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Your key to the latest industrial automation and process control information

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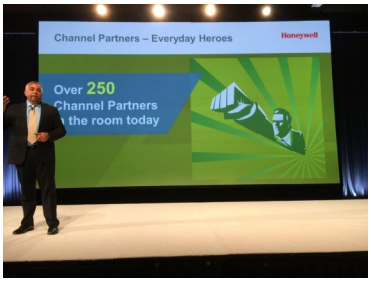
Cover Story: The 40th Annual Honeywell User Group: HPS walks a thin line between TDC and IIoT

More than 1,200 people, representing many of the world's leading industrial manufacturing companies, attended Honeywell's largest annual customer gathering last week in San Antonio, Texas. The event marked the 40th anniversary of the Honeywell Users Group (HUG) Americas symposium.

Vimal Kapur, HPS CEO

The symposium's theme "40 Years of Innovation," was only part of the story. Honeywell has aggressively fostered a culture in its users of "you will pry my TDC-2000 or TDC-3000 out of my cold dead fingers," even going so far as, a few years ago, to give an award to Eastman Chemical for having the oldest non-upgraded TDC-2000 still in operation. In fact, Honeywell reported at HUG that there are more than 6000 TDC systems in operation, with over 30,000 This culture makes it awkward, to say the least, for Honeywell to start talking about the virtues of the Industrial Internet of Things. This is, of course, because the users will have to pry their own fingers off their antiquated Honeywell DCSs in order to sample the beauties of the IIoT.



Andy d'Amelio

Honeywell's sessions were focused primarily on future direction, innovations and strategies to manage operations more efficiently in the face of various business challenges including industrial cyber security.

During the event, Honeywell also announced a new collaboration with Intel Security McAfee which will expand its industrial cyber security capabilities to help defend customers from the increasing threat of cyber attacks. This is discussed in depth later in this issue.

Edwin van den Maagdenberg

Vimal Kapur, HPS CEO, gave the obligatory state of the industry and state of the company address. He introduced Edwin van den Maagdenberg, the vp of global business operations, who spent some time talking about "Voice of the Customer" and the studies that Honeywell have been doing to improve the "listening ability" of the company. Andy d'Amelio, vp of sales, talked about the growth of the resurgent HPS Channel Partner pro-

Cover Story: Honeywell Walks the Line! (continued)

gram.

Bruce Calder's homage to Steve Jobs

"The process manufacturing industries are facing a critical time in history due to a convergence of factors such as security threats, a shrinking workforce and lower oil prices, among others," Kapur said. "These factors are driving a greater need for our technologies and services because they're designed to help companies conduct operations more efficiently, and with less risk."

The conference revolved around three core technology themes directly impacting companies' abilities to successfully adapt to changing market conditions: digital transformation and smart operations, system evolution and risk reduction, and smart instrumentation with smart integration. Throughout the week, Honeywell executives, technology experts and customers explained how these core areas can turn technology buzzwords like Big Data and Industrial Internet of Things (IoT) into practical applications. Much of Honeywell's thrust this year was a not-well-disguised reversal of their long-held migration strategy.

Bruce Calder's "Tech Talk"

In an homage to Steve Jobs, wearing black shirts and standing on a simple stage, HPS CTO Bruce Calder did the roadmap session. Much different than the previous years, when Jason Urso and Peter Zornio before him, jazzed things up with make-believe, Calder, CTO since December 2014, was more interested in getting out the vision. Joining him on stage for his "Tech Talk" were Mike Brown (global marketing services director) and Rohan McAdam. Brown talked about Intuition Executive, and the necessity of a global meta-model, a semantic data model that could be interconnected easily by OPC UA.

"HPS has been leveraging the concepts and technologies behind the Industrial IoT as part of the vision that we have been evolving towards for several years," Calder told general session attendees. "In order to run a reliable operation that continues to improve performance and business results, you will need to install smarter field devices, achieve more connectivity, collect more data and find ways to use that data to run a smarter operation."

