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THE LATEST IN A NUTSHELL

2014 ARC Forum a Family Gathering in Orlando

Internet of Things, Cyber Security and the Future of Automation Major Topics

Just like any large family gathering, the ARC Advisory Group Forum in Orlando was a combination of old friends, colleagues and bright new faces with a big dollop of news to share. The ARC Forum has become the most significant meeting of automation suppliers and end-users in the world. Sometimes it looks like a meeting of tomcats in an alley, with competitors circling each other warily. Sometimes it looks like old home week, because this is a very small industry, and everyone leaves friends behind when they change jobs.

The ARC Forum is THE place to be in the automation industry and this year was no exception. 800 of the best and brightest in automation set a record for attendance from all over the world. They heard about new releases and focused on the hottest topic -- the Internet of Things. What makes it work? Which companies have the strongest products in the field? Which companies have the best protections from incursions?

Andy Chatha hosts a panel of keynote speakers

Press Conference

These topics and questions were a large part of the ARC Press Conference. Nobuaki Konishi, a long time Yokogawa senior manager, presented a forward look at what the new release of the Yokogawa flagship DCS package, Centum VP will look like, and talked a little about what the 99 year old automation company does for its customers. "A commitment made is a commitment kept."

Nobuaki Konishi, Yokogawa VP

FDI Cooperation, LLC, demonstrated their most recent work at their ARC press conference. FDI, or Field Device Interoperability, is the attempt to combine and extend EDDL and FDT/DTM so that every intelligent field device can be programmed and used in the same way, with the same look and feel software, whether it is a HART device, a Foundation fieldbus device, or a Profibus device. FDI is supported by all the major field device vendors: Emerson, Siemens, ABB, Yokogawa, Endress+Hauser, and others.

Robert Gates, global marketing director for manufacturing for GE, accompanied by Ken Rawlings, product general manager for manufacturing software, presented a detailed look at the new upgrades to GE's Proficy suite of manufacturing and automation software at the ARC press conference.

Inside this issue:

Cover Story: ARC Forum 2014

We don't have room for reports on all the presentations at ARC, but here are some of the most interesting.

During an ARC Forum keynote address, Sandy Vasser (Electrical and Instrumentation Manager at ExxonMobil) articulated the thoughts of most (if not all) automation asset owners in the process industries in three simple words --- It Just Happens. In doing so, ExxonMobil has effectively challenged automation suppliers to improve their solutions. In time, both large and small asset owners will reap operational benefits.

Exxon's Sandy Vasser

Suppliers who do not meet the challenges risk suffering the consequences.

The top twelve challenges to key suppliers were identified as:

1. Eliminate, simplify and/or automate the overall execution of automation
2. Minimize custom engineering and reduce the total cost of engineering
3. Utilize standard hardware components with minimal custom design so hardware can be fabricated independent of software design
4. Virtualize the hardware and prove the software design against the virtual system
5. Prevent design, hardware and software rework
6. Eliminate unnecessary components and standardize the remaining components
7. Eliminate or minimize physical, data and schedule dependencies with other disciplines
8. Simplify the configuration of interfaces with third -party packages
9. More easily accommodate changes (include late changes)
10. Mitigate the effects of hardware and software version changes
11. Eliminate, simplify and/or automate the generation of documentation
12. Challenge traditional approaches

We know that it is not possible to mount instruments on equipment that is not installed and connect them to wires that do not exist.

These twelve challenges focus on not only reducing the overall cost of executing the automation system installation but also on reducing the amount of time that automation is in the critical path. Achieving both objectives makes the asset more profitable, more maintainable, and more sustainable over the long run. The latter objective (reducing or eliminating presence in the critical path) not only accelerates return on investment but can also be politically expedient because it reduces or eliminates the negative image that automation practitioners receive by being in the critical path when management is eagerly waiting for the first production run.

We know that it is not possible to mount instruments on equipment that is not installed and connect them to wires that do not exist. So it is not a surprise that (despite valiant efforts) automation is almost always in the critical path to plant startup. Current project implementation determines whether the automation delays startup for hours, days or weeks. One of the ExxonMobil goals is to remove automation from the critical path.

Traditional control system architectures connect the control system network to engineered controller cabinets and engineered marshalling cabinets located in the control room that are (in turn) connected to engineered junction boxes located in the field. Additional engineered junction boxes may be required in the field depending on distance and topology. These cabinets and their interconnecting copper wiring represent a highly engineered solution that is not only expensive to purchase and install but also takes up space in the plant --- including in the control room. Furthermore, such systems have limited flexibility because additional devices may require the pulling of additional cable.

ExxonMobil suggests that future automation projects be implemented with smart input/output devices located in standard smart junction boxes in the field. These junction boxes would be connected to the control system network via redundant fiber-optic cables and powered by redundant power sources with uninterruptible power supplies.

Benefits cited by ExxonMobil include that standard smart junction boxes with configurable inputs and outputs allow them to be ordered well in advance (based on estimates) without the need for factory acceptance testing. ExxonMobil estimates a 60-70 percent reduction in field terminations using smart junction boxes plus software design that can be validated independently from the hardware to reduce commissioning time in the field. Documentation requirements would be reduced while eliminating the marshalling cabinets and input/output equipment in the control room reduces control room space and HVAC requirements. Overall, the simplified system should be easier to install and result in fewer errors.

Smart input/output devices are only one automation technology that ExxonMobil is pursuing to potentially meet these challenges. Other technologies being pursued include hardware virtualization for engineering and testing, devices that automatically configure and self-document in the control system, third-party interfacing with Ethernet IP, standardizing the human machine interface (HMI), communication standards in substations, and wireless networks.

ExxonMobil has told the major suppliers that incremental improvements will not be sufficient and that they will likely need to

Cover Story: ARC Forum 2014

redefine and transform how automation projects are executed to meet these challenges. Most of the enabling technologies are commercially available. Nonetheless, ExxonMobil expects that developing, executing and implementing these changes will be difficult. The ultimate goal is to remove automation from the critical path during plant startup.

The INSIDER believes that there will be some improvements made to the monitoring and control functions performed by the automation system. However, where the monitoring and control functions will be performed and how they communicate will change dramatically to become more efficient and flexible. Implementation of smart junction boxes (and other challenges) effectively moves the input/output devices from the control room to the field --- closer to the instrument with tremendous potential to reduce wiring complexity and cost while increasing reliability, maintainability and flexibility.

> "Wired solutions provide better latency and delivery than wireless networks however mesh wireless networks can provide satisfactory performance."

The INSIDER believes that the potential for additional savings, flexibility and maintainability is even greater for new installations with little or no existing infrastructure. Utilizing bus communications such as Foundation Fieldbus, PROFIBUS and/or Ethernet IP can eliminate the need for some or all of the smart input/output junction boxes by connecting directly to the field device. This can potentially reduce installation costs and documentation requirements. In addition, some or all of the controllers might be eliminated by locating the control functions in field devices using Foundation Fieldbus.

The INSIDER believes that the monitoring and control function of automation systems will not change much. However the location of those functions will radically change as will their associated design, engineering, installation, expansion capability, and maintenance.

Wireless

Chris Witte (Plant Manager at BASF) offered insight into why and how to implement wireless field instruments in a deliberate and strategic manner. Chris warned that the first installations should not be for ROI projects but rather small projects for safety and security purposes where rigorous economic justification is generally not required. When implemented, these projects should be designed so as to become part of the infrastructure of a larger plant-wide system. After a few installations, these wireless systems will reach a critical mass that can routinely support ROI projects throughout the plant.

David Lafferty (ARC Associate formerly with BP) described some technical and logistic issues. Wired solutions provide better latency and delivery than wireless networks however mesh wireless networks can provide satisfactory performance. Battery life can be a concern however reducing sample rates and the amount of information transferred can decrease battery replacement. Wireless network security is a potential concern.

In a plant environment, wireless signals can be used to communicate with field instruments, radios, telephones, cranes and other equipment, and the Internet. These uses can cause conflicts --- especially in large plants with sophisticated equipment. The potential (and reality) of having "noisy" neighbors required some asset owners to assign a person to provide plant-wide wireless governance to ensure that deployment is coordinated and implemented in a "friendly" manner.

The INSIDER believes that suppliers and asset owners respectively selling and installing wireless instrumentation systems should consider the presence of existing and future wireless systems that will be used for other than automation purposes. It won't be fun to pull expensive wireless systems out because they don't scale or play well with others.

