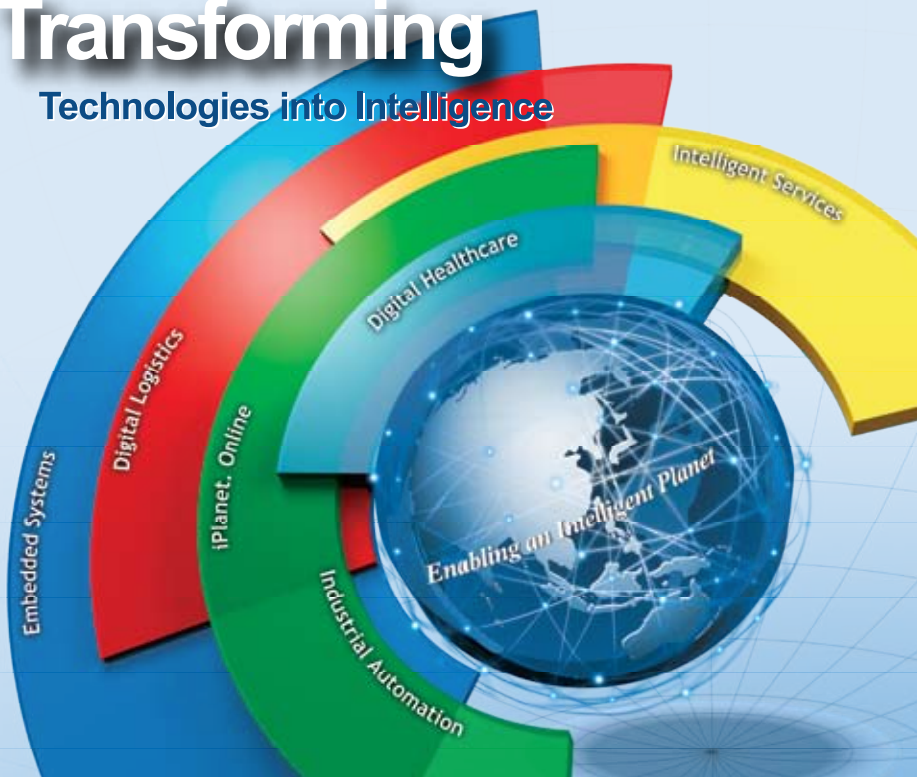


MyAdvantech

The Magazine for Global Advantechers and Partners

2011 WPC Special Issue

Transforming Technologies into Intelligence



Mobile Assistant Provides Convenient and Safe Healthcare

MICA-101 Enhances the Quality of Medical Care

Emergency medical services race against time to save people who have suffered a stroke or heart attack, and medical staff try to overcome the muscle loss that accompanies heart attacks as muscles deteriorate with the passage of time. This requires technologies that aid quick response. With this in mind, the Advantech MICA-101 Mobile Clinical Assistant can assist and enhance emergency services.



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About Advantech World Partner Conference

Advantech’s Upcoming Event Activates Your Business Potential

As intelligent applications, products, and services continue to evolve and are ever more widely available, they have a growing impact on everyone’s lives. Advantech’s “Enabling an Intelligent Planet” mission states that a fundamental transformation which will revolutionize the industry is taking place, and we want to share this vision with our partners to encourage this great change. Therefore, “Transforming Technologies into Intelligence” will be the theme of this World Partner Conference (WPC) in Taipei, Taiwan on October 27th-29th, 2011.

Advantech works closely with our partners to help them overcome the many hurdles they face on the way to market. In 1990, Advantech started the Regional Distributors Meeting to collect information about dealers’ needs and also to learn more about the technologies that benefit customer businesses. With advanced technology developments and rapid changes in the market, the event grew into a global interactive conference. In 2003 the current WPC format was officially launched as the premier event to discuss, deliver and demonstrate the new technologies that affect us all, as well as sharing Advantech’s new corporate strategies and vision with all participants.

This year, WPC has been separated into two events to satisfy different business focus and market segments. In March 2011, Advantech held the Embedded World Partner Conference, which focused on “Pursuing Global Leadership in Embedded Design-In”. The second event in October will focus on solutions that will “Transform Technologies into Intelligence”, and lead to a more intelligent planet in the Internet of Things (IoT) era. The exhibition will include more than 150 booths and demonstrate a whole range of new technologies and products.

From a multinational corporation to a globally integrated enterprise, Advantech continues to grow and develop products and services that meet customers’ needs to face the future with confidence and vigor. Through participation at WPC, participants can fully realize Advantech’s guiding principles, embrace the vision of this dynamic future, and continue to grow with Advantech as a valued eco-system partner. ■

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Transforming Technologies into Intelligence

With the emergence of IOT and Cloud Computing, the industry is encountering significant changes but also more opportunities for advancement. In order to cope with the new challenges, both Advantech and our partners have a clear objective and are well prepared for such a transformation, and that is why we set “Transforming Technologies into Intelligence” as the theme of this year’s World Partner Conference.

By Bai Yanyou, with pictures from Advantech
Interview with KC Liu, CEO, Advantech

Due to this dramatic transformation, we are standing on the starting point of an industrial paradigm shift. About every 15 years there is a major breakthrough in the IT industry. Since the advent of the computer, it has gone through different phases from mainframes, to personal computers, to the rise of the Internet. As computer hardware and network infrastructures mature, the emergence of the Internet of Things (IoT) and Cloud Computing has brought big changes and new challenges, and led the industry into a new golden age.

In the course of this transformation, integrated applications and communications have transformed people’s lives via mobile smart devices, while ATMs, point of sale, digital signage and healthcare, as well as building and environmental monitoring systems have quietly made their presence felt. With the rapid development of IoT, the unique features of industrial computers such as their ability to operate in diverse work environments and be embedded in a multitude of applications will become more significant. Furthermore, our working environments that are increasingly monitored and controlled through networks will become an important new direction in the next paradigm shift.

In response to this global shift, Advantech developed the slogan: “Enabling an Intelligent Planet” as a long-term mission statement to face the new IoT era with confidence and maintain its leading position. Furthermore, another

industry trend known as “Intelligent Services” has been growing. It is flourishing in many vertical markets and will enable infinite possibilities in many new areas including: the intelligent city, medical care, retail, transportation, logistics, and smart building automation.

Right now, many mature technologies are in place and sufficient to support the basic needs of the market. So, how to transform these technologies into intelligence and integrate these solutions will be Advantech’s most important goal to empower systems integrators in enabling an intelligent planet.

Since early 2011, Advantech has undertaken a series of reforming initiatives to implement this goal. The first one is organizational separation to segment different business units based on various niche markets. Currently, there are four business groups including 35 divisions. In the future, Advantech will expand more specialized divisions to serve different customers in expanding vertical markets.

Secondly, through a new sales model - M2M in vertical sectors, the decision making process and related information of overseas customers can be better communicated to all departments. And to promote the concept of “Transforming Technologies into Intelligence”, Advantech will no longer only sell platforms, but will become central to the vertical marketplace.

Furthermore, in addition to existing x86 and Windows platforms, Advantech will continue to develop new platforms for DSP, Android, and RISC applications in response to Intelligent application requirements and the sustained development of technology and infrastructure.

Advantech has not only changed our own internal structure but also assisted our partners to build their future business drivers. We cooperate and make joint sales with business partners from different channels and help establish cooperative relations with distributors in many different fields including medical care, automotive, energy and embedded fields.

Looking forward, we hope to further integrate the industry as a complete Ecosystem from the upstream to the downstream, including semiconductors, software platforms and software

applications. Because this new paradigm shift is still a very young and immature market, as a promoter of the Intelligent Planet, we are expecting more partners to work together with us to achieve common aims.

Particularly in the specialized application software area, Advantech wants to help small-scale and regional application developers and systems integrators by co-creating a global platform while we work to establish the new platform model.

By connecting everyone’s wisdom and know-how, from the upstream to downstream industries, we believe that the goal of “Transforming Technologies into Intelligence” can be reached much faster, and in the process of enabling this new paradigm shift, Advantech and all of our partners will become even more globally competitive. ■





A Quiet Revolution That Shapes Our Future

With the increase in embedded applications, smarter more intelligent devices are gradually being implemented into all kinds of equipment, enabling a more “Intelligent Planet”.

By M.D and picture form Advantech and TPG

Have you ever noticed when using ATMs that gradually you also use them to transfer and pay bills as well. There are immense changes in today’s fast paced world. While you’ve already got used to many new technologies such as digital signage in front of cinemas, surveillance cameras on the streets, and smart cards for transit, you might not know that a quiet revolution, led by smart technology, has been taking place and slowly changing our lives, pushing us toward a better future.

Imagine the future

So what kind of future awaits us. Well, let’s enter into a world of the imagination.

In your future house, you’ll seldom use an air conditioner remote control because the system will automatically adjust indoor temperatures via smart sensors which are hidden within the walls. You will also be able to control interior ambience such as lighting, audio and heating via the control panel through a single touch screen or even voice activated interface.

When you are driving your electric car, you will find the city you now live in is a very green place with fresher air, because the sunlight and wind have become major energy resources. Smart grids have already been built and provide the infrastructure with optimal allocation of energy resources.

Driving on roads, the best route to your destination has been set in advance, allowing you to travel in comfort. Even if there

are hold ups or accidents, the vehicle’s computer can provide alternative routes and calculate the exact travel times for you.

If you need to go to the hospital for medical treatment, you won’t need to stay in the waiting area after registration. Instead, you can go to the lobby to drink a fruit juice or read newspapers and the system will inform you when it is your turn to see the doctor. And if you have to apply for admission, some of your treatment can be performed at the bedside. Nurses can take your blood pressure or change dressings via Mobile Medical Carts. Meanwhile, the doctor will consult his tablet PC which is connected to the back-end system to call up your medical records instantly.

The changes described above are not in the far, or even near future, they are already here, and will increasingly appear in our lives through advanced smarter technology.

Intelligent technology changing lifestyles

But is there any difference between past and present technology? What is its future direction? The answer to both questions is the same - Intelligence.

One of the main features of previous technology was independent “single function” operation. For example, cell phones were just used to communicate by voice but now smart phones can take pictures, access the Internet, play video and music as well as many other functions. For fleet management, monitoring systems inside vehicles can automatically avoid

transit problems and secure the safety of goods with the implementation of image control software. With the help from GPS satellites and smart tracking technology, fleet owners can calculate a truck's location and send data to the back-end system to facilitate fleet management control. In the past, a monitoring system only provided a passive "watch" function, but now with "intelligent control" features, the system can process data from pre or post-events to provide accurate responses that can prevent unwanted incidents. This kind of Intelligence is being gradually applied to all kinds of equipment. Intelligent applications integrate existing technologies with a careful assessment of customer needs to design a system that can act and respond independently.