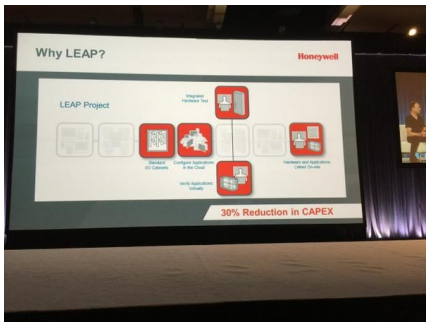
Calder also gave attendees a first look at HPS' first native app for mobile devices and tablets that connects to different sources and applications across the company's portfolio to create a more-intuitive mobile experience for plant workers. Mobility is part of the initiative to introduce a suite of apps that, along with new cloud functionalities, will enhance existing solutions to deliver better business efficiencies.

Calder had a panel, with Steve McGeorge (Global Product Marketing), Paul McLaughlin (Honeywell's Chief Engineer) and Ziad Kaakani (Lifecycle Technology Director), that focused on the benefits of moving forward into the new era of the Industrial Internet of Things. The INSIDER asked McLaughlin how he was going to talk to the TDC crowd and tell them to upgrade now. His answer was a tapdance between the benefit of sticking with what works now, and the benefit of upgrading.

3D Virtual Reality Training

The conference agenda included a wide range of presentations from Honeywell customers– covering everything from wireless applications and cost-effective control system migrations, to alarm management and energy conservation – highlighted how real-world manufacturers have used Honeywell technology to streamline their businesses by generating and analyzing the most-meaningful data from their operations.

Highlighted technologies included the UniSim® Competency Suite – the newest addition to the UniSim family of training technology, which now includes 3D virtual environment capabilities to provide realistic experiences. Other introductions included DynAMo Alarm and Operations Suite – software that leverages more than 20 years of alarm management experience in the process industries to help users reduce as much as 80 percent, overall alarm count by identify maintenance issues and increase visibility of critical alarms that require

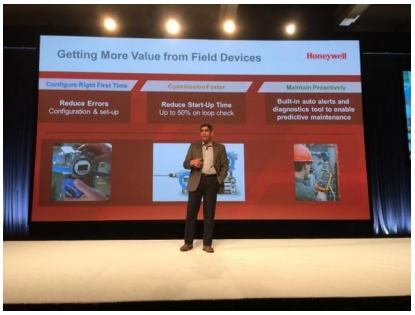


Innovative LEAP project management

Cover Story: Honeywell Walks the Line! (continued)

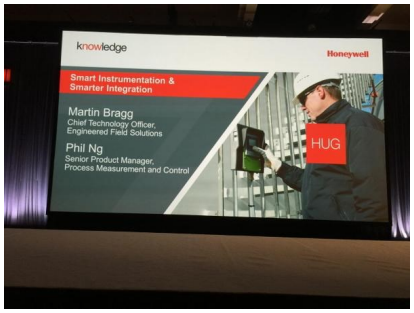
urgent attention.

Much was made of Honeywell Industrial Cyber Security Risk Manager – the first digital dashboard designed to proactively monitor, measure and manage cyber security risk for process control systems. As well, much was also made of the LEAP project management architecture.



We really, really mean it! Back in field devices!

One of the most interesting developments was the clear indication that Honeywell is back in the field devices game. Phil Ng and Martin Bragg talked about the roadmap that will take Honeywell field devices into the Industrial Internet of Things. Ng introduced the SmartLine® Level Transmitter – the newest addition to Honeywell's line of modular, smart field instrumentation designed to integrate with control systems to provide benefits such as extended diagnostics, maintenance status displays, transmitter messaging and more, and the EC 350 PTZ Gas Volume Corrector – the first member of a new line of high-performance electronic volume correctors (EVCs) that more accurately measure natural gas delivered to industrial customers, helping them meet government and industrial standards.



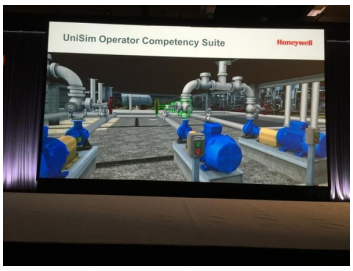
Phil Ng and Martin Bragg on field devices

Westech wins Channel Partner award

Jerry Belanger, vp Channel, gave awards to the Channel Partner of the Year, Westech Controls from Canada, and d'Amedio to the winners of the Unisim Student Challenge, two students from Brazil. One of the winners, Mariana Kobayashi, said that building the PID loops was the hardest part of doing the project.

