistics. The scope of logistics has been transformed from traditional warehousing and transportation to a state of complex efficiency and diverse operations. Knowing how to build a modern logistics business through intelligent system applications has become the key to enhancing the competitiveness of enterprises.

As the complexity of intelligent logistics increases, government and industry working together endevour to develop IoT applications for the intelligent energy and environment sectors. The implementation of these applications in many countries around the world is testament to the success of this public/private sector partnership. Thus, the theme of this issue of My WISE-PaaS is iLogistics, which describes the evolution of technologies and the trending smart applications in iLogistics, with expert opinions and analysis covering the practical aspects of application development.

In Advantech View, Van Lin, Director of Advantech's Intelligent Logistics sector said, "Advantech's intelligent logistics solutions have advanced greatly with these new technologies, which not only satisfies the market's need for software and hardware products but also provides a business model based on the concept of co-creation, so as to realize a one-stop logistics management system."

This issue also features eight insightful articles concerning intelligent logistics applications from around the world including, Advantech collaborates with Regenhütte fire brigade to save lives with IoT; Advantech's uninterrupted cold chain management solution–ensuring optimal food safety; Advantech drives the industry forward with complete smart factory solution; Komatsu partners with Advantech and leaps forward into the future of smart construction; and Toward smart and efficient ports - Advantech plays critical role in transforming the Port of Shenzhen. All these cases highlight the smart technologies and innovative applications that are being adopted in the logistics sector.

In the Customer Partnership section, Taiwan Cold Chain Association (TCCA) Chairman Cheng Tung-he pointed out that a group of enterprises and experts with expertise in cold chain management set up the TCCA organization in 2016, aiming to make Taiwan's cold chain industry the best in Asia. With a strong lineup of enterprises such as Advantech, it has successfully built connections throughout Southeast Asia, and is currently working to enter the Vietnamese market.

A forward-looking intelligent logistics industry is the best infrastructure resource for any advanced country's industrial development and the key to creating a stronger economy for its businesses and a better life for its citizens. Advantech will continue to integrate internal and external resources to accelerate the implementation and application of intelligent logistics, and dedicate resources to improving the economic development and quality of life for everyone. ■

Advantech's Visionary One-Stop Management Approach to Intelligent Logistics

Photos provided by Advantech
Interview with Van Lin, Director of Intelligent Sector, Advantech

Intelligent logistics involves the management of fleets, assets, environment, and workforce through the use of ICT equipment. With the advent of the IoT and AI technologies, the field of logistics has become more diverse. According to Van Lin, Director of Advantech's Intelligent Logistics Sector, Advantech's intelligent logistics solutions have advanced significantly with these new technologies, not only satisfying market demand for integrated software-hardware products but also providing a co-creation-based business model that enables the realization of a one-stop logistics management system.

Co-creation with WISE-PaaS IoT cloud platform

The complexity of the IoT ecosystem is ever increasing. This is why IoT standardization is among the greatest challenges, with each industry facing a different set of application requirements. Accordingly, Advantech proposed the co-creation model, utilizing this concept in tandem with the WISE-PaaS platform to build vertical solutions.

Advantech's WISE-PaaS is an IoT cloud platform with a flexible and expandable architecture that allows for seamless integration between a wide range of cloud solutions and equipment. With the participation of system integrators (SI), the platform can be rapidly developed, enabling SIs to enter international markets. However, SIs need substantial resources to enter international markets. But because of their relatively smaller size, resource limitations, and lack of information, international development can be a daunting task for SIs. Therefore, Advantech has also leveraged the concept of co-creation in its collaboration with SIs by supporting them strategically with solutions, marketing resources, and investments.

The co-creation concept was designed to drive the realization of the vision and potential of IoT. Advantech has worked with SI partners from various industries to share resources and co-create solution-ready packages. With the support of these partners, co-creation business opportunities are being generated, and the most effective and mutually beneficial strategies are being implemented.

For example, Information Technology Total Services (ITTS) and HwaCom Systems have also evolved into Advantech co-creation partners, focusing on solutions in the smart factory, intelligent logistics, and smart city sectors. These co-creation partnerships have generated robust business models and brought benefits and profits for all parties involved.

Innovation in application development

In addition to creating ingenious new business models, Advantech continues to pursue innovation in the development of technology and applications. Advantech's intelligent logistics management business maintains mature wide range product lines to effectively satisfy diverse industrial mobile worker requirements involving mobile and portableindustrial wearable and tablets computing systems. Advantech has also developed sensors and handheld devices that meet the demand of vertical industries for environment management. Taking food product factory and warehouse sensors as an example, besides standard temperature and humidity detection functions, they must also be able to identify sulfur dioxide levels. And for smart asset management solutions for ports, airport, and warehouses, ultra-wideband (UWB) positioning functions are vital due to the vast space of port those environments and the complexity in precisely locating goodsassets.

In the field of information transmission and communication, Advantech has developed diverse solutions to support technologies like 5G, LoRa and NB-IoT for future IoT applications, which will allow customers to choose the technology that best meets their demands. For instance, LoRa technology is suited for smaller enclosed spaces, and wall/metal pentration in fleet tucks, warehouse, retail stores. While NB-IoT technology can be applied in larger open spaces or outdoor applications.

Meanwhile, apart from offering a wide array of in-vehicle terminals and devices, Advantech is actively exploiting the capabilities of industrial-grade wearables that free up users' hands, thereby improving productivity and efficiency. Advantech's wearable barcode ring, for example, can be worn on a finger and enables hands-free barcode scanning with simple swipes of the hand.

Within Advantech's corporate culture, careful consideration of end-user needs is at the heart of innovation. Indeed, for Advantech, developing well-designed intelligent logistics solutions is a way of fulfilling its social responsibility. "Our fleet management solutions ensure driving safety, while our cold chain management solutions ensure food and medication safety for consumers," said Lin proudly. Going forward, Advantech will continue to develop intelligent logistics solutions to enable a smarter society, which in turn will help promote the Advantech brand worldwide. ■

Excellent Prospects for Fleet Management and Transportation Following The Emergence of AI Image Recognition and Autonomous Driving Technologies

The fleet and transportation industry has long been developing rapidly in terms of informatization and mobilization. In recent years, the emergence of AI technology has bolstered the industry's smart development. Fleet management and transportation employing AI image recognition and applications incorporating unmanned autonomous driving have all become feasible, ushering in a new era in the logistics sector.

Photos provided by Advantech
Interview with Dr. Chun-Ting Chou, CEO, OminEyes & Dr. Kang Li, Founder and Technology Consultant, iAuto Technology

As speed and safety are the two major elements in upgrading transportation performance, many large-sized transportation operators started incorporating electronic and mobile systems more than 10 years ago. In recent years, they have further utilized cloud, AI and 5G technologies to build smart applications, accurately managing their fleets and monitoring driver behavior while improving delivery efficiency and driving safety.

In-vehicle AI accelerates transportation development

Advantech iLogistics team and ecosystem (Intel, OmniEyes, iAuto) are positioned to offer total solutions to overcome smart transportation challenges and offer value for business owners. Advantech co-worked with Intel and develop TREK-676 which is the next generation, intelligent, rugged, and modular computer box for surveillance and fleet management. TREK-676 embedded AI module Intel® Movidius™ Myriad™ X VPU onboard with OpenVINO™ toolkit, enables vehicle, license plate recognition. Intel® Movidius™ VPUs drive the demanding workloads of modern computer vision and AI applications at ultra-low power. By coupling highly parallel programmable compute with workload-specific hardware acceleration, and co-locating these components on a common intelligent memory fabric, Intel® Movidius™ achieves a unique balance of power efficiency and high performance. "Based on the powerful TREK-676 in-vehicle computers, domain focus SI can develop diversified AI solutions for logistics and transportation, said OmniEyes CEO Dr. Chun-Ting Chou.

OmniEyes solutions enables edge computing of telematics equipment, providing vehicles with AI capability for diverse smart applications. Systems can automatically detect vehicle status and identification of traffic signage, which can then be combined with traffic regulations to evaluate driver behavior. Dr. Chou noted that if a driver turns into a street clearly marked with no-entry signs, or fails to stop for

pedestrians using crosswalks, related image data is sent to the fleet management staff for record-keeping and management purposes as well as to the drive as an at-scene waring.

The aforementioned transportation applications require the support of edge computing. Chou explained that the amounts of image data collected by telematics systems are enormous, and pose a heavy burden on network bandwidth and system platforms when constantly uploaded to the cloud for real-time computing. In fleet management, demand for real-time data processing is high. That is why OmniEyes will need powerful edge computing like TREK-676 as a crucial element in smart transportation systems.

However, there are certain challenges when implementing edge computing in telematics systems. First, the vehicle, with limited space, must be equipped with a processing architecture that boasts strong computing capability. Second, software programs able to recognize road conditions and traffic signage have to be developed. Third, terminal equipment with sufficient computing capability must be available to strengthen the operating performance of the entire system, so that it can assume smart attributes at an accelerated pace.