Ubiquitous Embedded Systems

According to a UK IEE definition, an embedded system is "fully embedded within a controlled device, designed for specific applications and has a dedicated computer system". Embedded systems are ideally suited for enabling "Intelligent Planet" applications as devices are everywhere such as mobile phones, GPS devices, digital signage, KIOSKs, as well as systems embedded in manufacturing or medical equipment for specific purposes. They have become an important cornerstone to support the operation of modern society.

In the beginning, embedded systems evolved from the architecture of PCs, and they focused on general-purpose applications due to the limitations of PC technology and the immaturity of the Internet. But with the advance of PC technology and intense competition, embedded devices began to dominate vertical markets and many special-purpose devices appeared in the construction, in-vehicle, medical, and other vertical fields. Now, embedded devices have become an integral part of modern life with their wide deployment making alternative technologies difficult to follow.

Building an Intelligent Planet via a five-year plan

As a leader in the industrial computer industry, Advantech never places limits on itself and always looks beyond the industrial manufacturing sector. With the maturity of embedded technology, Advantech took the lead to engage in diverse fields over many years. Nowadays, a ubiquitous embedded landscape is gradually emerging and this not only creates blue ocean market opportunities but also pushes Intelligent applications into all our lives.

Based on the company's core vision of "Enabling an Intelligent Planet", Advantech has a clear business development

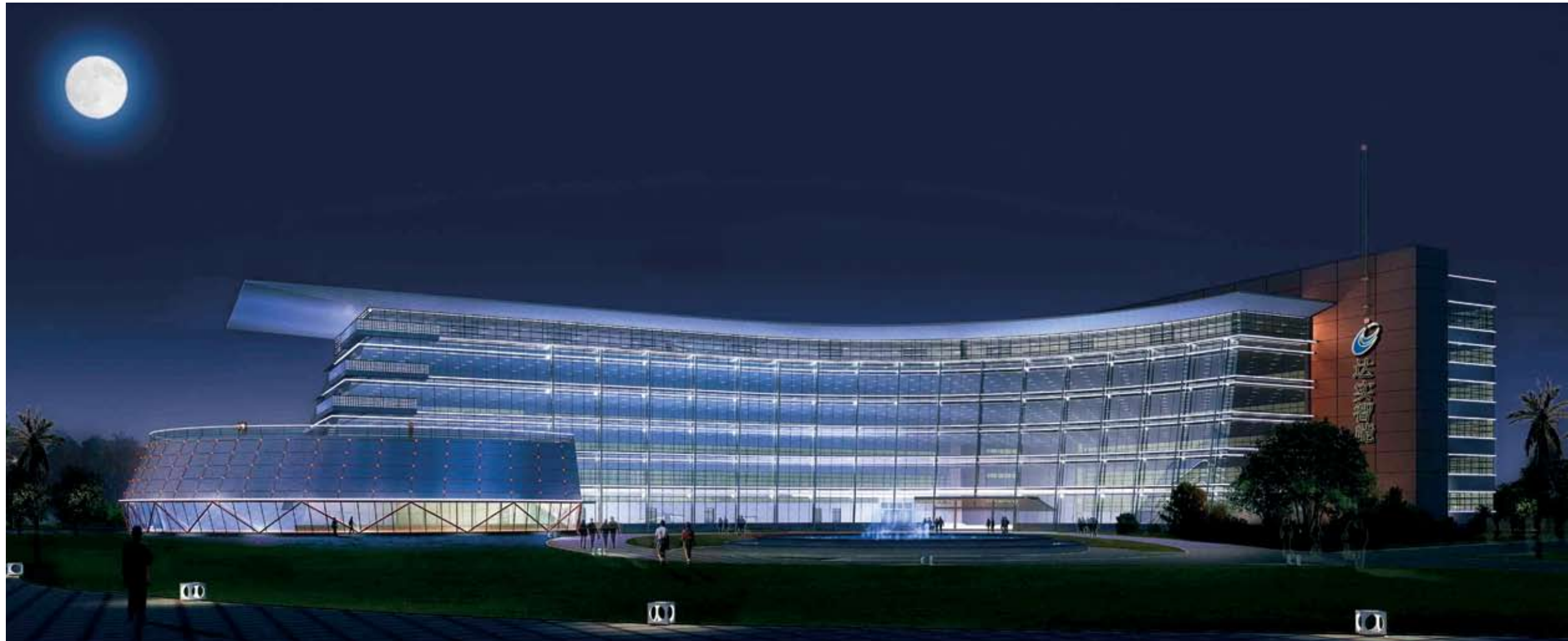
strategy by strengthening internal R & D capabilities and aggregating application experiences in different fields. These approaches quickly leverage Advantech's market advantage and give power to their products into intelligent applications in a range of vertical markets.

A new wave of automation solutions enables intelligent platforms to flourish in many areas, and as IoT is gaining momentum this will lead to a quiet revolution that will drive the future growth of Advantech.



In response to this quiet intelligent revolution, Advantech initiated four strategies to promote the company's growth, including the niche SBU Cluster Growth Model to expand Strategic Business Units (SBU), Geo-Region Reconstruction to restructure and integrate resources, GIE 2.0 (Globally Integrated Enterprise) to create dedicated business groups and teams, and AOnline to expand the global base for Advantech's distribution.

Through these four strategies, Advantech will deepen market penetration in a range of vertical markets, and more closely integrate the frontline business units and product groups to provide optimal product solutions as well as achieving maximum synergy. No matter what Advantech does, all plans focus on the core concept of "Intelligence" and extend embedded technology to each vertical market so as to create an enhanced vision of the "Intelligent Planet". ■



Promoting the Development of the Railway System in China

DAS Intellitech Optimizes Intelligent Transportation

The development of the urban rail transit system is the top priority for China's major cities. DAS Intellitech has been involved in the transportation business for over a decade building support for comprehensive monitoring systems. With the professional and technological advantages of intelligent and energy-saving services, DAS Intellitech has demonstrated its skills in many urban railway projects.

By Yi Ping Lin, with pictures from DAS Intellitech
Interview with Mu Qing Lin, General Manager of the Intelligent Rail Transportation Business Unit, DAS Intellitech

DAS Intellitech Profile:

Founded in 1995, DAS Intellitech engages in the development of intelligent construction and smart security products as well as providing consulting, design, and value-added services. The company is the first enterprise in China to receive an ISO9001 certification and its smart security system products have also been awarded an ISO14001 certification.



With the rapid development of urbanization in China, the total population of major cities continues to grow and with it the volume of public transportation, making traffic congestion problems ever more severe. As a result, the first priority many of these cities face is the development of suitable urban rail transit systems. According to recent transportation plans, ten different mainland cities, including Beijing and Shanghai, have built and put into operation some 29 rail lines. By 2020, the total length of China's urban rail transit lines will be between 3,000 and 3,500 kilometers.

At the same time, the growing trend in urban rail operation has been the development of computer intelligence and automation platforms, and comprehensive monitoring systems play a key role in that growth by improving security and reliability through better access to information and system controls. DAS Intellitech, established in 1995, has a strong reputation for combining professional services with excellent technology, and many of their transportation systems have already been implemented in China.

Intelligent Rail Transit Systems are a Growing Trend

DAS Intellitech's General Manager Mu Qing Lin, stated that his company offers a variety of solutions for the security, rail transportation, intelligent building, and factory industries, all built on intelligent and energy-saving technologies. These provide customers with efficient, safe, comfortable, and environmentally friendly facilities. In the year 2000, their company undertook a project to develop comprehensive monitoring systems for rail transport, with the first project to be installed in Hong Kong. The new system, installed



in Hong Kong's MTR, monitors the system and also manages electrical equipment such as air conditioning and lighting. Following completion of that project, DAS Intellitech won additional engineering projects in Shenzhen and Chengdu. With the successful completion of each case, the company was able to showcase its strengths and set trends for the development of intelligent computing systems and energy conservation.

The comprehensive monitoring system is comprised of many individual systems, including power monitoring, environment and equipment monitoring, emergency exits, train control, fire alarms, transmission, radio, CCTV,

clocks, passenger information, and access control. In the past, these systems operated independently and were managed separately. With advanced communication and control technology, the smaller systems can be integrated into a complete system via the network, enhancing management efficiency and reducing operating costs. Staff in the control room can better understand operating conditions and quickly deal with unexpected situations.

Compatibility and Cost-effectiveness Are Key Points

Since comprehensive monitoring systems are a very important part of rail transport, Mu Qing Lin

said that reliability and stability are crucial factors for customers deploying management solutions. Systems have to meet industrial-grade specifications against dust and vibration, and they need to operate in a wide range of temperatures, to be moisture-resistant, and to have long product life cycles.

DAS Intellitech chose Advantech as a long-term partner because Advantech was an early entrant in the industrial control field, and has the ability to develop customized solutions as well as offering verification, testing and other technical services. For the DAS Intellitech public transport cases, Advantech supplies the core platforms, providing compatible system products with excellent performance-cost ratios and has also helped DAS successfully win many additional projects in a highly competitive market.

Based on the Chinese rail transport system rollout schedule, cities in the southern part of the country will be implementing additional subway and transportation systems. Mu Qing Lin believes that, based on their past successes in the rail transportation sector, this is an opportunity for DAS Intellitech to continue to shine. Their familiarity with advanced technology and experience in the field will also allow them to continue to assist China as it pursues a localization plan to develop its own transit system technologies, a national railway system, and more intelligent transportation. ■

Data Acquisition & Control Cards



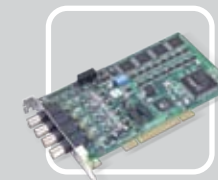
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Complete PCI Card Range for High-precision PC-based Applications

- High-speed, high-density and cost-efficient PCI cards to meet data acquisition needs for automation, test & measurement, and lab applications
- Up to 50 different PCI cards, including multifunction, analog I/O, digital I/O, counter, motion control, communication, GPIB, and more
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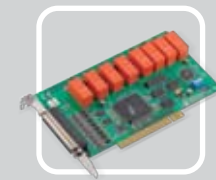
PCI-1710U
100 kS/s, 12-bit, 16-ch
Universal PCI
Multifunction Card



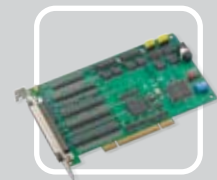
PCI-1714U/UL
30 MS/s, 12-bit,
Simultaneous 4-ch
Analog Input
Universal PCI Card



PCI-1730U
32-ch Isolated Digital
I/O Universal PCI Card



PCI-1761
8-ch Relay and 8-ch
Isolated Digital Input
PCI Card



PCI-1240U
4-axis Stepping and
Servo Motor Control
Universal PCI Card

The Relationship Business

Building Strong Industrial Relationships is Crucial to Success

By Martin Marshall

An Interview with Robert Jackson, Senior Product Manager, Product Partner Development, National Instruments

Industrial Automation may increase productivity and reduce costs for end customers, but it is becoming increasingly difficult to develop large projects when different technologies are required. That's why more and more businesses are working to develop relationships that can deliver a platform approach – thus reducing end customer's interoperability risks.