Unisim Challenge Winners

In the hallway, one of the exhibits was the Operator Challenge, produced by Jose Alamo of SNC-Lavalin, Honeywell's partner in developing 3D Virtual Reality Training. The INSIDER's Walt Boyes took the Challenge, which was to run up three flights of virtual stairs, grab a virtual fire extinguisher, and put out a virtual motor fire. His score, probably the worst of all, was 589 seconds. "But that was 500 seconds figuring out how to use the joystick game console, and 89 seconds of actually doing the work. That's more respectable," Boyes said.



Operator Challenge

Intel Security CTO Raj Samani

The biggest announcement of the event was the Intel Security/ Honeywell collaboration, announced at a press conference on Wednesday, right after the keynote by Raj Samani, CTO of Intel Security. Intel Security is better known as McAfee, and, according to Jeff Zindel, business leader for Honeywell's cyber security business, will be a full partner with Honeywell in cyber security. The INSIDER has more coverage of this announcement later in this issue.

Jeff Zindel announces Intel agreement

Cover Story: Siemens Automation Summit 2015 by David W. Spitzer, PE

The 2015 Siemens Automation Summit was held 22-25 June 2015 in Las Vegas, Nevada. Almost 600 people registered for the event which includes slightly over 200 Siemens solutions partners and Siemens employees. The overall tone was upbeat as business conditions were generally considered favorable for Siemens and its solution partners.

Siemens Digital Factory CEO Raj Batra

The opening formalities were shortened to about 90 minutes to include comments about digitalization from Raj Batra (President, Siemens Digital Factory Division). Digitalization has progressed from personal computers to smartphones to tablets to the internet of things to smart televisions to wearables. Approximately 50 percent of people in the world have cellphones and 80 percent are projected to have cellphones in 5 years. For perspective, even car washes are digitized with sensors and controls that can be displayed, monitored and analyzed remotely which demonstrates the scalability of the technology.

Smart devices are projected to generate an enormous amount of data --- 2.8, 8.6 and 40 zettabytes (trillions of gigabytes) in 2012, 2015 and 2020 respectively. It seems that everything is generating data which begs the question --- How will the data be handled? Raj said that 87 percent of those surveyed rank data analytics among the top three issues and fully 42 percent considered them to be at the top. Actions have not caught up with the concern because only 5 percent of people in the survey responded that they implemented a strategy to address the issue.

Raj cited the following:

- USD 65 billion of automation systems are nearing the end of their useful life and the average age of such systems is the highest that it has been since 1938
- 4 in 10 processes have little visibility and 30 percent of people spend 4 hours per day searching for information

50 percent of managers become aware of problems after the breakdown

The digital world needs to be looked at holistically to address the real-world problems to include design, installation, commissioning, operation and maintenance. Benefits include increasing throughput by up to 50 percent, reducing time to market by up to 50 percent, and reducing engineering costs by up to 30 percent.

There is no single path to achieving these goals and they will not be done overnight. Raj suggests that we need to start somewhere. Siemens has spent an estimate 10 billion euros on digitalization since 2007 --- approximately 40 percent on mergers and acquisitions and the remainder on organic growth to include an ecosystem focused on innovation, people, skills, technology platforms and IT partners.

Examples of companies that are digitizing include:

- century-old specialty chemical manufacturer Wacker (Germany) that standardized documentation for 4700 process and instrument diagrams, 60,000 devices, 117,000 measurement instruments and 47,000 valves in multiple plants worldwide and trained 1400 people.
- Car manufacturer Maserati (Italy) will increase production by 300 percent by 2018 in a new digitalized plant with flexible manufacturing.

Siemens (Aberg, Germany) uses programmable logic controllers (PLC) to make approximately 12 million PLCs per year and processes approximately 250,000 components per hour while reducing the number of defects from approximately 500 per day to 12 per day.