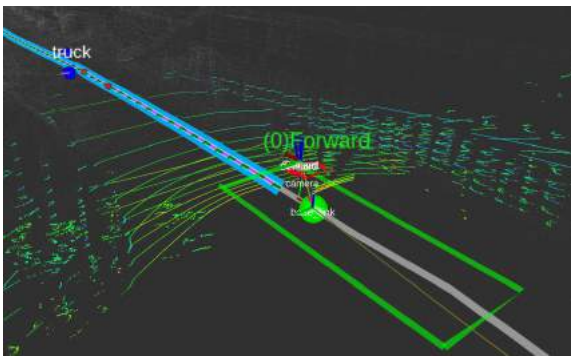
OmniEyes in-vehicle AI for detection for illegal driving at the scene.

Smart transportation driven by autonomous driving technologies

Besides performance enhancement in telematics systems, autonomous driving is another major trend in smart transportation. iAuto Technology Founder and Technology Consultant Dr. Kang Li pointed out that large-sized transportation firms have gradually moved toward autonomous driving over the past few years, but current development conditions suggest that there are still many obstacles to be overcome. This is why Advantech has been striving to create an IoT ecosystem.

iAuto based on autonomous technologies like LiDAR apply to fleet management and transportation. LiDAR which provides high-resolution, three-dimensional information about the surrounding environment can detect the position of people and objects around the vehicle and assess the speed and route at which they are moving. Li added that even though self-driving vehicles can already drive on roads, there is still a long way to go before they can carry passengers and are fully commercialized. In adopting self-driving vehicles in smart transportation systems, a wide range of issues must be addressed. Cooperation among businesses from different domains will be required to develop systems that satisfy actual needs.

In terms of technology, powerful edge computing will be a focus area in system design. TREK-676 in-vehicle computers paired with TREK-13x in-vehicle AI cameras improve real-time driving safety by forward collision, blind spot detection. As to the development of autonomous vehicles, data from vehicles, roads and clouds must be integrated so that these vehicles can first operate in specific fields before operational models can be adjusted and the cars can be adopted in other fields. In such a way, industry ecosystems can work continuously to gradually fulfill the promise of smart fleet management and transportation. ■



Advantech's Uninterrupted Cold Chain Management Solution: Ensuring Optimal Food Safety

Photos provided by Advantech
Interview with David Yang, Intelligent Logistics SRP Product Manager, Advantech

Often unnoticed by customers, temperature monitoring and data recording for frozen and refrigerated food is essential for supermarkets complying with food safety and sanitation regulations. To ensure food safety and freshness, many companies in the food distribution industry have adopted IoT technology to avoid human and data-based errors. Hypermarket leader, one of the biggest hypermarket chains in Taiwan, implemented Advantech's uninterrupted cold chain management solution for optimal quality assurance and food safety.

Realizing farm-to-table freshness

Temperature monitoring and data recording are vital in all aspects of cold chain management, including transportation, storage, and retail. Traditionally, these tasks were handled manually by staff. However, as human error cannot be completely ruled out, food safety may be at risk. With the advent of IoT technology, the possibility of human error is effectively eliminated: TREK-120 LoRa cold chain sensors are used to detect temperature and humidity levels and related data is uploaded to the WISE-PaaS cloud for real-time monitoring and management.

With its uninterrupted cold chain management solution, utilizing the industrial IoT cloud platform WISE-PaaS as a backbone for superior hardware and seamless communication, Advantech assisted hypermarket leader in fulfilling its promise to provide customers with farm-to-table freshness. According to David Yang, Intelligent Logistics SRP Product Manager at Advantech, hypermarket leader implemented the solution throughout its logistics operations, production and dispatch centers, and retail locations to precisely monitor temperature and humidity levels in all stages of production, transportation, and storage to comprehensively ensure food safety and sanitation.

Advantech's TREK-120 LoRa sensors offered hypermarket leader outstanding flexibility as well as other key features such as easy installation using magnetic and adhesive backing, wireless capabilities with long battery life, strong signal strength with high penetration by LoRa technology, and an IP65 rating for water and dust resistance.

The TREK-120 LoRa sensors could be placed at hotspots, entrances, and any other location in freezers and refrigerators throughout food factory production centers, cold rooms, dispatch centers, refrigerated trucks, and retail stores to monitor temperatures and humidity during transportation. TREK-120 sensors were paired with a LoRa gateway or NFC reader so staff could easily upload data to the cloud, instantaneously, with the push of a button.

"With WISE-PaaS cloud, all data collected by TREK-120 sensors is visualized on a cold chain management dashboard in real-time," David pointed out.

Notifications and alert reports are sent to the cold chain dashboard, as well as related staff and supervisors, showing events such as unusual temperature fluctuations and device malfunctions for instant crisis management. Hypermarket leader also connected their KPI score system to WISE-PaaS, encouraging staff to actively enhance their cold chain management.

More marketing resources and bonuses were rewarded to stores with higher KPI scores.

Seamless management of food safety and sanitation, a top priority for hypermarket leader, was thus made possible by Advantech's uninterrupted cold chain management solution with its superior IoT cloud platform and outstanding product design and supports.

AI meets cold chain management

After hypermarket leader's implementation of Advantech's cold chain management solution, the notification rate was high when freezers and refrigerators activated their defrost function because this was seen as a fluctuation in temperature.

"Defrost functions may vary depending on the brand of freezer and refrigerator and cause various issues related to temperature fluctuation," David explained. This is because TREK-120 sensors in freezers and refrigerators are often located at the air vents, which feature the highest temperature point in the fridge and may not reflect the actual temperature of the food.

"This was a great opportunity for Advantech to introduce its powerful AI technology," said David. After understanding hypermarket leader's needs, Advantech developed an industry-leading AI defrost mechanism able to pinpoint defrost functions and timing for various brands of freezers and refrigerators, thereby eliminating unnecessary temperature fluctuation notifications when defrost functions are activated.

AI can also be applied in the monitoring of noise, electric current, and voltage levels of refrigerators and freezer compressors using related data to forecast maintenance, repair, and malfunctions. This helps management prepare for any unforeseen circumstances.

The application of IoT technology offers unlimited opportunities. Advantech's commitment to ensuring food safety and sanitation is fully demonstrated by its uninterrupted cold chain management solution—delivering easy installation, superior hardware, a complete IoT cloud platform, and uninterrupted monitoring and management. With every stage of cold chain logistics carefully monitored and managed, consumers enjoy farm-to-table freshness with peace of mind. ■

Tingtong Logistics Leverages Advantech Solutions for Real-Time, Smart Warehouse Management

Tingtong Logistics has implemented Advantech's integrated IoT infrastructure to improve management efficiency and personnel safety in the warehouse. Paperless workflows and real-time inventory monitoring eliminate human errors and ensure the accuracy of inventory control, helping Tingtong Logistics make the leap into smart warehouse management.

Photos provided by Advantech
Interview with Van Lin, Director of Intelligent Sector, Advantech

Imagine hundreds of automated guided vehicles (AGV) moving around a cavernous factory without any personnel driving them. While this might sound like a scene straight out a futuristic sci-fi film, it is increasingly the reality for a growing number of companies operating in the international logistics industry.

An efficient, paperless workflow

Tingtong Logistics, one of the largest logistics companies in China, has over 56 self-operated distribution centers throughout the country. Its main areas of business are fast-moving consumer goods (FMCG), retail consolidation, and e-commerce logistics.

Traditionally, operations in Tingtong's warehouses relied heavily on manual labor and paperwork. Although staff used barcodes to manage goods, they still had to physically get on and off pallet trucks and forklifts to scan. This process proved time-consuming, inefficient,

and unsafe. Moreover, operations depended on staff familiarity with the various tasks and required the manual recording of relevant information. All this came with a high risk of human error.

According to Van Lin, Director of Advantech's Intelligent Logistics Sector, many of these issues were solved when Tingtong Logistics entered into a partnership with Advantech to adopt applicable IoT solutions. Tingtong Logistics implemented Advantech's integrated IoT infrastructure—which combined optimized hardware and software solutions for warehouses. All forklifts in Tingtong distribution centers are now equipped with Advantech's Intel-based MTC/DLT rugged vehicle-mount terminal, as well as the rugged PWS industrial tablet. Staff scans purposefully enlarged barcodes on the packaging cartons with Advantech's industrial handheld device PWS without getting on and off the forklifts. The content and location data of the goods are recorded and updated in the back-end system, simultaneously, while being centrally managed.

When goods are discharged from the warehouse, staff scans the barcodes for confirmation. After goods leave the warehouse, the control center uses Advantech's advanced wireless transmission and GPS positioning technology with a handheld device to track the driver's route, monitor the goods' delivery status, and fulfill other tasks. Drivers can use the handheld device to take photos of the delivery receipt and send it back to the control center as proof of delivery. In the event that goods are rerouted or returned, drivers can notify the control center via the handheld device and receive further instructions in real time.