National Instruments (NI) is a US company and producer of automated test equipment embedded hardware, and graphical design software that transforms the way engineers and scientists around the world design, prototype, and deploy systems for test, control, and embedded design applications. Their "LabVIEW" software is known worldwide and used in many applications that graphically design test, measure, and control systems.

Advantech is a Taiwan based company and a global leader in the automation and embedded industries, delivering hardware and software solutions and services across multiple vertical markets. Industrial Automation is one of their divisions whose portfolio includes: Human Machine Interfaces (HMI), embedded

automation computers, industrial touch panels, and video surveillance solutions amongst many others.

As the industrial landscape continues to move toward a more automated smarter environment, engineers implementing monitoring and control applications encounter increasingly complex systems. Such industrial control systems often consist of independent controllers managing specific, individual tasks. As these distributed systems increase in complexity, control and monitoring tasks must be divided among several controllers networked together and ensuring proper operation of these kind of distributed industrial processes requires the input of system managers and operators. Communication and interoperability for these systems requires a new graphical software approach. The ability to view a system through software, with layers of abstraction and models of computation enables a domain expert to lead the innovation for smarter systems and empower a smarter planet.

The distributed system also requires new approaches for visualization. Devices like Human Machine Interfaces



About National Instruments:

National Instruments transforms the way engineers and scientists around the world design, prototype, and deploy systems for test, control, and embedded design applications. Using NI open graphical programming software and modular hardware, customers at more than 30,000 companies annually simplify development, increase productivity, and dramatically reduce time to market. From testing next-generation gaming systems to creating breakthrough medical devices, NI customers continuously develop innovative technologies that impact millions of people.

(HMIs) offer direct interaction while web services and remote displays offer additional access to the system. LabVIEW supports visualization through multiple Oses including Window and Linux while also offering integrated web services capabilities for communication to embedded displays, smartphones, and tablets.

To provide a more complete platform offering, NI was looking to integrate HMI hardware platforms with their LabVIEW software to enable customers to integrate a complete system and ensure SW interoperability.

NI has a Partner Program that works with key product partners to deliver more complete platforms with first class LabVIEW integration, clear technical alignment and strong product support. Robert Jackson, who is a senior Product Manager at NI and manages the NI Product Partner Program said, "Our goal is to deliver hardware and software solutions to our customers that include NI core technology platforms and well-integrated complimentary products that

are compatible with LabVIEW. What we liked about working with Advantech was their sales team was open and responsive to our needs and worked to communicate these to the Advantech corporate team. They also offered a nice wide breadth of hardware that matched our needs for platform completion."

National Instruments is a worldwide organization with a presence in almost every region of the world. They have direct offices in over 40 countries and regions. Advantech sells its products and services through a sales and marketing network that spans 64 cities in 22 countries. Together, they offer comprehensive total solutions and services backed by global logistics support. This enables Advantech and NI customers to continuously develop innovative technologies that impact millions of people worldwide. ■



Smart Grids Power the Intelligent Planet

Technics Software and Advantech's Industrial Controllers Improve Power Generation Efficiency

By Martin Marshall
An Interview with Abhay Tandon, CEO, Technics

The electricity sector in India supplies the world's 5th largest energy consumer accounting for 4.0% of global energy consumption by more than 17% of global population. To satisfy the needs of rising energy consumption—but also to solve electricity wastage, India has identified that during typical transmission and distribution between 30 to 45% electricity is lost, and modernizing these systems to be more energy efficient is a key task to secure future economic growth. These losses are due to inefficient metering, proper energy accounting and auditing, but with the use of smart grid technology, India's power generation industries have a way to overcome these power shortage issues.

Smart Grids - The Way Forward

In order to efficiently deliver reliable, economical, and sustainable electricity services, the Government of India has been moving the transmission and distribution of electricity to a new smart grid model. Smart grids attempt to predict and intelligently respond to the behavior and actions of all electric power users connected to it – both suppliers and consumers. Transmission, distribution and electricity usage are reported real-time via smart controls, and a smart grid can respond instantaneously to provide just enough energy as required, as well as being able to monitor, regulate and maintain itself. This smarter process is another example of the intelligent use of technology that brings greater efficiency to the grid and allows

consumers to actively participate in optimizing the system as well providing information and choice of supply.

Smart Grids in India

For electricity transmission reforms, Powergrid (Power Grid Corporation of India Ltd) needed to make plans for keeping pace with the increasing complexities of grid operation in a dynamically changing electricity market, by continuously upgrading load dispatch centers through Wide Area Monitoring, Adoptive Islanding, Voltage Security Assessments, and Dynamic Security Assessments.

For electricity distribution reforms, the Cabinet Committee on Economic Affairs (CCEA) approved a "Re-structured APDRP" project scheme. This program included projects for establishment of baseline data and IT applications for energy accounting/auditing & IT based consumer service centers, and included regular distribution strengthening projects.

There were four goals needed for Smart Grids in India to succeed: 1. The end of load shedding (peak load shifting through combination of direct control and differential pricing (demand response/dynamic DSM). 2. Reliable power. 3. Cheaper prices. 4. More sustainable power.

Smart Substation Solution

Technics, New Delhi, an India based channel partner of Advantech who delivers industrial automation solutions for the power & energy industry, designed a Data Concentrator solution for a Government of India R-APDRP substation project. The project was in two stages, phase I and phase II. For phase I, Technics used Advantech's ADAM-5550CE Programmable Automation Controllers with ADAM-5017 (Analog Input), ADAM-5053S and ADAM-5057S (High Density DI/O) I/O modules and Technics own control software. The Data Concentrator solution needed to be able to transfer input data to a control center and accept commands from the control center to control the switchgear at the substation. To satisfy Technics' requirement, Advantech (PAC division)

created special customized solid state memory for their needs. Technics then had to integrate the whole system with the customer's SCADA system.

Mr Abhay Tandon, CEO of Technics said, "Integration and communication with the end-user's SCADA system was a major challenge. It took our team 800 man days to overcome design challenges and successfully implement the desired solution, but joint efforts put in by Advantech and Technics design teams saw us through. We chose to work on this project with Advantech because of their wide-range product portfolio as well as vertical market domain know how."

"Power & Energy customers also require long lifetime product support, so Advantech was the natural choice having been in the automation business for over 25 years. They could supply our customer with the longevity guarantees they needed. Technics software with Advantech's ADAM-5000 series controllers provided the smart solution our customer needed," said Mr Tandon. ■



About technics:

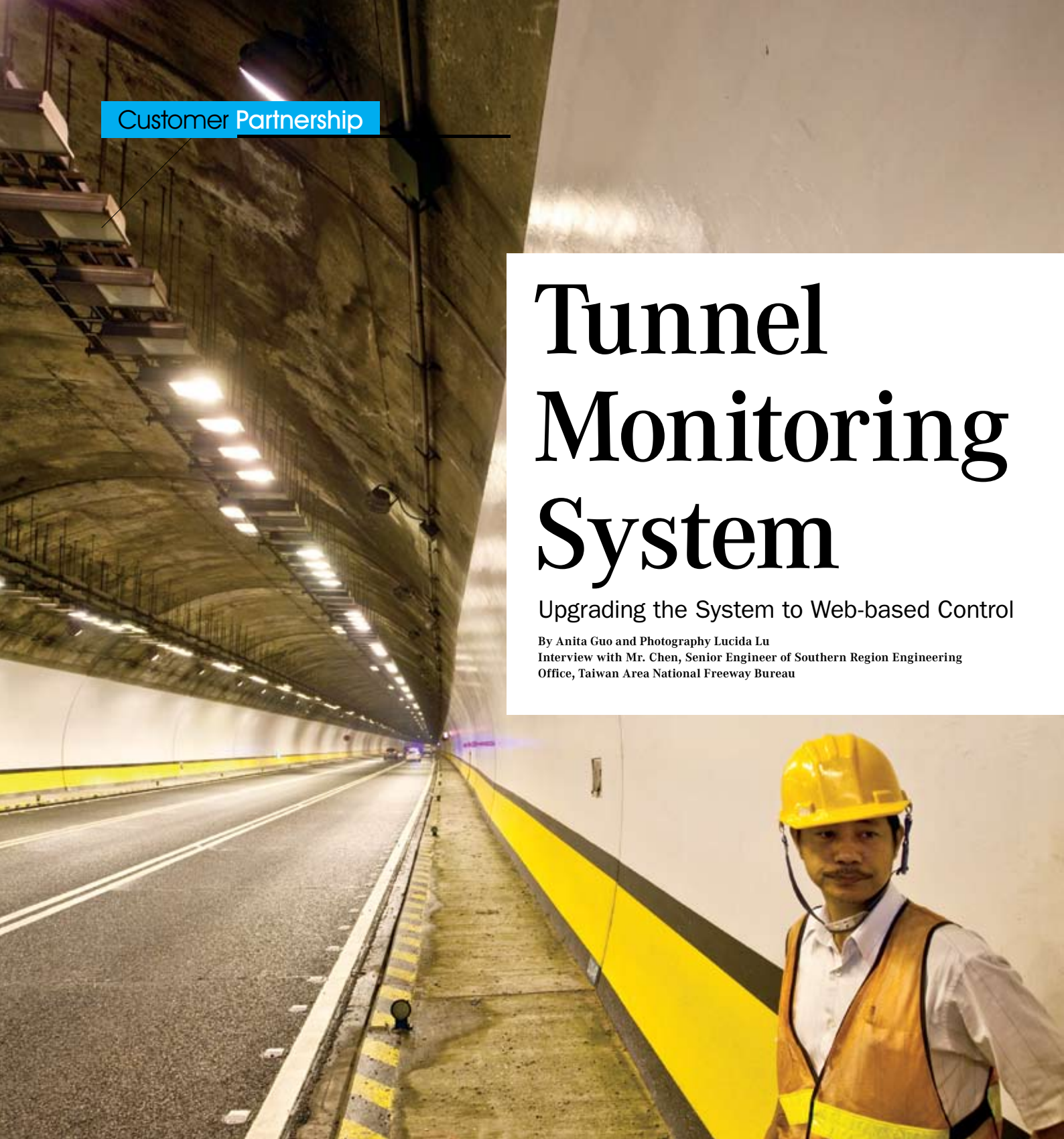
Technics is the Direct Channel Partner of Advantech for its Industrial Grade Computer Systems, Panel PCs, Touch PCs, Rugged Mobile PCs, Data Acquisition cards and modules etc. Its mission is to create and offer their customers with the best State-of-Art Products and Solutions at competitive prices, backed up with best possible support.

technics

Tunnel Monitoring System

Upgrading the System to Web-based Control

By Anita Guo and Photography Lucida Lu
Interview with Mr. Chen, Senior Engineer of Southern Region Engineering Office, Taiwan Area National Freeway Bureau



In late 1990, Taiwan's Freeway Bureau began planning the construction of National Highway No. 3 to open up better transportation links and create more balanced regional development. The highway construction would have to go through steep terrain and mountains

which made the project even more difficult, not to mention the difficulty of follow-up maintenance. Lantan Tunnel is well known among engineering associations and government agencies because it overcame numerous natural barriers and introduced many leading engineering methods.