Raj summed it up by saying that it is not too late to get started.

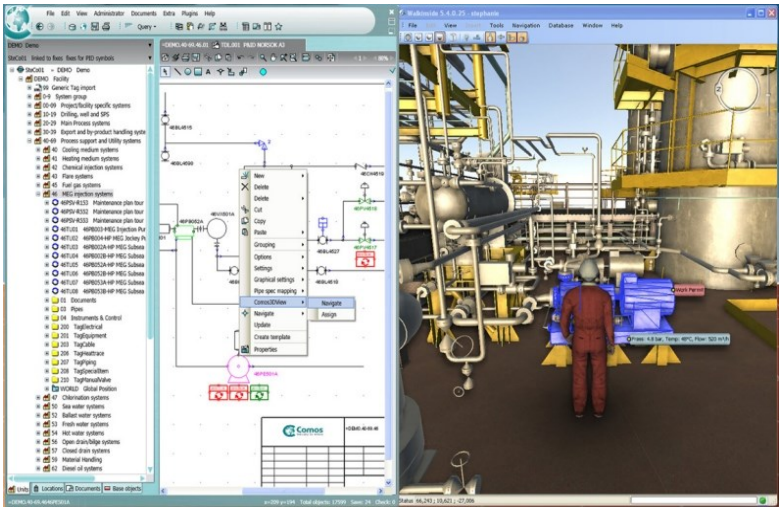
Roadmap sessions describing Siemens' efforts to streamline the more tedious aspects of upgrading and licensing were followed by over 50 technical breakout sessions and hands-on training sessions. Although some technical sessions were presented by Siemens employees, many were presented by end-users and Siemens solution partners including system integrators who use Siemens products. Many sessions focused on how Siemens equipment was used to implement improvements. More importantly, many of these sessions presented participants with realistic ideas as to how automation equipment can be applied to improve operation --- without regard to equipment manufacturer (although Siemens equipment was used for illustration purposes). Informal feedback regarding the hands-on training sessions that taught participants how to use various Siemens software packages was positive and some sessions included non-participating attendees (in other words… standing room only).

Highlights of the breakout sessions included various applications where using instrumentation and control equipment to upgrade processes and/or embed in OEM equipment resulting in improved operation and efficiency. Items related to the Siemens process control system include:

- software upgrades that streamline tedious operations
- simulation software for virtual commissioning and plant optimization

Siemens Automation Summit 2015 (continued)

- real-time monitoring, data collection and reporting for remote systems
- availability of common blocks in the Total Integrated Automation portal
- improved modularization, improved scalability, and redundant communication
- virtualization efforts
- remote display, control, reporting and e-mailing
- safety integrated functions (SIF) in variable speed drives enabling production to increase with less waste and increased safety at lower cost with an integrated solution
- integrated safety functionality for motors with variable speed drives that enables more economical installations with fewer parts than a classic safety functionality installation
connectivity with equipment from other manufacturers



Siemens COMOS Walkinside 3D Visualization and Simulation

The Technology Café included stands for many Process Industries and Drives products staffed by Siemens experts where a 3D virtual reality demonstration caught my eye. COMOS (Common Object Services) software integrated gaming technology with 3D plant design documents and real time data (or a data set) to allow the wearer of 3D glasses to journey through the plant where the data is displayed on the instruments. Equipment images can be customized to more accurately reflect the look and feel of the real plant.

This technology can enable adapters to identify design improvements early in the design phase when they can easily be implemented. It is especially important to incorporate comments from plant operators who often do not read drawings until start up (if at all). This technology can also be used for training, installing and operating the plant. In particular, a person who is off-site can instruct a person in the field where to go and what to do to investigate and/or solve a problem. Additional information could be obtained if the person onsite was fitted with a camera that displayed images on a second (adjacent) remote monitor. This information could also be observed in additional remote locations for additional scrutiny such as at an equipment manufacturer's factory.

Todd Gardner (Vice President of Process Industries and Drives, Siemens) spoke to analysts about how Siemens has altered its portfolio to better focus on industry and changed its culture to streamline Siemens' practices to make it easier for customers to work with Siemens.