Through Advantech's innovative solution, the newly implemented process has achieved substantial efficiency improvements and eliminated problems related to safety, data input, paperwork, inventory status, and human error.

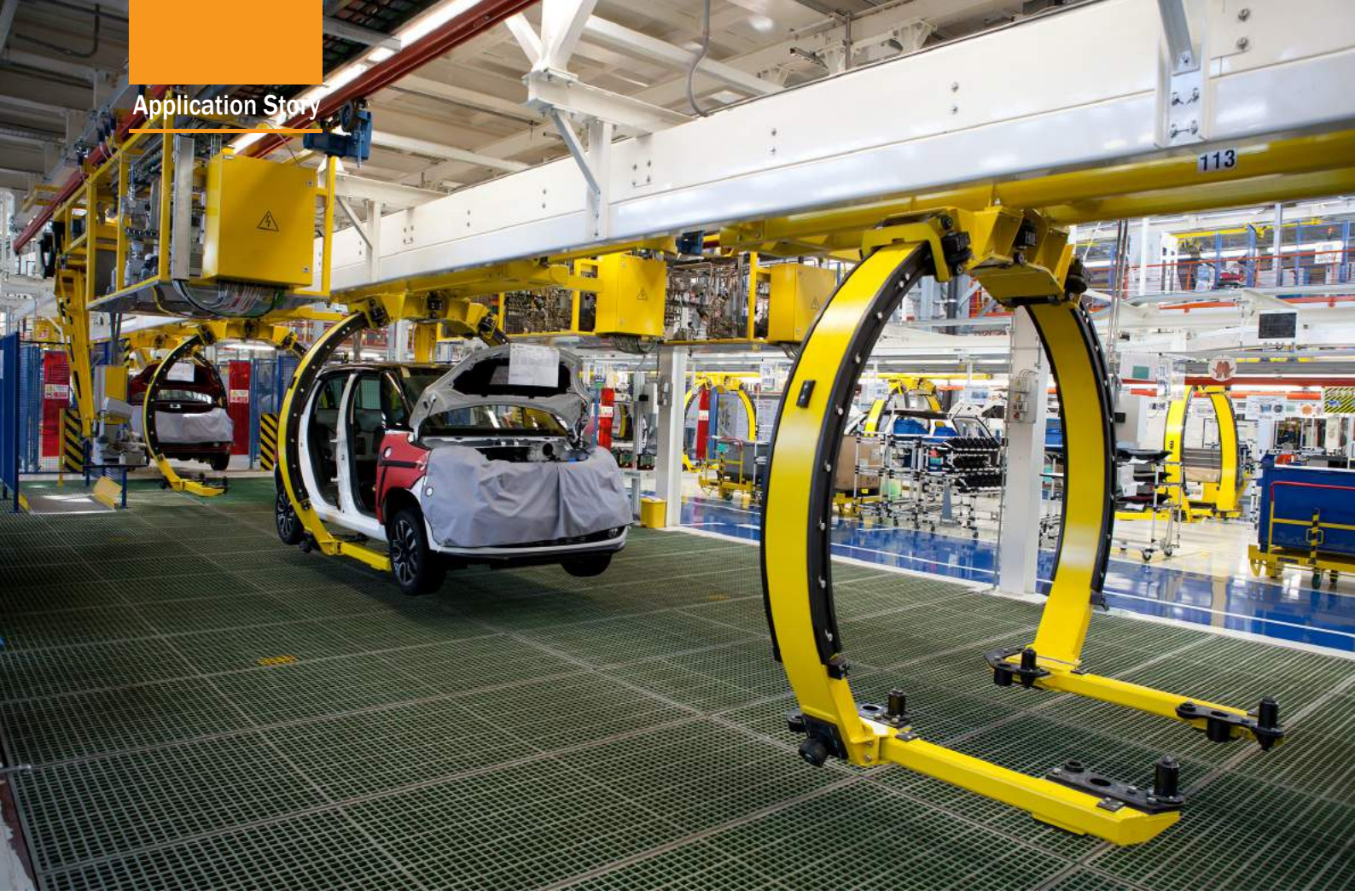
Effortless smart warehouse management

"When people talk about smart warehouses, they are primarily focused on the topics of smart shelving and AGV," said Lin. The environment and infrastructure of warehouses require huge modifications to accommodate these new technologies. Technical problems related to AGVs also need to be overcome—such as restrictions on oversized and overweight goods. "By using advanced IoT solutions for warehouse management, Tingtong Logistics has a made a major leap in this area and is now ahead of many other companies in the industry" said Lin.

However, before the realization of a complete smart shelving and AGV environment, progress still needs to be made in updating various technologies.

For instance, ultra-wideband (UWB) positioning technology can be used for personnel and vehicles, the safety and protection of goods, and management of all available assets. In addition, e-paper displays and lights can be utilized for on-site visualization of stock data in order to reduce the use of printed documentation while improving accuracy and efficiency when picking up goods. This is especially useful for medication inventory management. Wearables, like Advantech's wireless ring barcode scanner, can replace handheld scanners for increased productivity.

From Advantech's perspective, the best possible solution for smart warehouse management encompasses paperless workflow and the real-time monitoring of inbound and outbound activity from the control center to reduced human errors, increase staff safety, and improve overall efficiency. Advantech remains firmly committed to pursuing further innovation that realizes the smartest, most cutting-edge warehouse inventory management systems. ■



Driving the Automotive Industry Forward with Complete Smart Factory Solutions

One of the world's largest industries by revenue is the automotive industry. The considerable price tag of cars create high expectations among consumers for product quality and customization, which in turn contribute to the complexity of the manufacturing process. Smart factory solutions are the perfect way for automotive manufacturers to ensure that the quality of their products meets consumer demand.

Photos provided by Advantech
Interview with Andreas Baumann, Business Development Manager, Advantech

With the advent of personalized consumption, customization has become a key aspect for consumers when buying cars. Customization has been responsible for exponential growth in the types and numbers of components.

For example, a single series of a premium German automobile brand can reach over 1,000 possible variations. With cars' long lifespans, the supply of spare parts is very important for after-sales services, which constitute an essential aspect of customer satisfaction.

Certain German automobile manufacturers supply original spare parts for discontinued car models that are well over 30 years old.

The management of such complex products and their innumerable components and spare parts presents a lot of challenges in terms of manufacturing and logistics. Therefore, manufacturing automation and industrial computing have become critical throughout the automotive supply chain from the allocation and storage of raw materials and components to production and delivery and to timely spare parts procurement.

Smart optimized production logistics

The complexity and variety of automotive parts and components have caused serious issues in production and management. The challenge is to deliver the correct individual parts to each workstation in the production line and assemble cars in a carefully designed sequence. If a necessary component is not supplied in time, the scheduled work sequence of all subsequent workstations in the production line has to be changed accordingly.

A renowned German automotive manufacturer has implemented smart factory solutions and launched an extensive project to improve its spare parts logistics. An SAP-based after-sales parts project has been implemented at warehouse locations in various countries since 2013, improving parts availability throughout the network, reducing operational costs and inventory levels, and increasing productivity. All of this has contributed to enhancing efficiency in the manufacturing process and operational management.

Indeed, implementation of smart factory solutions ensures standardization and integration of the spare parts logistics process throughout the supply chain. It fosters a complete supply process from car dealers' orders all the way to payment; strengthens forecasting and planning of future spare parts demand; connects all partners to the spare parts logistics system; and bolsters warehouse management of incoming and outgoing goods, including stock transfer and annual stocktaking.

High-performance, durable computing solutions

Automotive manufacturing is a very demanding environment for computing hardware. The computing terminals are exposed to substances that are harmful for electronic devices. One example is carbon, a material that is growing more and more popular in automobile design. Carbon dust is highly electrically conducting and prone to cause short circuits if settling on a CPU. This is not the case for Advantech terminals. For this reason, the German automotive manufacturer's implementation of smart factory solutions consisted of many of Advantech's products, including Advantech's DLT-V83 series, the brand-new DLT-V72 Facelift series, and the UTC series.

Advantech's DLT terminals are used to build a hybrid automated guided vehicle (AGV) solution, in which DLT terminals are integrated into an autonomous tugger train as a control and/or fallback solution. Some parts of the factory cannot be reached by the autonomous driving tugger trains (e.g., narrow areas or areas restricted because of safety reasons), thus requiring manual operations by staff. Terminals are needed for navigation.

