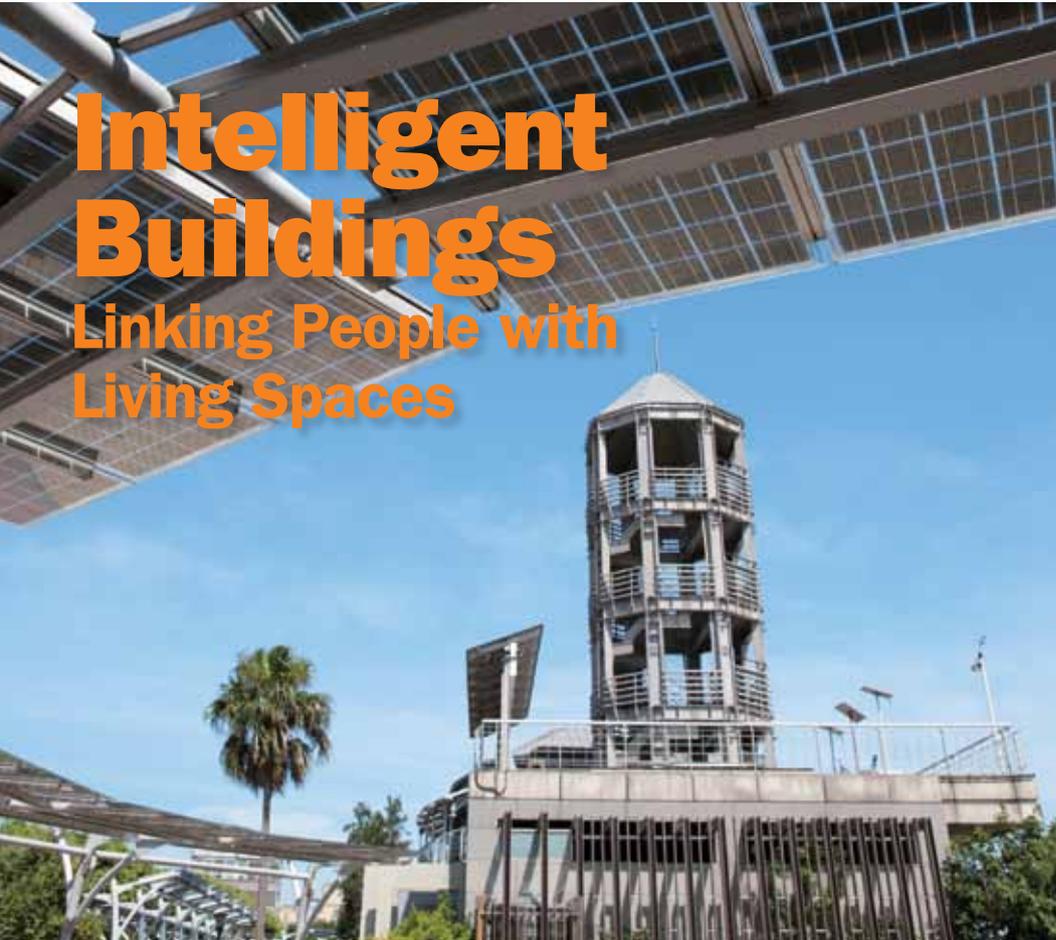


# MyAdvantech

The Magazine for Global Advantechers and Partners

Spring 2013 No.12

## Intelligent Buildings Linking People with Living Spaces



	ENTERS	OPEN AT REM
3	Closed	9:00pm
8	Closed	5:30pm
7	99-112	Open
6	Closed	9:20pm
10	Closed	
4-5	127-132	Open
5	43-70	Open
1	57	Open

A new benchmark for intelligent green buildings

Creating a new energy-saving application for public buildings

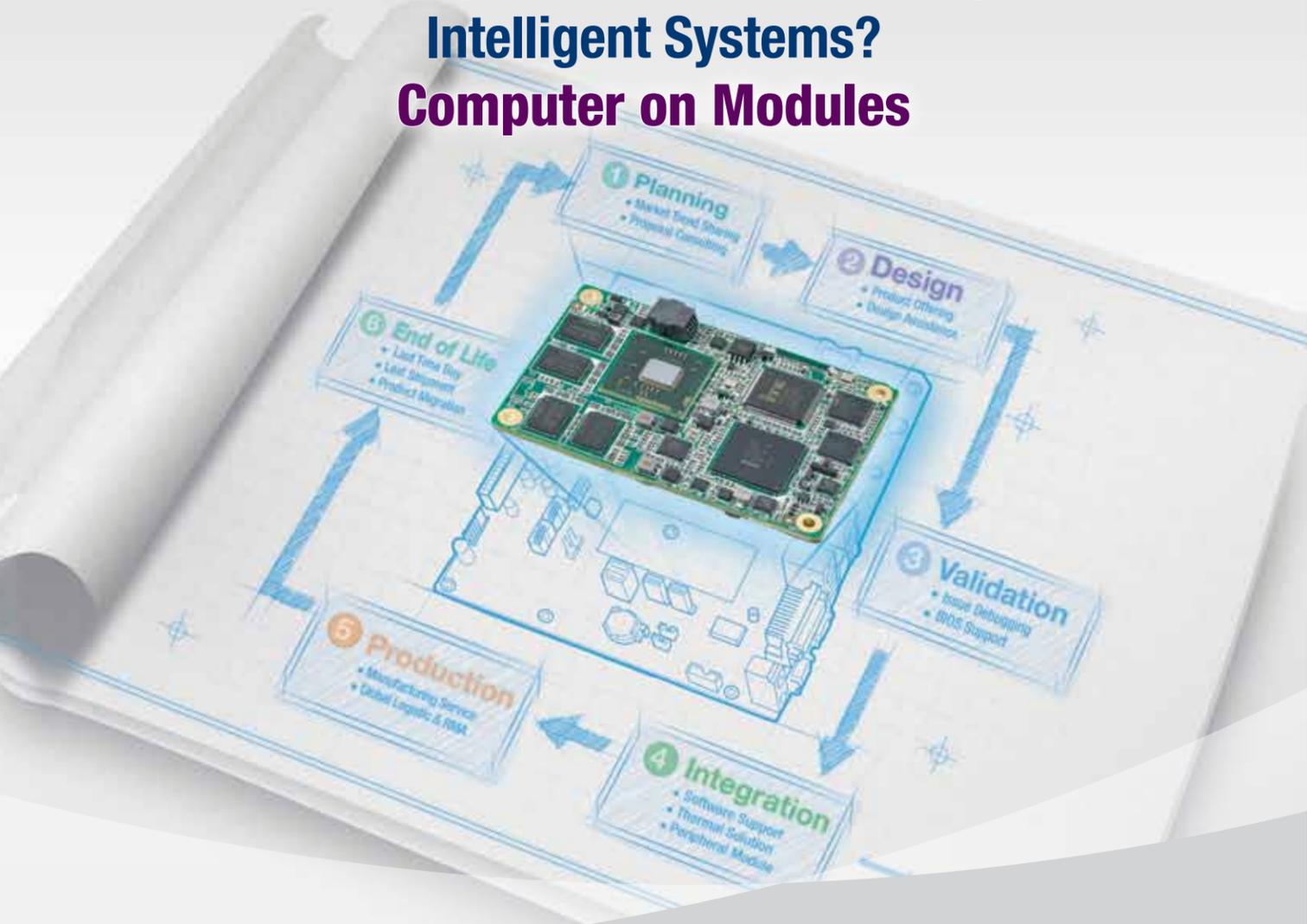


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#### Qseven

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#### SOM-3565

Intel® Atom™ Processor N2600 with NM10

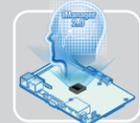
#### ETX

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# The Leading Edge of Intelligent Buildings



**ADVANTECH**

*Enabling an Intelligent Planet*

## Advantech Intelligent Building Solutions

Intelligent building solutions rendered by Advantech, provide building proprietors and system integrators with a total solution for creating convenient and service-ready platforms for constructing i-buildings. The service-ready platform includes hardware and software such as computers, networks, data collectors, controllers, RFID, measuring instruments, energy conservation equipment and the Advantech WebAccess HMI/SCADA software package for the following four scenarios: intelligent parking, intelligent reception, intelligent meeting rooms and intelligent offices.

[www.advantech.com](http://www.advantech.com)

Viewpoint

## From the Intelligent Building to the Intelligent City

For a long time, people have been in pursuit of convenience and a comfortable life, intelligent buildings are one way to achieve this. Since the world's first intelligent building, City Place, was constructed in Connecticut, United States in 1984, the vision of an intelligent building was gradually formed. So what is an intelligent city? One example is that of Japanese pupils, who have had their school bags equipped with an RFID tag, and tag readers have been installed on street lights to confirm that the pupils go home along their normal route, once they deviate from their path, or go somewhere dangerous, the tag readers will send a message to the control system to advise someone in charge to be prepared, this is just one application in an intelligent city.

An "intelligent city" will inevitably contain a variety of intelligent applications, and intelligent buildings to provide comfortable living spaces. However, a key point is that the "intelligence" is not equal to energy saving. Intelligent buildings could implement energy saving, but they also make life safer, healthier and more convenient. Therefore, the first and most important step is to confirm customers' demands when designing an intelligent building.

The Taiwan Intelligent Building Association is committed to promoting intelligent green building certification for professionals. The purpose is to train more professionals to know how to meet the needs of the owners and understand which intelligent applications suit each building. These professionals study the intelligent building RFP (Request for Proposal), then hand the details to the architect

as a benchmark for follow-up operations such as purchasing related equipment and cabling, to create an intelligent building that truly meets habitants' demands.

Unfortunately, today's governments and building contractors do not have time to complete the planning, or schedule the mechatronic design process properly. And as a result, the second phase of the project, due to budget considerations, means that often an intelligent building cannot meet the demands of the habitants'. Furthermore, Taiwan lacks a large number of intelligent buildings so it's hard to increase international visibility which also affects the development of the intelligent building industry. Fortunately, new office buildings in Linkou (Taiwan) and Kunshan (China) recently built by Advantech have been integrated with a lot of smart life systems which perfectly showcase our intelligent building business.

