



The ProSoft Magazine

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ISSUE TWO | 2011

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**Communicating
from the HART**



APRIL 2011

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From the President



Every year my friends and I ride our jet skis from Long Beach, California out to Catalina Island. When we start off, I always get a thrill as I race across the water, headed for the open ocean. It doesn't take long before the California coast quickly disappears behind me. But that's where the fun begins. I'm entering a world where I never know what may happen next. I could hit a huge wave and be unseated. I could meet a shark. I could also "catch some air" and sail right over that wave or I could discover that the shark was actually a porpoise racing along with me just for the sheer joy of it.

I couldn't help but reflect on this when I look at the speed with which ProSoft is growing. All of these unique individuals from diverse backgrounds and cultures, working together toward a common goal: developing communication solutions that actually make a difference in how products are manufactured, how natural gas is brought to the consumer and even how to keep runway lights on so the plane you are riding in lands safely.

As I watch the growth in emerging markets such as Poland and China, I get that small thrill again and realize that the fast moving machine that is ProSoft was poised and ready for this global change, as evidenced by our new offices in Warsaw and Shanghai. Our local presence in these global markets allows us a perspective of the world through the eyes and ears of our customers. This is crucial for the success of our business, for it is only by understanding our customers needs on a grass-roots level that we can offer them communication solutions that have a noticeable impact on their daily lives.

I am not personally responsible for a factory-floor production line or a potentially explosive process. But, it wasn't until a report crossed my desk alerting me to the fact that the ProSoft i-View Mobile App was flying off the shelves on iTunes that I really began to appreciate how new, innovative products like this could help people who do have these awesome responsibilities.

The world of technology never stands still, so it goes without saying that in our business you never know when you may meet that unexpected wave. But, I am again thrilled at the notion that with the passionate team we have at ProSoft, we will "catch some air" and sail right over.

Gary Joke
President/CEO



Scott Sibenac
Managing Director

North America

As an old saying goes.... Don't just follow a path, create the path. Well ProSoft is taking this to the next level.

If you were at Automation fair 2010 you got the first glimpse of this new "path." ProSoft has partnered with FieldServer Technologies, adding Building Automation Systems protocols and Fire Alarm Control to ProSoft's already extensive interface library. We also introduced ProSoft i-View, a very innovative product taking advantage of new technology and the latest consumer product trends.

By adding partnering to our product strategy we are able to get solutions to our customers faster and from a well-known and reliable source – "ProSoft." This gives us the freedom to look at the market demands and see if we can offer a partner solution with ProSoft behind it or if we should focus our Engineering group to create a new product to address our customer's application.

This also makes it easier for customers to find communication solutions with a single point of contact...ProSoft. We will continue to bring more and more solutions to the market as we always have. If you would like to partner with us or have a new product request – the path is clear, just give us a call.



Alain Chevalin
Managing Director

Europe, Middle East, Africa

As 2011 starts to unfold, times remain difficult and the economic situation is still uncertain. Nevertheless, ProSoft Technology continues to expand in Europe with the recent opening of an office in Poland to better support users of our solutions in this region.

Our communication gateways and in-chassis modules are becoming ever more popular and easier to use with the addition of features that embed our solutions seamlessly into users' development tools.

ProSoft Technology's wireless solutions have been awarded prizes in several countries for their perfect match with today's industrial application needs and are hence becoming the preferred choice for many users.

Our EMEA team is dedicated to supporting the fast growing group of ProSoft Technology users with whom we look forward to making 2011 a great success.

New offices open in EMEA:



ProSoft Technology North-Western Europe located in the U.K.



ProSoft Technology Central & Eastern Europe, CIS, Finland, Turkey located in Warsaw, Poland



Franco Melchiorre
Managing Director

Latin America

2010 has been an excellent year for our Latin American Region at ProSoft Technology. We would like to express our sincere gratitude to our customers for choosing our company for your industrial communication needs. Last year ProSoft Latin America grew significantly in providing wireless solutions in the oil and gas sector. Our RadioLinx 802.11 Master and Client solutions were selected for numerous oil production applications. Our Series 6000 wireless gateways were successfully tested and chosen for implementation in the oil fields of Eastern Venezuela. We look forward to more challenges in 2011 and wish to renew our commitment to serve our customers and partners with the best technologies and post sales support possible.

We are very fortunate to have you as our customers. Thank You!



Lenus Hong
Managing Director

Asia Pacific

At ProSoft Technology, we realize that Product Training is always at the top of our distributors' wish list. After a series of seminars dubbed as a "Communications School" organized by a distributor in Australia, the feedback was very encouraging, and there were numerous requests for further training. The ProSoft Training Department has worked together with the Rockwell Automation Training Department in the USA to build several training stations with CompactLogix, ControlLogix and ProSoft equipment for use by our customers.

Currently, there are 4 sets each of CompactLogix and ControlLogix training stations available in the ProSoft AP regional headquarters in Kuala Lumpur, Malaysia. An additional 2 sets each will be available soon in the Shanghai office for use exclusively within the China region.

Our library of training manuals so far include Modbus, Modbus TCP, Message Manager, Cellular Radios, Wireless Networks and Wireless I/O.

Our current training schedule is listed on our website at www.prosoft-technology.com/training. You may also contact your regional Sales Manager to arrange other training sessions. We're excited to share some application ideas with you, and we hope to see you soon in training class!



The lights that guide

By Adrienne Lutovsky

Airfield Lighting Systems Go Distributed Using Wireless I/O and Mobile Operator Interfaces

We all do it. Gaze out oblong windows from seats in their upright positions; feel the deceleration of the plane as it floats down the glide slope of the approach; watch our smooth descent toward two retreating columns of light defining the runway ahead. It is part of the experience of flying and much of your personal safety rests on the reliability of the airfield lighting systems that serve as the pilots' visual aids during take-off and landing.

Each year, approximately two million commercial flights depart or arrive in Canada, ten million in the United States (report Statistics Canada, Transportation Division and the Bureau of Transportation

Statistics, respectively). Without reliable lighting systems to facilitate aircraft movements, flights can be delayed or cancelled, causing an onerous ripple affect for travelers, businesses, and airlines alike. Worst case, an incursion can occur at an active runway intersection with a potential for fatal results.

The Architecture of Airfield Lighting Control Systems

Lighting infrastructure on the airfield includes runway and taxiway edge lights, threshold lighting, airfield guidance signs, and apron areas where aircraft are loaded and refueled.



Guide you home...

Power is distributed to the lighting circuits by underground cables from electrical vaults installed at selected locations on the site. These vaults contain the power distribution equipment for the lighting circuits, and are controlled by an Airfield Lighting Control & Monitoring System (ALCMS).

Liberty Airport Systems, an Ontario, Canada based equipment manufacturer, holds over thirty years experience designing airfield lighting power and control systems including those for George Bush Intercontinental in Houston, and Toronto International Airport.

They've seen it all and understand the consequences of failure of the lights airside.

"If a network communication problem means a major airport cannot control the approach and runway lighting, the airport may be forced to delay or divert the flights. That's a big deal" says Liberty President Allan Fletcher. "That's why we use robust industrial grade products and multiple levels of redundancy in our control system products."

While Liberty's power and control system

We went with ProSoft
because they are able to
handle high multicast traffic...



Touch screen Supervisory Control and Data Acquisition (SCADA) operator console located in the Air Traffic Control Tower.

solutions are application-specific, the core hardware and software products employed in their system design remain constant.