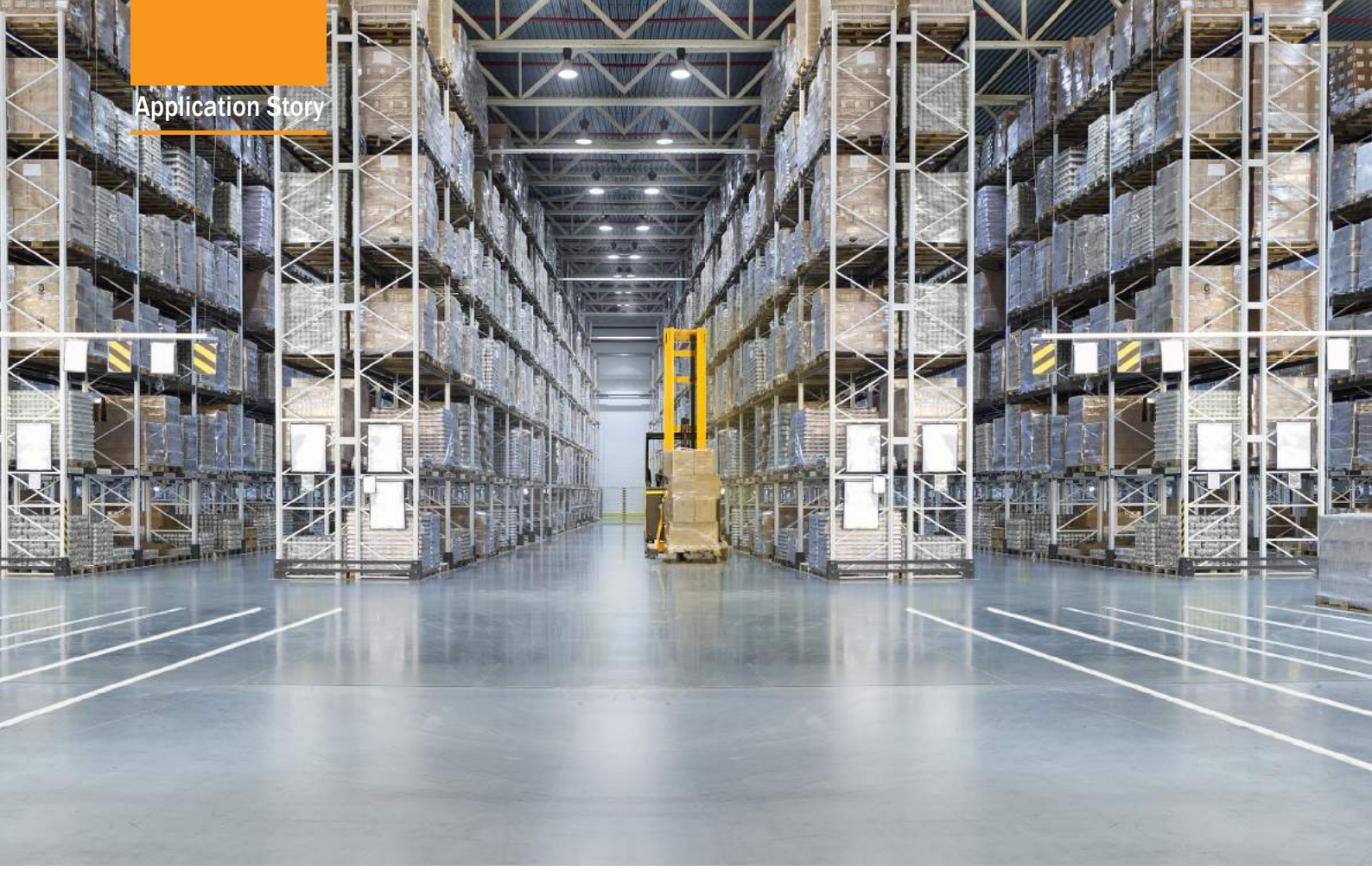
The DLT-V83 and DLT-V72 series are extremely robust vehicle-mounted terminals designed for harsh environments, boasting IP66-rated water and dust resistance; 5M3 certification for shock and vibration resistance; and IK08-rated, impact-tolerant, and abrasion-resistant touchscreen displays. Owing to these advantages, the German automotive manufacturer installed them on the AGVs to make sure that spare parts and components are delivered to the production line on time and in the proper sequence.

The rugged UTC series information terminals are used for displaying important information, so that operators can mount individual parts and components at each assembly station. The series can also be used on the shop floor to highlight important production data as well as changes to production steps and components.

Advantech uses various service resources to provide comprehensive local services to its customers in the automotive industry.

Other products Advantech offers to automotive manufacturers include ARK (digital signage solutions) for worker guidance and control; Rugged PCs or Panel PCs that serve as equipment control computers within body shops or paint shops; LEO-S wireless IoT sensing devices; and LEO e-paper displays for flexible and editable digital labeling.

Advantech's complete global services and smart factory solutions are helping automotive manufacturers around the world realize the goals of lowering operational costs and improving management and efficiency. ■



Connecting Traditional Warehousing to the World of IoT with Advantech's Smart Warehouse Management Solutions

Advantech's smart warehouse management solutions not only contribute to safer environments and improved efficiency, but also meet customer needs in many other areas, such as data acquisition, analysis and visualization, as well as in-store services.

Photos provided by Advantech
Interview with Lars Böddeker, Director of Transport & Logistics Alliances EMEA, Advantech

Warehouses of multinational retailers can be busy places, with hundreds of warehouse staff working alongside many forklift truck drivers who are moving pallets between shelves. They are hives of activity marked by tremendous discipline, productivity, organization, and teamwork. With the introduction of IoT, warehouse staff can work in safer environments featuring greater productivity and efficiency, providing retailers with lower operational costs and easier management.

Rugged vehicle-mounted terminals improve intralogistics and inventory management efficiency

Smart retailing has become a key trend in the

industry, and multinational retailers are actively seeking and implementing smart warehouse management applications to lower operational costs and improve service quality.

According to Lars Böddeker, Director of Transport & Logistics Alliances EMEA at Advantech, various multinational retailers in Germany have implemented Advantech's smart warehouse management solutions to improve their intralogistics and inventory management. One of these retailers, which had been using Advantech's MTC6 vehicle-mounted terminal for many years, recently upgraded to the new, more powerful vehicle-mounted terminals DLT-V83 and DLT-V72 to further advance its smart warehousing operations.

The DLT-V83 terminals are used to improve the efficiency of inventory management and enable precise allocation for intralogistics management. Advantech's DLT-V83 series is designed to increase productivity and maximize system uptime for logistics applications. These terminals are powered by Intel® Core™ i5/Celeron® processors and equipped with IK08-rated, impact-tolerant, and abrasion-resistant touchscreens, which support the latest WLAN standard for seamless roaming and WWAN for outdoor operations. The series boasts an IP66 rating, and supports a wide operating temperature range (-30–50°C/-22–122°F) to maintain operations in extreme industrial environments with no downtime. Adoption of this series guarantees data integrity and integration across all logistics operations. Moreover, the great degree of flexibility in terms of system configurations, connections and interfaces allows customers to easily customize terminals for specific application requirements.

"Besides offering very durable and reliable products, as well as comprehensive services and technical support worldwide, Advantech has cultivated long-term relationships with customers," said Böddeker. Advantech listens closely to its customers to understand and fulfill their needs, bringing upgrades to its existing products when needed.

Providing complete solutions for smart retailing

Other than the smart warehouse management solutions for intralogistics and inventory management, Advantech also provides in-store smart retail solutions to help multinational retailers improve store operational management and consumers' shopping experience. For example, the UTC series is designed with the concept of complete self-service kiosks in mind.

The UTC series are all-in-one computers with multitouch screens and digital signage systems with interactive interfaces that ensure the successful delivery of the intended content and promotions.

On the hardware side, the series provides advantages such as industrial-grade reliability, ease of maintenance, fanless operations, and wall-mounting capability, enabling all-in-one computer kiosks to work in a fast and stable manner.

At the service level, the high expandability of the UTC series allows for links with and use of various peripherals with near field communication (NFC), radio frequency identification (RFID), barcode scanning, and digital signage. By connecting to the cloud, the kiosks can provide real-time information on products and services to consumers, as well as shopping mall guides and self-checkout services, improving shopping experiences and promoting retailers' brand images.

Advantech is committed to growing alongside its customers, building a profound relationship with them, and fulfilling their needs for business transformation. ■

Advantech Collaborates with Regenhütte Fire Brigade to Save Lives with IoT

The Regenhütte fire brigade in Germany uses Advantech's IoT solution to shorten firefighters' response time and increase the chances of saving lives and property. The solution provides critical and mission-specific information with visualization and audio announcements to prepare firefighters for their mission, saving valuable time and eliminating communication errors.

Photos provided by Advantech
Interview with Van Lin, Director of Intelligent Logistics Sector, Advantech; Thorsten Kraus, European Business Development Director, Advantech

In Europe, more than 4,000 people die every year in fire-related incidents. Considering the scale of this problem, it is vital that the capabilities and efficiency of firefighters is enhanced.

Although every mission that firefighters undertake is different, in all cases, time is of the essence. The quicker they arrive at the incident scene, and the more information they have at their disposal, the better they are able to save lives and property. Introducing new technologies from the fields of ICT, IoT, and AI can help firefighters complete their missions in a safer and more efficient manner.