Todd observed customers are increasingly looking to Siemens for solutions and not products per se. An example of this is customers looking for equipment that will comply with an environmental regulation --- as opposed to an analyzer for the customer's system integrator to install.

Nicholas J. Webb presented the keynote address at the Customer Excellence Awards Ceremony where J. R. Simplot, Aegis Energy Services, and KUKA Systems North America (Aerospace) were honored. Nicholas is a renowned business futurist, author and innovation thought leader who is responsible for over 40 patents including one of the world's smallest medical implants to a wide range of industrial, consumer and wearable technologies.

Nicholas (known by many as the "Innovation Evangelist") said that existing structures will be hacked (destroyed) by disruptive innovators who will create (construct) the future. These disruptive innovators are really hackers who look for existing businesses to destroy. However companies that have a good definition of innovation and understand why innovation matters tend to survive and thrive. To this end, he suggested that innovation can be defined as the creation of meaningful net value.

Nicholas J. Webb, the Innovation Evangelist

Different types of changes can occur to include incremental, landmark, breakthrough and disruptive. Nicholas stated that the last 10

Siemens Automation Summit 2015 (continued)

-20 years have exhibited incremental changes but now disruptive change is occurring. Various ecosystems are shifting due to low production costs and the subsequent democratization of products. Innovation has not been effective primarily due to being poorly resourced. Consumer preferences are shifting as are connections as influenced by parameters in the SMAC stack (social, mobile, analytics and cloud).

Nicholas believes that 3D printing is a big deal because physical objects can be digitized. For example, the delivery of a part can be via a file that can be 3D printed remotely ---effectively decentralizing manufacturing. Further, shipping costs are eliminated, delivery is immediate and no inventory need be carried.

Similarly, toys can be 3D printed and even customized. Toy companies are concerned that their survival may be at stake because you can download files to 3D print toys (and many other things) at websites such as www.thingiverse.com. You can even upload your own designs for others to download and 3D print. Why buy toys when you can 3D print as many as you want? And lots of other things are also free. Nicholas recently downloaded and 3D printed a garden hose nozzle while wondering why someone would spend $20 at a store for the same item. Even some medical devices can be 3D printed much more economically than those currently being sold.

3D Printed Exoskeleton for Hand

The Internet of Things (IoT) is not really a thing but rather hyper-connectivity where everything is connected to everything else. Even people can be considered to be digital nodes in the IoT that produce data that can be aggregated and sold back to interested parties.

The maker movement is an umbrella term for independent inventors, designers and tinkerers --- DIYers (do it yourselfers). Toys such as LEGOs are purchased in kits with directions for one-time assembly. However children want to be creative and their parents did not want to buy kits each week. In response, Nicholas developed educational Hanz toys (www.hanztoys.com) intended to foster creativity with effectively one direction for use --- "Instructions Not Included". Think about that!

Hanz Toys: Instructions Not Included!

> "The Internet of Things (IoT) is not really a thing but rather hyper-connectivity where everything is connected to everything else."

Health care has been disrupted and will likely become more disrupted as services are not offered universally to all. Uber is the largest taxi service but owns no cars while drivers and riders rate each other for future reference. Google spent millions to purchase the Nest thermostat so the INSIDER suggests that Honeywell might be concerned. More specifically, the INSIDER opines that many threats to instrument manufacturers (including software) are likely to come from outside of the existing instrument manufacturing community.

Nicholas believes that the new currency is hyper-connectivity and innovation. Companies should foster these enablers to attract talented millennials who can thrive is such an environment. The INSIDER opines that Nicholas is fundamentally correct --- but getting there will not be easy.

David W. Spitzer, PE is a partner in the technology consulting firm of Spitzer and Boyes, LLC, which is the publisher of the Industrial Automation INSIDER. He is an ISA Life Fellow, and is an expert on field devices, variable speed drives, and technology transfer in the automation space. He can be reached at dspitzer@spitzerandboyes.com.

Nick Denbow's Roundup: "Changes" at Endress+Hauser

Switzerland–based Endress+Hauser have produced their 2014 Annual Report with their annual review publication, known as *"Changes"*. Last year at this time the major 'change' at E+H, as reported by the ***INSIDER*** June 14 issue, was that Matthias Altendorf took over as the Group CEO.