At the heart of each ALCMS system are Programmable Automation Controllers (PACs), which serve lighting circuit status information to a Supervisory Control and Data Acquisition (SCADA) operator console located in the Air Traffic Control Tower, providing Federal Aviation Administration (FAA) Controllers with a touch screen interface from which they control the various lighting circuits on the airfield. This proven system allows system engineers to improve productivity while helping clients to reduce maintenance costs and improve airfield safety overall.

Fiber optic cable is used as the primary communications medium. In many cases, a secondary parallel fiber network is installed as a backup. While reliable, fiber-based communication does have shortcomings. Field conditions may be such that:

1. Airside construction can compromise communications and thus operations.
2. Communications duct banks lay under concrete slab runway and taxiways, which are very costly to install and maintain.
3. Redundant fiber networks normally run

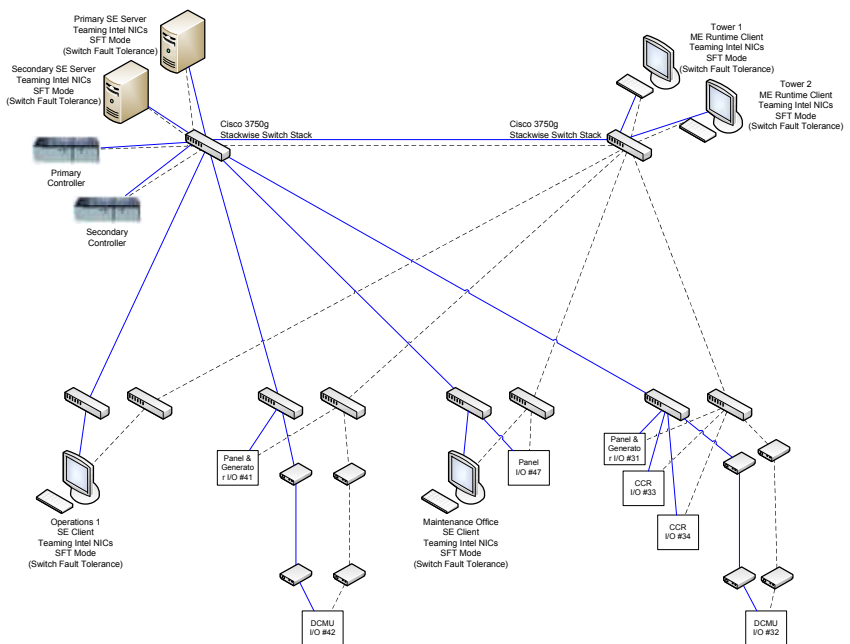
parallel to the primary line, and thus are subject to common risks, especially when a duct bank is compromised by a negligent back hoe operator.

Independent Wireless Redundancy

Airports are a dynamic entity, with runway and taxiway expansions and surface rehabilitation ongoing. Construction and

maintenance airside is a common event, whether for new construction or maintenance purposes. With fiber optic cable runs all around, there exists the risk that the fiber can be damaged during construction and the control system will be knocked offline.

As industrial wireless solutions began to emerge, Liberty considered their distinct advantages in use as back up communications to the fiber lines. Cost



reduction associated with installation, maintenance and replacement of fiber was a major driver, but even more valuable was the assurance of increasing uptime by implementing an independent backup communication system.

“Uptime and maintenance aspects are a huge consideration. If the system goes down, a maintenance team must be brought in. The costs of this can be significant, particularly if the occurrence is at night or on a weekend. But, if the system is able to automatically switch over to the wireless back up, this cost is avoided,” says Liberty’s Control Systems Product Manager Tom Wodzinski.

Liberty has been using Wireless Ethernet products successfully since the late 1990’s, however began to experience problems as the amount of multicast I/O traffic on their network increased. After some research and consultation with the automation group at Gerrie Electric Distribution, Liberty discovered that ProSoft Technology’s 2.4 GHz Industrial Hotspots were better able support their application needs.

“Liberty is an exciting company to work with because they are highly innovative, always seeking new and better technology,” comments Rob Porter, Automation Product Manager for Gerrie. “When ProSoft Technology released these radios, which were specifically designed and optimized for industrial Ethernet, it made for the right solution and Liberty was quick to take advantage of it.”

“We went with ProSoft because they are able to handle high multicast traffic,” says Tom Wodzinski, “and upon using the radios we also found the configuration tools were much more simplified. From our standpoint as a system integrator, we were able to reduce

development and installation costs because we could employ the same local electrical contractors that perform the installation of our electrical equipment to mount the data radios.”

Seamless Transition to Backup Communication

In one installation, Liberty supplied the airfield lighting control system to the Canadian Forces Base in Trenton, Ontario. CFB Trenton is a military airfield providing



View from the runway of a power vault and Air Traffic Control Tower, which jointly contain the software and equipment that make up the Airfield.

deployment support for military and humanitarian efforts around the world. The basic system relies on wireless backup for the ALCMS functions. In a later system expansion, eight new point I/O drops were added to the wireless network, providing real-time control and monitoring of high mast apron lighting around the airfield. The cost to install seven wireless nodes to the network came in at less than half of the cost of a conventional hardwired configuration.

In June 2010, the unexpected did happen. A contractor dug through a major telecommunications duct bank containing the main fiber optic communication cables for the airfield lighting. Communications and airport operations continued flawlessly on the wireless radio network for the next week while new cables were procured and installed.

Reaching Remote Sites

In a majority of airside projects, site equipment is deployed over a large physical area. Locations may involve a few I/O points and remote operator consoles which are potentially distributed over distances up to five miles. In these situations, it’s often not economical to run fiber and wireless becomes the primary line of communication.

In fact, Liberty has standardized on wireless as the primary network for the more

distributed applications on the airfield, including control from Central De-icing Facilities. De-icing is essential to safe aircraft operation in winter. An anti-freezing agent called glycol is used for this process. Because of its toxicity, environmental regulations now require modern airports to designate an area for the de-icing process, where glycol used to spray the planes is collected into reservoirs, cleaned

and discharged. These de-icing facilities are generally remote from the main terminals, so independent lighting systems are used to guide planes into the appropriate bays for spraying.

Mobile Connectivity, Maintenance, and Transferability

To take things one step further, the Winnipeg International Airport’s Central De-icing Facility lighting is controlled by a mobile laptop PC using a high speed wireless Ethernet communications module.

The lighting infrastructure of de-icing pads resembles a mini airport, where an individual called the Iceman controls the movement of aircraft within the de-icing area. The Iceman’s mobility is quite important as he moves about the facility and guides aircraft in and out under the most severe winter conditions.

Wireless mobile units are becoming common on the airfield, not just for de-icing but for mobile maintenance units, like one designed for Phoenix Mesa Gateway Airport. The airport uses ProSoft Technology's IP66 weatherproof radios to communicate from the maintenance vehicles to the main control system locations including the control tower and two electrical vaults.

If a runway is closed for maintenance, airport electricians can roam the airfield performing mandatory light checks while manually controlling each circuit from their mobile wireless computer. In the past, they would have had to contact the tower to switch circuits on/off for them, a tedious and time-consuming procedure at best.

Challenges

Wireless communications has proven to be very successful, but not without its challenges.