To create these office buildings, Advantech will play the role of pioneer to promote strategic alliances from different business sectors, including architects, equipment and Information and Communication Technology (ICT) industries. We will constantly review existing products and technologies, as well as intelligent building materials, and expand their applications in the intelligent building field. In terms of ICT equipment, they must evolve into a building if they want to be more effective, so ICT technology must be integrated into building materials and equipment. In this way customers can freely select their own materials and equipment, and only this way, can they move from intelligent buildings to intelligent cities.

Wen, Show-Ling,  
Director of Taiwan Intelligent Building Association

# SD Industrial: Helping Businesses Simplify Processes in Mexico

By Richard Ponce and Pictures from SDI  
Interview with Zacarias Dieck, General Manager of SDI

SDI (Soporte Dinámico Industrial S.A. de C.V.) based in Monterrey, Mexico is in the business of “simplifying processes” with a vision of helping a diverse range of clientele incorporate value-added products, programs and services to their existing operations in a manner that increases efficiency and competitiveness in the market. A key focus area for SDI is control and automation solutions for manufacturers, oil/gas production, energy, mechanics and consumer products. They distribute throughout Mexico, and they host a first class call center for ongoing support. The company’s beginnings date back to 2001; they’ve done business under the SDI name since 2006, and have been in partnership with Advantech since 2004. As a Premier Channel Partner, SDI has been able to leverage technical and product support, brand recognition, and more from its almost 10 year relationship with Advantech, while offering local market knowledge, order fulfillment and logistics.

Case in point: After its first visit to Advantech headquarters in 2007, SDI put together a five-year plan with a million dollar sales milestone. They reached the goal a full three years ahead of schedule in 2008, by delivering an IPC project of over 1,000 units to a Power and Energy sector client, thanks to a partnered approach which utilized the economies of scale, resources and the hard efforts of both SDI and Advantech. And SDI has kept up the momentum, doubling sales volume in the years that followed.

## It’s more than just products

SDI has access to an amazing portfolio of Advantech products. In 2013, they’ve been tasked with serving as an order fulfillment and logistics center, creating a strong central channel in Mexico for product distribution. This is a boon both for SDI and Advantech. But there is more than just the product in this partnership. Zack Dieck, GM of SDI said, “The partnership with Advantech has always been a great business relationship for us. SDI has received a lot of



support from Advantech’s main office, and nowadays it is easier than ever to communicate. The time zone differences actually work in our favor, as Advantech can help us fulfill solutions during the hours when Mexico sleeps.” Advantech is an integral part of SDI’s total business volume by bringing its marketing and technical knowledge to the relationship, and providing forums for learning like Leap Camp and other special training. As an experienced leader in providing intelligent solutions to customers, Advantech’s support is crucial; it gives SDI the opportunity to interact with other partners from other parts of the globe; and leads to vision-sharing, knowledge exchange, and more clout in the marketplace. SDI can take this information and pass it on to the integrators it serves. “Advantech has good resources. The market here lacks whitepapers and magazines found in other countries. We are able to develop our own office seminars, webinars, and provide information online. Our partnership with Advantech allows us to learn and extend knowledge to the SI market. And in truth, we learn from our customers as well,” said Zack.



SDI (Soporte Dinámico Industrial SA de CV) is dedicated to provide solutions and products of high performance to the industry. The company focuses on three specialized areas to give the best to customers: Control & Automation, Conveyors & Material Handling, and Packaging & Strapping. SDI has an excellent team in the value chain to fully serve the needs of customers because they are aware of the time and cost demands that the market requires. SDI strives to reduce complex processes in the supply chain and to help businesses perform faster and more efficiently.



## A bright future built on a solid partnership

There is great future potential in the Mexican and Latin American market. SDI is optimistic about growth. In 2012, they introduced a service center for Advantech products in order to provide local equipment service of chassis and motherboards. They also operate a local call center. This allows them to provide consolidated pre- and post-sales service and support, stock local inventory and scale up solutions quickly. SDI works through all the distribution challenges in Mexico. In turn, Advantech keeps an eye on the big picture, and offers ways to increase efficiency, cost effectiveness, and expanded coverage. An example of that is that right now SDI and Advantech Mexico are working together as a team to expand brand awareness in order to serve all potential markets and industries in the country with the same goal in mind that is “to provide trusted, innovative products, services, and solutions to the customer”.

While many failed during the recent economic crisis, Advantech and SDI delivered great quality at price points

that were highly competitive. As a result, when competitors were suffering through the doldrums of slow sales, SDI saw a 60% increase in sales, delivering to cost-conscious customers.

Zack cited the three-Cs—computing, control and communications, as three focal points for growing the business. When asked about his opinion of IoT, he said that he saw Internet of Things as a way to gain access to data from various places, and he thinks it is something that will grow over time in the Mexican market.

One of SDI’s future ambitions is to grow an internet-based “superstore” that would allow them to expand into direct online sales. Another is to provide more needs assessments and customer-facing communications in the coming year.

Long-term partnerships like the SDI/Advantech partnership are sound ways to advance business by combining the best attributes of each partner. Strength feeds strength and the net result is success. ■



# A New Benchmark for Intelligent Green Buildings

By deploying total solutions in the Kunshan and Linkou business campuses, Advantech introduces a brand new generation of intelligent and green buildings that show both the technical and the economic advantages of buildings that will lead the market towards more integrated, comfortable, and energy-saving construction.

By Lin Long and Pictures from Advantech  
Interview with LH Chou, Intelligent Services iBuilding Solutions Director of Advantech;  
Gary Wang, Industrial Automation Business Development Manager of Advantech

Two business visitors were driving along the road towards Advantech, the sun had finally come out after several days of constant rain and they smiled, despite the prospect of a 2-hour meeting. When they arrived, there was no attendant at the underground parking lot but the barrier slowly and automatically rose. As they drove through the basement wondering where they should park, a parking message - "B06" appeared on overhead LED signs and directed them towards their space. After parking and taking the elevator to the 1st floor lobby, they met their contact who was already waiting for them. Such a futuristic building with its associated smart solutions can operate and integrate all applications by itself, including vehicle license plate identification, car parking guidance, and visitor information. These intelligent building features are to be implemented in Advantech's new offices in Kunshan technology campus in China, and Linkou design & manufacture campus in Taiwan.

## Tailoring intelligent scenarios to users' needs

Gary Wang, Manager of Advantech Industrial Automation Business Development, indicated that these intelligent building projects are to be designed with various automated systems to create "smart fields", such as in Advantech's Kunshan and Linkou campuses which have four built-in intelligent scenarios (parking area, reception center, conference room, and office area) to fully meet the requirements of each office building. Starting with the intelligent parking application, after an employee books a meeting room and inputs visitor information (license plate number, cell phone or e-mail address), the system will automatically send a confirmation message, including a building photograph and route map to the visitor. The car license plate number will be sent to the car park's recognition system to allow it to identify and permit the visitor's vehicle to enter. Meanwhile, digital signs, integrated with the car park's lights, will lead the visitor

to their assigned parking space. Arrival information will be synchronously sent to employees so they can prepare to greet their guest.

In addition to the car park entrance, the license plate recognition system is also placed in front of the digital signs and at the parking spaces. The former is used to check the vehicle identification in order to correctly display the direction information; the latter helps the system rearrange empty parking spaces if the driver parks in the wrong place.

These intelligent parking systems also implement energy efficient air quality monitoring by installing many sensors and tying them in with the control program to schedule the lighting and air extraction system. For example, vehicles come and go frequently during rush hour; so at these times, the lighting will be kept on instead of repeatedly switching on and off with each vehicle. Once rush hour is over the system will return to normal operation and use sensors to detect cars entering and leaving the lot, and provide enough light to illuminate the road ahead. This saves a lot of energy as well as optimizing parking management.

For the reception, meeting room, and office areas, Advantech designs different intelligent features for each of them. For instance, one of the most common issues is forgetting to turn off the lights and air-conditioning once staff leave the office. Therefore the office space has been divided into small zones to monitor their activity. If no one is in that area for 10 minutes, the system will put the lighting and air conditioning into standby mode, ready to instantly activate when the area is next occupied. An air quality detector will adjust the air-conditioning temperature to ensure the most comfortable working environment for everybody.

The meeting room also integrates digital signs to show the daily conference schedule and adds scenario control to offer different modes such as video conferencing, presentation, and whiteboard discussions for a range of needs. In the reception area, the interactive digital signs

display information such as: surrounding introduction, conference room guide and QR code for the product catalog so visitors can learn more about Advantech's corporate philosophy and product ranges.

Through rainwater recycling and green energy utilization (solar and wind), Advantech introduces renewable energy into the building. Solar panels are installed on the roof to block the sunlight and test energy efficiency. Rainwater will be stored and recycled so it can be used for such functions as flushing toilets and watering the garden, and the elevated terraced terrain near Linkou campus is a terrific location to install wind turbines to demonstrate Advantech's wind power solution.

## AiBS brings both technical and economic benefits

Comfortable energy efficient working environments are not the only intention of intelligent building designs. Apart from automated systems, solutions must have the ability to monitor and carefully control a building's energy consumption. So, Advantech applied a Web-based Building Energy Management System (BEMS) in both campuses to help the building management staff, even without professional HVAC backgrounds, to effortlessly analyze and improve the energy management via an easy to operate Graphical User Interface (GUI).

The Director of Advantech Intelligent Services iBuilding Solutions LH Chou said, "The two new buildings adopt all of our intelligent solutions (AiBS), including WebAccess, digital signage, Zigbee sensing modules, PMV comfort control, DDC controllers, UbiQ scenario control modules, license plate recognition system, monitoring and host. From top to bottom, from hardware to software, these projects represent our complete solution approach".

AiBS covers intelligent control, management, energy conservation, and security, and is able to chain systems together via the internet into an integrated and service ready platform. With Advantech's software and hardware, System Integrators can focus on their clients' needs to design corresponding scenarios, and integrate the required devices in the client's application. Such an approach can substantially reduce system integration time.

By building the new campuses with AiBS as an intelligent green building controller, Advantech sets a new benchmark and will keep promoting intelligent building solutions that demonstrate both technical and economic advantages as well as innovating the market to create more integrated, comfortable, energy-saving, and smarter buildings. ■



# Unique Intelligent Building Management System for Swansea Metropolitan University

By Martin Marshall and Pictures from TPG  
Interview with Andy Courtney, Senior Channel Sales Manager of Advantech

By meeting government energy targets, Swansea Metropolitan University benefits from tax rebates as well as enjoying significant cost savings. After lengthy discussion it was decided that a unique energy conservation system designed specifically for SMU would give them total control over all information whilst providing a future-proof expansion path.

