

My WISE-PaaS

An Advantech Magazine - Industry 4.0 2021-2022

Advantech View

Predicting the Next Wave of Smart Factory and Innovation P.5

Application Story

Yamaha Motor Solutions and Advantech Help Enterprises Achieve Information Asset Integration P.12

WISE-PaaS

Advantech Builds IIoT Cloud Platform to Integrate Cloud-Edge-End Technology to Accelerate the Development of IIoT Applications and Microservices P.26

Customer Partnership

HITI Partners with Advantech to Accelerate IoT Deployment in Factories P.29

The New Wave of the Industry 4.0



Advantech and Tien Kang Develop Smart Digitized Shoe Manufacturing Solution P.16



WISE-PaaS

AIoT Solutions & Marketplace

EDITOR'S DESK

ADVANTECH VIEW

POWER INSIGHT

APPLICATION STORY

WISE-PAAS

CUSTOMER PARTNERSHIP

ADVANTECH NEWS



CONTENTS

Editor's Desk

04 Partnerships are the Secret to Industry 4.0 Success

Advantech View

05 Predicting the Next Wave of Smart Factory and Innovation

Power Insight

07 Transitioning from Manufacturing to IoT Provision Overcomes Smart Manufacturing Challenges



7 Power Insight
Transitioning from Manufacturing to IoT Provision Overcomes Smart Manufacturing Challenges

16 Application Story
Advantech and Tien Kang Develop Smart Digitized Shoe Manufacturing Solution



29 Customer Partnership
HITI Partners with Advantech to Accelerate IoT Deployment in Factories



CONTENTS

Application Story

- 09 Advantech Partners with Domain-Focused System Integrators to Digitally Transform the Aerospace Manufacturing Industry
- 12 Yamaha Motor Solutions and Advantech Help Enterprises Achieve Information Asset Integration
- 14 Advantech's Energy Management Solution Helps Vishay Reduce Costs and Optimize Efficiency
- 16 Advantech and Tien Kang Develop Smart Digitized Shoe Manufacturing Solution
- 18 Advantech Assists Stone Factory in Digital Transformation with iFactory OEE and Data-Driven Vibration Monitoring Solution
- 20 Advantech and Signal Transmission Join Forces to Deliver an OEE SRP Solution for Promoting Industry 4.0
- 22 Eforel and Advantech Cooperate to Provide Real-Time Monitoring and OEE Analysis to a Global Zipper Brand
- 24 Everest Textile Utilizes Advantech's WISE-PaaS Cloud Platform to Implement Intelligent Textile Production

WISE-PaaS

- 26 Advantech Builds IIoT Cloud Platform to Integrate Cloud-Edge-End Technology to Accelerate the Development of IIoT Applications and Microservices

Customer Partnership

- 29 HITI Partners with Advantech to Accelerate IoT Deployment in Factories
- 31 Collaboration Between Multitrade and Advantech Yields Industry-Oriented Solutions

Advantech News

- 33 Advantech Connect, Rolling Continuously

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Partnerships are the Secret to Industry 4.0 Success

Every aspect of manufacturing now generates data and the insights derived from this data can benefit the manufacturer — if they use it right. IoT devices and equipment record and transfer data to monitor important processes, give us new insights, boost efficiency, and allow businesses to make more informed decisions.

The world of manufacturing and industrial control is dominated by programmable logic controllers (PLCs). The data they acquire is the source for analytics and AI systems, which can identify patterns of use or behaviors that were previously hidden. The integration of IoT with PLCs, WiFi and other technologies long used in manufacturing is inevitable and necessary for Industry 4.0, which takes this further and shows us what is actually happening, rather than what we hope is happening.

Foreseeing the challenges of promoting Industry 4.0, Advantech has established close cooperation with local partners who have deep domain knowledge in the manufacturing industry. The main topic of this current issue of MyWISE-PaaS is the creation and promotion of local service ecosystems. Jonney Chang, Associate Vice President of Advantech's IIoT Group will give readers insights into Advantech's new strategy of helping local partners by developing an easy-to-use platform with a low-code environment, user-friendly interface, and many industry-specific apps that can assist partners in realizing smart factories.

In the Power Insight column, Mr. Brandon Cannaday, Chief Product Officer and cofounder of Losant, talks about how they have overcome smart manufacturing challenges by helping OEMs become IoT providers and create service-based business models. This issue also features eight insightful cases concerning how Advantech's partners have utilized the company's platform and solutions and helped end users to optimize their efficiency and production while reducing costs. From lean manufacturing production models, such as zipper, shoe, and textile production lines, to discrete manufacturing production models, such as automobile, electronic and aerospace product production lines, readers will gain insights on how smart solutions can be deployed in various manufacturing environments.

In the Customer Partnership section, Advantech's partnership with the well-established industrial control equipment supplier, HITI, and industrial automation and control turnkey solution provider, Multitrade, have contributed to Industry 4.0 transformation across several manufacturing sectors locally.

Advantech's vision to establish a local service ecosystem has markedly raised business owners' awareness of smart manufacturing solutions and promoted the large-scale replication of industry-specific solutions. Moving forward, Advantech and local partners will continue cultivating industry know-how in many more manufacturing sectors and bring Industry 4.0 to more manufacturers. ■

Predicting the Next Wave of Smart Factory and Innovation

The Industry 4.0 revolution is predicted to bring about four critical changes in the field of industrial automation. Likewise, the Solution-as-a-Service model will become one of the three main business service models. Advantech focuses on co-creation in an effort to help expand the Industry 4.0 ecosystem in response to these trends.

Extract from 2021 Advantech Connect Online Partner Conference
Speaker: Jonney Chang, Associate Vice President of IIoT Group of Advantech
Photos provided by Advantech

IoT automation technologies have come to the fore during the COVID-19 pandemic. This has led to the acceleration of remote monitoring facilitated by the widespread use of IoT sensors, robots, and software. On top of this, Industry 4.0 and 5G have presented the manufacturing sector with new opportunities.

Four key changes for the evolution to Industry 4.0

Jonney Chang, Associate Vice President of IIoT Group at Advantech, pointed out that both the pandemic and technological innovations have accelerated the evolution towards Industry 4.0. He predicts that four changes will occur in the field of industrial automation following this transformation.

First, recent events have greatly increased the market demand for applications with edge intelligence. Indeed, the use of IoT applications with edge intelligence and sensing devices that collect massive amounts of data based on field usage, has grown substantially.

Second, the control functions of PLCs will shift to distributed control units and virtual PLCs. Moves by the industry to utilize real-time Ethernet network technology at all levels allows

for data and computation to take place where it makes the most sense, rather than being set in a specific location due

to technology constraints. In simple terms, this means that processes that do not require hard, real-time control can now be run in the cloud with virtual PLCs.

Third, cloud platforms will be used to adopt centralized monitoring and integrated MES. Finally, the data will increase interaction between ERP and MES in the central operations center and can be exchanged with local automated clouds or OT data centers for full digital factory management.

Solution-as-a-Service becomes a key business service model

In response to the changes, digital transformation will become an important cornerstone of various industries in the future. Likewise, the Solution-as-a-Service model will become one of three critical business service models in the world of digital transformation.



The first model is Edge-as-a-Service — such as Advantech’s DeviceOn/BI — an open cloud-based data platform that provides device management, control, visibility, and security for distributed sensing devices and edge computing. In addition, DeviceOn/BI provides remote access and monitoring with over-the-air software updates, device diagnostics, and device configuration through drag-and-drop WebUI interface services.

*“Advantech’s smart factory digitalization strategy is entering Phase III, we will invite more partners to join us. ”
said Jonney Chang, Associate Vice President of IIoT Group at Advantech.*

Machine-as-a-Service — like Advantech’s WISE-InsightAPM — includes data management platforms developed specifically for assets. The main attributes of these services are the ability to provide optimized asset allocation and preventive maintenance for machine and equipment health. This improves the reliability and availability of assets. At the same time, WISE-AIFS provides AI model creation and management through an AI framework service that maximizes profitability and predictability.