“When you run fiber, you dig a trench

and put it in the ground,” says Wodzinski. “You know it's there. With wireless the biggest difficulty is pinpointing a point of interference if, for example, the airline implements an overlapping unrelated wireless network in the terminal. We can't control who else is in the spectrum tomorrow.”

Jim Weikert, Wireless Strategic Product

“ProSoft is responsive when issues arise during installation. The support guys are always very helpful, good to work with, and we can't see building our systems any other way today.”

Manager, adds, “Interference is an innate concern with open frequencies. For these types of applications ProSoft Technology offers several options for monitoring network health. For example, OPC (an open standards specification) can be integrated into an HMI or SCADA system, and through Simple Network Management Protocol (SNMP), IT engineers gain visibility of network performance. In addition, ProSoft Technology offers alternative solutions at 900 MHz, 2.4 GHz and 5.1 – 5.8 GHz bands, allowing the system to be tailored to work within the spectrum available.”

All in all, the benefits outweigh the costs for Liberty and their customers.

“We've had a very positive experience,” comments Wodzinski. “ProSoft is responsive when issues arise during installation. The support guys are always very helpful, good to work with, and we can't see building our systems any other way today.” ♦



Wireless I/O Control System Proves Successful for Vehicle Manufacturer in India

By Adrienne Lutovsky

In Chakan, Pune, India, a market leading manufacturer of utility vehicles built a modern Greenfield facility from the ground up with state-of-the-art equipment. At the heart of the plant is the Electrified Monorail System (EMS) conveyor, designed to deliver reliable, safe, quiet and efficient transportation of the vehicles from one work station to another along the assembly line. The EMS runs throughout the entire length of the Trim, Chassis and Final assembly (TCF) line of the Vehicle in the General Assembly shop. The light truck manufactured in this facility is transported by a wireless EMS conveyor. The TCF line is considered the final stage in production, where components are added to the vehicle including 'trim' components such as windshield glass and seats, as well as operational components such as the engine and wheels before final vehicle testing.

Control and Communication Automation

For consulting, specifying and planning of this project, the manufacturer worked with Yantra Automation, one of the largest Rockwell Automation distributors in India, in conjunction with their local Rockwell Automation account manager, and with system integration company Precision Automation and Robotics India Limited (PARI). The team worked closely to develop the best overall solution for this sophisticated project.

This being a new system and a Greenfield plant, they were not bound by constraints associated with some of the older monorail systems found in manufacturing plants. Thus,



they were able to design a sophisticated system that easily conformed to the goals of the project and the manufacturer's commitment toward Flexible and Lean Manufacturing. This entailed the following features:

- To eliminate communication issues and concerns associated with rigid copper bus bars and brush collectors commonly used for communication with EMS carriers
- To optimize reliability and uptime of the EMS conveyor system
- To deliver real-time communication with Programmable Automation Controllers (PACs) and Inputs/Output (I/O) modules for enhanced conveyor control
- And ultimately, to achieve optimum response times for managing the EMS vehicle carriers

From Yantra Automation, Ajay Kulkarni and Manish Sahni began the challenge of designing a complex wireless communication system for the assembly manufacturing line; an ambitious goal in a large-scale project involving multiple carriers in continuous motion along the overhead Electrified Monorail System. Together, the team selected a Rockwell Automation control solution supported by ProSoft Technology wireless Ethernet communication. The challenge: creating a seamless and reliable communication system between each carrier and the controller as they move throughout the plant.

Implementation

PARI was commissioned for the design and implementation of the specific assembly line. PARI is a turnkey integration company

The flexible architecture permits independent operation of each vehicle carrier, enabling carriers to be programmed for different speeds based upon their location on the conveyor path.

specializing in top-to-bottom conveyor system design, robotics, and controls and communication automation for the Automotive Industry segment in India.

PARI designed the full vehicle assembly line to operate in real-time on the EtherNet/IP control network, using several Rockwell Automation ControlLogix PACs and supporting peripherals on the shop floor, including I/O and Variable Frequency Drives. The decision to go with ProSoft Technology Industrial Hotspot radios was made primarily because of their industrial hardware and solid reputation for supporting Rockwell controls and communication interfaces seamlessly, in addition to the ease of operation.

Movement of the EMS carriers for transporting vehicles through the different stages of assembly is handled over a wireless EtherNet/IP network. The control system consists of one ControlLogix PAC on the conveyor and one ControlLogix PAC on the engine decking system for body marriage. The conveyor PAC is hardwired to two ProSoft Technology Master radios while the engine decking PAC is hardwired to a third Master radio. The conveyor PAC is wirelessly connected with 33 individual carriers along the EMS, while the Engine Decking PAC is connected wirelessly with 3 engine carriers. Each independent EMS carrier has a local control panel with Rockwell Automation I/O and a Variable Frequency Drive (VFD), and a ProSoft Technology access point acting as repeater to establish wireless communication between the main control panel equipment and their respective PAC. The carrier radios communicate with each other as well as with Master radio.

This EMS application is time critical, so each repeater radio is connected with its parent Master radio at all times to avoid switching



delays as communications change from one Master radio to another while the carriers are in motion. The Master radio in each conveyor PAC has two Omni antennas with a splitter to deal with multipath fading effect. The architecture fully supports seamless roaming by the carriers.

Results

After some initial challenges with line-of-sight issues which were resolved by adding another Master radio and elevating their locations, the system is now able to provide real-time communication between the EMS carriers and the PACs on the assembly plant floor, including real-time I/O status for conveyor movement control. The system also enables wireless synchronization between the floor-mounted engine trolleys and the overhead EMS carrier, for the smooth decking of the engine.

The flexible architecture permits independent operation of each vehicle carrier, enabling carriers to be programmed for different speeds based upon their location on the conveyor path. The conveyor speeds are seamlessly switched in the process zones, transit zones, straight and curve zones, manual speed zones, and slow-and-stop speed zones. Limit switches in the vertical elevators enable ramp up and ramp down velocities for elevation changes, ensuring safety of the carriers on the line. Buffers in the conveyors can be adjusted based upon prevailing production pull systems.

By opting for this wireless network, the manufacturer was able to gain several benefits, including:

- The ability to control the EMS conveyor and the engine decking carrier in real time and synchronizing the VFDs with the Engine Decking Carriers
- Eliminated complex wiring/cabling and cat tracks for communication cable
- Eliminated additional Bus Bars for communications with associated complex communications interfaces
- Obtained seamless and robust communication between the PACs and the I/O
- Obtained determinism with all the I/Os on each EMS carrier for better scan time management

The Future

The project went live in November 2009. Since then, the manufacturer has seen an increase in uptime, reliability and consistency in production output, enhancing their commitment toward Lean Manufacturing. With the success of the

Rockwell Automation control and ProSoft Technology communication solutions, five similar applications consisting of both EMS conveyor system and material handling in the vehicle assembly shops are being installed. ♦

When you go wireless...



RadioLinx Industrial
802.11n

CONTROL ENGINEERING Česko



2010
PRODUKT ROKU 2010
OCENĚNÍ ČTENÁŘŮ

Produktová řada
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Farewell to a ProSoft force



Janice & Jim Hungerford



ProSoft's Scott Sibenac, Janice & Bob Scott

By Danetta Bramhall

On January 31, 2011 Janice Hungerford worked her last day at ProSoft Technology. After 18 years at ProSoft, she has decided to retire...to her farm.