Everyone is looking to save energy costs these days as wholesale prices of oil and gas constantly increase. The pressure is on to try and balance energy efficiency with sustainable consumption and minimum environmental impact. Swansea Metropolitan University (SMU) based in South Wales (UK), has been a major centre for the delivery of vocational higher education since 1853. The University employs more than 500 staff and teaches more than 6,000 students. The Welsh Assembly (Welsh government) sets energy targets for large organizations to achieve, and by doing so they receive rebates in the form of tax credits. So, investing in an integrated building

management solution optimizes energy efficiency, indoor climate, security, and safety of buildings for small enterprises up to large university campuses. The goal for SMU was to create the best possible learning environment while reducing capital and operating expenditures, so recently the university commissioned a new energy saving Building Management System (BMS) which needed to be custom built to specific requirements. This was implemented by Highland Services, HardwarePT, and the University M&E maintenance department with SCADA automation software provided by Bubble Automation.

## Active management system designed for efficient energy handling

The final installed system needed to be superior to the existing heating system which was unreliable, inefficient and received no support due to the age of the system. The brief was to create an “active” building management system to monitor and improve energy efficiency across several large university buildings. The solution needed the ability to monitor both power consumption and the behavior of control devices in each building in real-time, as well as adjusting power consumption according to its needs. In addition, they required a benchmark system to compare individual energy consumption for each building.

## Specifications focused purely on energy consumption

In order to design a custom made system that fitted the unique requirements of Swansea Metropolitan University, Advantech along with their Channel Partner, HardwarePT, system integrators and SMU key decision makers defined the specifications, and after lengthy discussions they constructed a list of requirements:

**Ownership**– Ownership of the software resides with the University with no restrictions on development, license fees or access restrictions. The system was to be developed using commercially available market leading programming software, coupled with high quality PLC components. As owners of the system, the university needs to be able to make alterations or maintenance carried out by whoever is the most cost effective service provider, with the option of making in-house modifications themselves.

**Total cost of ownership**– As a combined system the supply, installation and running costs were to be far lower than would otherwise be if individual systems were installed in each building.

**Running cost**– The new system provides all the

information required, and produces customizable reports for presenting to anyone who needs it – without external involvement and therefore without additional cost.

**Information**– The system not only clearly shows what their energy usage is, but it also shows them where they are using it, thus providing a comprehensive overview and control over energy consumption. The university also has the ability to alter their system of control and monitoring; changes that can be made, as often as required and whenever they are required, without having to pay someone else to do it.

**Relevance**– The system is uniquely designed around the University’s specific requirements with nothing pre-configured. Therefore they won’t need to alter or adapt it which impacts on total cost of ownership.

**Simplicity**– The system is designed around the University’s needs and as such is designed to provide all appropriate information and control, the way they need it.

**Adaptability**– Whatever future level of monitoring and control is required, the system can expand, i.e. HVAC, lighting, occupancy control, access control, security etc.

## Design-build solution keeps overall costs down

After lengthy discussions with SMU it was felt there was a need for something different. In partnership with Highland Services, HardwareHP and automation software developers Bubble Automation Ltd., they created a system that benefits the university without holding them to ransom. They developed a different approach to monitoring energy consumption with real-time control and monitoring. Initially SMU wanted only to track ambient temperatures in all 7 seven of their buildings but they also wanted the capability to expand the system to include other systems at a later date. This would safeguard long-term investment and ensure long lifetime operation.

ADAM-5550KW Programmable Automation Controllers (PAC) with I/O cards, and ADAM-4015 Analog I/O Modules with temperature sensors were chosen for the control and data acquisition tasks which required Industrial PC computing performance but with the robustness of a PLC. The goal for SMU was to have a cost-effective and energy efficient BMS. Combining ADAM-4015 and ADAM-5550KW with Multiprog KW Software for IEC 61131 programmable control, enabled them to meet their efficiency targets and provide an easy to use, accurate, efficient, and reliable system for the whole university.

Realizing that the University was not getting what it



needed from their existing BMS, Highland Services with Advantech proposed a new solution - to replace the old limited system with an all new bespoke system designed around their needs. To do this they required the services of a company with a very similar business philosophy and were pleased to find that in Bubble Automation, who are an established automation software developer. Highland Services and Bubble Automation installed the overall system and equipment but during integration they encountered some connectivity and communication problems so turned to Advantech for help. Advantech's European technical support center were able to quickly troubleshoot their problems and get them back on track in no time. Through Advantech's call centers and offices in over 87 cities and 20 countries worldwide, they were able to respond quickly to customer requests, and it was Advantech's global reach which really paid dividends in this case.

Andrew Smith, a software engineer from Bubble Automation said, "We pride ourselves in building long term relationships with our customers. We can provide 24-hour support 365 days per year and can even diagnose/rectify/adapt systems remotely, and using Advantech's ADAM products meant that we could be sure SMU was getting the best deal with the best support."

Clive Granville of Highland Services said, "It has taken a lot of effort from all involved, not least our client - SMU, but we are at last able to offer what we consider to be a very reliable system. By working closely with Advantech,

HardwarePT and Bubble Automation, we were able to achieve our aim of providing a system that met the client's needs without tying them to any one supplier. We believe that it was our dedication to the client requirements which brought us success."

**Real-time automation solution brings TCO benefits**

The completed system has the ability to monitor both power consumption and behavior of the control devices in real-time; and its closed-loop feedback mechanism adjusts temperatures according to changing needs which improves overall efficiency. There is also room built into the system for expansion should SMU require further system development.

Total cost of ownership is low because:

- Commercially available software resides with the university with no restrictions on development, license fees or access restrictions
- The hardware architecture was developed using high quality, off-the-shelf PLC components
- The entire system provides and produces customizable reports for anyone who needs it
- The entire system is future-proof. Whatever level of monitoring and control is eventually required, the system can incorporate it, i.e. HVAC, lighting, occupancy control, access control, security etc. ■

# WebAccess+ Alliance for Building Collaborative Partner Relationships



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## Build a Win-Win Partnership by Joining Advantech's WebAccess+ Alliance

Integrated solutions, focused vertical markets, and partnerships are three essential factors to grasp business growth opportunities in the new era of the Internet of Things. Advantech's WebAccess+ Alliance is an innovative cooperation platform with a base of the IoT Solution software - WebAccess - to link with hardware, partners' strength and strategic co-marketing to get into focused vertical markets, such as water, oil & gas, intelligent buildings, factory automation, and renewable energy. Through the WebAccess+ Alliance, our selected partners can get a host of co-marketing opportunities and complete technical support.

# Creating a New Energy-saving Application for Public Buildings

For energy management applications, Advantech's products are capable of accurately collecting energy consumption data so that System Integrators can focus on their back-end data analysis to develop appropriate operating strategies as well as enhancing building energy efficiency.

By Lin Long and Picture from Imagemore

Interview with Hao Zhang, Technical Director of Shanghai Twenty-first Century Information Technology Corporation



With the increasing serious effects of global warming, climate anomalies are happening more frequently the world over. In June last year, rainfall was significantly reduced in China's Huang-Huai area, and temperatures soared to over 35-40°C causing a drought. Meanwhile, the Jiangxi area was hit by heavy rain and floods, Xinjiang encountered heavy snow falls during August, and a blizzard swept through the Beijing and Inner Mongolia region in November.

As a result, the government has tried to address these issues and has been promoting green energy conservation projects for public buildings since 2007. In 2009, a large energy saving project in Shanghai's Changning District was completed by the Shanghai 21st Century Information Technology Corporation (21st CITC). The company's Technical Director, Mr. Hao Zhang pointed out that this energy management system was designed to monitor and control public buildings in the low-carbon district in Changning using Advantech's BEMG-4110—a data acquisition gateway for uploading data. By monitoring, managing and analyzing electricity consumption of all equipment, energy efficiencies and cost savings were quickly realized.

Currently, there are more than 100 public buildings in the Changning district that have implemented this system and the same system will be rolled out in other areas of Shanghai. As for its success, Mr. Hao Zhang believed that the key was having a reliable data acquisition device which could quickly utilize information, and Advantech's BEMG-4110 was perfectly suited to this task.

## Developing an efficient energy strategy via accurate data acquisition

In general, there are two big concerns in public sector energy management. First is energy efficiency. For public buildings, wastage accounts for a big proportion of energy use (up to 25% of total electricity consumption), and although overall usage is less than residential buildings, their energy efficiency is relatively poor.

Secondly, unlike private residential buildings where electrical equipment is installed individually by residents and energy consumption is reduced by using high-performance products like "Inverter" washing machines and "eco" fridges etc, public buildings need better operating strategies to achieve energy-savings because they tend to share the same large appliances which makes accurately controlling power consumption more difficult. So working out how to improve the energy consumption of these collective appliances and systems (elevators, public lighting, central air conditioning, etc.) in order to operate them in harmony with environmental targets was a challenge. Simple things like adjusting thermostats to use less cooling and heating according to ambient temperatures, using less lighting when daylight is sufficient, or turning off some elevators during non-peak hours were identified as crucial actions that needed to be addressed.

That sounds simple, but what is the most suitable temperature? How to dynamically adjust indoor lighting according to conditions? How do we define off-peak hours that works for everyone? The answers can be tricky and difficult to achieve if there are no professional administrators and clear operating strategies and guidelines. However, by integrating

Advantech's products, 21st CITC were able to precisely collect on-site data and focus on data analysis to develop proper energy saving strategies.

## The most powerful backing for system integrators

21st CITC started to team up with Advantech in 2009 for hardware procurement and software collaboration and both companies have established a long-term cooperative relationship. Mr. Hao Zhang explained why Advantech was able to be their partner now that there are so many suppliers in China. "First of all, data is the foundation of our system operation and it wholly relies on stable devices to acquire it so that accuracy is achieved. Therefore, industrial-grade products were the only choice for us. Advantech is a leading manufacturer in the IPC industry and can provide a comprehensive range of products with services that support our requirements. What's more, energy conservation is not a short-term task, and maintaining the system is also important after implementation so our partner must be able to commit to long-term product and component supply to sustain long-term operation. With its long industrial background, Advantech has excellent market reputation and will be around for a long time," Mr. Hao Zhang believed.