Smart Field Systems

Rachel Phillips (Production Engineer at Goodrich Petroleum) described the challenges and benefits of automating oil wells that currently operate manually. Retrofitting existing oil wells with wired and wireless resulted in enhancing operator input that improved operator efficiency and reduced operator error. Work on the existing wells resulted in the development of a standard automation package for new wells.

The INSIDER believes that asset owners should consider automating manually operated processes. Automation suppliers should present compelling economic arguments for asset owners to automate manual operations.

Harish Tambol (Manager of Instrumentation at Reliance) described the application of an improved pressure switch in about 250 compressor installations. Traditional (blind) switches have significant drawbacks to include no indication, susceptible to vibration, mechanical parts, difficult to calibrate, time-consuming to change setpoint, deadband, drift… Harish reported using a digital pressure switch with and analog output and integral safety functions that provide better coverage to protect the compressors.

The INSIDER believes that asset owners should consider not using blind switches as much as practical. Suppliers of switches with analog outputs and/or diagnostics present compelling arguments for asset owners to use these (better) devices.

—Reported by Joy Ward, David W. Spitzer PE, and Walt Boyes

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EMERSON TO PROVIDE TRAINING SYSTEM FOR BP'S QUAD 204 NORTH SEA FPSO REPLACEMENT PROJECT

DeltaV™ Operator Training Solution to help improve safety and efficiency

Emerson Process Management has been awarded a $7 million USD contract to provide its DeltaV™ Operator Training Solution (OTS) for BP's Quad 204 North Sea FPSO replacement project. Training provided through the OTS will help BP personnel achieve safe, efficient operations and take full advantage of the integrated control and safety system (ICSS) that Emerson is providing under a separate contract.

"The OTS will provide a high fidelity dynamic simulation of the Quad 204 facilities," said Carl Slatter, Quad 204 Project OMS Manager at BP. "It offers a safe environment for operators and others to learn the best ways to deal with situations they may face in actual operations."

Emerson will install a fully operational training replica of the Quad 204 Project in Aberdeen, BP's regional production centre, with the longer term aim of relocating it to the BP Upstream Learning Centre at Sunbury, UK. The OTS will include a virtualised DeltaV digital automation system for process control and DeltaV SIS™ for process and emergency shutdown and for fire and gas detection. High fidelity modelling of the topsides process and of an Olga subsea process will be provided by contractor KBR and integrated into the virtual ICSS using SEEDS (Standard Entities for the Engineering of Dynamic Simulators) to ensure consistent implementation.

Larry Irving, vp oil & gas, Emerson

By providing an engineered, hands-on, process-specific learning environment, the DeltaV OTS will expose operators to what they will experience in their actual control room so they can gain experience in an off-line, non-intrusive environment. Personnel will learn both DeltaV operating concepts and the actual process, preparing operators to effectively handle abnormal situations and process upsets, as well as providing decision support.

"Operator training is an important part of any large project, especially offshore installations where onsite training is difficult to schedule and could delay the start of production," said Larry Irving, vice president for oil and gas at Emerson Process Management. "The dynamic simulation provided by Emerson's OTS makes training more realistic – ultimately helping BP to achieve safer and more efficient operation of the Quad 204 facilities."

"It offers a safe environment for operators and others to learn the best ways to deal with situations they may face in actual operations."

The North Sea Quad 204 project will access the remaining hydrocarbon reservoirs in the Schiehallion and Loyal fields, which are located approximately 175 kilometres west of Shetland, UK. As part of this project Emerson Process Management has been awarded a US$21 million contract to provide integrated control and safety systems for the new BP FPSO. The new vessel, which will replace the existing Schiehallion FPSO, will be 270 metres long by 52 metres wide and able to process and export up to 130,000 barrels a day of oil, and store in excess of 1 million barrels. Investment in this new facility will enable production to be extended out to 2035 and beyond.

Korber to Acquire Werum Software & Systems AG

Technology group Körber is to acquire Werum Software & Systems AG, of Lüneburg, Germany, the leading provider of MES software for the production control and production monitoring in the pharmaceutical and biopharmaceutical industries. The acquisition will expand the Group's Medipak Systems business area, which specializes in inspection and packaging technologies and manufacture for pharmaceutical products.

"Within the Körber Group, Werum would be able to benefit from our international focus and broad technological experience. Together, we could develop new, unique products and exploit long-term growth opportunities with a strong international customer base in our field of business," said Gerhard Breu, CEO of the Körber Medipak Systems.

"In Körber we see the ideal partner who would be able to open up new perspectives for us as well as outstanding development opportunities for our employees," said Hartmut Krome, Chairman of the Executive Board of Werum Software & Systems AG.

Werum IT Solutions AG has a total of some 400 employees at ten sites in Europe, the USA, Japan and Singapore. The Werum brand and market profile will be retained. Separate from this acquisition, Werum Software & Systems CIS AG will continue as an independent company, currently employing 100 people and developing software for sectors outside the pharma industry.

The Internet of Things in Manufacturing: An INSIDER Special Report

On April 2, Spitzer and Boyes will release the first in the INSIDER Special Reports Series, ***The Internet of Things in Manufacturing***. Prepared by Mary Samuelson's team, and edited by Walt Boyes, this special report will focus on quite different uses of the Internet of Things than the consumer issues everyone has concentrated on. Whether you call it Big Data, Ubiquitous Data, Pervasive Data, or other buzzwords, the Internet of Things will have a game changing effect on manufacturing from supply chain to the plant floor, and from the plant to the boardroom.

Topics to be covered will include "sensors everywhere" and how to use the data, shifting to real-time control, and, importantly, cyber security in a vastly expanded threat surface.

The Internet of Things in Manufacturing will be available for $500 per copy. We will have more information on how to buy the report soon. In the meantime, pre-orders can be sent to David Spitzer at dspitzer@spitzerandboyes.com. Checks and major credit cards will be accepted. Purchase orders are also acceptable.

EMERSON PROCESS MANAGEMENT AND RTTECH SOFTWARE AGREE TO JOINTLY DEVELOP ENHANCED ENERGY MANAGEMENT INFORMATION SYSTEM

Real-time monitoring and analysis tools will help industrial users improve energy utilization

Emerson Process Management has announced an agreement with Canada-based software firm RtTech Software to jointly develop an Emerson Energy Management Information System that will provide real-time monitoring, analysis and detection of excessive plant energy consumption. This collaborative development initiative is the next step in Emerson's commitment to improving industrial energy utilisation globally, known as Smart Energy Management.

Leveraging RtTech's RtEMIS platform, the two organisations will work together to enhance the platform to accommodate Emerson's rigorous, first-principles models for key energy equipment. With the combination of RtEMIS and Emerson's process models, users will be able to analyse and compare three critical data points: the amount of energy a system is designed to use, what it has used over time, and what it's consuming in the moment. "From Emerson's perspective, teaming with RtTech Software made great strategic sense," said Peter Zornio, chief strategic officer

Emerson CSO Peter Zornio

for Emerson. "Their field-proven RtEMIS product already offers a lot of the functionality we were looking for, and is built on top of the OSIsoft PI System."

Many energy management systems are designed to allocate energy costs at the end of the month. Few systems monitor energy in real time, compare usage against a theoretical benchmark, and analyse system performance by unit, area, and across an entire plant. Emerson's Energy Management Information System dashboards and reports will increase the visibility of site energy metrics, providing performance-improvement tools to users from field operators to plant management.

"Emerson's broad measurement portfolio, leading wireless platform, worldwide engineering resources and experienced consultant network make them an ideal company to implement these systems for large sites," said Pablo Asiron, chief executive officer of RtTech. "We are extremely excited and proud to be working with Emerson, and the new modelling capability will be a unique advantage of the Emerson Energy Management Information System."

Emerson expects to launch Emerson EMIS in the spring of 2014.

On the Cutting Edge: Projexsys, DirectedSensing and groov

Projexsys (www.projexsys.com) is a company dedicated to connecting industrial machinery and systems directly to the Web. Using HyperUA, a RESTful Web application that connects web browsers and smart devices directly to OPC UA industry standard servers. Founded by Mike Bradley, Sr. former CEO of Wonderware and Apprion, and Mike Bradley, Jr., Projexsys believes they can provide the advanced end-user capabilities that OPC UA lacks.