An invisible guardian of tunnel safety

"Because the Tunnel is located in the mountain area, its maintenance is a demanding challenge. Thanks to Advantech's help, their stable system gave us a big hand," said Mr. Chen, Senior Engineer of Southern Region

Engineering Office, Taiwan Area National Freeway Bureau.

Advantech's SCADA system provided easy management and control of the tunnel monitoring system which is comprised of front-end sensors (including a luminance meter, smoke and dust detector), APAX controller, and back-end PAC with WebAccess software to provide safe surveillance.

"Illumination is one of the most important aspects of driving safety. Due to tunnel's 1.2 km length, the lighting system not only had to provide basic lighting but also had to have adjustable illumination to help avoid accidents because brightness differences can cause motorist's eyes discomfort and problems," Mr. Chen said.

A user friendly graphical interface enabled engineers to easily locate the luminance settings, and the web-based design, hyperlinking, and remote communications, helped external engineering staff easily communicate with central management when out on site.

Building a traffic safety control system in the cloud

Three years ago, when the Freeway Bureau planned to replace the old system, a system with easy maintenance and a simple graphical user interface were the top priorities, Mr. Chen said. "Previous maintenance work used to waste a lot of time on account of using products from different suppliers, which meant problems became very difficult to resolve. We once called several vendors to come in, only to find out it was just a fuse problem! That's why, Advantech really impressed us—with Advantech things got much simpler."

Mr. Chen explained that contact was made with Advantech four years ago to help with an unknown fault. It was only a few thousand NT dollars



About Lantan Tunnel:

Lantan tunnel is a 1.2 km long twin-tube tunnel with three lanes in each direction and it is located at National Highway No. 3 between Lantan and Renyitan Reservoir in northern Taiwan. Complex geology made its construction more challenging due to the loose and soft mudstone, poorly cemented sandstone, and high underground water table. Lantan Tunnel became famous not only for its advanced construction methods, but also for its web-based traffic safety control system using Advantech platforms to integrate a transmission and SCADA system.



of work but Advantech quickly sent maintenance staff to resolve it. In addition, with the benefit of a web-based monitoring system, Advantech could offer the integration of a transmission and SCADA system to enhance overall maintenance performance. Thereafter, Advantech began to participate in the improvement of the tunnel monitoring system as a strategic partner.

Currently, there are 43 of Advantech's APAX controllers distributed in the Lantan Tunnel connected to back-end PACs with WebAccess software to control the whole tunnel. All of those devices were provided by Advantech which significantly improved the system. Mr. Chen added, "Advantech's PACs, which integrate control, data processing, images, video, and internet communications, are ideal products

for maintenance engineering to safely monitor the tunnel.

With increased maintenance and monitoring, the new system has attracted many engineering departments and agencies who visit the tunnel to take a look. And now, the Pingtung Zhongliao Tunnel team is also planning to replicate this project and use Advantech's products.

According to the contractor's manager, "Advantech's IPC products provided the best stability and integration. Secondly, Advantech offered complete technical training and support services, plus quality products at competitive prices, which is why Advantech has become the first choice of contractors." ■

Intelligent Process Control in Power & Energy Delivers Better Power Efficiency

AutomationX Software plus Advantech's APAX PAC Controllers Work Smarter to Define a New Generation of Industrial Controllers

By Martin Marshall
An Interview with Franz Rindler, Managing Director of AutomationX

In the power and energy industry (P&E) the essential requirements of power generation are never far from environmental issues. The ever increasing demand for energy from the private and public sectors needs to be balanced with pressures on the environment. And, one of the simplest ways to help the environment is to be more energy efficient, not just preventing energy wastage, but actively developing more efficient power generation processes, and this is where process automation comes in. What we need are smarter devices that communicate real-time with people and with each other, for example, devices alerting each other, and people who administer these systems, to production problems or bottlenecks, thereby reducing energy inefficiencies.

But our story begins with automation controllers. Once upon a time there were relays and timers, and then along came digital programmable logic controllers or PLCs which dramatically changed the scope and ambition of industrial automation control. PLCs were fully deterministic with deliberately limited control functions – just what was needed for manufacturing, building and factory

automation. However, PLCs can be “too” limited and cannot be used for complex mathematical formula, but with the arrival of the PC, inexpensive computing became ubiquitous, and combined with programmable logic controllers we now saw the arrival of the PAC, or Programmable Automation Controller. PACs are a hybrid solution consisting of programmable logic

controllers combined with the general purpose capabilities of PC technology. PACs are most often used in industrial automation for process control, data acquisition, remote equipment monitoring, machine vision, and motion control. Additionally, because they function and communicate over popular network interface protocols like TCP/IP, OLE for process control (OPC) and SMTP,



PACs are able to transfer data from the machines they control to other machines and components in a networked control system or to application software and databases. PAC's can be used over different application domains by adhering to open industry standards and providing multidiscipline programming and functionality.

Over the years automation controllers have evolved to provide ever increasing levels of control and options. Today's PACs can map control across multiple production layers as needed for data acquisition, process control, machine vision, motion control and more. Recent advancements in controller technology allow better flexibility, information processing, network capabilities, and improved scalability. PACs provide state-of-the-art solutions for variety of industrial automation applications, from Machine Automation to SCADA.

As industrial processes becomes increasingly complex, so does automation control and better control systems are required to integrate all proprietary and legacy systems that have evolved and are built upon other systems. What's needed is a control system that is scalable and modular and designed for engineering, visualization, control and management of small plants up to distributed control systems. AutomationX offers integrated solutions for process automation in Power & Energy, and Transportation infrastructure and many other automation industries.

End-to-end Solution

Advantech and AutomationX jointly developed a control solution that served a Power & Energy customer in power distribution with a process control solution that needed to meet IEC-61850

About AutomationX:

AutomationX is an internationally operating technology company, which is specialized in automation solutions in the fields of industry, infrastructure and energy. AutomationX's own software and hardware products provide a basis for these solutions.



and IEC-870-5-10x which is a standard for the design of electrical substation automation. AutomationX integrated their award winning process control software with Advantech's acclaimed APAX-5000 series PACs, as well as the UNO series for a win-win solution that met the customer's specific and challenging requirements. Advantech was chosen by AutomationX for their wide-range product portfolios as well as vertical market domain know how. And because customers in such critical industries as Power & Energy require long lifetime support, Advantech was the natural choice having been in the automation business for over 25 years. They could supply AutomationX with the longevity guarantees they needed to win the project. AutomationX's aX5 DCS software with Advantech's APAX 5000 series PAC controllers offered a control engineering solution that protected the client's investment but which could also grow in the future.

Network Intelligence Delivered

Rindler elaborated, “AutomationX's aX5 DCS software offers what everyone is looking for now – a single software tool that allows you to engineer and visualize everything across multiple domains. Units that cover a large geographic area always present a challenge. We recognized early on what the needs were for partial autonomy of the unit at the field level, thus local intelligence, on the one hand, and

the maximum penetration (vertical integration) of the control center, on the other hand, and built on that insight. The control system AutomationX offers is modern data transmission technology paired with control technology in the field that has the openness of IT systems. Furthermore, we integrate all unit components regardless of the manufacturer and thus guarantee a consistent interface between operator and unit. Advantech saw in our software portfolio the fulfillment of a vision for integrating all the intelligent and smart devices that make up the Internet of Things. The combination of Advantech hardware and our software portfolio is perfect for the market today. By working with Advantech, we can tap into the experience of a leading global player that is well established in the industrial automation and control business. This means we are able to achieve the flexibility and responsiveness required in today's globalized environment and offers our customers complete end-to-end solutions. Advantech helps us provide a more efficient way of developing more favorable control engineering solutions as well as helping customers reduce risk and costs,” said Mr. Rindler.

Advantech and AutomationX's jointly developed automation application is another example of the Intelligent Planet—an end to end solution for today's complex industrial automations and process control markets. ■



Improving the Safe Operation of a Nuclear Power Plant

For the sustainable development of a nuclear power plant, ensuring safe operation is a crucial task to win the public's trust. Advantech has served customers in nuclear-related applications for many years and their reliable quality and services have already won the trust of many customers.

By Jill Lai
Interview with Bin Deng, PAC Product Sales Manager, of Industrial Automation Group of Advantech

Advantech modified the architecture to avoid network congestion as well as effectively collecting and immediately transmitting the data.



The Qinshan Nuclear Power Plant is a 300MW Pressurized Water Reactor nuclear plant and is the first plant which is designed, constructed and managed by China itself. It is not only of great significance to Chinese nuclear power development but also an important case for Advantech to promote their applications in this industry.

Advantech's Shanghai Industrial Automation Group PAC Product Sales Manager, Bin Deng indicated that the operators in the control room of a nuclear power plant have the most important roles because they are responsible for the safe operation and management of the plant.

In order to ensure the safe operation and minimize personal negligence, Qinshan Nuclear Power Plant established a training simulator of nearly 500 square meters which is exactly the same size as the control room. Bin Deng said that this was a large-scale project for Advantech not because of its massive area, but because it needed to be a full scope simulation.