In addition, Advantech provides complete services to serve 21st CITC and that makes them less worried about integration with the bottom layer. Mr. Hao Zhang further indicated, "No matter what questions we asked, we always got satisfactory replies from Advantech's specialized team instead of just one or two salesmen. That allowed us to concentrate on our own clients better. Advantech's broad product lines cover a wide

variety of applications and most of them are for general purpose use, but when Advantech found out the project demands of 21st CITC, they thoughtfully offered product optimizations so as to meet our application requirements."

Taking as an example, the original configuration of the embedded system which used software for each energy monitoring station, resulting in the same information being duplicated four times. Subsequently, Advantech proposed a new tool with an easier user interface - Advantech's BEMG Utility which avoided repetition, as well as enhancing implementation efficiency which was in line with the management targets for this project. Additionally, Advantech continued to add more drivers enabling the host computer to correspond with the data acquisition rules in different regions so as to follow the technical guidelines issued by the government. It also increased the application flexibility and reduced risk to the system while 21st CITC developed the project.

Advantech's business philosophy has always been how to create greater value for system integrators through their products and services. With regard to energy management in public buildings, Advantech's products are capable of accurately collecting energy consumption data so that 21st CITC was able to focus on data analysis to develop the best operating strategy. Advantech's professional services provide a powerful backing to help vendors deal with any system integration issues with confidence. In the future, 21st CITC will not only cooperate further with Advantech on a video image acquisition application, but they also plan to expand their business nationwide with Advantech's generous support. ■



# Intelligent Buildings Linking People with Living Spaces

Automation and communication technologies work together to create modern buildings that anticipate user needs and respond to environmental changes, making life more convenient, comfortable and safer, while increasing energy efficiency.

By Lin Long and Pictures from Imagemore

Buildings provide much more than mere shelter; they are vibrant living spaces, and today's intelligent buildings make major contributions to our quality of life. According to a recent report by British research firm BSRIA, there are currently 427 million intelligent buildings globally, and that number is expected to reach 1.04 billion by 2020, definitely a robust growth trend for the future.

While different countries around the world have different definitions of exactly what an intelligent building comprises of, all agree that an intelligent building should provide more comfort and convenience in response to human needs, and should also be able to respond to various environmental changes.

## Smart/Green buildings – one of four emerging intelligent industries in Taiwan

The world's first intelligent building was the City Place Building, developed in 1984 in Hartford, Connecticut in the United States. In it, United Technology Building System Corp. installed a communication system, with office automation, automatic equipment monitoring and management, allowing administrators to control air conditioning, water, fire security and power distribution systems via computer.

After City Place came Japan's first complete intelligent building-Umeda Sky Building in 1987; two years after that in 1989, came Taiwan's first intelligent building, the Aurora Building. From a global perspective, Taiwan has demonstrated rapid development; non-governmental organizations and the Taiwanese construction industry have actively promoted intelligent buildings, and the Taiwan Executive Yuan also announced its "Intelligent Living Space" policy in 2005, listing Intelligent Green Buildings as one of four major new intelligent industries and a key development direction.

## New-generation intelligent buildings promote system integration

In recent years, the intelligent building sector has presented a new wave of technological revolution; with the evolution of computer and network technology, modern intelligent buildings are quite different from those built in the 1980s.

One of the key differences is the openness and integration of the system. The intelligent building of the 1980s had independent building automation, security access, and video surveillance systems, each having its own management platform. But with the rapid adoption of network technology, systems are moving toward an open architecture and bringing integration opportunities to these separate systems, creating diverse applications for intelligent buildings. When a fire alarm sounds, for instance, it will automatically display surveillance video data from the fire area on the management console. Intelligent buildings also provide more information services to administrators and inhabitants, for instance, analysis of energy consumption over time, comparisons of water consumption, electricity, and gas. The introduction of automated operating capabilities through an open control network architecture promotes the use of automated functions into the building such as the creation of closer interaction between people, buildings and equipment; all of which contribute toward a better quality of living.

System integration also helps to reduce costs of construction and operation; traditional intelligent

buildings require a lot of power distribution boxes and control cabinets which consume space. If electrical and communication modules can be highly integrated, not only can space be saved, but also time for equipment installation, and the stability and reliability of the system can be significantly improved as well.

## The next step after the intelligent building – The intelligent city

With the increasingly serious environmental problems including global warming and climate anomalies, how to coexist with the natural environment is an ongoing challenge for all of us. A market research report pointed out that a major proportion of energy consumption in many countries around the world goes to buildings; for instance, electrical consumption and heating for buildings in Great Britain accounts for 60 percent of the national total carbon dioxide emissions, and the proportion of energy consumed by buildings in the United States runs up to 40 percent.

Although resident behavior does affect energy efficiency in older buildings, more important factors in these buildings are the lack of effective energy control mechanisms, coupled with the effects of aging electrical cables and other equipment. An effective building energy management system can even reduce the negative impact of inhabitants' bad habits by automatically turning lighting systems on and off in accord with a set schedule.

Carbon reduction and environmental goals can be achieved through optimization of building energy use and resource configuration. In addition, with the increasing global population, infrastructures such as those that support transportation, medical/health care, education and public safety will be subjected to greater pressure from increasingly heavy demand. To replace all of the existing infrastructure would be unrealistic, both because of cost and time constraints. But our cities do need to become more intelligent, with interconnected instrumentation introduced into the existing infrastructure. Today, most Asian countries are actively developing intelligent buildings, such as in Fujisawa in Japan, Songdo IBD of Korea and Nusajaya of Malaysia. These cities have different characteristics, but they all focus on intelligent buildings, and stress the importance of introducing and integrating information and communications technology, along with energy savings and environmental protection.

Thanks to the evolution of intelligent buildings, modern architecture can offer so much more than previously. Automated feedback systems continuously respond to human use and environmental variations, providing living and working ecosystems with greater safety and energy efficiency, as well as more convenience and comfort. ■

# Corporate Value Creation

## Advantech is Committed to Promoting the Intelligent Building Industry

Information technology is not the only key point in creating intelligent buildings; system integration and connectivity are even more important. As buildings become smarter, they may even come to speak to their occupants in response to pre-programmed scenarios and conditions.

By LinLong and Pictures from Imagemore  
Interview with Gary Wang, Industrial Automation Business Development Manager of Advantech;  
LH Chou, Intelligent Services iBuilding Solutions Director of Advantech

In addition to looking at space, location and choice of construction materials for new building designs, contractors must also consider “smart spaces” and “digital lifestyles” in their planning. Adding smart technologies is an attractive way to increase property values in a highly competitive market. However, does adding devices that support Information Communication Technology (ICT) really create a more contented lifestyle? Can a building with these devices properly be called an “intelligent building?”

According to the Taiwan Intelligent Building Association,

an intelligent building must have energy monitoring and management capabilities; it must be constructed with “intelligent” building materials that are environmentally sound; it should promote health and security; and it needs to be environmentally aware, responding to changes in environmental conditions. People will naturally form close-knit communities around such buildings, as they are self-contained spaces completely integrated with all the necessities of life to meet the service needs of the occupants.

Based on this definition, creating an intelligent building is much more than just information technology solutions; it should include the integration of a variety of interconnected systems to meet specific needs defined by the community members within.

### System integration is the key

“In fact, the development of intelligent buildings is a multi-stage process,” said LH Chou, the Director of Advantech Intelligent Services iBuilding Solutions. “In the early stages, the development of intelligent buildings followed the course of building automation systems such as air conditioning and access control systems. People are mostly unaware of these systems in buildings. Then, thanks to rapid technological development beginning in the 80s, the next phase for intelligent buildings began to appear. Now, the newest buildings provide services that interact with people through integrated systems, creating intelligent living spaces that are sensitive to people’s needs.”

Gary Wang, Industrial Automation Business Development Manager of Advantech gives a good example of an integrated building scenario, using a fire alarm as an example. “Once the fire protection system sounds an alarm, which means there might be a fire in the building, people need to be evacuated as soon as possible. The first step is for the alarm system to connect to and activate an automatic broadcast system to alert people to leave; next all the lights should be turned on to illuminate the evacuation route; then an access control system needs to automatically unlock doors along the route; the air conditioning system should be shut down; and if there is a digital signage system, it can display evacuation routes and emergency directions to help direct people during the evacuation. Video systems from surveillance cameras can send images to emergency services personnel, and cell phone messages can be sent to building managers.”

The fire escape scenario outlines several subsystems that are interconnected—the fire department, central control, broadcasting, air conditioning, access control, digital signage and surveillance. Each system’s function is separate, but by linking them together intelligently, they can operate as a whole. This work is the responsibility of system integrators and it is not an easy task. “System integration requires strong programming capability, but many Building Automation (BA) companies are experienced only in automation and control systems,” said Mr. Chou. “These companies lack information and experience in developing communication technology, so they end up spending a lot of time and cost to integrate these systems.”

### Intelligent building scenario designer – iBS director

To mitigate some of the challenges of multi-system

integration, Advantech created AiBS, a convenient, integrated and forward-looking construction system, which uses WebAccess to integrate subsystems, and the iBS Director platform to build the logic required in the design of inter-connected building subsystems. BA suppliers can use these two components to write simple scripts that result in effective platforms, created in a fraction of the time and at a fraction of the cost.

WebAccess has a development history of over 12 years and features built-in communications drivers, including BACnet, Modbus and OPC, as well as some 200 drivers from different companies. It can be linked to nearly 1,000 types of automated equipment, ranging from air conditioning, power, lighting, to fire protection, water, access control and video. Each subsystem can be integrated into a single WebAccess platform, allowing an administrator to easily perform unified monitoring.

iBS Director, the other component in the solution, assists as a script designer. It provides a graphical interface, so that the BA provider can create a scenario model by dragging functional modules from each system to a central screen. The next step is defining the relationship between the modules. Once defined, the iBS Director can generate the underlying code to allow operation to take place in accordance with the scenario model.

### Advantech leads companies into international markets

There are many professional building automation suppliers in Taiwan, each of them focussing on a specific subsystem. They are each dedicated on improving their individual products, often at the expense of working on brand management, and this makes it hard for these individual companies to compete in international markets. So, Advantech helps by setting up alliances that help drive growth for the entire industry.

“Advantech has both the advantage of brand recognition and the global resources necessary to serve as an industry leader, which means we can help local suppliers and jointly promote the intelligent building industry in Taiwan,” said Mr. Chou. As long as the BA provider designs their product with WebAccess in mind as a common gateway, Advantech can help them enter and compete effectively in international markets. In the future, Advantech will launch the WebAccess+alliance to provide even more resources to its partners.