Finally, Factory-as-a-Service — such as the iFactory Industrial App — is based on the WISE-IoTSuite and is the main application software for the digitalization of smart factories. Advantech provides a standard solution suite package that assists domain-focused system

integrators with rapid development and eases the complete the digitalization of factories.

Advantech concentrates on co-creation to build an Industry 4.0 ecosystem

Mr. Chang pointed out that Advantech has been the core providers of Phase I edge computing & I/O devices for the past 35 years. In 2015, Advantech began actively deploying Phase II IoT digital platforms and Industrial app products. Congruously, major efforts were directed towards continued integration of multiple automation software applications that realized data integration between platforms and software/hardware bundled solutions. This has helped the company’s partners promote digital transformation in a wide range of industries. Now, Advantech’s smart factory digitalization strategy is entering Phase III. In Phase III, it is essential for Advantech to invite more partners to join.

Advantech provides an easy-to-use and low-code basic platform in the form of its factory solution suite package. This package helps partners realize the implementation of smart factories. Using a solution suite standardization strategy, Advantech cooperates with global partners to provide complete smart factory management in real industrial applications — including those found in metal processing, plastic molding, and PCB. Advantech firmly believes in creating an industry ecosystem for the future that is based on two facets — adding value, and the deployment of Industry app products with partners with domain expertise. Advantech plans to create successful strategies by deploying partners in local markets. They will also invite partners to join while implementing Industry 4.0 technologies. ■

Transitioning from Manufacturing to IoT Provision Overcomes Smart Manufacturing Challenges

Losant helps many industrial customers bring IoT products and services to market. They enable OEMs to become IoT providers and create service-based business models — two strategies that overcome smart manufacturing challenges.

Extract from 2021 Advantech Connect Online Partner Conference
Speaker: Brandon Cannaday, Chief Product Officer & Co-Founder of Losant
Photos provided by Losant

IoT, AI, big data, and cloud computing have recently emerged as the main technologies contributing to digital transformation. These technologies help reduce costs, improve efficiency, optimize production, and help manufacturing companies remain competitive. They also present many new opportunities to solution providers and OEMs in the IoT ecosystem.

However, these opportunities present several challenges. There are many OEMs who make CNC machines, power generators, electric motors, and other equipment. This equipment is subsequently sold to other industrial equipment manufacturers; creating a market for the creation of connected products that benefit customers and end-users. So OEMs need to master both mechanical processing and smart manufacturing technology if they hope to create smart manufacturing solutions for their customers from scratch.

Brandon Cannaday, Losant Chief Product Officer and cofounder posits that the industrial IoT cycle — the tendency for OEMs to be stuck in an endless loop of duplicating investment — is one of the most salient manufacturing environ-

ment challenges Losant faces. Indeed, an OEM must invest both time and money into identical technologies for each customer, creating congestion for customers who are also targeting other comparable industrial markets. This creates considerable overlap of time and money, and hinders this ecosystem's adoption of smart manufacturing practices.

IoT products and services bring benefits to both OEMs and their customers

Mr. Cannaday has helped many industrial customers bring IoT products and services to market. He pointed out that getting manufacturers to become IoT providers is a commonly overlooked opportunity. This process entails building service-based business models around their connected products. This strategy allows a way for OEMs to provide IoT directly to their customers, which in turn lowers barriers and friction to getting smart manufacturing distributed much quicker than it would otherwise take.



Service-based business models provide benefits to both manufacturers and their customers by reducing total cost of ownership. Indeed, customers gain a turnkey solution without the investment of time, technology, and system integration usually required to develop telemetry data from scratch.

“As you think about your place in the technology ecosystem, think about the strategies involved with how the customers you talk to can become IoT providers.”
—Brandon Cannaday, Chief Product Officer & Co-Founder at Losant.

These solutions deliver value to OEMs. When customers compare two pieces of similar equipment they choose the one that includes IoT services. Such equipment lowers the total cost of ownership and provides smarter services. “Recurring revenue is one of the biggest advantages and selling points for manufacturers,” said Mr. Cannaday. Connected machines offer product-as-a-service opportunities for manufacturers and are, accordingly, sold almost exclusively as subscription licenses. This allows manufacturers to transition from a one-time revenue model to a recurring revenue model. In addition, manufacturers can also become consumers of their own IoT products, which grants the data generated

by these IoT products more visibility. How the equipment operates in the field and how it is utilized by customers can be monitored in real time. This enables data to be utilized in smart design processes, allowing manufacturers to continue improving their equipment.

IoT ecosystems help deliver service-based business models

Losant has collaborated with Advantech to provide edge computing gateway solutions. Losant’s edge platform works as a software edge computing run-time system that allows customers to design and deploy business logic. Advantech provides a wide range of gateways — ranging from small OEM retrofitted products to larger systems that work within other equipment.

Losant’s IoT platform is a tool that IoT solution providers use to develop their go-to-market solutions with their actual IoT products. This is a new type of development for OEMs. It involves web and cloud services — a very different type of software development environment than the ones they traditionally adopt. Indicatively, many companies outsource to software developers if they do not have in-house experts.

Finally, Mr. Cannaday suggested, “As you think about your place in the technology ecosystem, think about the strategies involved with how the customers you talk to can become IoT providers so you can start delivering IoT products directly to your customers, and this will help everyone escape the recurring loop we seem to be stuck in.” Modern smart manufacturing solutions enable manufacturers to develop lifelong relationships with their customers by offering targeted services and IoT subscription licenses. These services and licenses empower service-based business models. ■



Advantech Partners with Domain-Focused System Integrators to Digitally Transform the Aerospace Manufacturing Industry

Advantech has assisted an aerospace research center in China with implementing an all-in-one IoT solution that integrates hardware and software. The solution accelerates the digital transformation of aerospace manufacturing processes by realizing data acquisition and integration in a multi-device IoT network in addition to the development of various smart field applications.

Photos provided by Shutterstock

The aerospace industry follows a discrete manufacturing production model to deal with high-mix and low-volume production challenges. However, strict requirements in terms of product quality, craftsmanship, lead times, and regulatory

compliance make production management highly complex and difficult to execute. The four main challenges faced by an aerospace research center in China were as follows. First, rapid increases in make-to-order and engineer-to-or

der tasks were exceeding existing production capabilities. Second, inefficient informatization management created an information island that prevented centralized management. Third, complex and diverse product configurations and craftsmanship considerations made it difficult to allocate human and machine resources, limiting the flexibility of production planning. Fourth, statistics regarding productivity, equipment utilization rate, and production costs could not be presented in real time, preventing management from having a clear overview of operational performance.

To address these issues, the aerospace research center initiated a smart manufacturing project 3 years ago. Adopting Advantech's IFS-52C-AG01 iFactory Smart Manufacturing Suite as a solution for metal fabrication management, the research center established an all-in-one IoT platform based on a microservice framework. The platform provided a collaborative tool for conducting complex R&D processes and diverse production tasks, as well as realizing data-driven digital transformation and smart manufacturing production.

Rising to the challenges of equipment networking and data acquisition

In terms of hardware, the IFS-52C-AG01 iFactory Smart Manufacturing Suite includes Advantech's ADAM-4571 serial device server, an ECU-1051 RISC-based industrial communication gateway, EKI-2525 unmanaged industrial Ethernet switches, and WISE-S100 stack light monitoring sensors. Combined with Advantech's web-based WebAccess/SCADA software and the iFactory/MetalWorks software application developed specifically for metal fabrication, the complete solution supported all

of the aerospace research center's digitalization needs. This, in turn, accelerated their realization of smart manufacturing.