Projexsys' RESTful approach provides universal connectivity to machinery for the Internet of Things and to virtually all web-enabled devices. With GE and other vendors adopting OPC UA as the global standard for connectivity, Hyper UA appears well positioned in the market.

Projexsys has developed an advanced proof of concept software that it has demonstrated to key OEMs and Resellers. "If we successfully complete our industrial software,"

...continued on page 8

Pump Acquisitions

As many as a quarter of the pumps installed in a greenfield processing plant are magnetically driven seal-less pumps, according to **Flowserve** COO Tom Pajonas - this trend is also evident in unit capacity expansions, re-rates and upgrades. So Flowserve has acquired Innomag, a manufacturer of advanced seal-less zero-emission magnetic drive centrifugal pumps used primarily in the chemical and general industries. Flowserve sees them as important for their core markets in the petrochemical, organic chemical and pharmaceutical industries. In addition the Innomag advanced seal-less pumps are capable of enhancing the Flowserve PolyChem product offering of ISO/ ASME fluoropolymer lined seal-less pumps. Flowserve president Mark Blinn described the acquisition of a close strategic fit, fitting well within their 'bolt-on' acquisition strategy.

Sulzer has acquired a 75% share in the pump and valve manufacturer 'Saudi Pump Factory', for GBP22m. Their facility in Riyadh, Saudi Arabia, producing centrifugal pumps to API and ASME standard, will become a part of the global Sulzer manufacturing network. Sulzer has also restructured its Pump Equipment Division operations, focusing activities onto three market areas – oil & gas, power and water. This has led to the creation of a Water Business Unit within the Pump Equipment Division.

Eurotherm Moves Into a Higher Gear

Times have been a-changing at Invensys Eu-rotherm. But this is not an effect of the Schneider acquisition – at least not yet. Walking into the lime-green Invensys-branded major Eurotherm factory at Worthing, in the UK, last month, the first visible effect of the acquisition had arrived: a dark green pull-up banner behind the reception desk declaring the business to be a part of Schneider Electric.

The change at Eurotherm started at least a year prior to this acquisition, as soon as the Invensys management solved the problem of the Group's pension fund black hole, by negotiating the sale of the Rail Divi-sion to Siemens. The proceeds were quickly allocated to go into three pots: a third for the pension hole, a third for the shareholders, and a third for investment into the remaining businesses. Chris Ashworth, md at Eurotherm, explains that for the last 20 years their expertise and new products had been developed organ-ically, in-house, to meet the requirements of known customers' processes and systems. Having the re-source and incentive to look more widely at their markets enabled them to open these new horizons, and even consider acquisi-tions. The effects will be seen this year, when there are 13 new product launch-es planned, compared to two new products in 2013.

Chris Ashworth, Eurotherm Managing Director

Expertise developed over 40 years

Eurotherm has perhaps their most significant R&D base at Worthing, but has other R&D groups – sig-nificantly the power man-agement group in Lyon, France, and other groups in Italy and Rockford, near Chicago, USA. The main US manufacturing plant is at Ashburn, in Virginia. Because Eurotherm de-scribe their business as being "Engineering based problem solv-ers in thermal production and process-es" a signifi-cant propor-tion of their staff are de-voted to pro-ject manage-ment and service. Plus a sign of the times is that power and energy management form a major part of all these ther-mal projects, which of course is music to the Schneider bosses, as they are "the global specialists in energy management". But the skills in Eurotherm that make them indispensa-ble as a supplier and con-tractor for such projects have been developed and tuned in their 40 year his-tory.

Major markets are in the suppliers of heat treated parts for aero engines, car parts, or any equipment where the quality of the mechanical parts is essen-tial; and similarly in life sciences and biotech where the same attention to tem-perature control is re-quired. These customers are supplied direct, or via systems integrators, or Eurotherm supply the OEMs that make the pro-duction machinery. To prove the quality control of their production, these cus-tomers then require the process records – previous-ly on paper charts, but now tracked, displayed and stored electronically - to be retained, for proof within their QA documentation systems, linked to the pro-duction batch identity. Eu-rotherm see this as a devel-oping trend likely to be extended into other indus-tries as well, for example into the processed food industry.

Eurotherm On-line Ser-vices, EOS

A product launched last October in this area was EOS, Eurotherm On-line Services, which addresses the management of the record keeping and calibra-tion certificates needed to meet the requirements of quality systems, and ensure compliance with regulatory standards such as CQI-9, AMS2750 and Nadcap. The system is held in a secure cloud site, and so is accessible from a mobile device as soon as an in-spector asks to view a doc-ument. It also keeps a diary to give reminders about re-calibration dates. Already Eurotherm are seeing addi-tional uses for the system, for example in allowing

Eurotherm—Continued

inter-plant performance and power consumption comparisons: it is also being used by plant managers for building management reminders – for example about service dates due, for electrical and fire extinguisher system tests etc.

The major base business

The Eurotherm base business is built on temperature controllers, high specification units, used to control thermal processes - for heat treatment, annealing, stress relieving etc, and then recording these processes for quality documentation. Plus there is a separate market for similar duties in life sciences. There are new market areas opening, for example in glass manufacture, particularly for new styles of windows with special coatings, and bottle formats. There is also major project work in energy management in optimizing the thermal processing of any material. In the increasingly competitive global environment, in glass and in other industries, the efficiency of thermal treatments is the difference between being profitable or not. The faster they can cycle products through the ovens the lower the energy consumed, and the faster the throughput: this has been the focus of the Eurotherm major projects and services business.

Marketing director Dave Hartley has been with Eurotherm 20 years, starting in engineering, and sees the future for the Eurotherm stand-alone controllers offering limited growth. The major current market change is a move to an open system format, with control running from a PLC. This is basically the competition to conventional Eurotherm controllers, but these PLC systems are currently developing or using relatively poorly performing internal digital temperature profile controller logic – PLCs are not good at this, compared to the Eurotherm analogue-style PID controller software.

Marketing Dir. Dave Hartley

The growth of these open systems might be due to the need for compatibility with other equipment, such as HMI and recorders, a company purchasing policy for such equipment, or even because the physical form required on the customer interface panel is not one of the many formats covered by the Eurotherm hardware. These factors made for the biggest headache in the past Eurotherm product development planning – ie having to make all types and styles of hardware and external interface available.

E+PLC, the bold step forward

The answer to this dilemma is to offer the Eurotherm expertise in terms of the separate control schemes for heat treatment available as a programme block within a soft PLC, which can then have interfaces and inputs programmed by a systems integrator, or an OEM machine builder, to suit what he wants for his application.

To achieve this, Eurotherm signed an agreement with Codesys, who, with over two million PLC licenses sold to date, claim to be the fifth largest PLC system supplier in the world, after the four main brands (Allen Bradley, Rockwell, Mitsubishi, Fuji). In a joint development that started 18 months ago, Codesys and Eurotherm have developed the PLC software to incorporate the Eurotherm PID and recording expertise, specifically first for heat treatment applications. This is then hosted within modified versions of existing Eurotherm hardware.

This new range, known as the E+PLC, is to have an official launch in April (ie in the next Invensys/Schneider financial year!), although sales started, and first orders were taken, on February 14. 'E+' means that Eurotherm analogue control and secure recording are neatly packaged (and presumably protected from being copied) within function blocks that the programmer can freely instantiate, and the 'PLC' means that the unit offers a complete, open industry standard IEC61131-3 platform and a single integrated PLC programming environment.

New Bio-Fuel for Valmet

Valmet of Finland, now independent from Metso, has signed a five year agreement with Zilkha Biomass Energy LLC over the market development for their steam exploded black pellet fuel, used to replace fossil coal in power stations.

Rickard Andersson, vp for biotechnology and environmental systems, in the Valmet Pulp and Energy business, summarised: "The market for steam exploded black pellets is expected to grow rapidly in coming years as the pressure to replace fossil fuels with sustainable environmentally-friendly alternatives is getting stronger. Combining Zilkha's deep know-how in pellet production and distribution with the Valmet project capabilities brings great opportunities to develop and exploit a new emerging technology."

The Zilkha pellets provide a number of benefits compared to traditional wood pellets, which include improved durability, water-resistance, higher energy content, lower shipping costs, and reduced dust problems. The black pellets can be handled in similar manner to fossil coal, which significantly reduces, or even removes, the need for expensive investments in logistics and plant rebuilds.