Advantech and fire brigade cooperation

Established in 1874 in the German state of Bavaria, the Regenhütte fire brigade currently has 25 volunteer firefighters. Until very recently, volunteer firefighters were notified of incidents via an analog alarm system. The central emergency dispatch would send a distress

signal to the fire brigade via fax, triggering the local siren and sending an alarm to each firefighter's radio pager. After assembling at the fire station, the firefighters had to read the incident details, determine the exact location of the fire on a map, put on their gear, and drive to the scene—a process that could take up to 20 minutes. To speed up this process and save precious time, the Regenhütte fire brigade, having realized that new technologies can significantly enhance efficiency, adopted Advantech's IoT solution.

Advantech implemented its UTC-520 and AIM-65 products to assist the Regenhütte fire brigade with accelerating its response time. The UTC-520 IP65-rated Windows-based ubiquitous touch computer functions as a server and alarm monitor. Upon receiving an emergency signal from the dispatch center, UTC-520 transmits notifications and incident details to firefighters' smartphones in real time.

As firefighters respond via their smartphones with confirmations of availability, information is transmitted back to the UTC-520 for mission planning and resource distribution. Meanwhile, the robust IP65-rated AIM-65 tablet is equipped with an Intel processor that supports dual OS, dual cameras, and a full HD IPS touchscreen with Corning® Gorilla® glass surface and multi-touch control. The AIM-65 tablet is used to provide mission-specific data, such as vehicle information, navigation maps, building drawings, and water supply location details, while constantly repeating details of the mission with audio announcements.

The solution uses the Alamos FE2 platform on the UTC-520, Alamos aMobile on the AIM-65, and the Alamos aPager Pro app on firefighter smartphones for enhanced synchronization. Thorsten Kraus, European Business Development Director, stated that "newly developed solutions visualize information, offering tremendous advantages compared to traditional communication methods."

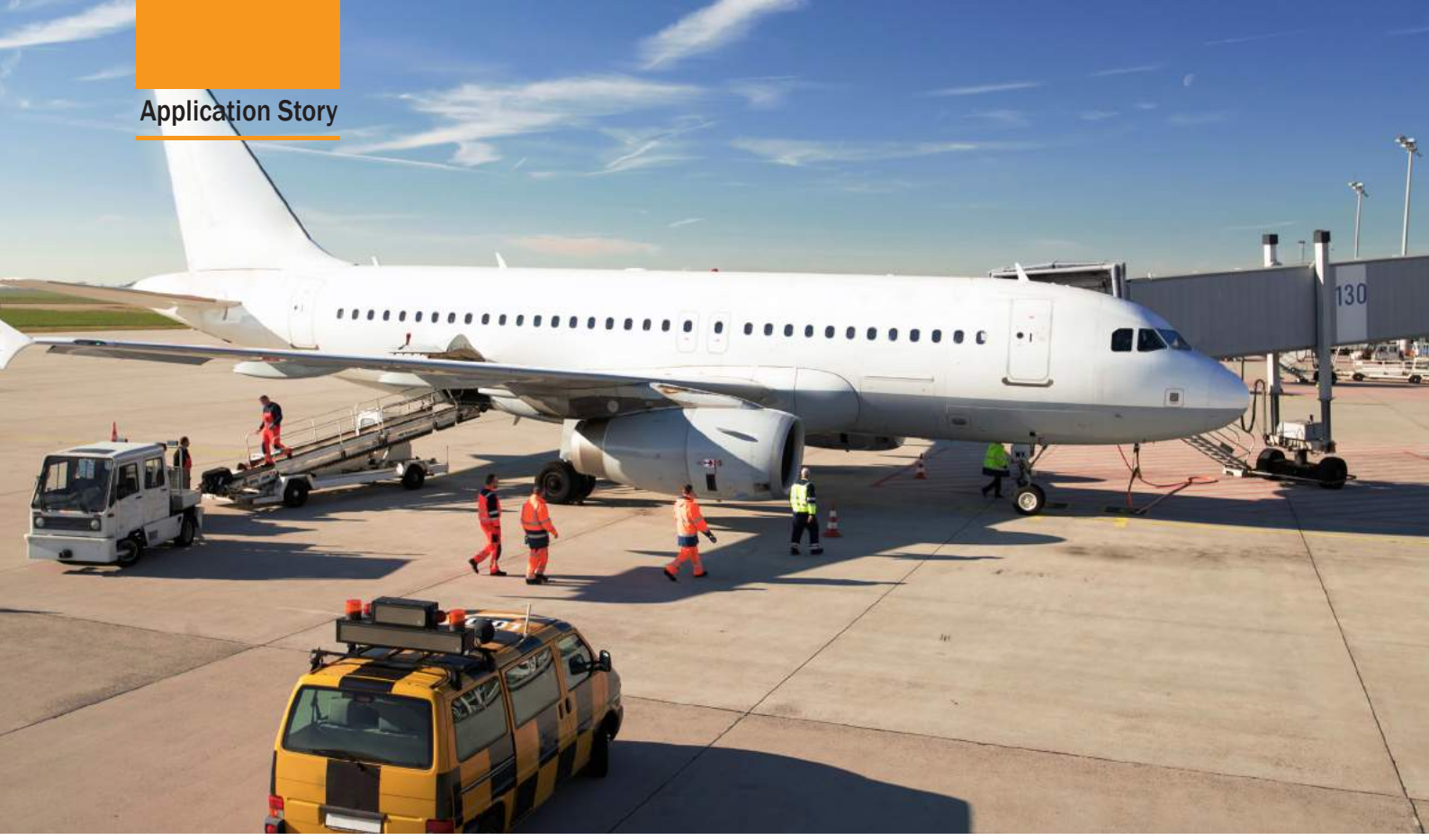
By having all vital information on these devices, communication errors can be eliminated. Moreover, much of the manual tasks are no longer necessary, allowing firefighters to save valuable time and better prepare for missions. "The fire brigade confirmed that the new IoT system saves at least five minutes compared to the old system, and when it comes to saving lives, five minutes can make a real difference," said Lin.

Smart firefighting for a safer future

These devices are merely the beginning. They serve as a foundation for a broader ecosystem built for firefighting. "With more data on firefighters and environments collected at the scene of fire incidents, we can build a command center for the future," Van Lin, Director of Intelligent Sector pointed out. Sensors can be installed on fire engines to obtain information and monitor onboard equipment and devices. The commander can use the on-board command center and coordinate the mission from the fire engine for efficient on-site planning and resource distribution. Heat-resistant sensors, thermal cameras, and wearables can be designed for firefighters to collect temperature data of objects and environments, oxygen levels in tanks, water pressure, and much more. Tracking devices can also be used to help firefighters locate their colleagues and equipment.

With the collection of large amounts of data, AI can be introduced to conduct further analysis and provide assistance in accordance with standard operating procedures, fire safety regulations, and past experience; for example, by suggesting optimal routes, warning of danger, and alerting firefighters to key information they might have missed. The advancement of 5G technology also contributes to accelerating data collection, transmission, and analysis, thereby strengthening coordination and saving valuable time.

In combating fires, time will always be the most important factor. Advantech believes helping and protecting firefighters and improving their efficiency through advanced IoT technology to be extremely important. By connecting firefighters to the world of IoT, citizens are better protected and communities become much safer. ■



Advantech's Complete Solutions Help Airports Worldwide Upgrade to Smart Management

Management of passengers, vehicles, assets and cargo at large airports is a complex task that requires smart processes underpinned by advanced technologies. Advantech and its partners have developed complete solutions to help airports around the world achieve such smart processes and thereby elevate their management operations.

Photos provided by Advantech
Interview with Lars Böddeker, Director Transport & Logistics Alliances EMEA, Advantech; Angus Shih, Business Development Manager, Advantech

Seven years ago, Munich Airport began adopting smart technologies, not only to gain a five-star airport rating but also to provide even better services to travelers. A key aspect of this endeavor was the eBus solution, which delivered smart processes for the scheduling and dispatch of shuttle buses, so as to quickly transport passengers between the terminal building and remote aircraft stands, reduce waiting times, and preventing situations in which shuttle buses are not available when boarding is scheduled to start.

Real-time passenger information

Munich Airport handled 46 million passengers in 2018, making it one of the 10 largest airports in Europe. The airport has over 100 shuttle buses to transport passengers between different points of the airport. The work that goes into managing this fleet of buses is extensive. One of the main challenges for fleet managers

is how to reduce waiting times for passengers and use the lowest number of buses to transport them.

Lars Böddeker from Advantech's Germany office, who was in charge of this project, stated that, "In addition to being equipped with cameras, announcements, advertisements, and display systems, smart shuttle buses are also able to provide passengers with up-to-date information on flight schedules and baggage carousels. The moment passengers board the shuttle bus after landing, they can see at which carousel they can collect their baggage in the terminal building, offering greater convenience and saving time."