The production site contains over 200 pieces of equipment, such as PLC devices, CNC machines, electric meters, and motorized maneuverable platforms. These all use different communication protocols and interfaces. Accordingly, equipment networking was the first hurdle that needed to be overcome in order to achieve digital transformation.

To realize centralized management, Advantech's ECU-1000 series of RISC-based industrial communication gateways were adopted to connect more than 200 machines. These gateways were then integrated with WebAccess/SCADA to enable smart applications such as fault diagnosis, predictive maintenance, and energy consumption analysis. Another challenge was handling the massive amount of data collected from all the equipment. For this, Advantech and its partner NewPwr developed a data visualization solution that optimizes data management and analysis.

Dedicated software for aerospace metal fabrication

Data acquisition through the Internet of Machines enables various smart applications to be implemented. For this project, to cater to the demands of metal fabrication at the aerospace manufacturing site, Advantech collaborated with Siger Data, a seasoned domain-focused system integrator and partner, to develop the iFactory/MetalWorks solution. Smart applications were created to assist with managing work orders, abnormalities, equipment utilization, environmental safety, and employee KPIs. This satisfied the center's various smart management

Solution

iFactory/MetalWorks Smart Manufacturing Suite IFS-52C-AG01

I.App:

iFactory@MetalWorks **WISE-PaaS/SCADA**



ADAM-4571
1-port RS-232/422/485
Serial Device Server



EKI-2525
5-port Unmanaged Industrial
Ethernet Switch



ECU-1051
Cloud enabled Intelligent
Communication Gateway for
IIOT application



WISE-S100
Intelligent Stack Light
Monitoring Sensor

demands, from design and CNC machining to surface treatment and metal casting inspections.

By leveraging edge computing, the MetalWorks Cutter Smart Management Module can be used for real-time monitoring and analysis during CNC machining. This provides management with a clear overview of cutter conditions in real time, which subsequently reduces labor costs and increases cutter management efficiency.

Although iFactory/MetalWorks is web-based software, the server at the aerospace research

center was located on site. Therefore, cloud-to-edge technology was adopted to transmit cloud capabilities to the edge, allowing cloud applications to be easily conducted on the on-site server. Moreover, this project's use of a microservice framework ensures that applications can be dynamically added in the future to satisfy diverse smart application needs. Overall, the MetalWorks solution has enabled the research center to visualize equipment data in real time for comprehensive monitoring and production optimization. ■

Benefit



Can be connected to more than 200 devices



Supports the complex management of metal fabrication processes



Integrated with cloud-based services and edge applications

Yamaha Motor Solutions and Advantech Help Enterprises Achieve Information Asset Integration

In an effort to integrate their software and hardware advantages, Yamaha Motor Solutions and Advantech have collaborated on the PowerComm information integration and application management platform. This platform helps enterprises effectively utilize information assets, improve operational performance, and accelerate digital transformation.

Photos provided by Yamaha Motor Solutions

Because small and medium-sized enterprises (SMEs) often lack resources, they require comprehensive solutions that integrate software and hardware to accelerate digital transformation at minimal cost. This prompted Yamaha Motor Solutions and Advantech to collaborate on the development of PowerComm — a powerful information integration and application management platform designed to improve information asset management. Already utilized in various industries, this platform helps enterprises leverage information to accelerate their digital transformation and enhance their competitiveness.



Improving information applications with innovative solutions

The present knowledge-based economy enables enterprises to improve their competitiveness by building unified management platforms that exploit information assets with considerable accuracy. This produces twice the internal communication and external publicity results with half the effort. Nevertheless, various issues related to enterprise information management persist, including disorganized information, non-systematic archive systems, and information correlation difficulties. These problems lead to misleading information in internal communications that can result in ineffective external publicity.

Inefficient information management can lead to a decrease in operational efficiency. Many enterprises are in urgent need of an intelligent solution for properly utilizing their information assets. PowerComm can be used to present vital enterprise information, such as advertisements, brand image publicity, and product line information, in a timely and efficient manner. PowerComm, when combined with big data

analysis, produces high-value information that can provide a basis for augmenting operations.

Wei-Zhi Zhuang, Director of the R&D Center at Yamaha Motor Solutions, explained that the potential application scenarios for PowerComm are numerous and diverse. Indeed, they include signage, multimedia playback, and interactive communication in building lobbies, corporate conference rooms, retail stores, classrooms, and laboratories; and on production lines. PowerComm provides a simple and highly effective tool for promoting digital transformation in various vertical industries.

“PowerComm has provided a simple but highly effective approach for promoting digital transformation in various vertical industries,” said Wei-Zhi Zhuang, Director of the R&D Center at Yamaha Motor Solutions

Advantech provides integrated software and hardware solution

Advantech leverages its expertise in industrial computing R&D and manufacturing to tailor PowerComm for various sectors. Accordingly, Advantech also offers at least three multimedia host, player, and touchscreen options, as well as industrial-grade displays (ranging from 32 to 86 inches in size) for building digital signage solutions that can support diverse deployments of PowerComm in various sectors.

Advantech’s software team also collaborated with Yamaha to develop software. According to

Lin Yin, Project Manager at Advantech, Yamaha wanted staff at all levels to be able to monitor content from multiple locations using the PowerComm platform. This led to the co-development of a real-time monitoring function, which facilitated unified management and control from a centralized location.

“We have been looking for digital signage partners to introduce Advantech’s mature corporate strategic management model to more sectors,” said Zhen Kang, Senior Sales Manager at Advantech. He asserted that through collaboration with Yamaha, the PowerComm platform will be deployed in a greater number of sectors, creating more intelligent application benefits for various industries.

For example, factories can use PowerComm to improve their production line management by displaying feedback on digital signage. Managers can use the platform to upload information, such as production capacity and materials data, directly to digital signage to realize unified management. PowerComm also helps companies with product launches by facilitating remote management of digital signage across locations in order to maximize publicity. Enterprises with multiple branches can also implement smart applications that allow information to be broadcast and presented at different locations simultaneously. Alternatively, the PowerComm platform can be used for real-time interaction, such as for employee training.

PowerComm has been widely deployed in many vertical sectors. Looking forward, Yamaha and Advantech will collaborate on more PowerComm features and applications. This will help more companies begin their digital transformation. ■

Advantech's Energy Management Solution Helps Vishay Reduce Costs and Optimize Efficiency

Tianjin Hongkai Technologies has joined forces with Advantech, to create a one-stop energy management solution for Vishay Intertechnology that transforms its various systems into a smart centralized system.

Photos provided by Tianjin Hongkai Technologies

Energy consumption remains a major manufacturing cost. Growing awareness of sustainable manufacturing and the recent tightening of environmental regulations has emphasized the importance of knowing how to improve energy efficiency. Congruously, collecting and analyzing energy data is the first step towards future improvement.

Vishay General Semiconductor's electronic component production site in Tianjin, China, runs multiple operations. They wanted to improve their access to both historical and real-time energy data in an effort to draw insights and engender efficient energy management strategies.

Leveraging hardware, software, and industry experience to ensure project success

Since its founding in 1962, Vishay General Semiconductor has grown to become one of the world's most trusted manufacturers of discrete semiconductors and passive electronic components — offering diverse products and one-stop shop services. It presently has 69 manufacturing sites in 17 countries. Vishay General Semiconductor (China) was established



in Tianjin Economic-Technological Development Area in 1995 with the aim of finding an alternative to traditional discrete manufacturing. In 2018, while bidding on a Vishay smart manufacturing contract, Tianjin Hongkai Technologies collaborated with Advantech in the creation of a one-stop energy management solution.