Low-cost simulation solution with complete functions

Qinshan Nuclear Power Plant used several of Advantech's modules (including ADAM 5000, UNO-2668 and FPM) to complete the simulator. The plant's training cost is lower than previous practice simulations. Bin Deng indicated that with complete functions, the Phase II simulator system only cost one-fifth of former training programs.

Due to a monitoring requirement which encompasses the entire region, the simulator needed to have more than 10 thousand endpoints installed to acquire the AO, AI, DI and DO signals to keep system response time within 50ms. As a result, Advantech modified the architecture to avoid network congestion as well as effectively collecting and immediately transmitting the data.

Bin Deng said that if the solution were to successfully execute in accordance with Ethernet's distributed architecture, it would definitely affect the real-time transmission rates of the network. Advantech therefore,

added embedded network controllers (UNO-2160 or UNO-2668) between the underlying server and an ADAM module (ADAM-5000ETCP) to aggregate and transmit data.

Using the standard communication protocol, MODBUS/TCP, the UNO-2668 and ADAM-5000ETCP were connected and on-site high-frequency and short frame signals could be acquired. In order to integrate the UNO-2668 and the server, and be able to send high-frequency and long-frame signals, developers designed their own communication interface based on the original configuration using programming tools such as EVC, CB.NET, and C#.

Real-time data transmission on the independent sub-network between the server and the UNO devices is ensured because communication traffic is small, so there are no data-blocking problems. Bin Deng stated that each UNO device could control at least 20 ADAM modules but in Qinshan's case only 16 were used, leaving reserve spaces for future expansion.

Later in the project, the Qinshan Plant also adopted Advantech's industrial-grade monitor, fire monitoring device, and other products as their Phase III simulator. In response to customer demand, Advantech offered IPCs plus board controllers to complete the simulator.

Successful environmental control in nuclear applications

In addition, the Hainan Nuclear Power Plant is also planning to use Advantech's products and they will start shipping this year. The simulator project is for the main control room and control center and will utilize Advantech's ADAM 5000, UNO-2668 and FPM devices.

Advantech IPC and communication modules are not only suitable for nuclear power plant simulators but have also been applied to other monitoring applications such as the simulation for environmental and meteorological monitoring for Suzhou's Thermal Institute, and a data acquisition system for radiation detection in Wuhan and the Shanghai Physics Institute.

Bin Deng said that regarding safety issues, military and research institutes have a strong demand for environmental

radiation surveillance. In 2008, Advantech's data acquisition system assisted Wuhan's automatic detection station in environmental monitoring of nuclear radiation and the follow-up plan will be associated with weather systems to enable more accurate monitoring.

Furthermore, a picosecond accelerator in the Shanghai Physics Institute has also adopted Advantech's ADAM 5000 to monitor their facility. For safety, the Institute required a nuclear response time of less than 1ms and Advantech offered better results with only 0.3ms which impressed them.

Taking features to the next level via APAX's new architecture

Bin Deng noted that features for nuclear-related applications often take 4 to 5 years to design; the entire project from construction to actual operation and the required hardware has to be decided upon before construction. Since projects can drag on for long periods, there are considerable variables and risks that may affect the implementation of such projects.

To eliminate customer concerns in nuclear-related applications, Advantech offers at least 20 to 30 year warranty periods and uses long life supply components to avoid shortages.

Advantech's new APAX series needs no middle layers (UNO devices) for communication and provides excellent features such as quick response rates, long MTBF, online diagnostics, and hot swapping. Meanwhile, flexible I/O modules reserve more space for future upgrades.

Based on the ADAM 5000 series, Advantech believes their modularized APAX products will improve system performance and continue to win customer trust. ■

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Trusted Automation Products to Manage Critical Applications

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PEC-3240

Intel® Celeron® M 1.0 GHz 4-axis Motion Controller with 32-ch DI/O



WebView-1270

12.1" Web-enabled HMI with Intel® Celeron® M



EKI-7554SI

4+2 SC Type Fiber Optic Managed Industrial Ethernet Switch with Wide Temperature



ADAM-4117

Robust 8-ch Analog Input Module with Modbus

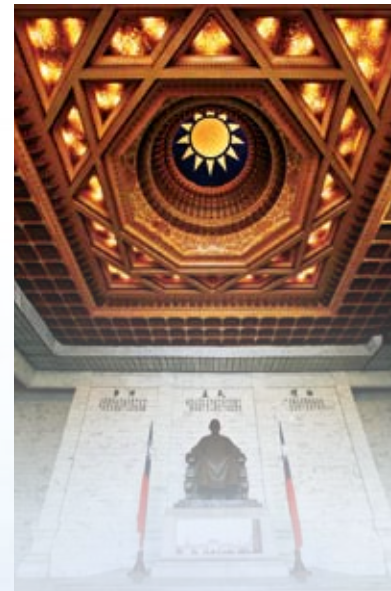
CKS Memorial Hall with Intelligent Control

A Significant Effect on Energy Savings

In order to effectively manage the thousands of light fixtures and power circuits in Taipei's CKS Memorial Hall, its management office carried out an improvement program to streamline operating procedures and at the same time reduce power consumption.

By Jill Lai and Photography Zeng Huaihui
Interview with Tim Cheng, Sales Manager of Advantech Intelligent Services Group
and Shih Tai Chou, Director of Easy Control Technology Corp.

Now, all of the lighting fixtures both inside CKS Memorial Hall and outdoors are directly controlled by an intelligent lighting system in the control center.



According to statistics, the National Chiang Kai-shek Memorial Hall has won the most-visited attraction in Taipei for five consecutive years and there were 7.06 million visitors in 2010. In recent years, its diverse range of exhibitions has made it a much sought-after place to enrich people's spiritual lives.

In the past few years, CKS Memorial Hall's management office has made efforts to improve the building's facilities in order to enhance service quality and energy efficiency. But this is no simple task because of the wide area the building occupies, not to mention the complexity of its electrical layout and circuitry. In 2008, Easy Control Technology Corporation (EZCON) won three bidding projects to better the Hall's facilities: the exhibition room, intelligent lighting systems, and lighting control and electric power monitoring systems.

Advantech's Industrial-grade Quality Receives Recognition

The sales manager of Advantech Intelligent Services Group, Tim Cheng, said "We are pleased to cooperate with EZCON for the CKS projects by providing products and services as well as sharing our experience in the intelligent building field."

EZCON's Director, Shih Tai Chou pointed out that while the CKS

Memorial Hall project is not huge, it is still a landmark project and does not allow for any mistakes. EZCON chose Advantech as its project partner because of Advantech's brand reputation and product reliability.

In the first project EZCON began close cooperation with Advantech, choosing Advantech's UbiQ environmental control device with power-saving technology as a lighting control platform. After that, they adopted ADAM-4051 digital I/O Module to collect endpoint data, Advantech's EKI-1528 Serial Device Server and Modbus Gateway to convert signals and set up a complete network to monitor and manage the system. The 24-hour electrical power meter also employs Advantech industrial products.

Intelligent Lighting Control via Touchscreen

Shih Tai Chou indicated that in order to effectively use their budget, they combined existing equipment with the latest switch control methods to integrate a lighting control and circuit management system in a control cabinet that has Advantech's UbiQ device built-in. As a result, the supervisor can remotely control the lights and electrical outlets via the system screen, without on-site operation.





Now, all of the lighting fixtures both inside CKS Memorial Hall and outdoors are directly controlled by the intelligent lighting system in the control center. A daylight sensor allows for automatic day-night switching, and the cabinet's touchscreen displays all lighting conditions.

Tim Cheng said that in response to the intelligent building market, "Advantech had launched related products as early as 2001. Taking the CKS intelligent lighting project as an example, external and internal lights needed manual control in the past but now just need one touch to easily control the whole system via touch screen control interfaces. Scenario controls allow the supervisor to preset various modes to master lighting switches in different regions. In addition, the electric power monitoring project upgraded the CKS Memorial Hall's lighting and power consumption management in the exhibition rooms



External and internal lights needed manual control in the past but now just need one touch to easily control the whole system via touch screen control interfaces.

and galleries. Furthermore, the project not only expanded the scope of lighting management, but also strengthened intelligent light control functions as well as setting an additional monitoring and video server to control the exhibition halls' light switches via the network."

"Energy saving is very important for everyone. Although the CKS project budget was modest, this was a big step forward for Taiwan exhibition centers. People who use electric power management systems will inevitably be negligent. The implementation of the latest IT systems enables intelligent power control, and the successful modernization of CKS Memorial Hall can be a role model for other Taiwan exhibition centers to drive a new wave of smarter systems as well as achieving important energy-saving goals," said Tim Cheng. ■

Real-time Ethernet I/O Modules with Daisy Chain Capability



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- ADAM-6100EI series supports EtherNet/IP while ADAM-6100PN series supports PROFINET protocol
- Daisy chain topology for flexible wiring
- Wide range of I/O modules with various functions and features
- Web-based utility for module configuration over Ethernet
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ADAM-6117EI
8-ch Isolated Analog Input EtherNet/IP Module

ADAM-6118EI
8-ch Thermocouple Input EtherNet/IP Module

ADAM-6150EI
15-ch Digital I/O EtherNet/IP Module

ADAM-6151EI
16-ch Digital Input EtherNet/IP Module

ADAM-6160EI
6-ch Relay Output EtherNet/IP Module

ADAM-6156EI
16-ch Digital Output EtherNet/IP Module

The Re-evolution of Specimen Collection Services

Optimizing Blood Specimen Procedures

Medical professionals use Advantech touchscreen computers to provide accurate specimen collection services.

By Sharlene Yu
Interview with Chi Ruei Lin, Chief of Medical Laboratory, Taoyuan Chang Gung Memorial Hospital and Pei Long Tsung, Section Chief of IT Department, Shin Kong Wu Ho-Su Memorial Hospital

Scene: When the doctor tells Miss Chen that she has to provide a blood specimen, she is very uneasy. She understands that the procedure is a necessary part of diagnosis, but she is worried about it, especially since she is afraid of needles. Nevertheless, she drags herself to the reception counter to check in.

There are a dozen examinees ahead of Miss Chen, and she figures it is going to take a lot of time. But it just takes a few minutes, from ID verification, to specimen confirmation, to printing barcodes, to the actual blood sampling. Miss Chen is surprised. "How efficient hospitals have become!" she says.