Advantech has long held that the promotion of intelligent building solutions is an important mission. In addition to developing management software to help building automation suppliers solve the challenges of system integration and connectivity, Advantech also wants to use its resources to help local business expand globally, and take the lead in creating a worldwide intelligent building industry. ■



# The Right Tools Mobile Data Terminals

Constantly monitoring vehicles and goods

As the saying goes: "The right tool for the right job". In-vehicle computers for short distance transportation can not only lower fuel consumption and save costs, but they also can monitor drivers, vehicles, and delivered goods in real-time to improve the overall efficiency of fleet management.

By Sharlene Yu and Pictures from Advantech  
Interview with Brian Hsieh, Senior Product Marketing Engineer of Advantech Mobile Computing and In-vehicle Computer Group

In Europe and North America, In-vehicle computers are also known as Mobile Data Terminals (MDT), and have been used in the freight industry for years, but recently they have gradually been gaining attention in emerging markets where economies are booming. The Senior Product Marketing Engineer of Advantech Mobile Computing and In-vehicle Computer Group, Mr. Hsieh said, "Although those new and developing countries do not yet have regulations for mandatory MDT use on vehicles, advanced technology is the key to enhancing fleet management and ensuring the cargo flows smoothly, especially for short distance goods transportation in urban areas".

#### Wake-up mechanism for 24-hour monitoring

Because the majority of MDT products only provide vehicle information while actually driving on the road, and long-distance haulage applications have to turn off their computers when a driver gets off work or leaves the cab because of high power consumption, Advantech designed a new MDT with a 24/7 monitoring mechanism (periodic, digital input, or WWAN wakeup) to provide a complete fleet management solution for light freight vehicles. "From power control, module configuration, digital input, and system design, our new MDT is a RISC-based platform and features ultra-low power consumption of only 250 mW, so even during off-duty hours or when the engine is switched off, our MDT will enter sleep mode and continue to provide real-time information to the back-end administration," said Mr. Hsieh.

#### Fuel-efficient route and safer delivery

For the freight industry, fuel costs often account for more than 40% of total transport costs and continually rising oil prices will increase the burden of business operations. MDT offer the most fuel-efficient route features via instant communications and also supports CAN BUS or OBD-II communication interfaces to easily acquire data from Engine Control Units (ECU). "In order to avoid interruption in delivery service and eliminate the high cost of accident repairs, fully understanding a vehicle's condition before it breaks down is the best way to save trouble such as dispatching tow trucks or rescheduling distribution. Using MDT to monitor a vehicle's status and driving behavior can not only effectively lessen fuel costs and prevent accidents, but can also help exempt businesses from the risk of increasing insurance premiums. According

to statistics, using MDT's best route suggestions and reminder functions reduces unnecessary acceleration and braking and can save 5~15% fuel consumption," Mr. Hsieh pointed out.

With regard to actual delivery, it's best to track in real time to improve cargo safety and security such as for high-risk oil and chemical tankers, or low-temperature storage of foods. Mr. Hsieh emphasized, "Once a freezer door is opened, or a vehicle is stolen, or a vehicle's equipment fails, MDTs are able to promptly inform drivers and managers to provide instant assistance or advice. Control center staff can also quickly call emergency services to guard against accidental explosions".

#### Perfect power protection for stable operation

In addition to industrial-grade specifications like rugged and anti-vibration design, Mr. Hsieh stressed that a qualified in-vehicle computer has to comply with various international standards. For example, many peripheral devices are mounted in vehicles these days, resulting in severe electromagnetic interference (EMI) and consequently power can't be maintained at a steady state. So properly verified and certified products are essential for system integrators.

Mr. Hsieh also indicated that, "Lots of mid to low-end products claimed to support Wide Range DC Input (+9~32V) but do not actually provide power protection so poor stability may cause some issues after one to two years of use." Advantech's MDT, TREK series products are compliant to the international certifications, ISO7637-2 and SAE J1113 ensuring the system is stable both in severe interference environments of large trucks or the relatively good condition of small- and medium-sized vans.

#### A variety of features meet diverse needs

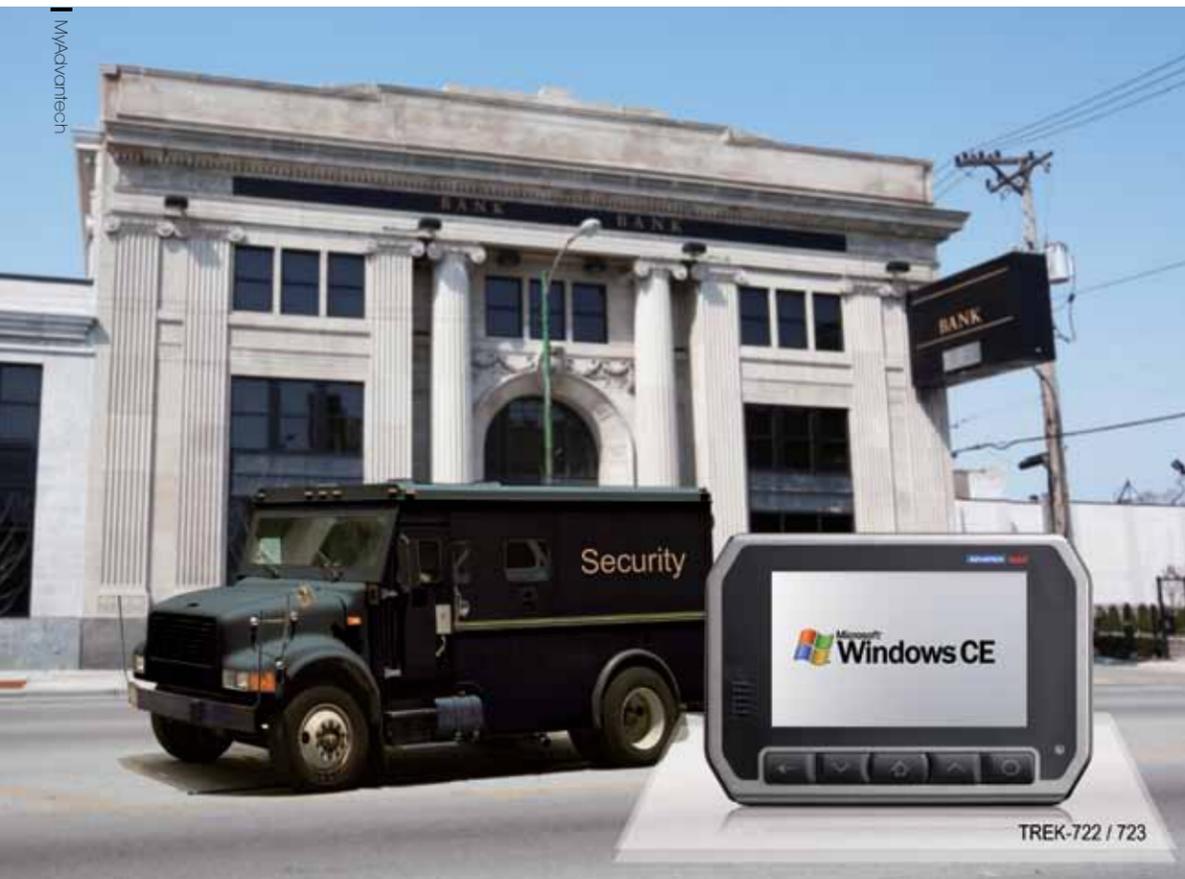
As for ambient temperature, Mr. Hsieh explained, "In winter, temperatures usually drop several tens of degrees Celsius below zero in Nordic countries and North America; and heat waves can hit anywhere in summer, making temperatures inside vehicles reach over 40°C. If MDT products don't have a wide temperature range capability (-30°C~70°C), they might not be able to boot up until temperatures fall to normal, and some might even be unable to work at all. Such temporary malfunctioning may bring unexpected results".



In terms of WWAN, Advantech's MDT can exchange its module to meet different mobile phone networks around the world, including Eurasian GSM, American CDMA, and China's TD-CDMA/CDMA-2000. WLAN allows user to take advantage of free WiFi in some cities so as to save phone charges. "In short-haul transportation, WLAN is the most effective network protocol and through a handover function that couples with WWAN, transporters have benefited from our MDT to reduce their telecommunication costs," Mr. Hsieh said.

When considering vehicle sizes, Advantech introduces two kinds of MDT products, TREK-722/723 with 5"/7" display for short distance transportation. Both of them offer the same functions enabling System Integrators to have the most appropriate MDT without modifying their application software. Mr. Hsieh stressed that, being different from commercial products which lack power protection, Advantech's MDT business has been operating under its own brand successfully for many years and has a professional design team (project support specialists) so whether it's power protection, wide temperature range, wireless transmission, or in-vehicle communication, our rock-solid MDT products present fleet management with practical solutions that deliver success. ■

Meanwhile, he also said wireless transmission is an essential function for a fleet management system. "Taking the widespread use of GPS as an example, Advantech's MDT provides 50 channels for satellite positioning and have built-in AGPS features for fast location connection using wireless and base station resources. Compared to cell phones and 3C products which only offer 16 channels, the result is very clear, our MDT performance is definitely faster".



TREK-722 / 723

# SUSIAccess

## Remote Device Management



### ADVANTECH

Enabling an Intelligent Planet

SUSIAccess is a value-added software which shapes new business model to migrate from traditional embedded systems to Intelligent Systems, bringing greater business opportunity in the existing embedded market.

Preloaded in all Advantech embedded solutions, SUSIAccess allows efficient remote monitoring, quick recovery & backup, and real-time remote configuration, to address to the needs of creating a more intelligent and interconnected embedded computing solution.



#### Active Control

- Intel® Active Management Technology (AMT) **New**
- Scheduled On/Off
- Remote KVM



#### Complete Protection

- System Protection
- System Recovery
- Standalone Management **New**

Powered by



#### Remote Monitoring

- System Monitoring
- Alerts via SMS Gateway **New**
- Event Logging **New**



#### Multi-Platform Support

- Windows System
- Linux System **New**

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# The First Industrial SATA III Storage Module

By Precyan Lee, Embedded Core Group Product Manager of Advantech and Pictures from Advantech

Speed performance is critical for Solid State Drives (SSD) and Serial ATA (SATA) interfaces can provide much faster performance for SSD storage. With the rapid growth of SATA-I/O technology, the latest SATA III specification increases transfer rates to up to 6 GB/s, and it is backwards compatible with previous SATA specs. And while the SATA III interface has yet to become a common design in the industrial market, its adoption rate is steadily growing.