Vishay's production site upgrade began with the integration of between six and seven independent systems related to energy consumption. This consolidated their fragmented systems into a single smart centralized system — improving the energy and production efficiency of the entire site. The solution monitors the environment, power supply systems, air conditioning, air compressors, sewage systems, fire alarms, and video surveillance systems. It also establishes

a cloud computing network and a centralized situation room.

Tianjin Hongkai Technologies has been Advantech's partner many years. During the bidding process, they competed with renowned global brands, such as Siemens and Honeywell. Advantech was awarded this project because of their WISE-PaaS cloud platform, customized solutions, and reasonable prices. The solution included Advantech's smart edge meters, UNO-2000 series modular box platforms, ECU1251 edge intelligent gateways, and pre-installed software solutions (WebAccess and WISE-EdgeLink).

Mr. Liu posits that being able to exploit Advantech's reliable edge-to-cloud solutions and Tianjin Hongkai Technologies' software and technological strengths in congress with both companies' years of relevant experience, contributed significantly to this project's successful implementation.

Benefits of an energy management solution

This energy management solution provided several benefits, the most obvious of which are the substantial increases in equipment efficiency and resource allocation. Likewise, improvements in maintenance and general operations combined with diminished equipment failure rates, which reduced overall costs.

The cloud platform delivers overall energy consumption benefits for each business unit and meets their energy efficiency KPIs. It also enables the setting, and real-time adjustment of, individual business unit's energy apportionment ratios. In addition, statistics from ERP and MES systems can be used to analyze energy consumption per production unit. The solution also helps identify unnecessary energy consumption and visualizes results using charts and graphs.

Furthermore, real-time data acquisition reflects the status and utilization rate of equipment, and this is key in determining equipment efficiency and executing predictive maintenance.

The project was selected by the Tianjin Municipal Government as a model case of smart manufacturing. It was also recommended to the National Industrial and Information Technology Bureau by the Tianjin Binhai New Area Industrial and Information Technology Bureau. In the future, Advantech hopes to provide more smart manufacturing solutions based on the WISE-PaaS platform as well as digital twin and AI technologies. Tianjin Hongkai Technologies will keep cooperating with Advantech to complete several more benchmark projects, using IIoT, cloud computing, and big data across the fields of design, production, manufacturing, and management. ■

Benefit



Two improvements: a substantial increase in equipment efficiency and resource allocation



Three cost reductions: maintenance and operating cost reduction; and equipment failure rate reduction.

Advantech and Tien Kang Develop Smart Digitized Shoe Manufacturing Solution

In consideration of the high-mix, low-volume production model typical of the shoe manufacturing industry, Advantech cooperated with a major shoe manufacturing machine maker, Tien Kang, to build a smart machine management solution that integrates intelligent software and hardware technologies.

Photos provided by Tien Kang Co., Ltd.

Three major trends have emerged in the machinery industry in recent years — the standardization of power generation and carbon reduction, the servitization of products and solutions, and smart manufacturing equipment. In response to these trends, the shoe-making machinery industry must accelerate its smart transformation to enhance its competitiveness. Accordingly, Advantech collaborated with Tien Kang to develop iFactory solutions that leverage Advantech's expertise in smart manufacturing, machine networking, and AI edge computing for smart machine management.

Advantech strengthens Tien Kang's digital transformation process

Established in 1982, Tien Kang Co., Ltd. is focused on the R&D and production of high-tech shoe manufacturing machines. In recent years, as the global market becomes increasingly competitive, utilizing intelligent tools to boost performance and optimize after-sales service and warranty/maintenance support has become a crucial business strategy for Tien Kang. In



regards to their digital transformation, finding the right partner who is capable of accelerating their smart development efforts was critical. Advantech's extensive experience with platform integration and app services in the field of smart machinery made them ideal partners for assisting Tien Kang with achieving the company's goals.

According to Gong Song-Nien, General Manager at Tien Kang, the first step in realizing smart machinery is to acquire accurate data. Although Tien Kang did previously collect data of the production parameters, productivity, and

other relevant information, their data acquisition methods were costly, difficult to implement, and lacked effective standardization. However, following a comprehensive production line overhaul, Advantech has been able to assist Tien Kang with establishing a standardized O&M management solution that allowed them to take their first steps towards building smart machinery.

“Advantech's iFactory machine management solutions help Tien Kang take the first step into realizing smart machinery.”

— Gong Song-Nien, General Manager at Tien Kang

Advantech's iFactory smart machine management solutions feature machine data collection and analysis functions, dashboard interfaces, and accompanying apps (I.Apps), all of which provided Tien Kang immediate benefits. These benefits included accelerated machine assembly, integrated data collection, systematic data visualization, and remote management of production lines at different locations. Another value-added benefit was enabling real-time notifications of abnormal events. Event alerts were sent in real time to the network edge via the cloud in order to promptly inform relevant engineering supervisors or personnel. An iMobile service app for repair management can then be used to schedule servicing and generate a progress report. This helps to reduce system downtime and significantly increase equipment

utilization by minimizing unscheduled interruptions.

Significant benefits enhancing corporate competitiveness

In terms of hardware, Tien Kang adopted Advantech's iFactory real-time monitoring (RTM) gateway for collecting machine data to facilitate operations monitoring. The provision of an anomaly call-out function enables managers to troubleshoot problems in real time. Deputy manager of Tien Kang regional sales division, Hwang Bo-Ru, reported that the RTM function has also solved a long-existing data integration problem caused by machines using different communication protocols and data formats. Now, with the standardization of equipment and sensor data, factory managers can monitor every machine from the OEE app dashboard.

In terms of software, the iFactory smart machine management solutions adopted by Tien Kang can be integrated with Advantech's WISE-PaaS cloud platform and combined with value-added industrial apps, including the Overall Equipment Effectiveness (OEE), Repair Management Service, and Event, Alarm, and Notification (EAN) applications. All of these tools have enabled Tien Kang to digitally upgrade its machine making facilities and provide more just-in-time after-sales services.

Currently, Advantech and Tien Kang have completed the first stage in the implementation of iFactory smart machine management solutions. Both parties will continue to collaborate in work to expand the smart functionalities of the machines. Collecting data from intelligent shoe-manufacturing solutions facilitates the implementation of lean production and optimizes the realization of digital transformation. ■



Advantech Assists Stone Factory in Digital Transformation with iFactory OEE and Data-Driven Vibration Monitoring Solution

Advantech has utilized its iFactory Solution Ready Package (SRP) to assist a Taiwanese stone factory to visualize production data, monitor equipment, prevent potential malfunctions, and perform predictive maintenance, supporting the factory with its transition into becoming a smart factory so that it can improve its production and market competitiveness.

Photos provided by Shutterstock

Taiwan's stone industry once thrived for decades, with most stone factories based densely in Hualien County, an area colloquially referred to as the "Kingdom of Marble." However, in recent years, the stone industry has declined markedly due to serious global competition. With the rise of stone industries in China and India, predatory pricing has pushed many companies out of the market. Under the guidance of the Stone and Resource Industry R&D Center, a stone factory based in eastern Hualien sought Advantech's assistance for digital transformation, utilizing the

iFactory SRP to visualize its production data, achieve real-time equipment monitoring, and implement predictive maintenance to improve production efficiency and reduce unplanned downtime. This digital transformation has enabled the stone factory to successfully break through into new highly competitive markets.

Confronting the challenges with a one-stop solution

For stone factories, the most important equipment in production and processing are stone

cutting and polishing machines. The process of producing high-quality stone products is complex, and as such the machines they use contain multiple intricate parts. Malfunctions, damage, and the need to replace parts can result in significant downtime, which can cause considerable loss for the factory. This was always a challenge for the factory, since they have lacked sufficient technical knowledge for full maintenance and they had not properly maintained their equipment, which had been imported from Italy. Prior to seeking out Advantech to assist with their digital transformation, the factory had been passive in dealing with downtimes, primarily because repairs are difficult and parts are not readily available. This was complicated by the possibility of parts taking months to arrive if back-ordered from Italy. To prevent equipment downtime and reduced overall production efficiency, the factory decided to go forward with digital transformation and adopt a proactive approach to equipment monitoring and predictive maintenance.