Janice is a well-known face in the industrial automation industry. She was the first sales person hired at ProSoft and one of the driving forces behind ProSoft's growth.

Janice was also one of the very first customers to buy ProSoft's first Modbus chip. Here, in her own words, is how she remembers it...

"I received the chipset, put it into the AB Module, read the not-quite understandable instruction manual, tried to make it work as stated and came up against a brick wall."

In other words, IT DIDN'T WORK! Well, to make a long story short, she called Doug Sharratt, the entrepreneur who started ProSoft, and he ended up sending her a new chip. Over the next few years, she used the Modbus module on several other projects, each time needing to call Doug to make adjustments so it would work. In 1993 Doug needed to hire his first sales person at ProSoft. He called Janice to discuss the opportunity. She remembers quite clearly asking him, "Who owns this company?" When he said that he owned it, she could only laugh since she had given him such a hard time over the previous projects when his product took some time to get working. He said he didn't mind because he felt she was someone he could work with.



"As an entrepreneur," said Janice, "Doug was actively developing product, working closely with Allen-Bradley and doing whatever he could to grow his new company. He worked all day answering the tech calls and building relationships, went home in the evening to see his kids and for the most part came back to his office and developed the products through the night. It was not unusual for me to call him late at night at the Bakersfield office to discuss what he was currently working on and to have him explain to me why something

18 years at ProSoft. I think at one time or another she has probably been everyone's boss. Now she's going to be wearing a new hat...a farmer's hat...as she and her husband, Jim, expand the farm/ranch they started a number of years ago.

"Jim is ready for a full time farmhand and is excited for me to join him in those ventures. We will never be big time farmer/ranchers, but will sure have a lot of fun playing!"

So far Hungerford Farms has 80 head of beef cattle, 75 grapevines, 40 fruit trees, blueberries, blackberries and beehives. Yes, they have installed a Kenya Top Bar Beehive and filled it with Italian bees. Oh, and did I mention the chickens...

Janice was always passionate about her work at ProSoft and did her best to pass that passion on to the rest of us. She will always be missed, but she will never be forgotten.

For those who would like to keep in touch with Janice, you can find her on Linked In. Her last title at ProSoft was Managing Director. Her new title is Sustainability Research Director, Hungerford Farms. ♦



What's a farm without chickens?



The original ProSoft team stand in front of their first show booth.



Janice celebrating with Doug on his 50th birthday.



Jim tends to his bees as other members of the Hungerford family look on.

wasn't working as expected. I remember one interface card specifically that I was testing that required just such a call. He responded, 'Oh, you just have to pull the chipset out and bend up one of the legs and it will work.' Thankfully, he did finally fix that one to not require the bent up leg!"

Janice has worn a lot of hats in the past





Water reclamation fit for the next century!

By Bridget Blackburn

In the early 1990s, when the Public Utilities Board of Singapore began a 100-year wastewater planning process, Singapore had two primary sources of water. Rainfall accounted for about half of the country's water supply, with the remainder imported primarily from Malaysia. The most forward-looking water supply plans rarely look more than 50 years into the future; Singapore's decision to look ahead an entire century was profound. Among the most significant differences between now and a hundred years into the future will be the small island nation's population. Slightly larger in area than Chicago, the island of Singapore has 4.8 million residents within its 247 square miles. The population is projected to grow to about 7 million by the end of the century. It was important to PUB to identify other sustainable water sources to meet the long-term needs of Singapore's population.

In a bold and radical move, the PUB created a massive underground tunnel system to meet the country's needs. A sewer tunnel network over 100 kilometers long snakes its way beneath the diamond-shaped island of Singapore, ultimately ending at the Changi Water Reclamation Plant. The plant lies largely underground on a compact 136-acre site at the eastern edge of Singapore. The facility boasts the first space saving design concept of its kind in the world and has won numerous awards.

"The designers have incorporated a space saving design concept - things like stack treatment tanks and also stack treatment facilities like our sludge treatment facilities. All the treatment facilities are stacked on top of the other to save space," said Yong Wei Hin, assistant director of Changi Water Reclamation Plant.

The huge influent pumping station which receives and screens all the used water from the tunnel before pumping it vertically through the pump shafts 50 meters to the surface, is responsible for purifying wastewater for consumption throughout Singapore. The plant treats up to 800,000 cubic meters (176 million gallons) of used water a day to international standards and has the potential to triple capacity through future expansion. The treated water is either discharged five kilometers out to sea through two deep sea pipes, sent to industrial facilities throughout Singapore or is sent to the NEWater Factory. Constructed on the rooftop of the treatment plant the Changi NEWater Factory purifies the water further through microfiltration, reverse osmosis, and ultraviolet disinfection before being remarketed as NEWater, Singapore's own brand of high-quality reclaimed water.

This monumental project needed low maintenance costs, real-time communication with remote diagnostics and needed to be

integrated with an already existing asset management system. Due to mandatory connectivity requirements, it was decided to use PROFIBUS DP V1 as the protocol for communication. The mega water treatment project has a long list of field devices in a wide-ranging PROFIBUS network that harbors thousands of different types of slave devices. The PROFIBUS DP slave devices mainly came from vendors like Siemens (ET200M I/Os & VSD), Yokogawa (Flow transmitters & Differential Pressure sensors), Vega (Ultra Sonic sensors, Level sensors), ABB (VSD), and Schneider Electric (VSD & DOL starters).

Schneider Electric was chosen as the Main Plant PLC provider for the Changi Water Reclamation Plant. Schneider Electric contacted ProSoft Technology to develop a PROFIBUS DP communication module that would enable Master control of the network from their Quantum Controllers.

"Schneider Electric is very strong in the water industry and wanted to bring valuable solutions integrating PROFIBUS and FDT/DTM technology," said Ken Roslan, General Manager of Marketing for ProSoft Technology. "The ideal solution for an application where PROFIBUS slave communication is required in the Quantum/Unity system was the ProSoft Technology PROFIBUS DP in rack communication

module for Quantum (PTQ-PDPMV1). We were able to help them expedite their time-to-market and get the customer's acceptance and final buy-in."

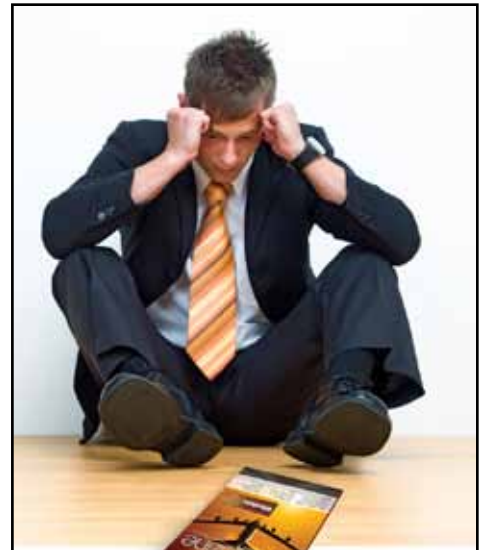
The PROFIBUS DP module acts as a PROFIBUS network scanner, providing high-speed transfer of Cyclic Input and Output data between PROFIBUS devices and the processor memory table. With field data access for up to 125 PROFIBUS DP slaves directly over the backplane, the module allows virtually unlimited acyclic data for online parameterization, alarming and extended diagnostics. The module introduces users to an even wider range of benefits with the added security and reliability of Hot Standby functionality and the interoperability from Field Device Tool (FDT) and Device Type Manager (DTM) technology.