Eurotherm-continued

The E+PLC Model 100 is a compact unit built up from the Eurotherm Nanodac, giving a PID controller, recorder and PLC in a compact single box instrument with a 3.5" TFT colour touchscreen.

The E+PLC Model 400 is a PID controller, recorder and PLC combined in a single modular solution for small to medium sized applications, based on the Versadac data recorder: it is available in a choice of base sizes, and comes with a range of precision I/O modules. Visualization programming is integrated within the Codesys environment, and an intuitive process interface is available via one or two local operator panels – based on the Eurotherm Optivis HMI.

E+PLC 400: a combination controller, recorder and PLC in a single module.

The future

Having set off down this route, and now a part of the Schneider Electric group, Eurotherm see several other possible avenues opening up for the E+PLC. This could include a low cost unit for offering to the catalogue market (such as through marketing channels such as Farnell), which is a low price market area, but one that is showing growth – and is not particularly an area where Eurotherm has been prominent. It would also be possible for Eurotherm to offer this unit to replace the Schneider branded PLC units, currently supplied by Fuji. Plus Schneider would probably have a use for the PLC in their building management systems products. It is significant that the Eurotherm E+PLC project, started in September 2012, added the E+PLC model 100 only in September 2013, ie after the Schneider deal was certain: this is the basic unit, and is an adaptation of the existing Eurotherm Nanodac, a compact recorder/controller unit in a 1/4DIN panel mount package, with a new touchscreen display replacing both the original display and push buttons. Such a development in under six months is quite an achievement.

Longer term, Eurotherm are considering whether their new function blocks themselves could be offered in an "app store", for engineers to incorporate them in their own PLC development projects, choosing the specific function – such as PID control, auto-tune, batch recording, archiving, all optimized for the industry application - to suit their project. While this has not been the market presentation normally considered as a first thought for PID temperature controller units, why not replace the supply of a physical module with a software module? As Chris Ashworth says, he would be happy to collect the revenue, without having to build and ship a physical unit! But for the proper expertise and advice, the Eurotherm project engineers will still offer their solutions.

On the Cutting Edge ...continued from page 5

Mike Bradley, Sr., says, "then we are a game changer

Developed by two wireless pioneers, Peter Fuhr and Hesh Kagan, Directed-Sensing (www.directedsensing.com) seeks to improve the ability to sense outside the standard spectrum. Pioneering advanced RF, they believe they can locate lost or rogue RF instrumentation, thermal fields, find steam trap leaks and locate chemical spills. Outside of the plant, DirectedSensing has implemented technology that has located cell phones in detention centers from a considerable stand-off distance.

If DirectedSensing's claims are real, they will have added hugely to our ability to monitor and control parameters we can barely sense.

Finally, Opto22's revolutionary *groov* device is undergoing continuous R&D, aimed at the IoT.

Rupture Disk Created to Prevent Vessel Damage

Elfab has developed a two-way rupture disc to prevent vessel damage under vacuum, or from overpressure. Customers who relied on separate rupture discs for positive and negative pressure relief can now use this disc to fulfil the same protective function via a single installation point, leading to a significant cost saving.

The assembly is available in either non-fragmenting or graphite designs, and both are compatible with most liquids, gases and vapours, so are suitable for most applications.

All designs feature the non-invasive, ATEX-approved detection system, the Elfab Flo-Tel, which has offered a non-invasive, fail-safe and re-usable hazardous area burst disc detection system for over a decade. Launched at Offshore Europe last year, the latest version of Flotel is now ATEX ExD approved, to interface directly with the customer's remote terminal units, providing failsafe indication of a burst disc.

The ExD system is used on large LNG installations, avoiding the need to use intrinsically safe barrier systems. The alternative Radio-Tel wireless system uses a radio link direct from the Flotel rupture disc detection system to transmit disc status information, as well as process temperature.

Hannover Fair Scheduled for Early April

It does appear that the German organizers of the Hannover Fair and the German editors attending their press conference in advance of the event early in April have not quite understood the basic idea of hosting the "World's leading trade fair" and thereby encouraging the overseas visitors to attend and adopt German ideas into their factories. At least the press conference presentations, and then the questions, were dubbed into English for overseas online viewers: I have to admit to relying on the accuracy of this translation, which may explain some of the more extreme statements!

Dr Jochen Köckler, a Board member of Deutsche Messe, the organizers, gave the main presentation. The theme of the event this year is "Integrated Industry – next steps", which shows the progress from last year's motto, "Integrated Industry". Dr Köckler was positive about the prospects for the coming year, with energy resources and re-industrialization progressing in all economies. He characterized the USA as benefiting from fracking, giving cheaper energy, and the possible result of re-shoring, with advanced manufacturing, making a very important market. China has moved into nuclear technology, and with the current increases in wages is seeking automation and high-tech opportunities – China was the Deutsche Messe partner in 2012. In Germany, there has been an energy turnaround, moving to a combination of renewables and conventional power sources. This is in line with the EU Commission requirement for 27% of power being from renewables by 2030. The Association of German Engineering Companies predict a growth in their output of +3% by value in the current year, after a very difficult time in the last two years.

The four main exhibition areas in the 2014 show, which is forecast to exceed the 4872 stands seen at the 2013 show, will be Industrial Automation and IT; Energy and Environmental Technology; Industrial Supply; and Research & Technology. An entire Hall, #17, will be devoted to robots and the automated factory.

Partnered with the Netherlands

The Netherlands are the chosen partner country for the Hannover Fair this year, and so Monique van Daalen, the Ambassador from the Netherlands to Germany, explained that they represent the most important trade partner to Germany, in both directions. The Netherlands has many niche industry specialist suppliers used by German factories, and is a prime source of innovation in energy technology, such as renewable wind power. Van Daalen also reminded us that The Netherlands invented the microscope in the 16th Century. This year there would be 200 Dutch stands attending, compared to 120 last year.

Industry 4.0 and the Smart-Factory

Prof Detlef Zühlke of the German Research Centre for Artificial Intelligence, and also Chairman of the Executive board of the Smart-Factory KLeV, to be on display in Hall 8 at the Hannover Fair, explained that his project started some time ago, as in 2005, but that as with any other major development, market pull was needed to get the idea implemented in practice. He explained the background thinking to "Industry 4.0", which was interesting, in the way it was expressed:

Industry 1.0 was the harnessing of steam power in 1783

Industry 2.0 was the conveyor belt, as introduced by Henry Ford in 1913

Industry 3.0 was electric automation dating from 1954

Industry 4.0 is IT and the Internet of Things [presumably dated sometime between 2005 and 2014!]

Prof Zühlke also explained the time development profile of new technologies, looking like a tidal wave, the sharp rise being the rise to the peak of inflated expectations, and the trough behind that peak being the trough of disillusionment. At the moment the Industry 4.0 is on the steep slope up to the peak of inflated expectations. One aspect of the technology that he identified as a major priority for current work was the topic of 'location awareness of mobile devices', but there was no comment about any such I 4.0 topics known due to be

Tropical Potash Production in Africa!

GEA Process Engineering has been awarded a contract to provide a Chinese Canadian Company with drying and conditioning systems for Africa's first potash processing plant. GEA Barr-Rosin will provide two European-built drying and conditioning lines which will be installed as part of a complete processing plant in the Republic of the Congo.

"To work in Africa together with our Chinese customer is a significant first for GEA Barr-Rosin," said Dominic Kuehner, GEA Barr-Rosin Sales and Marketing Manager. "We have a great deal of experience and expertise in design, supply and installing equipment and process for the potash industry and look forward to supporting our customer in this milestone project." A significant challenge will be to maintain the granulated potash product quality in the humid tropical atmosphere, since potash is hydroscopic. But the project in the Congo will mine one of the world's largest undeveloped potash deposits and produce agricultural-grade potash fertilizers to meet the growing demand from markets in Asia, South America, South Africa and Europe.

The facility is scheduled to start production in 2015 and is expected to be among the world's lowest-cost producers due to its highly efficient mining technologies, access to local natural gas, and its proximity to planned new port facilities and principal markets.

Hannover Fair continued...

shown at the 2014 Fair.

Questions from the German Editors

The first question seemed fairly pointed: it asked why Dr Köckler had even bothered to mention nuclear energy, when the German people and the Government had decided to drop all nuclear activity. He responded that 'the industry needs to offer the technology to the people who wanted to still be involved with it', that the German 'policy does not stop us showing this technology' [at the Fair].