After consulting with the Stone and Resource Industry R&D Center and knowing Advantech's reputation for quality and reliability of products and services, the factory sought Advantech for assistance in its digital transformation. Advantech provided a one-stop solution for equipment data acquisition and efficiency analysis from the edge to the cloud with its Overall Equipment Effectiveness (OEE) solution. This is one of Advantech's most vital iFactory SRPs for realizing smart factories through data acquisition, aggregation, and analysis of machine availability, helping companies improve productivity, reduce losses, and maximize profit.

One step closer to realizing a smart factory

Advantech's iFactory SRP combines

hardware and software into an integrated industrial application that enables factories to take a stepwise approach to realizing their goal of becoming a smart factory. In this case, the factory had installed 40 third-party vibration sensors to collect motor vibration data from its machines. Based on the frequency of vibrations, the sensors can be used to detect the internal conditions of equipment motors. The data from these sensors can then be transferred via a Bluetooth low energy (BLE) gateway and Wi-Fi access point to the MeEdge edge computer to perform OEE analysis.

The analysis output can then be visualized on a dashboard for immediate insights into machine availability, productivity, and quality management. This helps with achieving predictive maintenance, monitoring machine conditions, and performing motor vibration diagnostics. Ultimately, the visualization of motor vibration diagnostics has enabled the factory to perform real-time monitoring and take precautionary measures to prevent machine malfunctions and unplanned downtime.

With the help of Advantech's one-stop solution, the stone factory has significantly improved its production efficiency while reducing operational costs and increasing market competitiveness.

Looking forward, the factory is excited to move further with its digital transformation by accumulating more data and using it in more applications, made possible by Advantech's solutions being extremely flexible in configuration, expandability, and functionality. With Advantech's impeccable support and fast deployment, the dream of transforming into a smart factory could very soon become a reality for companies operating in virtually any industry. ■

Advantech and Signal Transmission Join Forces to Deliver an OEE SRP Solution for Promoting Industry 4.0

Advantech and Signal Transmission have joined forces to propose an Advantech's iFactory Service Ready Package (SRP) Overall Equipment Effectiveness (OEE) solution for a government-owned industrial research and technology organization in Malaysia. The solution has helped them with monitoring and collecting data in real time while offering an immersive Industry 4.0 experience for businesses seeking consultancy on smart manufacturing solutions.

Photos provided by Shutterstock
Interview with Beng Kee Tan, Managing Director of Signal Transmission

During 2020, manufacturers all over the world struggled to survive severe disruptions brought about by the COVID pandemic. Many industry experts and research reports have suggested that Industry 4.0 can provide manufacturers with not only right digitalization tools, but also business insight analysis to help them fight and overcome the post-COVID recovery and subsequent crises caused by new spikes in the pandemic. However, an August 2020 survey by the SME Association of Malaysia revealed that only 26% of local SMEs prefer digital transformation as their strategy for surviving the pandemic.

According to Mr. Beng Kee Tan, Managing Director of Signal Transmission, despite Malaysians using high-tech products on a daily basis and embracing the latest mobile apps, their adoption of digital technologies is very low, because over 90% of businesses in Malaysia are SMEs. "They simply do not understand the myriads of technologies used in Industry 4.0 solutions and need a lot of education on the topic,"—said Mr. Tan. With lockdown restrictions and associated



uncertainties, Signal Transmission's customers are holding back on new projects due to a lack of confidence in future returns. However, imposed lockdowns are the perfect time to prepare proposals and promote awareness of Industry 4.0.

Realizing Industry 4.0 with iFactory SRPs

To help businesses in Malaysia understand the concept of Industry 4.0, a government-owned

industrial research and technology organization sought out suitable solutions from Advantech for two CNC machines. The organization has always been known for supporting the country's industrial ecosystem through research and development and new technology innovations. Therefore, regardless of the concerns and difficulties of application assessment and deployment during the lockdown, the project does was allowed to go ahead.

Advantech and Signal Transmission have joined forces and proposed an Advantech iFactory SRP OEE solution that combines an SRP-IFS250 on-premises OEE server, EKI-2528 unmanaged ethernet switches, machine monitoring solution, edge gateway solution, and some monitoring sensors for vibration and environment. To cover the entire installation site, three wireless telecommunication technologies were adopted: WiFi, LoRaWAN® and LPWAN.

“Having Advantech’s reputable brand behind every project is the best warranty for customers.” ,said Beng Kee Tan, Managing Director of Signal Transmission.

Mr. Tan commented, “The success of this project lay in Advantech’s proven full range of hardware and software solutions that work really well together.” After deploying the OEE solution, the organization was able to remotely monitor and collect data in real time, offering an immersive Industry 4.0 experience for businesses seeking consultancy on smart manufacturing

solutions. Due to the promising results, the organization is now planning to implement Advantech’s WISE-PaaS Cloud Platform so that management dashboards can be viewed from any browser-enabled device.

Dedication to continuous development helps local partners grow their market share

Although manufacturers in Malaysia are still at the stage of connecting islands of information for overall monitoring and data acquisition, Mr. Tan believes that going forward, advanced technologies such AI, big data, and visual recognition will gradually be adopted in Malaysia’s manufacturing sector. Also, Advantech is dedicated to the development of new solutions that utilize the latest technologies and they encourage knowledge sharing with all their partners, which will help Signal Transmission raise awareness of Industry 4.0 solutions for their customers.

Signal Transmission has partnered with Advantech since the company started using WebAccess SCADA in 2014. Today, they are a WISE-PaaS VIP. Since then, Advantech has offered one-stop-shop solutions and services that have served several projects across different sectors, such as in water treatment, manufacturing, bio gas, and many more. Mr. Tan pointed out that Advantech is a renowned brand in Malaysia. “Having Advantech’s reputable brand behind every project is the best warranty for customers. We can leverage Advantech’s advanced technology to provide custom solutions to our customers, in areas such as Industry 4.0, cloud services, remote monitoring, and conventional SCADA solutions.” Looking to the future, Signal Transmission and Advantech will grow steadily in the Malaysian market and expanding their market share together. ■

Eforel and Advantech Cooperate to Provide Real-Time Monitoring and OEE Analysis to a Global Zipper Brand

Indonesian system integrator Eforel has provided an OEE solution to a global Japanese zipper brand that helps them capture real-time data and respond to machine errors faster. This prevents damage that would otherwise result in production downtime.

Photos provided by Shutterstock
Interview with Hanggar Cahya Kusuma, CEO of Eforel

The manufacturing sector is critical to Indonesia's economy. In 2018, Indonesia's Ministry of Industry launched the "Making Indonesia 4.0" initiative — an integrated roadmap aimed at implementing several strategies for the sector to transition to Industry 4.0. That year, a McKinsey survey indicated that 90 percent of Indonesian business leaders felt that one of the main benefits of introducing smart manufacturing technologies would be improvements in performance. Despite this, only 13 percent of respondents indicated that their companies had begun their digital transformation.

Eforel CEO Mr. Hanggar Cahya Kusuma stated that the main roadblocks to their customers' Industry 4.0 journey are a lack of IoT knowledge and talent, as well as insufficient IT integration and cyber security. Most companies using programmable logic controllers (PLCs) in their workflow still collect production-related data manually, including information on equipment availability, production performance, and product quality. Eforel integrated the Advantech iFactory Smart Manufacturing Suite to help these companies start their digital transformation. This suite

incorporates a WISE-PaaS private server with various integrated applications including OEE and energy management solutions.