Carl Henning of Profibus Trade Organization, commented, "We've had big segment growth due mainly to PROFIBUS strengths in factory automation, safety applications, drives and motion control. These applications use PLCs and ProSoft's ability to add Hot Standby (or automatic failover) capability is an additional feature that will be helpful in these and other applications."

Using Field Device Management (FDT/DTM) technology, Schneider Electric was able to easily integrate PROFIBUS devices into the Quantum Controllers. The plant's overall system architecture now provides high speed communication, and controls power to devices over the bus, making it possible to have very large networks; all backed by ProSoft Technology's extensive protocol expertise, communication engineering knowledge and industry-leading technical support.



The Changi Water Reclamation Plant and the NEWater Factory are only part of the master plan to reach Singapore's goals of cleaner waters around the island, a healthier environment for its citizens, and enhancing the country's reputation as a global water high-tech center. Other projects include an extensive public education program, and the long-term Active, Beautiful, Clean (ABC) Waters program, which will help to complete the vision. Once implemented, these programs will not only help bring Singaporeans closer to the water so they can better appreciate it through the transformation of the drains, canals and reservoirs into vibrant streams, and beautiful lakes for the community's enjoyment, but also will create a sustainable water supply for years to come. ♦



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The **ProSoft** Magazine



Water Flows in Iraq

EDITOR'S NOTE: This is one of those stories that simply falls in your lap and then proceeds to write itself. It started one day, while minding my own business, when I got a call from one of our tech support engineers who was very excited about a systems integrator he had just talked to in Iraq. He gave me a brief outline of the water project and the SIs phone number. I took a chance and dialed the phone expecting to get an answering machine. To my surprise David Watts came on the line, and I think he must have been just a little homesick, because he began to talk...and talk... and talk. Two hours later I was still asking questions and David was still talking. It didn't take long to write the story and then the fight began between publications as to who could print it first. To date it has been printed in 13 different publications. It is by far the single most popular story ever written about a ProSoft application. For those of you who may not have seen it, we are reprinting it here. Enjoy!

By Danetta Bramhall

In Badaah, Iraq, David Watts adds finishing touches to his work in the Nasiriyah Water Treatment Plant—his home away from home for nearly eight weeks. The largest water treatment facility in Southern Iraq, the Nasiriyah Plant supplies 10,000 cubic meters per hour of fresh drinking water to approximately three million Iraqis in Ad-Dawayah, Badaah, Al-Shatra, Al-Garaaf, Nasiriyah and Sug Ash Shuyuk.

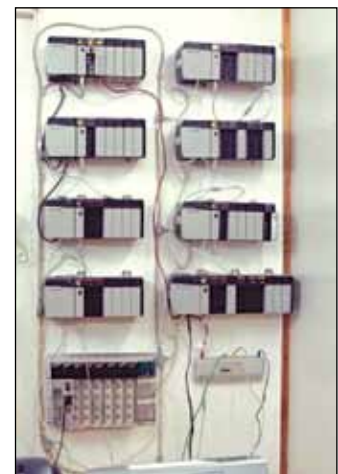
“This new water facility rivals any state-of-the-art water treatment plant we have in the States,” said Watts.

It didn't start out that way.

Watts sat in his home office in Krum, Texas when he recently received an email from a friend asking if he would be interested in going to Iraq to program PLCs. Ordered and



David Watts dons his body armor in preparation for going to the pump stations outside the water plant compound.



David Watts has single-handedly programmed all of the PLCs for the water plant.

shipped to the facility, they had no one in the area who knew how to program PLCs. David Watts owns DWC Technology, and is primarily involved in systems integration and consulting for automation projects.

“I thought about it for awhile,” said Watts. “Then my daughter said, ‘Wouldn’t it be awesome to go and help build this plant and be a part of history?’” His wife and three children, Heather, Jordan and Drew, all agreed traveling to Iraq and helping build community infrastructure would be a great experience. So he packed his bags.

When Watts arrived in Iraq, he discovered Allen-Bradley PLCs to be very limited in their programming with roughly 10 percent completed. The Modicon Quantum PLC was roughly 80 percent ready. He immediately set to work. “The GUI was also limited and very static in its appearance and function,” Watts said.

Individual ControlLogix processors were placed at the three pump stations along the Garaaf River, a small branch of the Tigris River. The fourth ControlLogix was placed in the control room to function as a SCADA host for the plant. The Quantum PLC, which has 20 Remote I/O drops, was used to control the backwash of 20 individual filters cells.

“Then came the problem of getting the Quantum PLC to communicate with the ControlLogix,” said Watts. “I had never used a ProSoft Technology interface module before. And, of course there were no manuals or cables on location to help me with this, so I called ProSoft Tech Support.”

ProSoft Technical Support Engineer, Scott Lee, answered the call. “You could tell right away that he had his hands full,” said Lee. “But he obviously knew how to program and only needed a little nudge in the right direction to get the ProSoft Modbus Interface module up and running.”

The Nasiriyah Water Plant is located just north of Nasiriyah City, between the Tigris and Euphrates Rivers. This is the area commonly referred to as the “Fertile Crescent”, a rich food-growing area.

The Plant takes water from the Garaaf River and delivers the water into 10 large clarifiers to allow the sediments to settle. Alum is then mixed with the water to allow any remaining particles to coagulate prior



Nabeel Abbood received a crash course in PLC programming and integration.

to sending the water to the flocculators. Next, the partially cleaned water is sent to sand filters where a majority of the bacteria is removed. Finally, chlorine is added to kill any remaining bacteria and the water is sent to 2 underground storage tanks.

Fluor-AMEC, the project contractor, awarded ANCo and Snaffee, both Iraqi contractors building the plant, a safety award for 4.5 million safe man-hours.

“That award was really something,” said Watts. “When you consider we had as many as 1,000 workers at a time building this plant, the pump stations as well as the pipeline that measures one meter in diameter. The local workers are also a big reason why the building of this plant has been so successful. It has created jobs and has become a source of pride for southern Iraq.”

One of the Iraqis who has been instrumental in the programming and commissioning phase, and will continue to be once the plant is operational, is Nabeel Abbood. Watts describes Abbood as a “very intelligent young man.”

“Nabeel was hired to handle the IT at the plant,” said Watts. “But he has also received a crash course in PLC programming and integration and has been a great help to me. When I leave he will be the person with the most PLC programming experience at the plant.”

The new plant went online in early 2007. It replaces a small water plant that was severely overtaxed.

“Since this is a very agricultural area,” said Watts, “except for a small water treatment facility near by, some of the people in the region got water in buckets from the river, so

this is a great improvement for them.”

When asked if he had to take any special precautions while on this job, Watts laughed. “Only when going outside the compound.”

A private security detail from the UK and General Saad, the top ranked Iraqi officer in the province, provided troops for the safety of the workers traveling in the region.

“General Saad came to the plant personally,” said Watts. “He was an incredibly nice guy. After he shook my hand he then touched his heart which is a way of showing respect here.”

“If we have to go outside the camp, Kroll, a company from the UK, provides security. For that we had to wear body armor and traveled in bullet-proof Suburbans.”