Through the GPS information of the fleet management system, administrators possess accurate information concerning the location of each shuttle bus. Combined with the information gleaned from the people counting system, administrators are able to easily dispatch buses. There are no longer situations in which no buses are sent to pick up passengers. Furthermore, the buses feature environmentally friendly designs; once passengers have disembarked, electrical systems are automatically switched off in order to lower operational costs.

However, to achieve the aforementioned functionality, the computer system installed on the buses to collect and provide information must possess strong integration capabilities. Munich Airport has a large IT department, with many ideas and special requirements concerning the use of technology. A company like Advantech, which has tremendous technological capabilities and solution integration experience, could therefore play an important role in helping the airport create flexible and customized systems and overcome various challenges related to system installation.This smart shuttle bus solution has since been adopted by airports in Stuttgart, Dusseldorf, Zurich and Dubai as well. In the future, Advantech and its partners will also develop mobile applications and dead reckoning upgrades for the eBus system.

Passenger and cargo management solutions

Besides the eBus smart shuttle bus solution at Munich Airport, Advantech has introduced innovative applications at airports in the Netherlands and India. Advantech's Angus Shih explained that at the Dutch airport, the tugs used to push aircraft into position were previously operated by drivers. But to save manpower, the airport decided to adopt automated guided vehicles (AGV). The first system chosen by the airport offered insufficient built-in support for the CAN bus protocol, making it difficult to operate the vehicles. The airport therefore switched to a system designed by Advantech and a system integrator, which resolved the communication problem and helped fully realized a smart environment of driverless AGVs.

For the airport in India, Advantech provided a fuel truck management system boasting GPS positioning and task assignment functions. This system allows administrators to keep track of fuel trucks operating at the airport and assigns aircraft fueling tasks to the nearest truck. In addition, it prevents fuel trucks from entering restricted areas through geofencing, so as to ensure airport safety.

Advantech also provides comprehensive systems to help airports manage passengers, vehicles and goods. For instance, it has developed systems that monitor the performance of bus drivers and issue warnings whenever a driver is found to be fatigued. These systems are equipped with 180-degree bright spot intelligence cameras, which notify drivers when objects move into their blind spots.

As for vehicles, apart from fleet management, Advantech provided an in-vehicle computer with CAN bus chips that allow for real-time monitoring of vehicles' engine performance, temperature, humidity and fuel consumption data, which is sent to a back-end management system for processing. Last but not least, the hundreds of thousands of objects spread across large airports need to be managed in a smart way, so as to reduce asset losses and Advantech's asset management system helps achieve this goal.

Smart management processes are of the utmost importance to airport operations and Advantech will continue to work with its partners to develop innovations that help airports around the world implement smart management solutions. ■

Komatsu Partners with Advantech for AIoT Heavy Duty Construction Equipment

With the advent of IoT, Komatsu, a global leader in heavy duty and construction equipment, is embracing smart construction with innovative 3D modeling systems and autonomous heavy construction equipment that are powered by Advantech's ICT solutions and in-vehicle computers.

Photos provided by Advantech and Komatsu
Interview with Ichiro Nakano, Vice President, Komatsu; Van Lin, Director, Advantech

In addition to relying on its skilled personnel, Komatsu also proposes to utilize 3D modeling in the job site processes– powered by Advantech's TREK in-vehicle computing and communication platform—to precisely execute tasks, thereby preventing human errors and minimizing risks associated with staff shortages.

Komatsu pioneers semi-automated heavy equipment

Twenty years ago, IoT would have been inconceivable and impossible to accomplish. Nevertheless, Komatsu showed tremendous vision by implementing the industry's first standardized telematics system "KOMTRAX" for its construction equipment in

2001. “KOMTRAX” greatly increased Komatsu’s competitiveness in the industry, monitoring the status of equipment, facilitating arrangements for maintenance, and predicting the occurrence of malfunctions, thereby minimizing equipment downtime and maximizing equipment productivity.

According to Ichiro Nakano, vice president of development division, Komatsu’s Dantotsu business strategy has three aspects: products, services, and solutions. Dantotsu, which means “unrivaled” in Japanese, symbolizes Komatsu’s commitment to delivering excellent products, services and solutions to its customers.

While Komatsu provides quality products that ensure superior performance and reliability, the telematics system “KOMTRAX” was introduced to support services, i.e., remotely monitoring the condition of equipment and providing complete after-sales services such as repair, maintenance, and technical assistance. Komatsu offers a standard warranty and an extended warranty that utilizes KOMTRAX’s remote manage function to manage the location of equipment for timely repair and maintenance. This has been a key differentiator, helping Komatsu stand out from the competition.

Nakano-san points out that Komatsu introduced semi-automated dozers in 2013 and semi-automated excavators in 2014 to deal with shortages of skilled operators and improve productivity at construction job sites. Since after the deployment of those, we realized automated equipment contributes only a small part of the construction process, to radically improve productivity, construction operations had to be thoroughly overhauled. Therefore, Komatsu introduced the concept of 3D modeling for the entire construction processes and started SMARTCONSTRUCTION in 2015, so as to transform itself to help customers from a manufacturer to a service provider and eventually a solution provider.

A future of autonomous driving

Since its establishment, Komatsu has developed systems and manufactured electronic devices in-house in order to control product quality and reliability. This has been an important competitive advantage. Nevertheless, after serious consideration of integration issues and talent recruitment, Komatsu turned from embedded microprocessor systems to the in-vehicle PC based platform, and partnered with Advantech due

to the superior quality & Service of its TREK in-vehicle computing & communication platform.

Advantech provided rugged and trusted TREK in-vehicle platform for Komatsu’s semi-automated construction equipment to realize features such as 3D modeling manipulation and graphical user interfaces. Also, Advantech provided ultra-rugged DLT computers to Modular Mining, a Komatsu subsidiary providing operation optimization systems for the mining industry, and to Komatsu’s Autonomous Haulage System, the world’s first autonomous driving system for large mining dump trucks.

Besides the ruggedness and stability of its TREK in-vehicle platform, Advantech’s application-oriented middleware and software also made Komatsu’s application development more productive. With the assistance of semi-automated equipment, management has been able to lower criteria for operators and recruit digital generation staff with less experience for jobs that in the past required decades of experience.

Nakano-san emphasized that the future of SMART CONSTRUCTION is to go full steam ahead with automation. Autonomous heavy equipment will revolutionize the construction and mining industries by solving personnel shortage issues, eliminating human errors, creating a safer work environment, executing tasks with impeccable precision, increasing productivity, and lowering operational costs. Komatsu continues to collaborate with Advantech to realize an autonomous environment for equipment and systems used in the construction and mining industries. ■

Toward Smart and Efficient Ports Advantech Plays Critical Role in Transforming Port of Shenzhen

As one of the world's busiest container ports, the port of Shenzhen must ensure that traffic flows efficiently. The main objective of the terminal operator is to help freight ships minimize their time in port by optimizing the flow of goods and achieving fast customs clearance.

Photos provided by Advantech
Interview with Gary Huang, Product Sale Manager, Advantech iLogistics

Greater safety, security, and efficiency

With high competition, the container port industry faces the challenges of better safety performance, greater operational complexity as a result of much bigger ships, managing congestion risk, staying profitable through shipping line economic cycles, and doing more with less space. To enhance operations, the Port of Shenzhen has embarked on a digital transformation journey to become a smart port. The first step on this journey is the implementation of a smart crane system developed by Intellindata and Advantech to achieve greater safety, security and efficiency.

The Chiwan container terminal is one of the areas in the Port of Shenzhen where this system has been adopted. "The container-logistic includes three parts: the crane by the quayside receives order from the management system to unload the containers in sequence, the management system sends orders to nearby trucks, to move the containers to designated yard." Gary Huang, Product Sale Manager of Advantech iLogistics, stated "with the smart crane system developed by Intellindata and Advantech, workers simply monitor container handling equipment such as gantries, cranes and van carriers, so as to ensure that operations run smoothly, 24 hours a day and seven days a week."

The architecture of the smart crane system features the Advantech DLT-V8312 slim vehicle-mounted terminal with rugged design to provide a long lifespan and increased uptime on the cranes, even in the extreme environments and the monitoring application developed by Intellindata. This terminal optimizes data communication between cranes, trucks and management systems through wireless networks.

When ships dock at Chiwan, cranes equipped with the Advantech DLT-V8312 receive instructions from the management system to unload the containers in a certain sequence. During these operations, the Advantech DLT-V8312 collects operational data and sends it to the management system for task monitoring and further data analyzing. The operators in the office can track the status of each crane in real time, so as to keep abreast of loading schedules for asset and task allocation optimization. In addition, crane drivers are immediately notified of changes in cargo information from the ship to avoid loading the containers with the wrong sequence, which will help raise productivity.