Solving production efficiency and real-time monitoring issues with an OEE solution

Established in 1994, Eforel is a domain-focused system integrator (DFSI) partnered with Advantech. They specialize water management, transportation, energy, mining, and automated production applications. A large Japanese zipper brand with many factories around the world tasked the DFSI with implementing a new OEE solution in two of its factories in Indonesia.



The company had already implemented a system for production efficiency and equipment effectiveness analysis, but the resulting solution did not meet their performance expectations. Furthermore, they wanted to be able to link the OEE solution to five different types of PLCs and existing software solutions such as ERP, production management, and energy management. Therefore, Eforel proposed Advantech's OEE solution, which provides automatic data acquisition, real-time monitoring, and cross-system integration features.

In the trial phase of the project, PLC units from 100 machines were connected to Advantech's ESRP-SCA-UNO2484 Edge SRP/Visualizer, which has built-in WebAccess/SCADA software for data collection. Most projects require only one or two ESRP-SCA-UNO2484 units to connect to all machines, which makes it a very cost-effective solution. Moreover, the powerful WebAccess/SCADA system supports 200 drivers, 450 controllers, and various standard protocols — including Modbus, OPC UA, OPC DA, Ethernet/IP, DNP3, SNMP, and BACnet — making data collection effortless.

Data collected by ESRP-SCA-UNO2484 are passed to the IFS-EGM-M77 Solution Ready Platform (SRP), which was linked to the customer's existing software solutions. Also, Advantech's WISE-PaaS platform provides online dashboards with an intuitive visual interface, making data visualization easy to understand at a glance and enabling management to log into their dashboards from any browser-enabled device for remote monitoring of production lines.

Transforming from a hardware provider to a total solution provider

After implementing Advantech's OEE solution,

management at the zipper factory were able to work out when, why, and how many times production lines stopped. They were also able to improve the visibility of day-to-day operations through real-time monitoring of their machines. According to the customer's feedback, the latter feature in particular allowed them to take immediate action as soon as errors occurred because all OEE-related data was automatically collected by the system, thus preventing human error and data omissions. This decreased damage that would otherwise result in production downtime. Proof-of-concept design issues were resolved before project implementation, meaning that the customer was able to deploy the same system in their second factory after the trial phase had been completed in the first factory. Mr. Hanggar Cahya Kusuma commented, "We have been working with Advantech for over twenty years and have now been a DFSI partner since 2018. Advantech has made an excellent move by transforming from a hardware provider to a total solution provider, enabling us to focus on selling their total solutions, such as the OEE solution used in this project."

Advantech's comprehensive range of technology has allowed Eforel to capitalize on opportunities to help other companies' transition to Industry 4.0. In order to promote Advantech's total solutions, Eforel has been cooperating with local system integrators while holding seminars and workshops every year. Despite knowledge limitations related to the latest Industry 4.0 technologies, such as AI and visual recognition, Eforel has now created a new team focusing entirely on the development and promotion of AI-based solutions. They hope to raise awareness of the latest trends in Indonesia and contribute to the "Making Indonesia 4.0" initiative. ■



Everest Textile Utilizes Advantech's WISE-PaaS Cloud Platform to Implement Intelligent Textile Production

Leveraging Advantech's WISE-PaaS cloud platform, Everest Textile successfully implemented data visualization management and significantly improved the quality of its waterproof membranes, while realizing its goal of intelligent textile production.

Photos provided by Everest Textile

Interview with Richard Tseng, Chief Digital Officer of the Digital Service Center at Everest Textile; Frank Lin, Assistant Vice President of the Technology Research Center at Everest Textile

Because the fashion industry is driven by fast-changing trends and consumer demands, low-volume, high-variety production is essential for clothing manufacturers. To support this demand, the textile industry has begun to shift towards smart manufacturing.

In keeping with its digital transformation strategy, Everest Textile, a leading global textile manufacturer, is committed to promoting Industry 4.0 and implementing smart manufacturing processes. Accordingly, the company collaborated with Advantech to build a smart digital production line and optimize its production

processes in order to improve product quality, yield rates, and factory management.

Advantech is a crucial Industry 4.0 partner for Everest Textile

Established more than 30 years ago, Everest Textile now reports annual revenues in excess of 10 billion TWD. In addition to actively investing in the R&D of textile technology, the company is renowned for producing innovative high-value products. Moreover, since announcing its Industry 4.0 strategy in 2014, Everest Textile has continued to implement related initiatives aimed

at maintaining its competitive advantage.

According to Mr. Tseng, Chief Digital Officer of the Digital Service Center at Everest Textile, “Innovation and sustainability have always been the company’s key development goals.” He further asserted that the key to realizing innovation and sustainability is smart manufacturing, and the digitalization of production processes is crucial for promoting smart manufacturing. He also commented that with Advantech’s assistance, Everest Textile has been making significant progress. Referring to Everest Textile’s implementation of Advantech’s WISE-PaaS cloud platform in 2019, Mr. Tseng stated that in the past, data from setting and dyeing machines was disorganized and scattered across various factory systems. To consolidate this information, all data had to be transcribed and input manually, which was not only time-consuming but also prone to error and data losses. These issues tended to result in time wasting at workstations and suboptimal production schedules.

After adopting Advantech’s highly-flexible WISE-PaaS services on WISE-STACK 300 rack-level private cloud, Everest Textile was able to create an application framework service capable of collecting data from over 100 machines in order to realize a fully digital smart textile manufacturing production line. This not only optimized operations and improved process transparency, but also made knowledge transfers easier and more systematic for employees.

Two-pronged approach to visualization and membrane optimization

With Advantech’s assistance, Everest Textile has realized two major achievements — production management visualization and membrane quality optimization. In regards to the

production of the high-performance waterproof membranes, Frank Lin, Assistant Vice President of the Technology Research Center at Everest Textile, explained that Everest Textile has developed predictive quality analytics and warning systems by collecting and analyzing relevant data parameters in membrane production. This has allowed them to visualize the entire process and significantly improve membrane production. Moreover, their digitalization efforts are expected to increase membrane sales by 50% in the next three years.

In addition, Everest Textile has also installed cameras to capture images of release paper during the gluing process. An automated optical inspection system combined with intelligent image analysis technology is then used to determine the quality of the release paper in real time, with all resulting data transmitted to the WISE-PaaS platform. ■

Benefit

This provides production line operators a clear overview of the product status and quality, helping to minimize error and defect rates, which minimizes overall wastage. With the automated optical inspection system offering 99% detection accuracy, the quantity of defective membrane products is expected to decline by at least 10%.

Mr. Tseng commented that “Everest Textile collaborated with Advantech because of its outstanding software and hardware capabilities and customer service. With Advantech’s assistance, Everest Textile has significantly enhanced its smart manufacturing capabilities, improving production yield rates by up to 90% and OEE to 88%. This gives Everest Textile the confidence to continue its smart development and push toward increased growth and transformation.”

Advantech Builds IIoT Cloud Platform to Integrate Cloud-Edge-End Technology to Accelerate the Development of IIoT Applications and Microservices

In response to rising business opportunities in the field of industrial IoT (IIoT), Advantech has built an IIoT cloud platform to help collaboration with domain-focused system integrators, independent software vendors, and other ecosystem partners develop various industrial applications and accelerate global manufacturing transformation toward Industry 4.0.

Photo by Advantech
Interview with Ning Kang, WISE-PaaS Product Director of Advantech; Willie Lin, iFactory Solution Associate Manager of Advantech

With the emergence of smart applications in the post-pandemic era, demand for digital transformation has skyrocketed in the manufacturing industry. Coupled with the expansion of new infrastructure investment in major countries such as the United States and China, business opportunities in IIoT have been driven to new heights.