Watts next stop is home to Krum, Texas, but he says the experience has been such a good one he plans to come back to Iraq to help with the Erbil Water Plant located in northern Iraq. Work is near completion on a \$100 million water project that could bring 6,000 cubic meters of clean drinking water to the people of Erbil every hour starting next year. The project, which will be built in multiple phases, includes a potable water treatment plant, an intermediate booster station, a storage tank and pipeline. ♦



Workers were given an award for 4.5 million safe man-hours.



Communicating from the HART

By Adrienne Lutovsky

Valspar Corporation is the seventh largest paint and coatings company in the world, with \$2.9 billion in sales in 2007. For all plant design, integration, measurement, and control, Valspar trusts Meter Maintenance & Controls Inc. (MMCI).

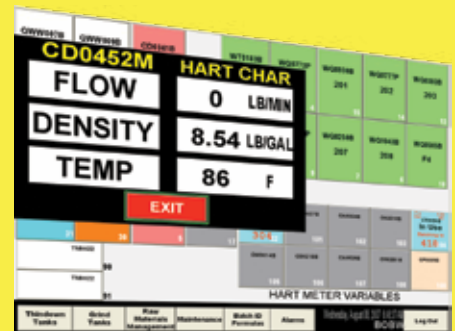


Micro Motion flow meters system by MMCI.

MMCI is a system integrator and technology supplier in Redlands, California, that specializes in true turnkey liquid measurement solutions. They have set up or retrofitted the Valspar plants in Wheeling, Illinois, Sacramento, California, Lebanon, Pennsylvania, Statesville, North Carolina, and Garland, Texas to name a few. New plants receive a top-to-bottom paint blending and batching system, with everything from the piping, to the electrical, to the process equipment and programming being supplied, installed, and programmed by MMCI.

To handle the paint blending process in each of these plants, MMCI recommends Emerson Process Micro Motion flow meters. These flow meters measure mass flow, volume flow, density and temperature variables, and provide precise control measurement of the various ingredients that are blended together to create a given batch of paint.

From a management and operation standpoint, Valspar wanted a system



Flow Meter Variables in RSView.

that would allow the entire enterprise to be integrated from the plant floor controls to the information systems. Plant operators need diagnostic information for monitoring of the process and for identifying maintenance needs or problems on the line without requiring that the operator be trained on the control system. The laboratory also needed access to this information for quality control and trending.

As a loyal Rockwell Automation® customer, MMCI chose to use a Rockwell Automation Process Automation System (PAS) to extract data from the flow meters. As each flow meter batches a raw material into a mixing tank, the process variables are recorded by RSSql™ and ultimately presented to Valspar



Valspar Tank Farm installation by MMCI. Includes Micro Motion Mass Flow Meters with HART Interface.

Integrated Architecture that helps end-users like Valspar Corp converge industrial and business technologies plant-wide. ProSoft's gateway offering leverages the EtherNet/IP backbone to create a powerful process control application that can easily communicate with other plant-floor and information systems."

"MMCI has been using Rockwell and ProSoft products for years...possibly since we first started as a company in 1989," comments Terry Davis, President of MMCI. "We use ProSoft's Modbus ControlLogix cards all the time, so it was a no brainer. Now we try to use their HART gateway in all the paint plants we work in; and have plans to apply it in many other industries we serve. Just recently MMCI replaced a Pepperl + Fuchs HART Multiplexer system with ProSoft's in the Statesville, North Carolina facility. We were glad to find a modern solution for an old communication platform."

Implementation

In all, MMCI has set up five plants for Valspar, with each project involving anywhere from 30 to 50 flow meters. In a general application, MMCI has all HART flow meters linked up to a single ProSoft gateway. The gateway routes the data over Ethernet to the Rockwell Automation ControlLogix PAC. The ProSoft module acts as a bridge, allowing the Process Automation System to communicate seamlessly with the flow meters. Once data is extracted

from the meters it can be distributed to RSSql™ and RSView®.

Conclusion

The greatest benefits of the new system are streamlined efficiency, simplified monitoring and operation, and the creation of a quality control process for preventative and predictive maintenance.

"Our plants are happy with the feedback that we are now receiving from our meters," says Mike Dimaggio, the Director of Engineering for Valspar working out of the North Carolina facility. "Using this information we have been able to modify our preventative maintenance plans to stay ahead of any issues before they occur. For example, we began changing out filter bags before the pumps and meters. In the past if the bag wasn't changed out we would reduce the flow to the point that we would have meter inaccuracies. Now that the system tracks this data, we have been able to see how often we should be changing these bags to avoid any errors when batching, and are able to act before an error occurs.

"Also, in the past if someone had a theory that a metering problem causes a quality issue with a batch," continues Dimaggio, "we could not prove or disprove them. We had to look at the meter the next time it was used. Now, with stored data several times per minute for each meter charge, we can go to the real data from the questioned charge and either prove or disprove this theory.

The ability to avoid meter inaccuracies will definitely help us from a quality standpoint."

Dale Simmons, Lead Engineer for Valspar working out of the Wheeling, Illinois facility, continues, "With the HART system we can track and standardize flow rates of materials between sites. We also use the density outputs to monitor solids levels in our slurry tanks. Logging the history enables us to track line cloggages and take preventive action. In several situations we have used the historical HART data in conjunction with RSSql to troubleshoot issues that have occurred within the batching system itself... meters faulting out, misdirected flows, incorrect RSSql transactions, and more."

From a monitoring and operations standpoint, the process allows any person in the plant at any given time to view activity on the floor, the Watch Dog Timers set up by MMCI, and any other critical information. This saves money and time for Valspar associated with hiring and training employees, plus the rework and maintenance that would otherwise have to be done by a technician. The system is user-friendly and because the measurement system is so accurate, the system nearly runs itself and downtime is mostly eliminated.

"I know Valspar appreciates not having to call us out there every time they run into a maintenance hiccup," notes Davis, "though the systems still operate without issue today." ♦

Overcoming barriers to wireless adoption

Security concerns

By Adrienne Lutovsky

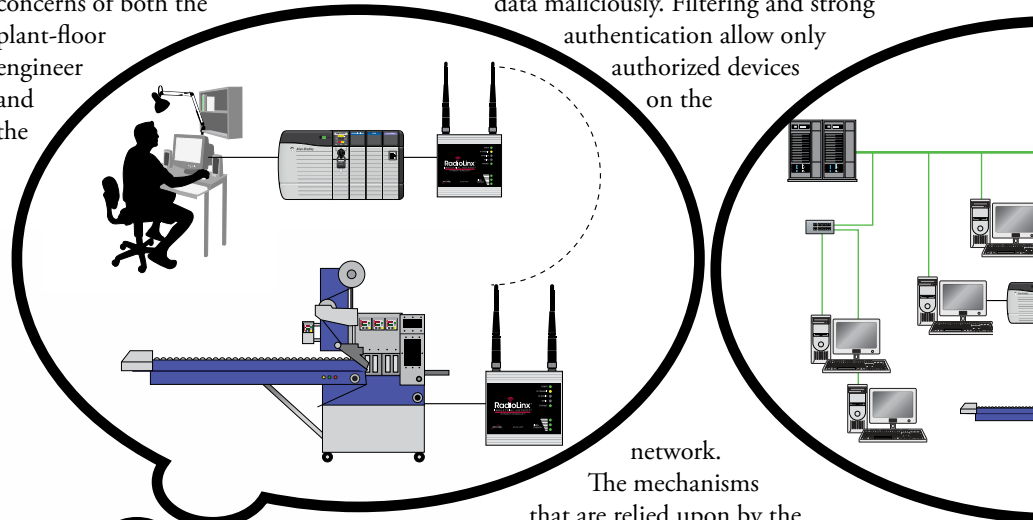
Wireless is utilized now more than ever in control architectures. It is flexible, versatile and can be cost effective; however, many conservative end users are still reluctant to trust wireless.