The excellent performance by the smart crane system has also attracted the attention of other terminals. For instance, the Dachanwan terminal of the Port of Shenzhen has adopted Advantech DLT-V4108 rugged vehicle-mounted terminal with integrated keyboard to optimize the trailer operation with great performance.

High productivity with smart logistics systems

Intellindata and Advantech are looking beyond the Port of Shenzhen and are aggressively promoting their smart solutions to more ports across China.

The Port of Guoyuan, situated in Chongqing's

Liangjiang New Area, plans to transform itself into a smart port with fully automated operations covering container wharfs and storage yards. Intellindata and Advantech have provided smart logistics system and professional consulting services to help the port's operators realize their goals concerning smart operations.

With the end-to-end system offered by Intellindata and Advantech, instructions to all trucks, forklifts and cranes in the container terminal are sent through the central command system. Dispatch trucks from logistics companies get permission to enter the wharf after their license plates have been verified. Once the containers have been loaded onto the trucks, cameras and sensors installed at the gates once again automatically verify license plates and container numbers and allow them to exit. All operational data is transmitted to the cloud and managed by the central command center for data analysis to optimize overall logistics.

The architecture of the smart logistics system features the Advantech TREK-734; a RISC-based open platform all-in-one light-duty mobile data terminal equipped with dual microphones, speakers and sunlight-readable 8" display to provide a long lifespan and increased uptime on the trailer or forklift even in the harsh environments, and the monitoring application developed by Intellindata.

Intellindata and Advantech's smart logistics solutions manage more than just the cargo flow in and out of ports. Vehicles are dispatched and monitored through the fleet management system to ensure that cargo safely reaches third-party logistics centers. Workers don't need to print hard copy receipts anymore; they can simply trace the real-time status via the GPS-equipped system. Meanwhile, the port operators are quite satisfied with the reduction of the container transportation rate.

Win-win partnerships in the smart port ecosystem

Today, global ports and terminals are facing ongoing pressure to reduce operational costs, implement appropriate security measures, and mitigate the effects of climate change. In this context, Advantech works closely with domain partners to help operators develop comprehensive smart port strategies to improve operations with new technologies.

Advantech and its domain partners offer reliable end-to-end solutions to achieve zero-downtime smart port operations with Advantech's rugged and stable design terminals with the certifications of Navis N3 TOS, such as Advantech DLT-V83, DLT-V72, which are the best solution for port operators to build up the international smart port.

Gary Huang stated that "Advantech's products can perform reliably even in harsh environments with serious vibrations, and are therefore ideal for ports. Advantech's international staff offer professional services to support partners in addressing market needs." Industrial partners can leverage Advantech's product and services to develop the end to end smart port solution to support the port managers to accelerate the transformation toward smart port.

In fact, many of Advantech's domain partners said Advantech's complete end-to-end and flexible solutions allow them to meet customer demand and realize our goal of building smart ports.

"We are fully committed to creating a knowledge sharing ecosystem with partners and port operators, so as to accelerate the development of smart ports." said Gary Huang. Advantech sincerely invites the domain partners to join the ecosystem to co-create a bright future. ■

DLT-V72 Series

Stylish Design, Ultra-rugged System

DLT-V7212 P+

DLT-V7212 / V7210

DLT-V7210 K / V7210 KD

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New Front Design

- Stylish and sharp look with iconic red line
- 6 programmable hotkeys and 6 function keys

Rugged System with Excellent Wireless Connectivity

- Support latest WLAN/LTE/Bluetooth
- Fast WLAN roaming capability
- IP66/5M3/ IK08 certified

New DLT-V72 Models for Diverse Applications

- **DLT-V7212 P+**
  12" PCAP-terminal with compact system and thin bezel design
- **DLT-V7210 KD**
  10" PCAP-terminal with screen defroster for cold storage applications

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Advantech Utilizes WISE-PaaS/ APM as a Service Framework to Promote High-Compatibility Device-to-Cloud Cold Chain

Photos provided by Advantech
Interview with Jamie Su, product manager for IoT.SENSE, Advantech; Yu Wang, system architect of IoT.SENSE, Advantech; Gordon Chang, manager of Service-IoT Business Group, Advantech

Solutions For many companies, asset performance management (APM) is an important part of Industry 4.0 and overall digital success for transformation. APM helps companies grasp the health status of various assets through the real-time collection of lifecycle data. This is combined with monitoring, diagnosis, warning, and prediction mechanisms. The system locates problems early, explores root causes, and, through control and tracking, continuously strengthens asset performance.

Given its importance, Advantech provides an APM service framework through the WISE-PaaS Industrial IoT cloud platform. Jamie Su, product manager for Advantech IoT.SENSE, says that users can freely define required performance indicators—such as alerts, utilization rate, OEE (Overall Equipment Effectiveness)—and then configure and calculate through WISE-PaaS/APM to reduce unexpected downtime, increase utilization, reduce operating costs, and improve production quality.

Su points out that in the past companies often faced bottlenecks when promoting asset performance management as the same set of data collection mechanisms could not be used due to the large number and differentiated nature of varied assets.

Advantech designed a variety of Edge SRPs (Solution Ready Packages) to interface with different data sources: WISE-PaaS/EdgeLink to connect more than 200 Linux-based PLC devices; WebAccess/SCADA or WebAccess/HMI to connect more than 450 kinds of Windows-based PLC devices; WISE-PaaS/DeviceOn to manage IPCs generated by Advantech and monitor CPU/Disk/Memory operation status; and WISE-PaaS/EdgeX-API to monitor sensors (such as cold chain sensors, cameras, smart batteries, electronic cash drawers, and RFID) at smart hospitals or in the smart retail field. The heterogeneous data is then processed within uniform guidelines.

When the data is connected to WISE-PaaS Cloud, users can directly enable APM to provide a variety of micro-services, including device templates, asset evaluation, reports, notifications, events/alerts, Workflow/MES integration, and OTA APIs, without additional development—making it is easy to create a variety of Digital Twin Templates for the supervision and maintenance needs of fixed assets, mobile assets, fields, and permissions integration.

A large ship automation system supplier in mainland China liked the advantages WISE-PaaS/APM offered and installed ECU edge equipment and WISE-PaaS/EdgeLink software in their ships to collect data and upload APM in real time to meet the management needs of shipboard equipment.

Paired with other tools—such as WISE-PaaS/Dashboard and WISE-PaaS/SaaS Composer to create management interfaces and apps—ship owners remotely monitored vessel information at all times.

Cold chain gateway solution

Using WISE-PaaS/APM was enough to produce multiple applications and the WISE-PaaS APM.Cold Chain SRP was one of the representative projects. Yu Wang, system architect of Advantech IoT.SENSE, pointed out that the cold chain solution covered not only “cold” but also “hot” and was suitable for scenarios where it was necessary to control temperature and humidity. This included cold chain transport vehicles, hypermarkets/supermarkets, vaccine factories, plant factories, warehouses, wineries, semiconductor factories, and museums.

There are many edge devices used in these fields. Some are responsible for collecting power information whereas some are responsible for collecting temperature, humidity, and harmful gas data. Advantech provides WISE-PaaS/EdgeX-API with data acquisition software to allow users to host a large number of heterogeneous data on the WISE-PaaS Cloud through a unified, standardized API and data format to achieve consistent processing and presentation, and to realize diversified computing functions.

For example, if a user determines that a freezer temperature above 18 degrees Celsius exceeds the standard then the formula can be configured in APM to construct a rule. Once deployed to a large number of freezer stations, the administrator can monitor the status

Cloud-Based Cold Chain Solution Powered by WISE-PaaS

of all freezers via the app.

Yu Wang added that, undeniably, rules cannot always effectively reflect the current status. At this time, the user can use the WISE-PaaS/AFS (AI Framework Service) defrost training model, then deploy the OTA function to the edge to perform reasoning, and then connect the APM and AFS to establish a more accurate device performance management method.

Gordon Chang, manager of Advantech Service-IoT Business Group, said that the core content of the WISE-PaaS cold chain solution is "WISE-PaaS/APM + EdgeX-API" as the latter uses container virtualization technology to package all software services into Docker microservices. This can be run on different operating systems and hardware devices and is crucial to successfully collecting data from different sources.

The gateway designed by Advantech for the cold chain solution is based on EdgeX-API technology, which includes EdgeX Core (covering data services, logging services, real-time event notification services, real-time event processing services). When facing southward (ground), a CC connector connects to the LoRa cold chain sensor. When facing northward (cloud), there is an APM connector which passes sensor data to the WISE-PaaS Cloud via the MQTT protocol.