Recently, Advantech launched the world's first industrial SATA III SSD, the SQFlash 820 series, which uses the latest PS3108 SATA III controller developed by Phison Corporation. This industrial SATA III storage module is making a notable entrance thanks to its reliability and performance, which provides a capacity of up to 1TB and read/write performances of 400 and 500 MB/s respectively. These excellent ratings are combined with high stability algorithms to enhance durability and reliability, even allowing the SSD to be operated in rugged environments.

## Technologies for power loss protection

Modern SSD storage is normally designed with DDR (a type of volatile memory) acting as a temporary cache between the SSD controller and NAND flash to improve performance. However, one major concern of using DDR

is that it is not able to retain data during a power failure which can lead to data loss or even a disk crash. To prevent such problems, PS3108 has a design feature called "Flush Manager" which has two important features:

DDR acts as a data organizer to consolidate incoming data into efficient groups for NAND flash. Data makes a quick "pit stop" in the DDR, and is then quickly flushed to NAND flash by the Flush Manager preventing it from remaining bound in DDR.

DDR no longer serves as a data cache in front of the Flash IC, but instead becomes a background controller for processing metadata. Any data from the host will be directly processed and flushed to Flash IC, with cache no longer retained in DDR. This data which is registered and written to Flash IC will survive abnormal power failures.

## Global fragment writing

Fragment Writing Technology was firstly introduced in late 2011 on the SQFlash SATA II Extreme series product. Using this technology, an 8K page becomes the minimum unit size, which is 100+ times smaller than the ordinary NAND flash management approach. The result of this is higher endurance and better performance. The endurance test shown below shows that Fragment Writing Technology can reduce overall block erase by a factor of three to four

times, which equates to prolonged endurance. Enhanced performance is also shown as the time consumed for the test decreases with Fragment Writing Technology.

\* The test simulates a 1 MB per minute data write over a 1 year period, 24-7. In total, 525GB data will be generated.

In the fragment writing illustration, the 8K data pages were processed locally group by group. With the PS3108 controller, the data is globally arranged across the entire SSD. The writing efficiency is higher and results in even better endurance, as shown below:

\* WAF (Write Amplification Factor) is a numerical value representing the ratio between the amount of data that an SSD controller needs to write and the amount of data that the host actually writes. A better WAF value, which is closer to 1, guarantees better endurance and lower frequency of data written to flash memory.

## Read disturbance management

Read Disturbance usually occurs due to unstable current which causes neighboring storage cells to be mistakenly read. Theoretically, reading data from a specific page will decrease the voltage level of that page. Meanwhile, the adjacent pages might be disturbed as a result of the voltage change and this eventually leads to data errors or even data loss. ECC is a solution to this issue. However, ECC can only correct errors within a certain range, which is 72 bits per 1K Byte of data for the PS3108. If a burst of a large quantity of errors happens and it is beyond ECC's ability to handle, the affected blocks might become bad. To prevent such a situation from happening, the controller is designed to monitor the ECC number within a block. If the ECC of the block exceeds 21 bits, the firmware will relocate data to a new block and reset the original one so that data is protected.

## Advanced security functions

Another advanced function of the SQFlash 820 series SATA III SSD is an Opal compliant design, which supports

in-drive AES (Advanced Encryption Standard) 256-bit encryption. For even more critical applications that might need an emergency erase, the SSD is equipped with a hardware GPIO pin that can trigger a high security level immediate data erase.

## AES 256-bit encryption key

PS3108 is optionally embedded with a security controller to generate an AES encryption key for real-time data encryption before storing data into NAND flash. Since data is fully hashed with the 256-bit encryption key, if a controller or firmware fails, there is no way to access the data stored in the NAND flash.

## One touch emergency erase

One Touch Emergency Erase is a hardware emergency erase. The low level erase command executed by controller will be triggered once the GPIO has detected a signal interruption. Three different erase levels can be made with the SQFlash 820 series product.

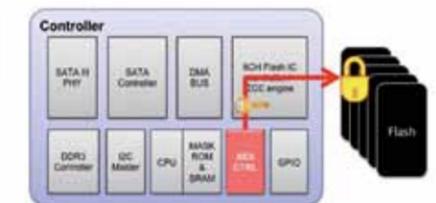
**Data Erase:** Firmware is kept intact in this mode so the drive is still usable after erase. It takes around 70 seconds to thoroughly wipe user data for a 256G SSD. However, if the erase process is interrupted, data will not be fully deleted, and remaining data could possibly be accessed after device reactivation.

**Firmware Erase:** The drive will immediately become unusable after execution since firmware will be destroyed in just a few milliseconds. Providing that AES is enabled and the encryption key was stored in the firmware, none of the data can be decrypted or recovered in such condition.

**Global Elimination:** This is the highest security level of erase, which is implemented on the SQFlash 820 series. Once the erase command is triggered, the controller will first issue a Firmware Erase, and then follow up with a Data Erase to make sure the drive is unusable and that nothing is left on the storage media. ■

	Normal Algorithm	Fragment Writing Technology
Erase Cycles Count	7,614,912	1,909,863
Time Consumed	142 minutes 44 seconds	23 minutes 49 seconds

	PS3105		PS3108	
	Terabytes Written	WAF*	Terabytes Written	WAF*
128G MLC	212.21	1.52	366.10	1.0058
256G MLC	423.18	1.47	730.65	1.0053



# Windows Embedded 8 Coming Soon Bringing A Smarter Embedded System

Advantech's Intelligent Systems and Remote Management open up future Embedded business opportunities.

Intelligent systems have become an essential part of our lives even though we might not be aware of their existence. To further improve system performance, Microsoft will launch the Windows Embedded 8 family of operating systems, and Advantech will also offer relevant Embedded products specially for this architecture. Working together, this will bring Embedded intelligence to the next level.

By Wanger and Pictures from Advantech  
Interview with Chun-Nan Lee, Embedded BG Lead for Taiwan of Windows;  
Chi-Wen Lin, Embedded Core Group Business Development Manager of Advantech

The term "intelligent" has become commonly used in recent years. Though many industries boast the term "intelligent", such as "intelligent transportation" or "intelligent medicine" or "intelligent store", it is more than just meaningless industry jargon. The introduction of intelligent systems in most fields has indeed changed our lives. The Windows Embedded 8 platform that Microsoft launches in 2013 not only provides enhanced performance and an optimized interface, but also brings new innovation to Advantech's longtime expertise in Intelligent Embedded

products. Working together with Microsoft will help Advantech to realize its vision of Intelligent Planet in a step-by-step fashion.

According to Windows Embedded BG Lead for Taiwan Lee Chun-Nan, in terms of devices, intelligent systems consist of two major parts: the terminal and the host. The terminal includes various handheld devices, specialized IT equipment and industry devices. The operation of the overall architecture is to properly process the messages received by front-end devices and send them to back-end devices for storage, control, and analysis. The intelligent system concept is the extension of the emerging Internet of Things, mobility, and future development trends.

#### Embedded platform streamlines system operation

The development of intelligent embedded architectures in recent years has taken a drastically different path than that of the past. In addition to horizontal expansion into more applications, existing applications are deepened vertically, such as point-of-sale in the retail industry, fleet management in the logistics industry, and versatile digital signage. Microsoft provides complete solutions for them all, such as Windows Embedded POSReady and the upcoming Windows Embedded 8 Industry platform, for the front-end, and SQL Server for the back-end. Windows



Embedded 8 Industry is the next generation of Windows Embedded POSReady, now extended to meet the needs of broader industry scenarios. Lee indicated that Microsoft's comprehensive investment in its embedded architecture makes the software interface linkage between front-end and back-end systems more compatible. Introduction, operation and service of the architecture also become easier and faster. Aside from the software systems for on-site appliances, Microsoft also expands system coverage to the cloud by offering Windows Azure. Lee also pointed out that the Windows Azure platform provides a complete set of cloud application services. Businesses don't have to set up a separate back-end host to enjoy business cloud services which can be customized to a certain degree, and therefore optimized to their finite resources.

On top of the existing operating software, Microsoft integrates its product technologies horizontally into intelligent systems, for example, the Kinect for Windows motion sensing technology that has been popularized with Xbox. This technology captures the body motions of the person standing in front of the screen, and then computes and analyzes them to give commands. It has begun to be introduced to other applications; for instance, clothing stores incorporate motion sensing technology, so while shopping, customers can change the color of clothes directly with hand gestures in front of a full-length mirror that is made of digital signage and motion sensing technology. Other applications, such as for kiosks, have also seen been introduced.

#### Windows Embedded 8's optimized user interface

Microsoft's comprehensive investment in intelligent systems has begun to pay off. Windows Embedded 8, set to launch in 2013, will bring embedded systems to the next level. Taking the above-mentioned digital signage as an example, Lee said that as more embedded products enable touch technology, in particular multi-touch technology, the benefits of digital signage will significantly increase. The optimized multi-touch user interface of Windows Embedded 8 allows users to manage and control the system intuitively.

The optimized multi-touch interface is just one of the many features of the product, Lee said. Judging by current developments, there will be six major device requirements for intelligent systems, including analysis, user experience, management, connection, information security, and identification. Windows Embedded 8 is designed with these six features in mind.

Windows Embedded 8 family of products offers a variety of platforms designed for individual applications, consisting of Windows Embedded 8 Standard, Windows Embedded 8 Pro, and Windows Embedded 8 Industry. Like its predecessor, Windows 7 for Embedded Systems, Windows Embedded 8 Pro delivers the full power and familiarity of the Windows operating system. Enterprises and partners can create quick-turn, industry-certified solutions, without concern for application and device compatibility. Windows Embedded 8 Standard is a flexible, modular, version of Windows 8 that gives enterprises and partners the freedom to choose which parts of the operating system they need





for their unique requirements. Devices can also be locked down to block certain gestures and deliver a more secure and differentiated user experience. Unnecessary functions can be removed based on the industry need to ensure that system features fit end-user requirements perfectly. Historically, Windows Embedded POSReady has targeted retail point-of-service (POS) solutions. Moving forward, Microsoft will deliver the power of Windows 8 technologies to these and other scenarios requiring fixed experiences with enhanced lockdown, branding and the other benefits of Windows Embedded 8 – including peripheral support to other industry-specific scenarios, such as manufacturing and healthcare, in addition to POS.