To accommodate this trend, Advantech is actively deploying IIoT systems, integrating the five core components of its WISE-PaaS platform to form a complete industrial cloud architecture. This can aid ecosystem partners, such as domain-focused system integrators and independent software vendors, with accelerating the development of their own industrial applications and microservices.

The five core components of an industrial cloud architecture

According to Ning Kang, WISE-PaaS Product

Director at Advantech:

The WISE-PaaS IIoT platform offers a diverse range of core advantages. First is the decoupling of software and hardware. In traditional automated equipment, the software is always customized to fit certain hardware. Now, software and hardware are completely decoupled.

Second is empowerment. The WISE-PaaS platform provides a low-code development architecture that allows for the easy deployment of AIoT solutions for use across different industries. This framework includes five core components: WISE-IoTSuite, WISE-DataInsight, WISE-DigitalV, WISE-InsightAPM, and WISE-AIFS. These components facilitate industrial IoT intelligent perception, big data analysis, industrial data visualization, digital twinning, and AI industrialization.

The third advantage is edge-to-cloud seamlessness. Advantech provides complete



edge-to-cloud solutions, including those for edge data acquisition, de-duplication, cleaning, filtering, statistics, and analysis. Combined with the low-code development framework of the WISE-PaaS platform, users can seamlessly construct various industrial application solutions in one go.

The fourth advantage is the open ecosystem. Advantech emphasizes working with partners to accelerate the expansion of AIoT business opportunities. As such, the company is committed to ongoing collaboration with partners to build an ecosystem around WISE-PaaS.

WISE-IoTSuite provides a cross-cloud, cross-domain unified management system, allowing industrial apps to be deployed efficiently within public clouds, private clouds like WISE-STACK, WISE-STACK Edge Intelligent all-in-one computers, and other environments without changing a single line of code. This helps in realizing the goal of one-time development and various deployments at multiple ends in one unified operation.

WISE-DataInsight provides a one-stop service that satisfies data storage, development, management, and analysis needs. It also supports

multiple databases and helps realize diverse data integration and application.

WISE-DigitalV provides visualization services for clearly presenting large volumes of heterogeneous data in a 2D or 3D dashboard.

WISE-InsightAPM is a digital twin low-code platform that supports one-stop integrated services such as equipment monitoring, production management, predictive diagnosis, equipment alarm notifications, and operation and maintenance management to assist in asset performance management and optimization.

Additionally, WISE-AIFS is an AI industrialization platform that helps to reduce the threshold of AI modeling in various application fields while improving the efficiency of AI program implementation.

Leveraging various packages to activate smart development

“Based on WISE-PaaS, Advantech can create various solution suites for different smart factory application scenarios, making tools in the industrial cloud architecture more versatile and localized,” said Willie Lin, iFactory Solution Associate Manager at Advantech.

Industrial manufacturing processes are generally divided into process manufacturing and discrete manufacturing, and Advantech actively seeks out similarities between the two and utilizes IoT Suite tools to package them so that they can be quickly adopted by users.

First, the Smart Manufacturing Startup Suite is a quick-starter package that focuses on environmental, and equipment monitoring with smartphone notifications and a dashboard command center, allowing users to quickly adopt and understand smart manufacturing. It is ideal for both large enterprises and small- and medium-sized businesses.

The second package is the Productivity Optimization Suite. As many factories urgently need to monitor the operating status of equipment to ensure smooth production, this package focuses on solving various people-related issues and supports operation controls, such as worker dispatching, shop floor management, “andon” calling systems, repairs, and maintenance.

Third is the Energy Sustainability Management Suite, which provides factories with assistance in adopting ESG management to establish sustainable value.

The fourth package is the Machinery Health Management Suite. To avoid unplanned equipment downtime, improve equipment operation and maintenance capabilities, and ensure high-quality aftersales service, this package leverages digital technology and equipment networking technology to provide prompt information on repairs and maintenance, KPI and health prediction, and other functions. It monitors the health status of equipment in real time, connecting equipment vendors, customers, and equipment to reduce maintenance costs while improving equipment safety and availability.

This gives equipment manufacturers greater confidence to globally control the operation, maintenance, and sale of their equipment.

Looking forward, Advantech will continue to utilize WISE-PaaS platform as its core IIoT platform to collaborate with partners from the IIoT ecosystem to co-create data-driven smart industrial apps for various industries and easily upgrading their systems in the shift toward smarter manufacturing. ■

WISE-PaaS Application Cases

Regardless of the industrial cloud platform or smart manufacturing application package used, there are many real-world application cases for WISE-PaaS. For example, a renowned shoe manufacturer in Taiwan utilized the Smart Manufacturing Startup Suite to manage vital chemical processes—specifically, the formula management for its shoe sole production. This package not only provided equipment monitoring capability; it also monitors consistency in work quality between day and night shifts. Another example is a major SMT equipment manufacturer implemented Advantech's SKY-6400 server and deployed IoT Suite and AIFS to meet their needs for PCB soldering defect detection. It improved their AOI detection efficiency, optimized inspection quality and stability, and reduced the detection error rate, demonstrating outstanding results and benefits.

HITI Partners with Advantech to Accelerate IoT Deployment in Factories

With Advantech's assistance, HITI has transformed from an industrial control agent into a systems integrator. Through close collaboration, Advantech and HITI have helped numerous factories implement smart manufacturing and realize Industry 4.0.

Photos provided by HITI Industrial Automation
Interview with Hsu Kuo Yu, General Manager of HITI, and Lu Wei Ren, Vice President of HITI

In recent years, many manufacturers have implemented smart production management in response to growing labor shortages resulting from increasingly aged populations and other factors. Market competitiveness and productivity are also expected to increase due to transparency requirements, enhanced production controls, and increased automation in manufacturing. Other key factors influencing industry include the need to collect production data in real time and the ability to optimize production planning and scheduling. To cater to industry trends, HITI Industrial Automation has collaborated with Advantech to provide all-in-one solutions that assist enterprises in the chemical, shoe, and fastener supply industries with implementing smart manufacturing.

Joining Advantech's WebAccess+ IoT solution alliance

Established in 2001, HITI started out as a supply agent for industrial control equipment, later transforming into a systems integrator. With 21 years of experience in automated controls and systems integration, HITI has gained considerable domain knowledge and technical expertise across many industries.

Hsu Kuo Yu, General Manager at HITI, pointed out that from bottom to top, a smart factory includes operational technology (OT), communication technology (CT), information technology (IT), and data technology (DT). To ensure a solid foundation for implementing smart manufacturing, companies first need to establish a comprehensive OT system. This

provides the stability that allows digitalization, visualization, cloud migration, and smart development to be implemented. Leveraging its extensive industry experience, HITI offers OT- and CT-based industrial control automation solutions that facilitate the realization of smart manufacturing.

In 2016, HITI joined Advantech's





“HITI and Advantech complement each other and represent the perfect partnership for OT and IT integration.” – Hsu Kuo Yu, General Manager at HITI

WebAccess+ IoT Solution Alliance and moved closer toward OT and IT integration. According to Mr. Hsu, after gaining an in-depth understanding of the benefits of Advantech’s iFactory solution-ready package (SRP), HITI collaborated with Advantech to assist manufacturers transitioning toward Industry 4.0.

Manufacturing industry accelerates towards industry 4.0

Lu Wei Ren, Vice President at HITI, explained that HITI has integrated Advantech’s intelligent energy management system (EMS) to assist one of the biggest plastic manufacturers in Southern Taiwan with building a smart command center in order to realize real-time electricity monitoring and management.