Marrying Wireless Security Objectives for both the Plant and IT

The first topic to arise when discussing whether to deploy wireless in a plant network is most surely security, and this decision is often not made in isolation. Plant engineers want to ensure uninterrupted production, and that security measures are in place to protect their process and plant floor equipment. IT engineers want to ensure that systems deployed in the plant co-exist well with networks in the rest of the organization and

that nothing compromises the security of corporate information. Though different, the concerns of both the plant-floor engineer and the

encryption techniques can be utilized to avoid someone interpreting your data maliciously. Filtering and strong authentication allow only authorized devices on the



IT engineer are of high importance.

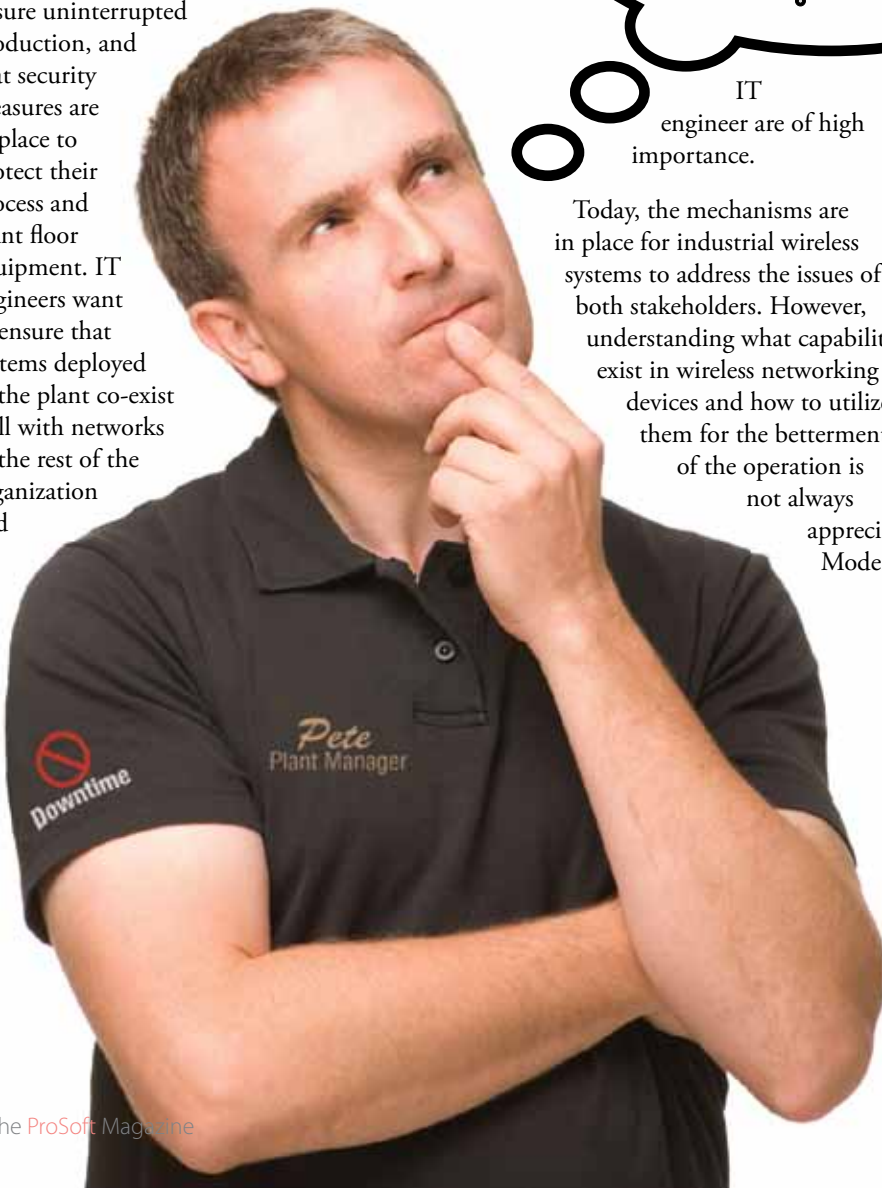
Today, the mechanisms are in place for industrial wireless systems to address the issues of both stakeholders. However, understanding what capabilities exist in wireless networking devices and how to utilize them for the betterment of the operation is not always appreciated. Modern

network. The mechanisms that are relied upon by the US government for transferring secret information are present in today's industrial wireless devices, and address many of the concerns of security of information, assets and reliability of processes.

So, do not view the discussion on security for a plant network as one in which IT engineers and plant engineers have competing interests. Instead, acknowledge that each has their own experiences. Plant engineers have depth of experience in 24/7 reliability and the role reliability plays when deploying automation networks. IT engineers have depth of experience in co-existence of multiple systems and network management. The two can complement each other if cooperation exists.

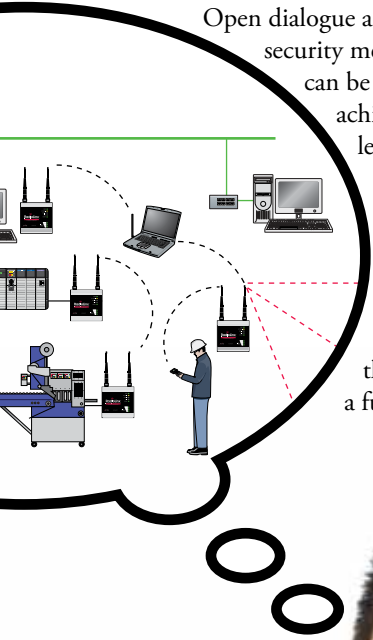
Getting IT Onboard

Swallow the lump in your throat and engage IT from the get-go. IT has likely deployed wireless more pervasively throughout their networks and will want to incorporate their best practices, allocate frequencies to ensure coexistence with other networks, and potentially help plan which technologies will be used. If IT is not included in the process and you proceed with your system, they can and will shut you down.



Lean on your solution provider. They should understand the needs of both departments and can bridge this gap to find a common solution.

Open dialogue about the security measures that can be put in place to achieve the same level of security as they are accustomed to with the wired systems. Today, with the standards that are in place, a fully provisioned



wireless system can lock down the network securely and satisfy enterprise requirements. Sometimes this involves getting around red tape.

For example, heavily regulated industries like Pharmaceutical must adhere to strict data collection specifications, so the IT departments are more sensitive to security concerns. It is important to be clear on what you need and what IT will need from you in order for them to feel comfortable with your technology decision.

I'm a control guy and now I've brought IT in on my system. So, who owns my network in the event of a system down? How quickly can it be handled? How quickly can it be diagnosed?

This is where it gets tricky. We are control people. Relinquishing decisions about our processes is antipodal to our natures. Who controls the network often comes down to the policy that exists or is set in place. With wireless, the same rules of demarcation should apply as would with Ethernet. In some cases IT owns anything connected to Ethernet. In some cases the plant floor will own anything producing output. Sometimes IT will be involved in the decision making process and frequency allocation, but the plant has responsibility for installation and maintenance of the system. In any case, what becomes

important is that the line of demarcation be established upfront and that the selected wireless technology provides the diagnostic tools to satisfy both of these stakeholders

The tools for IT and the plant floor may differ. Having the appropriate tools for each is critical to prompt resolution. In the IT world, tools are based on Simple Network Management Protocol (SNMP), which is supported by some industrial radios. Higher level diagnostics may include OPC level data that can be used to integrate diagnostics into the control system.