In the second question the editor asked why he had not mentioned 3D printers, when last year the show made a feature of them. The response was that they were still there, still would be on show. Full stop.

Then another German Editor asked about the interest level in Industry 4.0. The response was that Germany invented Industry 4.0, so "we should implement it!" The follow up sentence explained that the threat was that the USA was waking up, with the implication that if Germany did not implement the ideas then the USA would do it first. This rumbled on with a comment that obviously implied the UK was not a threat in terms of moving forward with these ideas, because "The UK is closed -down". So obviously the opinion would seem to be that there is not much point in attracting UK visitors to the Hannover Fair!

Finally a sensible question came from an Intech Editor, asking about cyber security with Industry 4.0. Prof Zühlke said this was a very important question, and there is a need for answers: 'We have to create trust'. Before that trust there needs to be confidence in our colleagues across the industry….

EMERSON INTRODUCES NEXT GENERATION FORK VISCOSITY METER

Micro Motion Fork Viscosity Meter is designed for demanding applications where accurate, fast-response viscosity and density monitoring is required

Emerson Process Management has released the Micro Motion Fork Viscosity Meter, the next generation of the market-leading Micro Motion 7827 and 7829 direct insertion viscosity and density meters. Incorporating the same rugged and reliable tuning fork design as its predecessors, the Fork Viscosity Meter is built to tackle demanding process applications such as oil fired heater combustion control, HFO blending/production and pump protection.

In applications where accurate, fast-response viscosity and density monitoring is required, the direct insertion Micro Motion Fork Viscosity Meter is the ideal choice. The meter helps solve problems customers face on a daily basis, such as reducing oil fired heater combustion emissions, minimising cutter-stock usage in HFO blending and reducing contamination risks on multi-product pipelines.

The Fork Viscosity Meter incorporates a hazardous area approved head-mounted transmitter that has the flexibility to connect to control systems via a wide range of digital and analogue protocols. Because it supports 4-20mA, HART, WirelessHART, FOUNDATION fieldbus and RS485 Modbus, system integration and start-up/commissioning costs are significantly reduced.

Fork Viscosity Meter

An additional benefit of the Fork Viscosity Meter is the capability of accepting and processing external signals from other field instrumentation such as temperature, pressure and mass/volumetric flow devices. The input of these external measurements enables the Fork Viscosity Meter to calculate and output process measurements while minimising installation and cabling costs.

The Fork Viscosity Meter also incorporates a new capability called Known Density Verification that checks the meter for alarm conditions, sensor integrity and the presence of coating, erosion or corrosion. This new technology expands the availability of diagnostics information in critical viscosity and density applications which can result in significant maintenance costs and cycle time reductions.

Delivering Snow to Sochi

Eight WEG 22kW motors formed a crucial part of the Sochi Winter Olympics back up team, enabling snow to be created naturally when nature did not co-operate. These motors were located within a pair of large Evapco AT Cooling Towers assembled beside a centrally-located pumping station. Feed pipes radiating from the two buildings delivered chilled water to mobile snow cannons. After further conditioning, the water from these cannons delivered snow, when the atmosphere was cold enough.

The cooling towers used induced draft axial fans of the counterflow cooling type. Each tower was 6m high, with a footprint of 11m by 6m, containing four fans, each driven by a 22kW motor: the air flow from each tower was 214 cubic metres per second. The WEG motors were chosen because WEG engineers responded to the Russian design concerns, and supplied anti-corrosion coating and environmentally protected enclosures: in addition the WEG products had to comply with the Evapco cooling tower specification for motors, as well as being Russian state standard GOST certified.

Rob Vandenboer, Product Manager at Evapco Europe, said "We're extremely happy with the quality of WEG products and service, and especially delighted with the support received from the WEG office here in Belgium."

THE WAY I SEE IT
Editorial

Making the Internet of Things Secure? Oh, Really?

We have been hearing about the Internet of Things for almost a decade now. It will be wonderful. It will connect everything on the planet into One Big Network. It will allow us to do marvelous things. It will fully leverage the power of the Cloud and Big Data.

In manufacturing, the Internet of Things will permit us to finally get predictive and proactive maintenance on board for the entire plant. It will finally give us what we need to optimize plants. It will make advanced process control actually work past the point of the end of the project. It will allow us to see inside vessels and processes in ways we haven't been able to see before.

Imagine that, with the Internet of Things and the continuously decreasing cost of sensors, we could instrument our vessels and production lines, as Emerson's Peter Zornio suggests, "pervasively." We may be able to see, in real time, things that we've never been able to see before. What would happen if we could put 100 temperature sensors on a distillation column?

Motors will monitor themselves for out of spec operation. Control valves will diagnose stiction on their own, and write their own repair work orders. Controllers will compare performance of their loops to design parameters and automatically tune themselves for optimized operation.

Condition monitoring will become automatic and done entirely in the background. Analysis of potential breakdowns will be done by the machines themselves, and work orders to repair or replace at the next shutdown will be generated without human intervention.

In fact, condition monitoring algorithms may be used to predict the time remaining to a necessary plant or unit shutdown and turnaround.

All of this sounds wonderful. It sounds almost too wonderful to be true, like somebody has offered us the Big Rock Candy Mountain of operations excellence.

Like everything, there has to be a catch. There has to be something to make this coming Nirvana of manufacturing something less than we are being promised.

And there is.

We know that controllers can be attacked and subverted. That's what Stuxnet and all of its current variants did.

We know that hackers can gain access to plant control and MES systems by starting at the field device network level. HART, Foundation fieldbus, Profibus...all are susceptible to several vulnerabilities that are well known.

One of the reasons that both the HART foundation and the ISA100 committee decided to ignore the Zigbee standard was that over a decade ago, it was clear that Zigbee had too many vulnerabilities. Zigbee and its derivatives are the foundation of the Internet of Things outside of the plant.

In many ways, cyber security has resembled the Scarecrow from *The Wizard of Oz* pointing in both directions and saying, "Not me!" In order for us to have trust in the Internet of Things this attitude has to change.

If you look at networks in a topological way, each set of three nodes defines a surface between them. If there are three hundred nodes, there is a certain surface area. If there are three thousand, or three million, the surface area goes up. We call that area the threat surface.

We are going to be working with a threat surface far larger than we've ever seen before, and we haven't done a good job of protecting our networks so far.

Vendors and end users alike are going to have to think this through before the Internet of Things becomes something more like the One Network to Rule Them All, in the Land of Hackers Where the Shadows Lie, instead of the Big Rock Candy Mountain.

INSIDER
INDUSTRIAL AUTOMATION & PROCESS CONTROL

Profile

A Discussion With Andy Chatha

by Joy Ward

I had the pleasure of spending a few moments with ARC founder and President Andy Chatha at the 2014 ARC Advisory Group meeting in Orlando, Florida-- the place to be for anyone who is anyone in automation. Mr. Chatha has been kind enough to give us a few minutes of his time to talk about his life in automation.

IAI: How did you get into automation?

Andy Chatha: Well that's going a long way back. (Laughs) I got into engineering in the good old days. Engineering was cool and automation was cool and its one of those professions that once you get in you're stuck. [Laughter] So you kind of get dragged into it and you continue, so it has been fun. It has been a great journey. And it is always is interesting. There are always new things happening so it's never boring.

IAI: What is one of the high points of your career in engineering and automotion?

Andy Chatha: It's been a long journey, but, I tell you, I think it keeps on getting more interesting. Personally, right now, what's happening in the world and our industry; this connecting the whole world, this internet of things is probably the most interesting thing, at least to me. It is so fascinating that we can do these things. I think as human beings we like challenges and I think we have invented the challenge of our lifetimes, probably of the century. They are saying we are going to have 50 billion devices connected to the internet by 2020 or something like that… I just hope that we are careful; I hope that we use the technology to do good for mankind, good for everybody; good for this planet.

IAI: What's important about that for you to be part of this challenge of the century?

Andy Chatha: it is really interesting for us to help the industry. For the last 25 something years we have tried to provide the vision for our industry… Our goal has been always to see how we can help our industry move forward. I think that it's fascinating to work with all the industry leaders and all sides of the fence; the customer side as well as supplier side and the press. It's fascinating to work with so many smart people. We just had all the cream of our industry here. The leaders on the customer side as well as on the supplier side and so forth, and I'm just very thankful to be part of this journey of our industry.