Ensuring Zero Error Services

With the rapid development of intelligent medical services, sampling services such as the one depicted above are reaching a new milestone. Medical Laboratory Chief of Taoyuan Chang Gung Memorial Hospital, Chi Ruei Lin, said "Miss Chen is not a special case".

Based on safety considerations, hospitals may ask patients to comply with their standard rules, and even though wait times are reasonable,

the procedure can be torture for the patients. Therefore, many hospitals are seeking the best solutions to maintain their service quality and professional images.

Chi Ruei Lin pointed out that the inspection process is divided into three parts: specimen and sample delivery, instrumental analysis, and validation test report. Because problems appear most often in the initial specimen collection phase, preventing mistakes at this stage is very important.

The inspection report plays an important part in helping a physician diagnose his or her patient's physical condition and decide on appropriate treatment. But hundreds or even thousands of specimen collections are performed in large hospitals every day, and patients' health and even lives depend on the accuracy of these reports.

"For specimen collection, no mistakes are tolerated; even one error is unacceptable," Chi Ruei Lin stressed. In order to reduce operational errors, Taoyuan Chang Gung adopted Advantech PIT-1501W as their terminal system inspection station last year. Replacing the manual check, PIT-1501W

with external card reader helps the examiner check the examinee's data and also links to automatic labeling machines for specimen collection tubes to avoid mislabeling. In order to achieve zero errors, they are considering adding a scanner in the future.

Streamlined Process Reduces Waiting Time

With an eye to the elimination of long waiting periods in the hospital, Shin Kong Wu Ho-Su Memorial Hospital has also introduced Advantech's PIT-1502W system at their inspection station to

The inspection process is divided into three parts: specimen and sample delivery, instrumental analysis, and validation test report. Because problems appear most often in the initial specimen collection phase, preventing mistakes at this stage is very important.

speed up their processing. The hospital's Section Chief of IT Department, Pei Long Tsung, indicated that with the new equipment they simplified the whole process and improved their work efficiency. He also said, "For hospitals, the process of simplification can minimize error probability as well as reducing the patient's waiting time".

Meanwhile, PIT-1502W's built-in webcam offers a video-capture feature to record the specimen collection practices. Pei Long Tsung said, "This recording function not only provides real-time video that lets us know the on-site

situation, but can also be the basis for future data tracking".

Providing Complete Functions in a Limited Space

Both hospitals face the problems of limited space. Counter tops must hold many necessary appliances such as collection tools, specimen tubes, and rubbing alcohol; space is at a premium. Therefore, minimizing desktop clutter is a prime requirement. Pei Long Tsung said, "PIT-1502W is touch panel computer so it requires no keyboard or mouse. Additionally, it can be placed on





In order to protect the interests of patients all the products in the hospital have to comply with medical-grade standards.



a bracket, which releases a lot of counter space."

In the light of PIT-1501W's waterproof feature, Chi Ruei Lin said, "Because every device in the hospital needs to be disinfected by alcohol every day and an unexpected accident may happen during specimen collection, the waterproof feature is particularly important to us; unfortunately most PCs and notebooks do not offer it."

Designed for Use in the Medical Environment

It is worth mentioning that both hospitals adopted touch tablets as their support tool for the inspection process, but they use those computers in different ways. For example, Taoyuan Chang Gung uses PIT-1501W's LED indicator light as a number caller to remind patients which counter is available. As for Shin Kong, they use PIT-1502W's built-in camera to enable video recording.

No matter how the devices are used, both PIT-1501W and PIT-1502W fully demonstrate Advantech's custom-tailoring capacity to meet different demands at each hospital. More importantly, the systems are compliant with international medical safety standards UL60601-1 and EN60601-1-1, as well as adopting anti-bacterial materials for the computer cases to accommodate the hospital environment. Chi Ruei Lin said that in order to protect the interests of patients all the products in the hospital have to comply with medical-grade standards. In addition, he continued, "The lower electromagnetic emissions of Advantech's products are another reason why we chose their devices. I believe that with such new equipment, our professional medical services will administered even more efficiently." ■

Enhancing Healthcare Connectivity and Efficiency



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- Potential applications include multimedia and interactive content, internet access, digital phone, intranet access, video conferencing, educational programs, accounts & billing, and electronic patient record retrieval



PIT-1502W

- 15.6" full flat touch screen with Intel® Atom™ D510/D530 1.6 GHz processor
- Built-in emergency button and 2 LED indicators
- Options: smart card reader/RFID/CCD/Wi-Fi/TV tuner/handset/remote control/MSR/barcode



PIT-1702

- 17" touchscreen with Intel® Celeron® M ULV 1.06 GHz /Intel® Core™2 Duo 1.06 GHz processor
- Built-in emergency button and 2 LED indicators
- Options: smart card reader/RFID/CCD/Wi-Fi/TV tuner/handset/remote control/MSR/barcode



HIT-W121

- 11.6" full flat touch screen with Intel® Atom™ N450/D510 1.6 GHz processor
- Customizable hot keys on the front
- Optional: handset/RFID/CCD/Wi-Fi/TV tuner/smart card reader
- Light weight: 3 kg



HIT-W151

- 15.6" full flat touch screen with Intel® Atom™ D510 1.6 GHz processor
- Customizable hot keys on the front
- Optional: barcode/RFID/CCD/Wi-Fi/TV tuner/smart card reader



HIT-W181

- 18.5" full flat touch screen with Intel® CULV SU7300 processor
- Customizable hot keys on the front
- Options: smart card reader/RFID/CCD/Wi-Fi/TV tuner/handset/remote control/MSR/barcode

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Mobile Assistant Provides Convenient and Safe Healthcare

MICA-101 Enhances the Quality of Medical Care

Emergency medical services race against time to save people who have suffered a stroke or heart attack, and medical staff try to overcome the muscle loss that accompanies heart attacks as muscles deteriorate with the passage of time. This requires technologies that aid quick response. With this in mind, the Advantech MICA-101 Mobile Clinical Assistant can assist and enhance emergency services.

By Sharlene, with pictures from Advantech

Interview with Hong Rong Lin, Medical Secretary and Medicine Director of Emergency Department, Chi Mei Medical Center
And Pei Long Tsung, Section Chief of IT Department, Shin Kong Wu Ho-Su Memorial Hospital



An ambulance arrives at the emergency room of the Chi Mei Medical Center. The nurse, equipped with MICA-101, immediately admits the patient, examines their condition and performs an ECG which is transferred immediately to a cardiologist via mobile phone; the cardiologist then consults with the ER doctor to determine a course of action. After the emergency preparation work is complete, the staff begin a cardiac catheterization operation. The entire process in the ER from time of arrival to operation is less than 15 minutes, thanks to the MICA-101 Mobile Clinical Assistant.

In the ward at the Shin Kong Wu Ho-Su Memorial Hospital, a nurse at a patient's bedside uses MICA-101 to query the hospital's database and retrieve medical records and X-ray images. Data in hand, the nurse explains the patient's condition to family members and they are made fully aware of the situation in less than a few minutes. MICA-101 makes daily work more efficient and cuts the nurse's rounds in the ward from two and a half hours down to 50 minutes, giving the nurse more time to take care of patients.

These remarkable treatment capabilities have become the norm over

the past year in many of Taiwan's hospitals. With attention focused on improving the quality of medical care, the application potential of MICA-101 is becoming increasingly popular.

“Cutting the Cord” and Fulfilling a Patient-centered Philosophy

Advantech's MICA-101 is a professional mobile computer platform for hospitals. It features small size, sturdy design and long run time, as well as wireless technology that enables real-time data access. It makes hospital workflow paperless and more accurate. Compared to traditional SOPs, this new

approach provides immediate data, images and medical records at the patient's bedside, allowing caregivers to dispense the most appropriate medical care. Equipped with a barcode scanner and RFID reader, drug delivery and patient identification is safer and more accurate.

The Medical Secretary and ER Medicine Director of Chi Mei Medical Center, Hong Rong Lin, said, "In order to save lives, physicians often run the race against time. Traditional nursing stations are inefficient; they keep nurses constantly on the run between the wards and the station. But since 2000, Chi

Mei has been using E-healthcare and M-healthcare technology and has completed many projects. After introducing multimedia transmission services in 2010, we now want to make the ER process more streamlined via wireless networking. Advantech's MICA-101 is just the thing to meet our needs."

According to statistics, Chi Mei Hospital receives more than 183,000 out-patient visits each month and the ER receives more than 14,000 visits, making up about 25% of all emergency admissions in Tainan. However, each ER intake processing takes on average only 13 minutes and patient satisfaction is 97%. Hong Rong Lin said "Advantech's professional services combined with MICA-101's advantages gave us strong support to upgrade our medical service and the next step is to combine MICA-101 with our information systems to help doctor diagnoses."

Portable Devices Enhance Efficiency of Ward Rounds

Shin Kong Hospital uses MICA-101, which is based on Intel® MCA architecture, for its easy integration and portable features. The hospital opened in 1992 and is comprised of 35 departments with over 900 beds. In order to provide more accurate medical services, the hospital undertook a management and care project to use mobile devices. They researched the feasibility of PDAs and workstations. They found PDAs could not be integrated with their systems and the small size also limited functionality. Workstations were dismissed as too heavy and their use would affect operational efficiency.

The IT Department Section Chief of Shin Kong Hospital, Pei Long Tsung, pointed out that they need lightweight equipment which can integrate with



The nursing staff need lightweight equipment which can integrate with existing systems. They must be easy-to-clean, quiet and durable, and help them complete their daily work.

existing systems. They must be easy-to-clean, quiet and durable, and help them complete their daily work. MICA-101 uses an Intel® Atom™ processor, and it can integrate with legacy hospital information systems. It is portable, features a 10.4-inch screen, and weighs only 1.5 kg, making it a lightweight and handy device. For these reasons the hospital chose MICA-101 for use in their medical care operation.

In the past nurses had to return to workstations to input data, but now they can do it immediately from any location via the MICA-101. The screen is much larger than a PDA, making it easier to communicate with patients and record data. In addition, the embedded camera can capture hospital conditions, wireless capability enables real-time access, and the fanless feature ensures quiet operation, important when a nurse is near a patient's bedside. MICA-101 can also be easily cleaned by hospital staff with medical-grade solvents, reducing the risk of infection.

Pei Long Tsung said that they were looking forward to further enhancing the hospital's quality through advanced technology and devices, and that there may be applications for MICA-101 in the ER, trauma case handling, anesthesia monitoring, or in staff and patient identification.