**Advantech and Microsoft work together to develop intelligent systems scenarios**

Microsoft consulted Windows Embedded partners like Advantech during the product design phase of Windows Embedded 8. Chiwen Lin, Advantech Embedded Computing Core Business Development Manager, indicated that Advantech is one of the largest business partners for Microsoft in Taiwan in the embedded domain and have worked together on many efforts. Advantech assisted in the testing of Windows Embedded 8 in the early design phase, while Microsoft provided Advantech with actual products for testing and validation of the pilot introduction. This will allow Advantech to complete the testing of all the hardware product operating systems prior the launch of Windows Embedded 8.

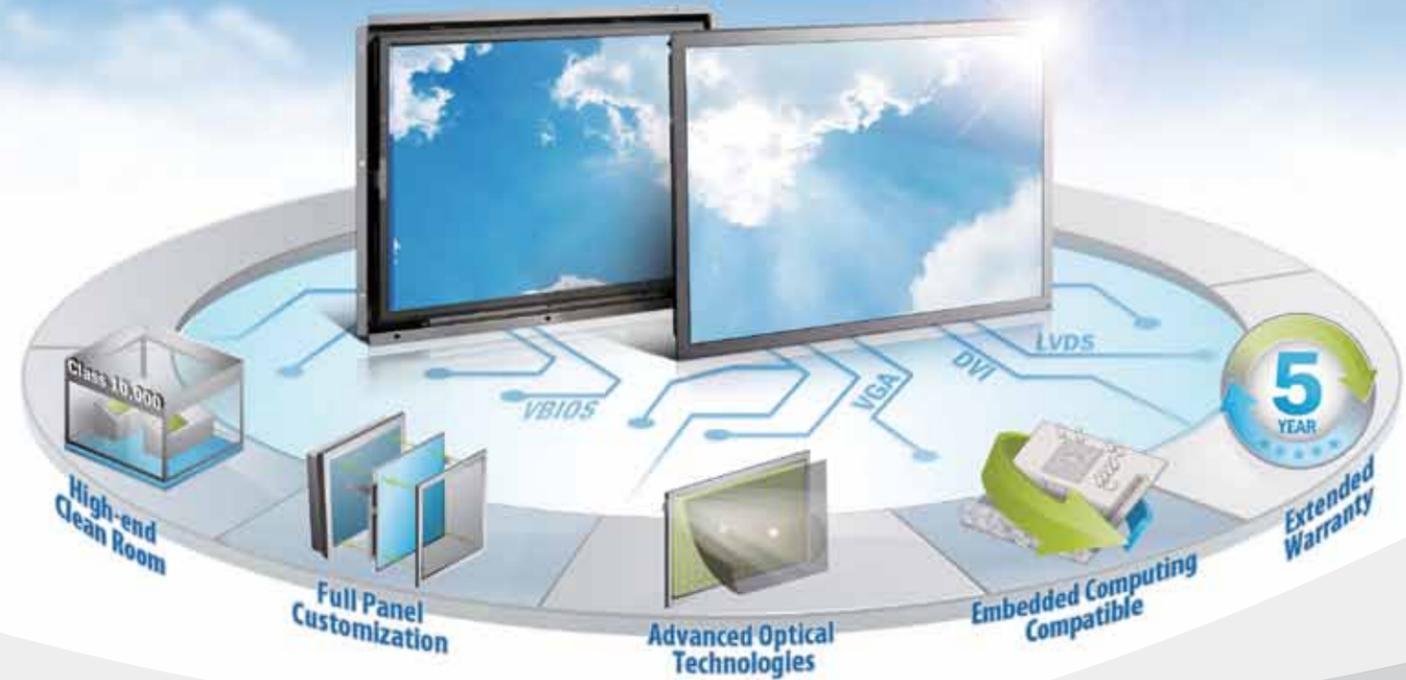
Owing to the advantages of an early understanding of Windows Embedded 8's functions and features, Advantech was able to improve the software features that

it had developed in the past in conjunction with Windows Embedded 8. For example, SUSIAccess, launched years earlier and widely known by system integrators, will be able to support the Windows Embedded 8 platform. Its remote management functionalities, including system monitoring, desktop control, remote configuration, and system security, transform the embedded systems into an across-the-board intelligent platform. Li reckoned that on-site service may not be conveniently available for enterprises that incorporate industrial computing devices as they are distributed widely. With SUSIAccess' remote control functions, users can get a clear picture of the statuses of devices spread over different locations at any time. If a simple fault occurs, users can reboot or report the problem remotely, preventing service personnel from exhausting themselves and reducing maintenance-related cost for enterprises.

In terms of information security for embedded systems, SUSIAccess can convert the conventional passive "Blacklist" mode into an active "Whitelist" in order to control unnecessary programs in the operating system for industrial computers. A Whitelist mode is made by creating a positive application list. Only programs in the list can be installed and executed, and those not on the list will be blocked, making information security management easier and more complete.

With Windows Embedded 8's various functions and features specifically designed for embedded systems, in addition to Advantech's rich professional expertise accumulated from years of hard work in various fields, we will be able to provide strong assistance to intelligent systems developers through close integration between hardware and software. ■

# Advantech Integrated Industrial Display Solutions



**ADVANTECH** Industrial Display Solutions

**Advantech Industrial Display Solutions Seamless Integration with Embedded Platforms**

Advantech provides integrated industrial display solutions to deliver faster time to market for embedded system integrators. Our solutions not only include wide-ranging display products, but also guaranteed compatibility with embedded platforms including LVDS/VGA cables, VBIOS and touch driver support. What's more, Advantech has built a Class 10,000 LCD clean room to provide high quality manufacturing and value-added services, and provides long-term commitment to customers with an industry-leading 5-year extended warranty.

**Value-added Solutions:**

- Leading High Brightness Technologies
- Excellent Sunlight Readable Solutions
- Advanced Optical Bonding Solutions
- Versatile Touch Screen Integrations



**IDK-1000 Series Industrial LCD Panels**

- 5.7"~21.5" size options
- 200~450 nits brightness
- LVDS signal interface



**IDK-2000 Series Ultra High Brightness LCDs**

- 8.4"~31.5" size options
- 1,200 nits high brightness
- LVDS signal interface



**IDS-3000 Series Ultra Slim Open Frame Monitors**

- 6.5"~19" size options
- DVI/VGA interface
- Rear/VESA mounting



**DSD-3000 Series Digital Signage Displays**

- 32", 42", 55" size options
- HDMI/DVI/VGA interface
- Wall mount



**DSD-5000 Series Stretched Digital Signage Displays**

- 28"(16:3), 38"(16:4.5) size options
- DVI/VGA interface
- Wall mount

# Stepping into the New HMI Generation

HMI takes a step forward by integrating Software and Hardware

The multi-touch technologies of smartphones have been implemented into industrial HMI. This not only simplifies their operation and overcomes interface limitations, but sets free the imagination of software designers to create much more preferable user experiences.

By Wanger and Pictures from Advantech  
Interview with Jonney Chang, Industrial Automation Group Director of Advantech



Competition has led to a gradual decline in vendors' net profits, making manufacturers having to look at ways to advance their production efficiency. During this improvement process, information control is very important and that is why in manufacturing industry

virtual management tools and techniques have grown in recent years. To fully realize this, Human Machine Interface (HMI) products are well placed to meet this need as well as expanding into intelligent application fields.

## The endless variations of multi-touch technology

The Director of Advantech Industrial Automation Group, Mr. Chang stated that the future development of HMI will head towards the 3C's—Computing, Control, and Communication, and this will lead to entirely different opportunities. From providing simple click access to screen visualization, HMI evolution no longer just focuses on hardware but software integration also, and it is this which will be the next highlight to look out for.

HMI is benefiting from the technological progress in display panels and semiconductors which have produced thinner and lighter screens. And gradually, mature multi-touch technology has made HMI products function more like smartphones with more intuitive and easier ways to interact with the interface.

HMI specifications have undergone a fundamental change due to multi-touch technology. In the past, more frames meant more functions could be provided by HMI, but now users can click almost anywhere on the screen and can shrink or enlarge an object and even make 3D displays that completely break free from previous limitations and invite us to enter a new era of visual manipulation.

Mr. Chang told us about other hardware features of HMI will become inevitable trends, including low-power consumption (from the concept of green factories), high-resolution for higher visualization demands, and 16:9 screen ratios which are ergonomically more suitable for human vision and mainstream optimal purchase costs.

## The most thoughtful customized design

At present, HMI products are targeted at manufacturing and non-manufacturing equipment. The former accounts for the largest proportion of applications and can be classified into two major types. First, for traditional industry, HMI hardware is less demanding for new features because the existing equipment can produce most products making the turnover rate for new applications to be relatively low. In contrast, the electronics industry has a greater requirement for latest technologies due to shorter product lifespans, faster upgrade and updates, and better product performance. No matter which, both require some degree of customization to meet different manufacturing processes. For example, a beverage filling machine can only work when HMI performs specific instruction like

simultaneously pressing two buttons to avoid operating errors. As for electronics factories, the differences in corporate culture, work patterns, and systems design brings out diverse needs even if they manufacture the same products.

In the non-manufacturing area, HMI applications are increasingly too, such as in the intelligent buildings field. Instead of the original desktop computer in a control room, HMI's multi-touch operating modes offers a better way to control utilities like electricity and water consumption in buildings. Mr. Chang stated that, "Hardware technology and software integration are both very important for HMI. Advantech's Building Energy Management System (BEMS) is an extended product from our SCADA system series. Using BEMS HMI multi-touch features, functional modules can be designed as APP icons. BEMS products are open for users to design their own combined functionality so as to completely fit their needs and processes".