IAI: What's good about that for you personally that you get to be part of this exciting time?

Andy Chatha: It's always challenging. always thinking about the next thing. At ARC, our whole business hinges on kind of trying to look into the crystal ball and see where the industry is headed. Working with a great team; we are very fortunate to have the team. Most of us have been together for 15 or 20 years. Working with a great team and having great customers and contacts and so forth, its fun to me.

IAI: How does it make you feel to be part of that team and right in the middle of all of this?

Andy Chatha: It is a satisfying experience and it's good to be part of a great industry. When you come to think about it I'm always in to new things, new stuff. And this industry has given me that opportunity.

IAI: So can you take us to a time that really stands out to you, one of these times, when it is just so exciting, and tell us about that time.

Andy Chatha: For many months we have been, not just me, but as a team, we have been thinking about this internet of things and how it is going to impact our industry. One slide I had in my presentation we've been working on that slide for months trying to get everything right. Will this happen, this happen? We've been changing it until the last minute. How will it impact our industry? What's happening right now? Yes, I'm always looking to the future.

When we went to school we didn't have computers. I was lucky to start working with computers in college. Computers were just coming. We worked with paper tape. It's just fascinating how far the technology has come. And now we are really, it's a lifetime… and we can make every little thing intelligent. We can make this machinery fly; we can control… just drones. This intelligent machinery, we can make it do anything. I think what's happening is very fascinating… I don't know how much I will be able to watch, how many devices will be connected in our lifetimes, but I think it is beyond imagination. Once you connect the world, how complex will it get and how will it function? It's totally beyond our comprehension. You're thinking about all these things flying around. It's very, very amazing. Let's hope we can do it in a manageable way.

IAI: What do you see as an especially important aspect of the internet of things?

Andy Chatha: I think when you look at technology it is taking people out of poverty. The cell phone by itself has taken millions, if not billions of people, out of poverty. Just having that communication is in my view probably the most powerful thing; when people talk, being able to talk with other people. I remember I grew up without a phone in the house and you always wondered, you know, 'where is so and so?' You couldn't talk. Communication gives people power and I think technology has already done more good, despite the drawbacks or whatever, for people on this planet than anything else, and I'm hoping that it continues to help people.

IAI: What happens if we don't manage the technology well?

Andy Chatha: Well, that's anybody's guess. I think some bad things can happen.

IAI: Like What?

Andy Chatha: When things don't work we have all kinds of (trouble). The plant people really know very well. Explosions can happen and can do a lot of damage. Cybersecurity is a big challenge. Who knows the future? Wars can be fought over the Internet with technology by people, so a lot of bad things can happen and it is unfortunate that those things happen. You want to try to use the technology to avoid bad things from happening but let's hope that we can do good, more good than bad.

IAI: Who did you start your career with?

I grew up in India and I went to school at London University. Once I got out of London

Chatha continued…

University I worked for a company called GEC, General Electric Company of UK. So I started working in the UK for several years then I came over here and worked for a company called Westinghouse Electric Corporation. From there I went to work for Foxboro.

IAI: Did you always plan on going into automation or was there another area of engineering you were thinking about?

Andy Chatha: I am [an] electrical engineer. I went to school [for] electrical engineering. In those days, actually, even today, I don't know if many people have a degree in automation engineering. Most of the people do their engineering in some other field and somehow they get into automation. I just got into automation and unless you come across some obstacles then you keep going in that direction.

IAI: As a young engineer, did it ever occur to you that you might be right in the middle of this change of the century? Right now you are a thought leader in this field.

Andy Chatha: To be honest, I don't have long term goals. I kind of let my life kind of go wherever it takes me. So I never kind of said, "I want to do this or I want to be there." I'm a little bit more of a free spirit.

IAI: Is there anything you would say to that fresh faced engineer just coming out and working with GEC or Westinghouse?

Andy Chatha: I think it's always, exploring. Try to look at things differently. I like the program we started here this year, bringing young people in and exposing them to a broader world because a lot of times what happens is when companies hire young people they kind of give them very narrow focused kind of jobs, projects… You could be working in these projects for a long time. I remember I would work on a project and usually these projects lasted two, three, four years. You are working on one project. You are trying to make this thing work. But I think this (student project) is good and we are planning to expand this program next year and going forward. I think it is good for the industry to expose (students to the possibilities in automation)… (It says to them) "hey look. This industry is very broad. It's fascinating! Jjust get some of the younger people here. I think the younger folks we had here, they really enjoyed it and we are hoping to actually build on this.

IAI: What would you say to a young person looking at this field, like some of the folks you had here?

Andy Chatha: I think it's one of the most fascinating fields right now. There is nothing more interesting than the Internet of things, at least in my view.

IAI: What is it that makes it so fascinating?

Andy Chatha: Just making the things smart. Making the things fly. Making the things talk. Making the things do things for you. Go and get me, you know, a cup of coffee or whatever. It is fascinating to any kids right now. You know, there are games, you can start building Legos right at home. The 3D printing machinery. You can buy a little machine and make parts of something and start making things. I think it's a fascinating thing for kids. I think there will be a lot more people getting into manufacturing or making things. Engineering will be a lot more interesting.

IAI: What caused you to decide to start ARC?

Andy Chatha: Well it's again one of these things… as I mentioned to you, sometimes when you're at companies you kind of do things maybe a little bit too long. Also there was the time I decided, okay I'm going to go and get my MBA. You say, well okay, maybe I can try to do this and so I think it's a combination of things.

IAI: What has it done for you to be more involved in ARC?

Andy Chatha: I think the best part of my job is I can do what I want. You can pick the topics. Now, I'll always be researching new topics. We have a great opportunity. We are always doing research and writing about the leading edge. okay how will this impact this industry? How will that happen? So I think fortunately we have a whole bunch of other people who also like doing this. As a matter of fact, that is what ARC is. We have brought together a team of folks who kind of like this kind of thing -- challenging themselves, thinking about how this industry [can] evolve. So I think that's the best part of this job.

"Just like any other human being, if we have made some contribution, that is the best thing you could hope."

IAI: So how does that make you feel that you get to be part of a team, that you can actually choose what you look at and that you've got all these fantastic people at ARC, these really, really bright people, and here you are right in the middle of that. How does that make you feel?

Andy Chatha: It's good to be part of this. It's not just this team. As I mentioned to you, this whole forum, it's like a family… Nothing happens in [a] vacuum. It's all kind of, as an industry you talk to your clients, and you talk to industry experts like Walt, and so forth and slowly you build upon it. It goes beyond the ARC team. It's really; I would say, I think we are just fortunate. Most of these people, I would say 70% of the people at this forum, are repeat attendees. They were here last year and the year before. I think they come here to really meet with their peers and see each other. This industry all is, despite as big as it is, this industry is still like a family. It doesn't matter which company (people) work for. They have all made the rounds. [Laughs]

IAI: Where do you want to see this industry go ultimately? We've talked about the Internet of things but beyond that where do you want to see this industry go?

Andy Chatha: When you come to think about it, the automation (industry) was very restricted to the plants and factories because automation was expensive and only big companies could afford it. But I think right now, the genie is out of the bottle and in my view automation is everywhere. We're going to see automation when we talk about the Internet of things. We are going to see all kinds of intelligence added to things and so I think right now our industry is really, I don't know if it's good or bad, but our small family is going to get a lot bigger.

IAI: Talking about the future, what do you want historians to say about you? Andy Chatha: I think it may be talk of the times. Right now some people are (saying) we are going through a second revolution, Others say we are going through a third revolution. In Europe they are saying it is industrial revolution four. Looking back, just think how we think about the first industrial revolution. We are talking about the steam engine and so forth. It totally boggles my mind where we are; the kind of things we are doing. To be very honest, right now it's anybody's guess even predicting a year or a couple of years from now. Thinking about even 10 years or 50 years from now, I don't think we can even imagine the kinds of things that will happen that far into the future. Change is so enormous every year it is really mind boggling.

IAI: As these historians are pulling up some names and they pull up Andy Chatha and ARC, what would you have them say about you?

Andy Chatha: Hopefully, that we have made some contribution. Just like any other human being, if we have made some contribution, that is the best thing you could hope. I think a lot of people are contributing to this and… and it's just happening and hopefully we have helped our industry and made some contribution, I think. That's the best thing we can hope for.