MICA-101 is suitable for handheld and medical cart applications, allowing medical personnel to provide immediate bedside service. Combined with its light weight, portability, generous screen size, hot-swappable battery, and other peripheral support (RFID, barcode reader, fingerprint recognition), MICA-101 becomes an exclusive "mobile care assistant" for patients.

As medical services race against time, MICA-101 significantly enhances quality and performance of medical care. ■

Digital Healthcare

Ensuring a Patient-centered Environment


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Advancing Intelligent Vehicle Inspection

Advantech Makes Testing More Effective

When it comes to electric cars, the battery is the key to design optimization. Relying on Advantech's in-vehicle system, BYD, a major Chinese auto maker, effectively prepared a complete solution that quickly analyzes an electric vehicle's battery, providing consumers with better service.

By Bai Yanyou, with pictures from Advantech
Interview with Shiao Fong Shen, Software Manager of New Energy Division, BYD

BYD has for a long time invested in the electric vehicle business; it has not only developed successful designs and production systems, but also provides a complete and convenient backend system to maintain its electric cars.

Scene: Mr. Wang is happily preparing to take his family on an outing in their new electric car. But he sees a low battery warning on the display panel. Although the warning disappears in an instant, Mr. Wang is concerned that the vehicle may not be up to the demands of the day, so he decides to go to the repair shop.

As soon as the children hear his decision, they are totally bummed; they know that vehicle analysis alone can easily consume half a day, and their happy holiday plan is trashed. But wait! Not this time. Unlike the past, the inspector checks the car using a mobile computer, which reports the car's mechanical status and power capacity in less than 10 minutes. The car is good to go, and the Wang family is off on their happy journey, enjoying a relaxing holiday.

The New Energy Division Software Manager of BYD, Shiao Fong Shen, pointed out that electric cars are the future of the automobile industry. BYD has for a long time invested in the electric vehicle business; it has not only developed successful designs and production systems, but also provides a complete and convenient backend system to maintain its electric cars. This is an important part of BYD's new energy policy. BYD, with support from Advantech, has made a big effort to offer

consumers a top notch vehicle inspection service.

In-Vehicle Computer Provides Advanced Dynamic Control

Shiao Fong Shen said that understanding batteries is an important element in electric vehicle development. Different designs and applications have vastly different effects on battery life and usage; consequently BYD's engineers have to manage a plethora of relevant vehicle and battery information to achieve optimal design results.

In the past, engineers used various methods and a complex process to acquire battery data. In order to accelerate this procedure and simplify the general inspection, Advantech in-vehicle TREK series products implement a complete solution that can quickly inspect the battery in a new electric vehicle. TREK is specifically developed for automotive applications, and its power supply meets ISO 7637-2 and SAE J1113 certifications. In addition, TREK connects easily to the built-in computer of a BYD electric car; it uses Controller Area Network (CAN-bus) J1939 protocol to access vehicle information.

Shiao Fong Shen said "When a customer vehicle comes into our garage, engineers use this inspection system to easily acquire the car's information via TREK." The Advantech system can also deal with failure diagnosis, but

right now, BYD is focusing on battery inspection. Therefore, the system mainly provides the power data acquisition, such as electric current, voltage, operating temperature, stability, and other related data.

The Best Supporter for New Energy Applications

Advantech pointed out that both companies have built rapport and trust through cooperation. "The original case with BYD was to provide charging equipment, but we found that BYD was using common notebook computers to serve as their data acquisition devices. Although a notebook can do this work, it needs different connecting accessories, and often loses the data collected, so we suggested that they upgrade to a vehicle-specific product."

Advantech's in-vehicle solution not only avoided data loss, but also provided a convenient design that eliminated

inappropriate operation. And charge frequency was reduced too, by Advantech's long-term operation feature.

In addition to all-electric vehicles, hybrid cars and gasoline cars can also adopt Advantech's relevant testing solutions. Right now, each inspection workshop only needs to set up three to four stations to satisfy operational demands. Citing the rising awareness of new energy and the BYD electric car as a hot-selling product in China, Shiao Fong Shen illustrated that the demand for such inspection solutions will increase dramatically in the future.

Shiao Fong Shen also pointed out that BYD has many other projects that have the potential of using Advantech's products. Take the embedded board as an example; it is quite suitable for management-related tasks in electric vehicle charging systems. By following the roadmap of BYD's electric cars and related developments, Advantech helps them yield brilliant results. ■



Advantech in-vehicle TREK series products implement a complete solution that can quickly inspect the battery in a new electric vehicle.

Fully-integrated Terminal for Truck Fleet Management Solutions



ADVANTECH **DLOG**

Competence in Mobile Computing

Boost Long Haul Trucking Efficiency

- Real-time workload scheduling improves operating efficiency
- Vehicle diagnostic capabilities enable monitoring and driver behavior management
- Fully-integrated system design for easy installation and maintenance



TREK-753
All-In-One Computer

- 7" 16:9 display with touchscreen
- Rich, built-in RF capability for CDMA/ HSDPA/GPRS, GPS, WLAN, Bluetooth
- Automotive grade working temperature range (-30° C ~ 60° C)
- ISO7637-2 & SAE J1113 power solutions
- Entire system IP54 rated with optional IO cover



TREK-550
In-Vehicle Computing Box

- Automotive-grade working temperature range (-30° C ~ 70° C)
- Rich I/O including CAN, LAN, COM, isolated DI/O, dual display/audio output
- Built-in GPS/ GPRS/ HSDPA/ CDMA/ WLAN & Bluetooth
- Advanced Safety with AV-input and G-sensor
- One connector & cable to pair with TREK-303H



TREK-510
ARM-based, In-Vehicle Computing Box

- STMicroelectronics RISC/WinCE-based
- Automotive grade working temperature range (-30 ~ 70° C) and SAE J1113, SAE J1455, ISO7637 & E-mark regulations
- CAN Bus (J1939), multi-COM ports, isolated DI/Os, Audio, USB host & client, SD slot
- GPS with AGPS, and GPRS/ CDMA/ HSDPA
- One connector & cable to pair with TREK-303L

iTaxi

Differentiates and Betters Customer Service

A Win-Win Solution for Taxi Carriers and Passengers

Do you feel bored while taking a taxi? With iTaxi services, that's a thing of the past. Now, you can enjoy the ride more, without need to fidget with mobile devices or stare vacantly out the window.

Article by D.M; with pictures from Wesley Lui
Interview with Tsuen Jie Jiang, Director of Telematics and Control System Division,
Information and Communications Research Laboratories, Industrial Technology Research Institute (ITRI).
And Ofelia Yu, Product Manager of Vehicle Mounted Computing Platforms, Advantech-DLoG.



How would you envision an “intelligent” taxi of the future? What services would it offer? What would you like to see it do? Director of ITRI’s Telematics and Control System Division, Tsuen Jie Jiang grapples with these challenges and believes that: “Impressiveness should be a core concept in the service industry, that’s why we incorporated sophisticated technology into the design of the intelligent taxi system or “iTaxi.”

Value-added Services via IT Systems

iTaxi is part of the ITRI Telematics System Demonstration program. In brief, passengers in the taxi have access to six separate services available to them via touchscreen. The final result looks polished and simple, but development and delivery of the system took quite a lot of time and effort.

Promotion of iTaxi began in 2008 and is now implemented in 40 cabs in the greater Taipei area. In those cars,



With this system, carrying passengers is extended to marketing services. Through its major functions which add value to the service, taking a cab can be more fun.

iTaxi provides safety and convenience via SMS messaging, wireless internet access, advertising, video playback, life-style information, and surrounding area information. Tsuen Jie Jiang said that the most popular services to date are SMS and wireless internet. SMS is a design feature put in place to protect passengers traveling at night. Passengers need only input their phone number, and the system will send a short message to the recipient to inform them of the drop-off location, time and the car number. Business passengers can take advantage of internet connectivity in the cab using their notebooks and other portable devices while on the move. Tsuen Jie Jiang stated that, “Services can be paired to passenger characteristics. In general, passengers can be divided into daytime and night time groups. In the daytime, most

riders are tourists or business people, often with short ride times. At night, riders may travel longer distances, and are more concerned with safety, so the system provides different content for each of these two groups.”

In order to provide additional services, ITRI also established the iTaxi website, which allows taxi drivers to set up their own blogs. Passengers reading this information are apt to feel more comfortable with the driver, leading to





TREK-550's original design targets the in-vehicle environment which is prone to issues such as vibration, extreme temperatures, and unstable power supplies.

repeat business. At the same time, internet connectivity allows driver statistics to be sent from the iTaxi to backend systems, adding another reference for passengers and management.

Quality-Assured Devices Enable Smooth Operations

Tsuen Jie Jiang stated that a quality-assured device is a key factor in the smooth operation of the iTaxi system. The backend system receives over 9 million transmissions of data monthly, which would flatline low-grad and general systems. The stability and reliability of Advantech's TREK-550, mitigates this concern.

Advantech notes that TREK-550's original design targets the in-vehicle environment which is prone to issues such as vibration, extreme temperatures, and unstable power supplies. An in-vehicle system can be damaged by a vehicle's transmission system, a bumpy road, or in-cab temperature. One might

think air conditioning would provide a comfortable environment for computer systems, but in fact, outside temperature is a common reason for system failure. In high latitudes, winter temperatures are often below freezing. By contrast, summer weather in tropical countries is too hot. A car's interior devices face shifting high-low temperatures.

TREK-550 completely overcomes these problems. It has passed stringent certification standards for continued operation in environments subject to high vibration and wide temperatures. For example, TREK-550's power supply meets ISO 7637-2 and SAE J1113 standards; and the system complies with SAE J1455, MIL-STD-810G, and Class 5M3 against vibration and shock; its working temperature ranges are -30°C-70°C. In addition, TREK-550 operates stably for long periods of time, especially important for taxis which are often kept in service more than ten hours at a time.

Mr. Lee, a driver participating in the iTaxi program, said that the failure rate of the system was very low. He also gave high praise to iTaxi and said, "With this system, carrying passengers is extended to marketing service, taking a cab can be more fun. Passengers get more pleasure and don't just stare out the window or play with their mobile phones. They now have a number of choices through iTaxi." So, the next time you get into a taxi, lookout for the iTaxi logo and experience a completely new ride sensation. ■

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TREK-550

In-Vehicle Computing Box for Fleet Management

- Automotive-grade working temperature range (-30° C to 70° C)
- Rich I/O including CAN, LAN, COM, isolated DI/O, dual display/audio output
- Built-in GPS/ GPRS/HSPA/CDMA, WLAN & Bluetooth



TREK-753

All In One Computer for Fleet Management

- 7" 16:9 display with touchscreen
- Flexible expansion capability for
- CDMA/HSDPA/GPRS, GPS,



Enriching Lives via Innovative Training Programs

In 2010, Advantech reorganized their training center into the Advantech Institute. Its focus is strategic learning and it offers a variety of innovative courses to help students learn while at the same time enriching their lives.