Though policy varies from one organization to another, the trend seems to follow suit of wired Ethernet on the plant floor. Whether wired or wireless, when a line goes down at two in the morning, it is the plant manager whose phone rings.

Regardless of who owns the network, it is fair to say that troubleshooting a wireless network has a different process than with a wired Ethernet system. A wireless network is not tangible, for one. You cannot hold it in your hand. It can be affected by outside contamination, which can widen the scope when trying to isolate the root cause of a problem. This is why it is essential to have proper tools in place to monitor and diagnose your system. As with every other essential component in your system, have someone clearly identified who knows how to use these tools and understands the equipment. Select a vendor that can support you throughout your implementation and down the road, with the proper tools and training, technology selection, and technical support program. With these things in place, someone who is familiar with doing the diagnostics on a wired network can also diagnose the wireless network. ♦

For more information or the extended article, email alutovsky@prosoft-technology.com

Spot the Difference

Bandsaw operator Josh Sanders gives his full attention to the pipe he is cutting. Can you spot the differences between the two pictures?

Hint: There are 10 of them.

Answers are upside down at the bottom.

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____



Photos courtesy of Independent Pipe and Steel in Bakersfield, California

1. Added radio on top of white box 2. Moved ear muffs from white box 3. Put gloves on middle of picture 4. Added ProLinx Module 5. Added small slice of pipe on top of pipe 6. Added soda can on piece of pipe 7. Added pipe in 8. Added Radiolinx under pipes 9. Removed ear plugs 10. Changed V to an A in the grey box

The Funny Pages

The Trouble with Double Entendres

I used to work for a packaging OEM that made rotary net weigh fillers. These fillers are used on manufacturing lines to accurately weigh and fill liquid into bottles or packages. The equipment is installed all over the world, which had me hopping on a lot of planes in those years. I handled a project down at a Coca-Cola plant in Bogotá, Columbia one week in 1998. On this particular job, there were individual weigh scales on each filling station, which I was installing and testing for accuracy. Everything was smooth on the job, and I departed Bogotá for home. Shortly thereafter, I did a similar equipment job in Melbourne Australia. On my return flight to LA, I passed through the line at customs, where the agent scanned my passport and asked me what my business was in Columbia. I told him the truth; I went to Columbia to fix scales for weighing and packaging coke. Well, I thought it was funny anyway. ♦

Moral of the story: Fight the urge to joke with Customs Agents!

All That Glitters Is Not Gold

Many years ago when I had just gotten out of the Marines, I went to Mauritania, Africa to teach Rockwell PLC programming at an iron ore mine in the middle of the desert. When I say the middle of the desert, I mean deserted. Literally, as my plane descended into the mine town, there was no airport, no terminal, nothing. I still joke that the airport was the spot in the sand where the plane stopped. I hopped off the plane, and picked up my bag from the giant pile in the sand where they were thrown.

The two primary languages in Mauritania are French and Arabic, so I hired a French translator. Unfortunately, I was separated from my translator when passing through

customs on the way home—or, more accurately, soldiers armed with AK-47 assault rifles—and all the forms were written in French. I marked the seemingly appropriate boxes for my claims, noting possession of my remaining American Express traveler's checks. Imagine my surprise when the customs agents pulled me aside with weapons drawn, demanding I produce my \$5,000 worth of gold! After some lengthy and frightening discussions, I managed to make it on the plane...and after handing over \$800 of my left over traveler's checks to the Mauritanian Army.

“On my return flight to LA, I passed through the line at customs, where the agent scanned my passport and asked me what my business was in Columbia. I told him the truth; I went to Columbia to fix scales for weighing and packaging coke.”

But, that's not where the story ends. The Royal Air Morocco 727 in which I departed nearly crashed at our destination in Casablanca. The pilot had the plane sideways and the tip of the wing on my side touched the ground. ♦

Moral of the story: 1) If you don't understand what you are signing, don't sign it. Ask someone. 2) Don't fly on Royal Air Morocco.

Bullets, Beer and Fireworks—Oh my!

One day after work I swung by a friend's place to grab a beer and to drop off a box of fireworks I had in my garage, for his kids to use on the fourth

of July. I am a recreational shooter, and it turns out I had a box of bullets packed in the same box with the fireworks. I took the bullets, tossed them in my computer bag and finished my beer.

The next day I headed to the airport for a business trip to Duluth, Minnesota. I went through the security check without thinking about it, I tossed my computer case on the conveyer to be X-rayed. I completely forgot about the bullets I had thrown in there earlier until the security team pulled me aside and asked if I had live ammunition in my bag!

I explained the situation and they must have bought it thankfully, because I didn't end up in prison. ♦

Moral of the story: Don't mix bullets and beer.



Were you there?



The crowd gathers in anticipation of Automation Fair 2010.



Jim Weikert, Wireless Product Manager for ProSoft gives a customer a demonstration of ProSoft's new i-View.



As always, Rockwell's hands-on labs drew a huge crowd.



Lary Marshall, ProSoft's North American Sales Manager, talks to customers on the show floor.



Chris Hines, Training Manager for ProSoft, walks customers through some hands-on training during the show.



Eddie Cantu, Regional Area Manager for US South Central, talks to customers on the show floor.



Aditi Kulkarni, Product Manager for ProSoft, walks a customer through ProSoft's SCADA products.



Eduardo Giancristofaro, ProSoft's Regional Sales Manager for Brasil, talks to customers on the show floor.



ProSoft's hands-on labs were well received. One customer remarked, "It was just like going to the butcher and having him slap the meat on the counter so you could really tell what you were getting. We were quite impressed with just asking about a module and being able to throw it in a rack to see how it works."



To celebrate its 20th Anniversary, the ProSoft booth was decked out with banners, Hollywood lights, hands-on labs and the premiere issue of their new magazine.

Were you there?



Revere Control Systems featured live radio interviews from the show floor.



The Fluke booth drew lots of attention.



One of the teams competing in the robotics competition makes final adjustments to their entry.



Festo drew lots of attention with their racecar simulator.



Sum Yeung, a Controls Engineer for Walt Disney Resorts, was the winner of an iPod loaded with ProSoft i-View, compliments of ProSoft Technology.



Ron Monday, Owner of OnLine Development, talks to customers on the show floor.

Automation University in South Africa: August 2010



Tom Lenigan, Technical Support Engineer for ProSoft, walks a customer through ProSoft's new faceplates.

Why buy an iPad when you can win one?



iPad 2



Enter ProSoft's "Best Application Contest"

ProSoft Technology is looking for real-life application stories using our products.

To enter the contest, please submit the following:

1. Explanation of how you used a ProSoft product, 800 to 1000 words. (Just tell it in your own words, don't worry about grammar.)
2. At least 3 photos of the project.
3. A quote from the customer talking about the application.
4. Permission from the customer to publish the story.
Email your entry to dbramhall@prosoft-technology.com.

Entry deadline is July 1, 2011

For more information and complete rules go to www.prosoft-technology.com/contest