Hollysys Reports Financials

Hollysys, one of two Chinese automation companies to be known on the greater stage outside of China, has reported its financials.

In the bad old days, we used to divide sales, and sales goals, into US (or Europe) and ROW. ROW stood for "rest of world." Automation companies based in the US (or in Europe) generally did roughly 80% of their business in the home country, and around 20% in ROW. Any automation company that is of any size that still does that revenue split is doomed, dying, or already dead.

Hollysys Beijing Headquarters

We always said that if the ROW ever got any money to invest in automation, they'd be ripe pickings and all we had to do was to get over there and participate in the great shower of money that was sure to come over us.

Not.

What actually happened was, as most companies were waiting it out, some foresighted majors, like Emerson, Siemens, ABB, Endress+Hauser, Krohne, and Rockwell among others, moved in...only to find that there were, especially in China and India, homegrown automation companies that were making and selling products and doing quite well.

Hollysys is one of those companies. You can see from their results that they've done well, and managed to be competitive against the major global companies.

What Hollysys has not managed to do, mostly, is to find out how to sell outside Greater China and to some extent Brazil. When they do, the rest of the world (imagine how fast that particular worm turned!!) will find them a fierce competitor.

From Hollysys' press release, we see a high growth, comparable to good growth anywhere, but especially good growth considering the contraction of the Chinese economy.

"Quarterly revenues of $153.4 million, representing an increase of 75.9% compared to $87.2 million year over year, and an increase of 35.5% compared to $113.2 million quarter over quarter."

"Gross margin at 31.0%, as compared to 32.1% year over year, and 35.7% quarter over quarter."

"Non-GAAP net income attributable to Hollysys of $25.9 million, a 90.7% increase compared to $13.6 million year over year, and a 27.4% increase compared to $20.4 million quarter over quarter."

"Non-GAAP Diluted EPS at $0.45 reported for the quarter, as compared to $0.24 year over year, and $0.35 quarter over quarter."

"Backlog of $503.3 million as of December 31, 2013, a 40.0% increase compared to $359.6 million year over year, and 2.4% decrease compared to $515.9 million quarter over quarter."

"Quarterly DSO of 156 days, as compared to 161 days year over year, and 175 days quarter over quarter."

"Inventory turnover days of 27 days for the current quarter compared to 42 days year over year, and 43 days quarter over quarter."

"The total amount of cash and cash equivalents and time deposits with original maturities over three months were $150.1 million as of the current quarter end."

Embedded security for networked PCs

With their technology partner TenAsys, Innominate Security Technologies launched a new security product for networked Windows PCs at the 'Embedded World' expo at Nuremberg in February. mGuard eVA operates on TenAsys eVM for Windows, hardening Windows systems and applications, protecting them with a firewall, shielding them from denial-of-service attacks, adding integrity monitoring and allowing secure reception of remote maintenance services through VPNs via the Internet - all in a cost effective way.

mGuard eVA uses the newest version of the TenAsys eVM for Windows, an embedded Virtualization Manager to integrate with native Windows systems on multi-core PCs. It thus represents the first software product to easily implement Innominate's repeatedly demonstrated 'HyperSecured' concept of embedded systems protection by virtual security appliances, offering a simple out-of-the-box setup.

Installation of mGuard eVA requires a 32 or 64 bit Windows system (XP or newer) on a multi-core PC platform with 2 or more cores, plus an Intel Gigabit Ethernet interface and VT-x and VT-d virtualization support (other configurations possible).

Hollysys continued...

The new CEO of Hollysys, Shao Baiqing, who was previously in charge of Marketing and Business Development, said, "We are very excited to report a solid financial and operational result for the second quarter of this fiscal year."

"During this quarter, we insisted in executing our strategies to vertically penetrate in the high-end industrial automation market and improve our market share in mid to low end markets, and to horizontally explore the potentials of each customer to supply entire automation and control solutions and service leveraging our complete and mature products and platforms. Both new orders and revenue of industrial automation delivered strong growth, there were satisfied achievements in some particular industries, for instance, thermal power, chemical, petrol chemical, cement, metallurgy and etc. Going forward, we believe that we will increase our overall market share in the industrial automation, nurture and quickly take commanding height in our new businesses leveraging our advanced technologies, experienced professionals, profound industry expertise, and customization and innovation capability.

Dr. Wang ChangLi, Hollysys CEO, resigned in December 2013

"In rail transportation, we have seen meaningful progress and consistent revenue contribution in high-speed rail signaling field. This will expand our products providing in the railway transportation market and will grow to be another revenue growth driver for Hollysys in the future. All in all, as a well-recognized rail signaling system provider, we are confident that with strong R&D capability, solid execution and reliable products, Hollysys will continue to penetrate China's vast railway construction market and explore international opportunities.

"For the overseas industrial automation and rail transportation expansion, we are sending qualified and experienced engineers from China to overseas, and recruiting local engineers to expand our overseas team. With our proprietary technology, industry expertise and strong competitive advantages, together with our expanded local channels through Bond and Concord, we will continue to make exciting achievements in the international market in both industrial and rail transportation fields."

Hollysys has less cash and backlog than its Western competitors. It is clear that they are in a position to take business outside of China. What they lack is a clear understanding of how to set up a global sales and marketing organization, and how much money it will take to do that.

It won't be long, the INSIDER feels, before Hollysys, Supcon and the other Chinese automation firms decide to buy the expertise they need to move onto the global stage.

When that happens, there will be fits and starts, but the dragon will be out of its cage for sure.

What Hollysys lacks is a clear understanding of how to set up a global sales and marketing organization, and how much money it will take to do that.

ConneXium Tofino Firewall

Back in 2012, Schneider Electric partnered with Tofino Security to create the ConneXium Tofino Firewall. This inspects and secures network traffic to and from the automation devices, providing protection from traffic storms, malformed messages and deliberate hacking attempts. In addition, it can block inappropriate modification or programming of critical devices and controllers, preventing costly mistakes and improving overall network uptime and reliability.

This original model only used the Tofino Deep Packet Inspection on messages passing through using the Modbus TCP protocol. Now this has also been added to cover Ethernet/IP protocol messages. The Tofino Enforcer technology ensures that only the right, well formed Modbus TCP or EtherNet/IP commands from devices approved in the Windows 7 type Tofino Configurator interface can pass through the firewall. And this interface includes pre-configures templates for Schneider Electric automation products.

Tofino ease of use for engineers makes it possible to implement firewall rules by selecting use cases, rather than having to know protocol specific nuances. So, if you want the ConneXium Tofino Firewall to only allow EtherNet/IP Data Read commands to pass between a PLC and an HMI, then you select the Read Only option.

Tofino feel that the ConneXium Tofino Firewall goes a long way to securing systems without engineers having to become firewall gurus.

Disconnecting the HMI from the Control System

Everybody who will admit it agrees that HMI design stinks. Each system is a one-off, based on the DCS or SCADA system you've bought, and it is about as easy to figure out how a process works by looking at the HMI as it is to figure out how to fly when you have already jumped off the cliff.

Working with Southern Company, PAS has apparently managed to create a decoupled HMI design that can be used for any DCS (almost). The difference? This HMI design is based on the process and the application, not on the control system.

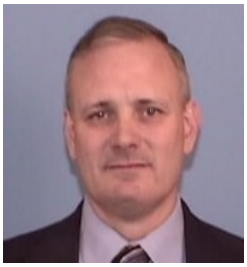
Why is this important? Simply because no company has only one vendor and version of control system, even though companies like General Mills and Dow and DuPont have been trying to get there for years. Looking at Southern Company's fleet, they have many power plants with different control systems, but the power plants are very similar and can be operated in the same way. Train once, operate many.

This is, the INSIDER believes, the wave of the future. Then too, remember that more accessibility by mobile devices is going to be a requirement in the next few years. So it stands to reason that the HMI be application based, not control system based.

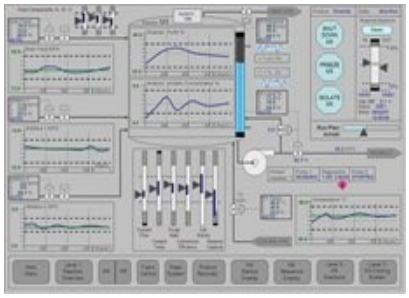
PAS calls this new system PowerGraphiX 2.0. They claim that PowerGraphiX promises to revolutionize the way operators view information at power plants.