For the past two years, HITI and Advantech have also achieved great results with IoT deployment in the fastener and shoe manufacturing industries. In the shoe industry, HITI have completed several machine networking projects for various companies, including the Feng Tay Group. This enabled them to develop automated reporting mechanisms and realize smart applications, such as production and energy consumption data collection and analysis. In the shoe-making machinery industry, HITI has helped companies like Hung Chi Technology with implementing machine and equipment networking in order to transform from a traditional

machinery manufacturer into a smart machinery supplier. In the fastener industry, HITI has assisted more than 13 fastener manufacturers in Southern Taiwan with machine networking, resolving transparency issues and optimizing production management to promote smart manufacturing in this sector.

Mr. Hsu stated that HITI is combining its 21 years of practical OT experience with Advantech’s strengths in industrial hardware and software solutions, IoT application development, and IoT cloud platforms. The two companies complement each other very well and represent the ideal partnership for integrating OT and IT.

Over the past five years, HITI in collaboration with Advantech has cultivated talented teams with IT and DT capabilities. By developing technology for OT and IT integration, HITI were able to successfully shift from an industrial solutions agent into a competitive systems integrator in the field of smart manufacturing.

Mr. Hsu believes that over the next five years, as well as working toward becoming a leading expert in smart manufacturing, HITI will continue to cooperate with Advantech in an effort to replicate their success across Southeast Asia. Additionally, HITI is looking forward to launching its industrial apps (I.App) on Advantech’s WISE-Marketplace in order to give more factories the tools to accelerate the implementation of IoT applications and Industry 4.0. ■

Collaboration Between Multitrade and Advantech Yields Industry-Oriented Solutions

Leveraging Multitrade and Advantech's industry expertise and technical strengths, Multitrade has increased customer acceptance and deployment of smart manufacturing solutions, while expanding its market share in Malaysia.

Photos provided by Multitrade
Interview with Desmond Tai, Managing Director of Multitrade

According to Industry4WRD: National Policy on Industry 4.0, published in 2018 by Malaysia's Ministry of International Trade & Industry, the country's manufacturing industry accounts for approximately 22% of gross domestic product (GDP). The Industry4WRD policy aims to transform Malaysia's manufacturing sector by encouraging stakeholders to shift toward Industry 4.0 and adopt smart manufacturing technologies. This is expected to boost manufacturing productivity and increase manufacturing revenue to RM392 billion by 2025.

According to Desmond Tai, Managing Director at Multitrade, the automation and control systems market in Malaysia has long exhibited stable growth. However, when Multitrade first started promoting Industry 4.0 solutions in 2018, the concept was very new to the manufacturing sector. After Industry4WRD initiatives were implemented in 2019, business owners began to warm to Industry 4.0, but most were still in the research and trial stage. As such, understanding of the benefits and advantages of Industry 4.0 remains relatively low. Nonetheless, this emerging market presents many great business opportunities for the future.



Gaining customer acceptance with one-stop services and domain expertise

Established in 2011, Multitrade is a turnkey systems integrator that focuses on robotics, automation, and IoT solutions. They have served numerous companies in various industries across Malaysia, including the food and beverage, iron and steelmaking, latex-dipped product manufacturing, and water treatment industries. With over 20 years of experience with systems integration, Multitrade provides comprehensive services that range from consultancy on production site planning and production design to system implementation and installation. Their services utilize automation solutions developed

by renowned brands, such as the IoT and cloud solutions developed by Siemens and Advantech.

Although Multitrade had been an Advantech channel partner for many years, it was not until 2018 that they officially became one of Advantech's domain-focused systems integrator (DFSI) partners. With technical support from Advantech, Multitrade started migrating their software solutions to Advantech's WISE-PaaS platform and have since developed many WISE-PaaS-based smart manufacturing solutions.

Mr. Tai commented, "We utilize the WISE-PaaS platform to develop solutions, which accelerates the development process and minimizes development and maintenance costs. WISE-PaaS provides integrated applications, such as OEE and energy management solutions, as well as easy-to-use, low-code development tools. Thus, we only need junior programmers to develop customized solutions for projects."

As a DFSI, Multitrade has completed several successful projects using WISE-PaaS-based solutions. The most common challenge they encounter is manufacturer resistance to adoption, which is generally due to a lack of IoT knowledge. However, because of Multitrade's expertise in industrial automation control and their relationship with local customers, they have successfully introduced solutions to businesses in various sectors and been awarded many projects.

Complementary advantages drive the implementation of Industry 4.0

Although the acceptance of smart manufacturing varies across manufacturing sectors, Multitrade and Advantech continue to encourage Malaysian manufacturers to commence with the trial phases, with a view to assisting them throughout their journey to Industry 4.0 adoption.

Consider their latex-dipped product manufacturing as an example, Multitrade and Advantech co-created an industry-specific solution for their factory production lines, which enabled analysis of production-related data that improved the visibility of day-to-day operations. Together, they successfully introduced an Industry 4.0 solution that can be adopted by other manufacturing businesses.

Mr. Tai pointed out that Multitrade's success in certain sectors is due to having extensive industry knowledge; however, for some sectors, the provision of targeted solutions is proving more challenging. As previously stated, Multitrade is currently focused on the food and beverage, iron and steelmaking, and latex-dipped product manufacturing sectors, where they are working to replicate their successes with introducing industry-specific solutions. Multitrade and Advantech's ongoing efforts to cultivate industry expertise in other sectors will undoubtedly give more manufacturers access to the production advantages of Industry 4.0.

In addition to providing advanced technical resources and prompt support, Advantech has shared promising sales leads with Multitrade. Since the establishment of their DFSI partnership, cooperation between the two companies continues to go from strength to strength. Not only have they developed strong communication and a mutual understanding of each other's needs, but they are now in a better position to determine action plans for expanding their market share in Malaysia.

Looking to the future, Multitrade hopes to win more large-scale government projects with the assistance of Advantech Malaysia. This cooperation has already proven to be a winning formula for all parties and manufacturers. ■

Advantech Connect, Rolling Continuously

Photos provided by Advantech

Advantech Connect 2021 Online Partner Conference was held in the first half of this year. With the theme of “Co-Creating the Future of the IoT World”, we examined how Advantech partners in the industrial IoT world cooperate to reshape the next industrial future. One of the key themes of Advantech Connect was “Industrial IoT Solutions”. The theme was the focus of a 3-day online event featuring 6 different topics, sharing insights ranging from transformative IIoT, Industrial AI, Smart Factory, Smart Machine, Energy & the Environment, and Transportation & Mobility. More than 50 experts were invited to the Industrial IoT track, and more than 20K guests registered.

In order to include more focus topics from the viewpoint of different regions worldwide, Advantech Connect in the second half of 2021 will collaborate with regional industrial experts to deliver insightful and inspiring speeches. These 60-90 minutes session topics will focus on new AI technologies, smart factory energy saving solutions, productivity optimization, and machine health management. Advantech Connect 2021 Online part II will continue to explore the digital transformation of industry and promote the co-creation of a sustainable ecosystem for driving the realization of smart factory services. Stay tuned. ■



Advantech Connect
Online Partner Conference
Driving Digital Transformation with Industrial IoT

Enabling an Intelligent and Sustainable Planet



ADVANTECH

Enabling an Intelligent Planet

Advantech's hardware, software, I.Apps, and integration solutions consist of various products designed for specific applications, such as in energy (solar energy, wind energy, smart grids, electric vehicle charging stations, building energy-saving, and energy-saving monitors), flood and disaster prevention, sewage treatment, remote education, public safety (smart street lighting, transportation safety), public health, telemedicine, smart medicine, cold chain management (food safety), smart agriculture, information security, and cloud computing. In 2020, our worldwide revenue for the sale of products used for sustainable purposes accounted for 15.79% of our total revenue.

In the future, we aim to incorporate sustainability concepts into our strategy blueprint for developing new products in different industries. We will continue to develop smart solution plans to make the world cleaner, safer, healthier, and more convenient, enabling an intelligent and sustainable planet.