With the help of Advantech's WISE-PaaS/APM, it is easy to break through barriers, extensively interface with diverse field devices and communication protocols, and provide large-volume equipment management and workflow integration templates across different fields. WISE-PaaS/APM can be combined with the WISE-PaaS/AFS to accelerate the development of device prognosis and AI applications. Users who wish to stay updated on energy consumption, utilization rates, and the OEE of each plant or production line in real time can now do so seamlessly. ■

In-Vehicle AI Enhances Driving Safety

Real-Time Collision Avoidance and Driver Behavior Monitoring

ADVANTECH

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- Real-time visual and audio alarm notifications to warn drivers of potential collisions
- High compatibility and easy integration reduce development costs
- Event monitoring and synchronized video outputs facilitate fleet management

TREK-130
Front Collision Avoidance ADAS Module

TREK-132
Multifunctional Driver Behavior Recognition Module

TREK-134
Ultra-Wide (180°) Blind Spot Detection Module

TREK-674
Compact In-Vehicle Computing Box for Fleet Management and Surveillance

TREK 303/6
7/10'' In-Vehicle Smart Display for Visualized Fleet Management

https://www.advantech.com/solutions/ilogistics

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Taiwan Cold Chain Association Leading Enterprises to Exploit Business Opportunities in Southeast Asia

With the Taiwanese cold chain industry able to deliver smart and sophisticated solutions and compete internationally, the Taiwan Cold Chain Association (TCCA) has assembled a team of leading companies, including Advantech, to make inroads into Southeast Asian markets.

Photos provided by Advantech
Interview with Cheng Tung-he, TCCA Chairman

In Taiwan, people enjoy easy access to fresh seafood from around the world, as well as imported vaccines and medicine that need to be stored at controlled temperatures. Such convenience, made possible by the use of cold chain logistics technologies, underlines the critical role played by the cold chain industry in raising national competitiveness. The comprehensive cold chain industry in Taiwan, as well as its related hardware and software technologies and cost-efficient and high-quality services, not only raises quality of life for local residents but also bolsters Taiwan's economic growth momentum through international business development.

In view of this, a group of enterprises and professionals with expertise in cold chain management set up the TCCA in 2016, aiming to make Taiwan's cold chain industry the best in Asia. With a strong lineup of enterprises such as Advantech, it has successfully built connections to Southeast Asia, and is currently working to enter the Vietnamese market.

Strengths of Taiwan's cold chain industry

TCCA Chairman Cheng Tung-he pointed out that three phases can be distinguished in the evolution of the cold chain industry. The first phase is operational development, with a focus on increasing efficiency and lowering costs. China and many Southeast Asian countries are currently in this phase. The second phase, in which Taiwan finds itself at present, centers on management aspects. Taiwan is gradually moving toward the third phase, which is characterized by greater levels of sophistication and the ability to provide customers with thoughtful and safe services.

Cheng added that Taiwan's industry boasts a wide array of capabilities and resources, including: energy-saving logistics centers; earthquake-resistant shelves; energy-saving refrigeration in trucks; monitoring and management of cold chain storage, transport and distribution; multi-temperature operations; and cold preservation. Indeed, Taiwan is far ahead of Southeast Asian countries in terms of technologies and services. Taiwan's industry in recent years has also ventured into smart applications and services, and is well equipped to cultivate markets in Southeast Asia.

Vietnam's cold chain market

With a population of nearly 100 million and a fast-growing economy, Vietnam is a key priority in the Southeast Asia strategies of Taiwanese cold chain enterprises. Of particular note is the fact that Vietnam is an agricultural powerhouse, aiming to expand its

agricultural and fisheries exports from US$40 billion to US$100 billion. However, due to insufficient technological capabilities to preserve products, Vietnam suffers from great losses and waste. The country therefore urgently requires cold chain services that are based on smart management, so as to reduce these losses and increase the quality of its agricultural products.

"Vietnam has great demand for proper storage and transport of fruits and vegetables, meat products, and seafood," added Cheng. "Additionally, the retail sector in the country is witnessing rapid development, boosting cold chain demand among distribution channels and logistics centers. In fact, the compound annual growth rate of Vietnam's cold chain industry is expected to reach 10.4% in the period 2016-2021."

To better achieve business opportunities in Southeast Asia, the TCCA formed a top-level team in early 2019 consisting of leading cold chain enterprises and organizations including Advantech, the Industrial Technology Research Institute, Kenmec, TechBesh, WAP, Flutai, Li-Hsin Investment Corp., and BankPro.

These enterprises and organizations offer a wide array of solutions, and by joining hands they are well positioned to make a big push in the Vietnamese cold chain market.

Advantech contributes smart capabilities

Representing these enterprises, the TCCA signed a letter of intent on cooperation with the Council of Taiwanese Chambers of Commerce in Vietnam at a seminar and exhibition concerning the development of Southeast Asian markets. By working with Taiwanese companies based in Vietnam, the TCCA has further strengthened its efforts to develop local market opportunities. The TCCA also dispatched a delegation to the Taiwan Expo in Hanoi in 2019, and held a seminar to demonstrate the innovative technologies of Taiwanese cold chain enterprises and share Taiwan's experience and solutions. Feedback during these events was tremendous. The solutions and success stories derived from Advantech's incorporation of IoT and AI technologies have moved Taiwan's smart soft power to the forefront in Vietnam.

Cheng added that "the Taiwanese cold chain industry has to further elevate itself to provide even more sophisticated solutions, and must extensively leverage information technology. Likewise, when technology companies enter the cold chain sector, they require a great deal of sectoral know-how, no matter their size." Advantech is a global leader in the field of industrial computing. Its automation products conform to international standards, and its management and workforce have an international outlook. The company also operates a large distribution network across the globe. The TCCA, meanwhile, has members spread throughout the industry, and possesses considerable know-how. Cooperation between Advantech and the TCCA is thus mutually beneficial, allowing Advantech to deepen its alignment with the industry and TCCA to assist up- and downstream companies with expanding international markets based on Advantech's strengths.

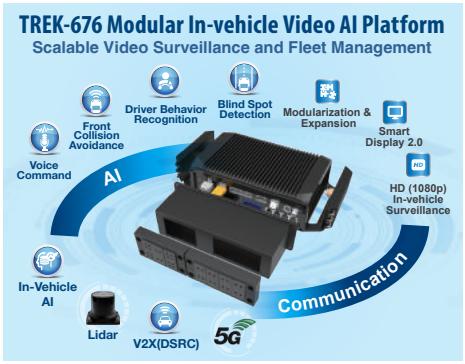
The TCCA is currently engaged in discussions with the government of Vietnam's Lâm Đông Province, a major agricultural center, in the hope of establishing a logistics zone featuring distribution and storage components for agricultural products in collaboration with TCCA members as well as Vietnam-based Taiwanese enterprises. Cheng emphasized that "to take on such a large project requires cooperation across the industry chain as well as a lineup of leading enterprises. Developing overseas markets individually can be an arduous task for Taiwanese enterprises. But by working together, they are able to create even greater business opportunities." ■

TREK-676 Modular In-vehicle Video AI Platform

Photos provided by Advantech

The TREK-676 is a next-generation, intelligent, rugged, and modular computer box for surveillance and fleet management. Its modular design supports various CPU platforms and RF extension with automotive grade connectors (FAKRA) for diverse applications, and offers easy installation and customization. It features built-in GNSS, WLAN, Bluetooth and WWAN, and via the modular I/O extension supports an edge AI module, 5G communication or DSRC/V2X with up-to-date technology expansion.

The TREK-676 can operate in a wide temperature range (-30°C to 70°C/-22°F to 158°F), has MIL-STD-810G and 5M3 certification for shock and vibration tolerance, and possesses dust and water ingress protection with an optional IP65 cover for harsh environments. ■



Advantech's LEO-W Wearable Barcode Scanner Ring Wins 2020 Taiwan Excellence Award

Photos provided by Advantech

Advantech is pleased to announce that its LEO-W wearable barcode scanner ring has been accorded a 2020 Taiwan Excellence Award, one of the highest honors in Taiwan's industry. The LEO-W was selected by the jury for demonstrating superior innovation.

The LEO-W wearable barcode scanner ring is an ultra-compact Bluetooth barcode scanner that is worn on a finger for hands-free scanning. Designed to streamline workflows for warehouse, logistics, retail, and inventory management applications, LEO-W is capable of scanning barcodes that are printed on paper labels or displayed digitally. Unlike traditional barcode scanners with a capacitive touch pad, the LEO-W features an optimized physical scan button for excellent control and power savings. Available in five sizes, it can be worn on either the left or right hand for maximum flexibility and comfort.

Furthermore, the LEO-W provides great value as a mobile data collection solution with the durability

to withstand rough handling in harsh industrial environments.

Since it is equipped with Bluetooth communication technology, the LEO-W can also be easily paired with a wide range of devices for real-time data collection. Moreover, the scanner can operate at distances of up to 10 m (33 ft) from the host system, increasing worker mobility and overall efficiency. By reducing workflow interruptions and data-entry errors, the LEO-W allows managers to streamline operations and increase productivity. ■

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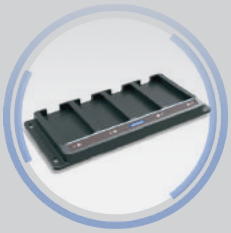

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