PowerGraphiX is comprised of predesigned graphic templates, object libraries and best-practice guidelines for the design and implementation of operator interfaces at power generation plants. Companies choosing to implement PowerGraphiX can expect vastly improved graphics at significantly reduced costs when compared with traditional methods.

Looking at Southern Company's fleet, they have many power plants with different control systems, but the power plants are very similar and can be operated in the same way. Train once, operate many.



Harvey Ivey, Southern Co I&C Design and Support Manager



High Performance HMI for PowerGraphiX

The proprietary software was initially developed because Southern Company Services, Inc. had a vision of consistent HMIs and improved situational awareness in control rooms across the operating fleet. PAS is now making the product commercially available for all utilities.

"Southern Company is committed to proprietary research and development in order to deliver solutions to our company and the industry," said Harvey Ivey, Southern Company Manager of Instrumentation and Controls Design and Support. "This particular software was originally created to streamline information displayed in control rooms across our generating fleet, significantly improving operator effectiveness."

The methodology behind developing PowerGraphiX was based on the industry-recognized book "The High Performance HMI Handbook" by Founder and CEO of PAS Eddie Habibi and Principal Consultant for High Performance HMI of PAS Bill Hollifield. It addresses the use of color, pattern recognition, standardization and other principles to transform data into actionable information, providing operators with a more holistic view of plant operating conditions.

PAS Vice President of Technology Mark Carrigan says, "PowerGraphiX makes interpreting a plant's current condition simply intuitive."

The Consumer Guide Series Goes Kindle

New e-book (only) editions of the magnetic flowmeter and vortex-shedding flowmeter Consumer Guides are available as Kindle e-books. More of the Consumer Guides will be available later in the year.

The consumer guides are the only independent consumer guides to the world's instruments, ranked by performance, size, and supplier.

These guides contain technical information including pointers for installation, such as fluid, piping, hydraulic, mounting, and electrical considerations.

Tables include the types of equipment available and selected features that are available from each supplier, along with their country of origin or source.

These guides are indispensable for designers, engineers, owners and end-users of instrumentation equipment. See where your instruments rank. These guides will help you with your next selection/purchase.

For more information, search "Spitzer and Boyes Consumer Guides" in the Kindle Store on amazon.com.

AREVA to Help Schneider Electric

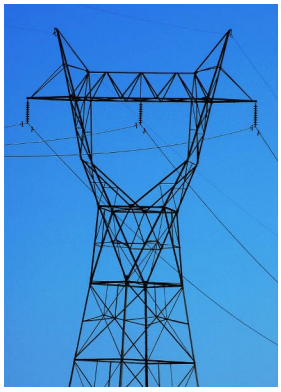
A strategic partnership agreement signed between Areva and Schneider Electric will focus on energy management and storage solutions based on hydrogen fuel cell technology.

Areva will contribute their Greenergy Box energy storage solution, based on an electrolyser and a fuel cell. In this, hydrogen and oxygen produced from electrolysis during periods of low energy demand is recombined to produce electricity during periods when demand exceeds supply. In operational use since 2011, an example in Corsica is connected to a 560 kW photovoltaic solar power plant on the MYRTE demonstration platform. Shortly a Greenergy Box will be connected to 35kW peak power photovoltaic panels installed in La Croix Valmer, in Southern France.

Areva will benefit from the international presence of Schneider Electric, and its involvement and leadership in electrical grid management. The agreement will enable Schneider Electric to achieve grid parity for renewable energies while managing their intermittency and optimising network connection. Under the agreement, both groups will combine their expertise in order to design and propose energy storage solutions that guarantee the reliability of electrical grids for isolated sites and areas where access to power is limited.

Power Companies are Being Refused Insurance Coverage for Cyber-Attacks

A BBC article by Mark Ward quotes underwriters at Lloyd's of London saying they have seen a "huge increase" in demand for cover from energy firms. But surveyor assessments of the cyber-defenses in place concluded that protections were inadequate, according to the article, which can be found athttp://www.bbc.com/news/technology-26358042. Ward quoted energy industry veterans said they were "not surprised" the companies were being refused cover.



"In the last year or so we have seen a huge increase in demand from energy and utility companies," said Laila Khudari, an underwriter at the Kiln Syndicate, which offers cover via Lloyd's of London, quoted in Ward's BBC article.

The market is one of few places in the world where businesses can come to insure such things as container ships, oil tankers, and large development projects and to secure cash that would help them recover after disasters. Power companies have been trying to use insurance coverage instead of actually making their systems more cyber secure.

Data Breach Coverage is Not the Same as Cyber-Damage Coverage

For years, the article by Mark Ward quotes Ms Khudari, Kiln and many other syndicates had offered cover for data breaches, to help companies recover if attackers penetrated networks and stole customer information. Now, she said, the same firms were seeking multi-million pound policies to help them rebuild if their computers and power-generation networks were damaged in a cyber-attack.

"They are all worried about their reliance on computer systems and how they can offset that with insurance," she said, according to Ward's BBC article.

When insurance companies began to audit the power companies asking for cover from cyber incidents, they found that the companies' cyber defenses were weak.

Suddenly, it seems, the insurance industry has recognized that compliance (with NERC CIPS or similar compliance-based regulations) is not necessarily additional security.

"If something has basic connectivity then it will become internet connectivity through some channel."

Ward's BBC article quotes Khudari as saying, "We would not want insurance to be a substitute for security."

According to Ward, Khudari expressed herself puzzled as to why firms were suddenly seeking coverage in large numbers, especially since no governments have mandated that power companies get cover.

The INSIDER believes that power companies are finally heeding the warnings, but instead of looking for help making themselves secure, they are looking for insurance.

Power companies typically are regulated industries, where compliance is sought after. Compliance doesn't prevent accidents, however, and those power companies that have depended on being able to say, "We were in complete compliance…" after an accident where power failed to thousands of customers simply cannot expect insurance.

Growing Threat

Financial pressures and the ability to manage systems remotely was inadvertently giving attackers a loophole they could slip through, Nathan McNeill, chief strategy officer at remote management firm Bomgar told the BBC.

Trying to cut costs by linking up plant and machinery to a control center so they could be managed remotely meant those systems were effectively exposed to the net, he said.

"If something has basic connectivity then it will become internet connectivity through some channel," Ward quotes McNeill as having said.

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Comments and suggestions should go to Walt Boyes, waltboyes@spitzeranddboyes.com

HIMA and TECNA Collaborate in Latin America

The debate about SIS systems rages on. In the absence of much actual data on performance in accidents, it has become almost a religious argument. Should the safety instrumented system be separate and distinct, or can it be mounted on the same backplane as the basic process control system? Eventually we'll find out. The INSIDER is beginning to think that the tide toward combined systems is turning a bit in favor of separate systems.

The INSIDER is beginning to think that the tide toward combined SIS systems is turning a bit in favor of separate systems.

HIMA North American HQ in Houston

Nicole Pringal at HIMA reports that HIMA and oil and gas engineering company TECNA have agreed to collaborate on construction projects throughout Latin America and are jointly bidding on projects requiring safety instrumented systems (SISs).

Roger Van Nuis, CEO HIMA North America

"TECNA is an engineering construction leader in the region with unique abilities and experiences providing a high level of functional safety solutions to their clients," said Roger Van Nuis, president of HIMA Americas. "We're honored they will work with HIMA in equipping their clients with our advanced SIS hardware and software. It's a powerful combination."

Carlos Giordano, head of A&C TECNA

TECNA is a global engineering, procurement and construction company specializing in the implementation of projects within the oil and gas markets, as well as nuclear energy. "At TECNA, we offer our customers complete functional safety services, ranging from PSA, HAZOP and LOPA to providing completed cabinets," said Carlos Giordano, head of Automation & Control. "This is really a best-in-class relationship that will certainly add value for our customers."

For 40 years, TECNA has successfully performed complete projects, from design and construction of industrial plants, to commissioning, operation and maintenance.

TECNA is part of Isolux Corsán Group. HIMA claims to be the world's leading specialist for safety-related automation solutions. According to the company, more than 35,000 HIMA systems have been installed in over 80 countries, protecting the equipment of the world's largest companies in the oil, gas, chemicals, pharmaceuticals and power generation industries for more than 40 years.