## Combining SW with HW brings greater benefits

Let's look at the car engine assembly factory as an example to show what Advantech's HMI can do in the automotive industry. Because of the sophisticated and complicated operations on production lines, plants used to acquire data from working points via SCADA and send them to Manufacturing Execution Systems (MES) to control operating processes, but Advantech's HMI is able to seamlessly integrate SCADA with MES and can also access both systems in one screen; furthermore, Advantech's software platform - SUSIAccess enables system administrators to access all information or optional system features through the Enterprise Cloud by providing a range of downloadable functional modules for HMI. "If hardware vendors are able to develop their software programs for HMI solutions, then there are lots of exciting benefits to be gained for end users. And, due to smartphones, people have become accustomed to multi-touch operation and by applying this to HMI in manufacturing, systems can not only simplify operational processes but can also overcome traditional user interface display limitations, thereby inspiring more ideas through innovative software design. In other words, HMI must be capable of providing both software and hardware functions so that it can be a complete solution for customers," Mr. Chang said. ■





**Boonyarit Kantaporn**

**AOnline Manager  
Advantech Thailand**

**G**reetings from Advantech Thailand. I am very glad to have this opportunity to introduce myself to worldwide colleagues in this global edition of MyAdvantech magazine. My name is Boonyarit Kantaporn, AOnline Manager. I joined Advantech in 2011, and was assigned to develop the AOnline business locally. This is very challenging because normally customers in Thailand expect that we provide not only quality products, but they also want a solution consultant who can provide first-rate services to them.

My personal objective is to drive AOnline forward, creating greater brand awareness and customer loyalty. This is another challenge, but we know that we can get it done through great teamwork. It's been an honour to be a part of the Advantech family, working here I find myself motivated with a passion to succeed. In my private life, I love to enjoy quality time with my family, travelling, visiting cultural places or just relaxing.

I wish you all success, so keep up the good work and if you're ever in Thailand, let me know...I'll give you a real taste of our legendary spicy clear soup "Tom-Yum-Kung", I guarantee that it's not same as you've tasted in Thai restaurants in your country.



**Britta Palanjan**

**Credit Specialist  
Advantech Irvine**

**G**reetings from Irvine, California! Hello, my name is Britta Palanjan, Credit Specialist in the AENC Credit Department. I joined Advantech in October of 2011 after being on parental leave for several years. I was highly motivated to return to the workforce and feel very lucky to have found a company that makes work exciting and fun! I am extremely grateful to be part of the Advantech team and for the opportunity to grow professionally and personally. I truly appreciate working for a global company with diverse teams and multinational customers. Born and raised in Germany, I studied Business Administration and Accounting in Germany and the US. My years of experience in accounting, customer service, and sales benefit me in my daily work as the Credit Department assists the financial and sales functions of the organization. One of the key elements is driving customer satisfaction in a fast-paced environment. Our team interacts daily with the global customer base. I enjoy the challenge of solving customer problems while building positive relationships based on mutual respect and helpfulness. I am very fortunate to work with an amazing team and excellent leadership. Having colleagues in different parts of the world, respecting each other, and working together as a team is truly amazing and inspiring!

I am very thankful for everything that Advantech's employees and the company have given me. Furthermore, I am eager to continue to learn more about the Advantech family and hope to meet many of you in person!

**H**ello, this is Chingpo sending his warmest greetings from Beijing, China.

I joined Advantech in 2002 as a hardware engineer in our Automation BU. Doing R&D is fascinating because I can infuse my ideas into new products, and I'm very proud that I've helped design a variety of products including: ADAM, UNO, and APAX products. I went through a 2-month TCAP training in Beijing in 2008, and have been working here since then.

I am now in charge of the Energy Solution PD which was established in July 2011, devoted to developing products for the Smart Substation market. A variety of challenges and difficulties came up in the process of the transformation from an R&D centre to a product division. I was lucky to have participated from the very beginning, and I've learned so much about our products, marketing and sales strategies, and I highly value these experiences.

Life here in Beijing is also fascinating. The "culture shock" is amazing to me. I have been here for 4 years, and still experience new things from time to time, even the language and the sayings. Guys here still mock my pronunciation, but I am fond of the food here, the weather, my companions, and I even love skiing. I totally enjoy my work and life here in the Beijing office—I suppose that's the reason why they say my laughter is always vigorous and recognizable. I wish every one of you good health and happiness!



**Chingpo**

**RD manager  
Advantech Beijing**

**H**ello Everyone, my name is Mariette Dusseldorp and I've worked for Advantech Europe as a Marketing Manager for 12 ½ year now. I'm located in the ABN office which is in Breda the Netherlands. I started in the millennium after working for 16 years at Procter & Gamble, which is a completely different industry than Advantech. So in the beginning, I had to learn a lot about our business-to-business industrial computing markets & approach, and still every day I'm learning about our customers and our extensive product portfolio. This makes my job so interesting! Our RBU takes care of the Benelux and Scandinavian countries in northern Europe. Currently I'm focusing on marketing for the Medical Sector in EMEA. There is a lot going on with the digitalization of hospitals. I'm proud that Advantech has the right solutions with their medical grade PCs and devices for patient bedside entertainment. We are steadily building relationships with our system integrators to enter this market together. With our team we want to deliver the message: 'Enabling a Smarter Hospital'. Recently, we've used the smaller sister magazine of this one called MedAdvantech Journal to roll this out, but also via our biggest event of the year, the Medica exhibition in Düsseldorf Germany. I am married and we have two lovely student kids. In my spare time I play the clarinet in an orchestra of 60 people. I'm also active as a volunteer for a big cycling event called Colsensation, to raise money for Cancer Research. 250 People are cycling up Mont Ventoux in France on a specific day. It gives a very satisfying feeling to contribute to this event, it's for a good cause and the motivation of people taking part in this event is overwhelming.



**Mariette Dusseldorp**

**Marketing Manager  
Advantech Benelux & Nordics**



# Tales from India

The economy of India is the tenth-largest in the world by nominal GDP and the third largest by purchasing power parity (PPP). As per World Economic League Table report published by the Centre for Economics and Business Research (CEBR), India will become fifth largest economy by 2020. Since 2005, Advantech India has equipped system integrators and solution providers with the solutions and products that accelerate productivity, innovation, and discovery. In early February 2005, Advantech world headquarters, decided to form AIN as one of its regional business units and to further develop the Indian market. Management representatives from Advantech Co. Ltd, Mr. Henry Lee, Vice President, ePlatform Services Asia, and Mr. Howard Lin, Vice President, eAutomation Services Asia, have been instrumental in AIN's development. The first office of Advantech India was opened in Rajajinagar, Bangalore with three employees. This location is popularly known as the Silicon Valley of India. Right now, the India team has been expanded and moved to a new office premise in Kasturinagar, a suburb of Bangalore with 16 employees.

Advantech India has a strong presence in south India and is expanding it's operations to western India and northern regions by establishing sales and support offices in Pune and New Delhi. Advantech India provides 24/7 customer support service through it's call center and online support centers, and in mid 2013 Advantech India will be offering Configure-To-Order-Service (CTOS) to their customers.

Advantech India was recognized as a Windows Embedded Gold Partner and a Microsoft Authorized Embedded Distributor in India in 2012. This brought a unique opportunity to work closely with Microsoft and expand it's hardware/software offerings in India. In spite of the global economic recession, Advantech India managed to keep in profit, and IPC sales sky rocketed. This was not only due to Advantech's excellent product quality and reputation, but it was also down to the full support from local partners that jointly brought us success.

IT solution providers in India tend to introduce low-cost strategies. Undoubtedly, low-priced goods easily draw attention, yet Advantech India believes that only higher quality and durable products last longer in the market. Hence, Advantech India has adopted a different tactic from those of other players—highlighting the performance and reliability features of our products. Compared to other manufacturers, products and solutions provided by Advantech India get through mission critical evaluations more easily.

The Industrial Automation Group takes prides in three specialized sectors - Automation Computing, Control and I/O, and Industrial Communication. All solutions built by the eAutomation group deliver high-performance products built on rugged, industrial-grade designs. The product lines include: Embedded Automation Computers, Open HMI Platforms, Automation Controllers & Software, Distributed I/O Modules, Plug-in I/O and Motion Control, and Industrial Ethernet Solutions.

Currently, Advantech India collaborates with several channel partners locally; among which A Tech, Technics and Dynalog are major associates. These partners have been vending Advantech products for over a decade and have acquired a unique understanding toward Advantech solutions. And, in order to strengthen our partners' capabilities on device maintenance and replacement parts and services, Advantech India provides extensive training resources. Just one more example of why Advantech India looks positively towards future growth and prosperity—long may it continue. ■

# Turnkey Signage Solutions Key to Success



Data Protection

Windows® Embedded Ready

Remote Management

System Security

**ADVANTECH**

Enabling an Intelligent Planet

## Covers All Your Signage Requirements

Advantech has powered thousands of digital signage applications across every industry/market and has recently developed these turnkey signage solution offerings. Now it is easy to create signage solutions, knowing that reliability, security and manageability are assured. All Advantech digital media players come pre-loaded with an embedded OS, along with SUSIAccess remote device management software, Acronis data protection software, and system security software by McAfee. By turnkey signage solutions, System Integrators can save important development time and focus on their own applications. Results: better apps, quick time-to-market.

### Data Protection

- Full/Hot/Scheduled Backup
- On-click Recovery

### Remote Management

- Remote Monitoring
- Remote ON/OFF
- Remote KVM

### Windows® Embedded Ready

- Multi-language: ENG, JPN, CHT, CHS
- Multi-Touch Support
- Motion Sensor Technology Support

### System Security

- White List Protection
- Solidify the HDD
- Unauthorized Activity Warning



**ARK-DS220**  
ION2-based Intel® Atom™  
OPS Digital Media Player



**ARK-DS262**  
3rd Generation Intel® Core™ i7  
OPS Digital Media Player



**ARK-DS520**  
ION2-based Intel® Atom™  
Digital Media Player



**ARK-DS762**  
3rd Generation Intel® Core™ i7/i5/i3  
Digital Media Player with 3 x HDMI



# Cycling with Advantech @30



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## **Cycling with Advantech @30**

In order to celebrate Advantech's 30<sup>th</sup> Anniversary, we will hold a cycling program in over 30 cities worldwide to communicate our altruistic LITA philosophy and our commitment to talent development. In addition to expressing Advantech's philosophy, we would like to bring Advantech worldwide members and partners together to fully realize the corporate vision of Advantech Beautiful Life.

為迎接研華30週年，並傳承研華30年來利他、專注、團隊合作與人才培育等核心價值觀，我們將透過「Cycling with Advantech @30」腳踏車活動串連全球，凝聚全世界研華同仁及夥伴們的向心力，落實利他精神與企業社會責任，並與全球夥伴們攜手轉動研華美滿人生的企業願景。