By Sharlene Yu

An interview with Chaney Ho, General Manager of Advantech and Deryu Yin, Vice President, Human Resource Division of Advantech

Corporate Social Responsibility (CSR) refers to a company that is willing to take responsibility for social issues as part of its business philosophy in addition to going beyond the traditional goal of profit maximization and it emphasizes contributions to consumers, employees and the environment. A seminar with the theme of CSR was recently held in Beijing, which you might think would be hosted by public interest groups or a government-sponsored agency, but actually it was one of a series of training courses conducted by the Advantech Institute.

Contribution to the Community

In order to deliver Advantech's business philosophy, the company not only planned a number of courses but also reorganized their training center in 2010. With a new name, the Advantech Institute integrated its original career development courses, and its hardware and software education programs, with strategic learning programs to leverage advantages in the enterprise.

In addition to internal staff, the teaching also targets Advantech's customers and partners, with more sessions geared to the general public to be offered in the future. Advantech General Manager Chaney Ho said, "Advantech has made a lot of effort to nurture talent, and not just train staff but also our partners, and even the general public. The main purpose of the program is to offer free courses for everyone who contributes to our society; it is our responsibility as a good corporate citizen."

Getting Instant Results from Practical Programs

Advantech's Vice President of Human Resources Division, Deryu Yin further explained, "Advantech wanted to pass on

our business wisdom and practical experiences; we devised many training courses to achieve better staff interaction where senior managers can share their knowledge and experience. Furthermore, trainees who participate in the study and implementation of real business cases as part of the program can really help benefit our business."

For instance, one of Advantech's departments proposed a topic of process improvement in their product development procedure. HR helped them to establish the curriculum (content, modes of delivery and evaluation), and through a weekly meeting and discussion, they brought out many fresh ideas, and improvement measures as well as putting them into practice and improving their workflow. Deryu said, "With such programs, problems can be solved immediately in the training process, and we get instant results."

Setting a Base Model to Nurture Talent

Deryu Yin also emphasized that training topics can come from senior executives or junior staff. She said, "Either through a top-down approach or a bottom-up approach, Advantech Institute gathers concepts from anyone and helps them to develop a curriculum as long as the topic is suitable."

In addition to the Advantech Institute programs, a variety of ways to keep the trainee active in learning, including workshops, reading, lectures, eLearning, panel discussions, and so on are practiced. The Institute assigns both internal senior staff to be mentors, as well as inviting scholars and professionals such as professors from National Taiwan University, National Chengchi University and Beijing University.

With open topics, various teaching methods and many different experts, Advantech Institute creates an innovative

approach to actively cultivating human resources. As one of the many mentors, Chaney Ho, who is also known as the school principal of the Advantech Institute said privately, "Establishing Advantech Institute means we are playing for real in nurturing talent, and Advantech would like to share our experiences and offer guidance to other enterprises, as well as setting up a base model for the industry."

Exclusive New Course Material

Most training courses use ready-made materials from well-known universities as their curriculums for education and training. At Advantech, trainers were required to create all new training content and exercises as part of theme building. Some programs even had several months of pre-discussion and interviews with appropriate personnel prior to being created. Deryu said, "The existing courses could not be tailored to fit our individual, organizational or team needs and our courses had to target special themes and deliver new material. As a result the training outcome can really be put into practice and the effectiveness of training can be enriched."

Advantech set goals to develop training projects that cover global situations and industrial movements, with topics such as the Greater China Homeland, Corporate Development Strategies, Professional Leadership, Corporate Citizenship, and Pricing Models. Professionals who were invited by Advantech Institute propose related questions as well as conduct group discussions in class. "Through the learning, discussion, and presentation of ideas, followed by acting on recommendations for improvement the process inspires the next case topic, and this continual evolution is well suited to Advantech's business model," Deryu said.

Enlarging the Available Talent Pool

In the future, Advantech Institute will continue to provide relevant technical courses and seminars for external training while internal training will focus on the cultivation of elite talent. Managers will propose a variety of related training courses to meet this growth objective of enlarging the talent pool. One upcoming activity, "Champion Program," which is expected to be an annual event and will be held on November 23rd at Advantech's Aspire Park, will promote leadership and talent development in business. The program, based on Advantech's innovative approach, will ask a trainee to follow along with a pre-workshop and a pre-reading, and discuss with a mentor in the form of a case study during the four-day event. Advantech believes that through this program, their business philosophy and practice can be passed to the trainees as well as nurturing exceptional talent, thereby promoting cooperation and interaction between employees and executives. This will promote both outstanding leadership and long-term talent development.

Embracing Knowledge from the Source

As Confucius said, "In a group of three, there must be someone I can learn from." The Institute's new logo fully presents its mission based on this Chinese proverb. Deryu Yin said that Advantech Institute uses a human-oriented approach to design their training courses and hopes everyone can open their arms to embrace knowledge from the source in order to improve their abilities while enriching their lives. ■





Migrating from Innovation to Entrepreneurship

A new educational model of industry/university cooperation

In order to nurture future talent, Advantech Foundation has elevated its TiC100 education program from a technology innovation competition, to an innovative business model to strengthen students' creative thinking and meet the challenges of the marketplace.

By Nana and pictures from Advantech Foundation

Interview with CT Liu, CEO of Advantech Foundation, and PingPing Chen, Advantech Beijing Branch

In the 21st century, the world is moving towards a new digital age where knowledge skills, technology and software applications are rapidly changing and evolving. In order to create a positive influence on society, Advantech Foundation is actively involved in the education of future talent. Since 2010, it has elevated its Technology Innovation Competition (TiC100) to the next level (Innovative Business Model) in order to strengthen students' creative thinking and meet the challenges of the marketplace.

Understanding the business model is more important

Advantech Foundation CEO, CT Liu said, "Since the founding of the Foundation in 1997, we continue to focus on university/industry cooperation, and also encourage students to stimulate their creativity through our TiC100 Competition to show their ambition and realize their entrepreneurial dreams."

Despite a decade of progress, CT Liu found that the student's venture planning is more idealistic than realistic. He said, "Our TiC100 activity is trying to cultivate the new entrepreneurs, but the competition's attendees are still young and enthusiastic students. Due to the lack of the experience, it is difficult for them to grasp the profit model in business."

Responding to this consideration, Advantech Foundation changed its theme to "Innovative Business Model" in 2010 but retained its original entrepreneurial spirit. Meanwhile, contest topics were proposed by entrepreneurs and enterprises as well as setting the program goals and progress schedules. Within limited conditions, the student's product, service, or idea has to face inevitable problems just like in the real world and those students can also experience how to overcome them in a mature and developed market instead of learning only on paper, thus helping them create new business models.

About Advantech Foundation

Established in April 1997, Advantech Foundation hopes to promote the core values of: "People Oriented, Sincerity & Integrity, Extraordinary Innovation, and World-Wide Vision", via educational activities in the spirit of "Taking from the community and giving back to society". The next TiC100 activity will start in Q1 2012. Anyone interested, please visit the website: <http://www.tic100.org.tw/tic100/>





The Foundation's purpose is based on the spirit of "taking from the community and giving back to society", and public activities and volunteer services can enhance Advantech's brand image as well as creating positive feedback between the company and society.

Letting New Ideas Take Root via Creative Learning Laboratory

At the same time, the foundation also held a "Creative Learning Laboratory" camp with TiC100 to foster talent in 2010. CT Liu believes that the key factor affecting student achievement is whether educators are filled with creativity and breakthrough thinking or not. He said, "TiC100 focuses on a situational learning model and students need to quickly integrate into a variety of circumstances and find insights to overcoming environmental changes to find ways to solve problems as well as addressing new models. It is quite different from the traditional educational approach - a single question with only one answer."

In addition, the Laboratory invited Taiwan's leading academic professors and business representatives to be the team's instructors. Through a camp-style workout to trigger the creative thinking process, these instructors can further be mentors to promote the ideas of creative learning. With their experience, they can keep a creative mind and pay attention to the market demands when they provide students with employment counseling so as to fulfill the core purpose of industry and university cooperation.

Building on Taiwan's Experience to Create a Wonderful Life

With a successful track record in Taiwan, Advantech Foundation will set up a Beijing representative in Q4 2011. PingPing Chen, who will assist with the Office's establishment, said that the Foundation's purpose is based on the spirit of

"taking from the community and giving back to society", and public activities and volunteer services can enhance Advantech's brand image as well as creating positive feedback between the company and society.

PingPing Chen also mentioned that Advantech's branch offices are widely distributed throughout mainland China in various regions, which have their own cultural characteristics and different demands. And with the integration of Taiwan's experience and local resources, the Foundation can really send out a positive message of nurturing creative talent to young people.

The mission of the new Advantech China Foundation will be to encourage individual accomplishment and enhance work skills as well as elevating personal pride and prestige. The foundation activities will provide creative and communication opportunities for staff and students.

By building a "wonderful life" and spreading happiness through self fulfillment, Advantech Foundation reveals the essence of the human spirit. With the establishment of the new Advantech China Foundation, Advantech also demonstrates how their efforts continue to affect and give something valuable back to society. ■

Advantech Railway Automation Solutions



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- TPC-1251H features an Intel® Atom™ processor and a wide operating temperature (-20 ~ 60° C) and certificated with Energy Star.
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TPC-1251H
12.1" SVGA TFT LCD Intel® Atom™ Touch Panel Computer with Wide Operating Temperature



EKI-6559TMI
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UNO-2173AF
Intel® Atom™ N270 1.6 GHz Automation Computer with 2 x GbE, 3 x COM, Mini-PCIe



ADAM-5510EKW/TCP
8-slot SoftLogic Controller with Ethernet

Environmental Management

*Monitoring and Protecting our
Natural Resources*



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The abundant Taihu water area contains huge irrigation and river systems with highly dense population in its surrounding areas. The primary mission of Advantech's Environmental Management System in this application is to monitor and prevent flooding.

Environmental Systems

Advantech helps customers implement remote monitoring and control, delivering unsurpassed levels of environmental awareness. We help our customers use their resources more reasonably and effectively, maintaining the safety and quality of living environments, and potentially helping save lives.

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