Matthias Altendorf, E+H Group CEO

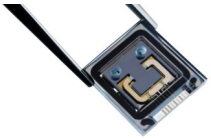
Group sales increased in 2014 by 11%, as reported in the February ***INSIDER***, but this included consolidation of the Analytik Jena business results for the first time: excluding this the sales growth would have been 6.4%, with return on sales improved to 15.9%. Altendorf is also facing the significant problem of the stronger Swiss Franc, from January 2015, and a "less than energetic start" to the new financial year, while the group is facing challenging growth targets. Currently the biggest investment project is in Reinach, Switzerland, where the Group is expanding their flow measurement engineering competence centre, which is quoted as "a clear and visible commitment to Switzerland as a manufacturing location". This is important at a time when many Swiss companies have put a hold on investments. The report also mentions that the three major geographical markets for E+H are facing problems. In Germany, chemical production is relocating to other world regions as a result of energy prices. In the USA, the oil & gas business is showing signs of weakness. In China, E+H quotes a lack of the major customer projects that have characterised recent years, plus local suppliers are gaining significance in this, and other growth markets.

Technology direction

Last July, the Fraunhofer Institute for Production Technology selected E+H as one of the Top 5 companies with successful approach practices to developing concepts in technology intelligence. Dr Ulrich Kaiser, Director of Technology at Endress+Hauser, comments that "We cannot look into each and every technology ourselves. But we can gain a lot if we keep a keen and watchful eye on what's happening worldwide in scientific and industrial research laboratories". Despite the name, Dr Kaiser has no direct link to the Ann Arbor based Kaiser Optical Systems, an E+H subsidiary: he has been in the technology director rôle for 12 years, and before that worked for E+H Flowtec in Switzerland for three years, having previously worked for Dräger in R&D for five years.

The E+H business focus is on instrument technology for the varied industries in the process industry. In the last year, it has been notable that food and beverage, and the chemical industries, have presented the best markets, while in process measurement technology, the liquid analysis business has grown at a stronger rate than other technology fields. In the medium and long term, they see marked opportunities in developing the market for laboratory analysis, and the option of employing advanced methods of analysis to a greater degree in process technology applications. The move towards the laboratory analysis business was mentioned by Klaus Endress in the 2014 issue of *'Changes'*. [Not mentioned by E+H, was the possible aspect that competitors are less numerous, and so margins might be better, in this sector] So in a carefully planned series of acquisitions, Dr Kaiser and E+H have assembled the technologies needed. First SpectraSensors, a leader in laser-based gas analysis. Second Kaiser Optical Systems, bringing expertise in Raman spectroscopy and holographic components. Third was the completion of the acquisition of Analytik Jena, the analytical instrumentation and life sciences specialist in the eastern part of Germany, now well established in laboratory and medical markets. Just prior to this move, Analytik Jena had acquired the plasma mass spectrometry business previously run by the US Bruker Corporation, which completes the three spectroscopy technologies used for elemental trace analysis – the others being atomic absorption and atomic emission based. Together with E+H Conducta, the liquids analysis member in the Group, Dr Kaiser has had the heads of technology from all four companies meeting on a regular basis, to share know-how – and also to develop relations with the Fraunhofer Institute, their research partner, as well as with their main laser system supplier.

Ulrich Kaiser, Dir. Of Technology at Endress+Hauser



Nanomass density

Their interests in analysis don't however stop here. Within E+H two other fledgling businesses are the newly established TrueDyne in Switzerland, and Jobst Technologies in Germany. TrueDyne has been set up to exploit novel Coriolis technology, firstly with the Nanomass Density meter, a field device for the process industry to monitor gas density in the line. The sensor is micro in scale, with a

Nick Denbow's Roundup: E+H Changes, Sellafield and ABB wins FPSO order

measuring tube only slightly thicker than a human hair: it is the first in a planned range of sensors using such microsystems technology. Jobst Technologies specializes in the development and production of biosensors, that are capable of measuring the lowest of concentrations of micropollutants.

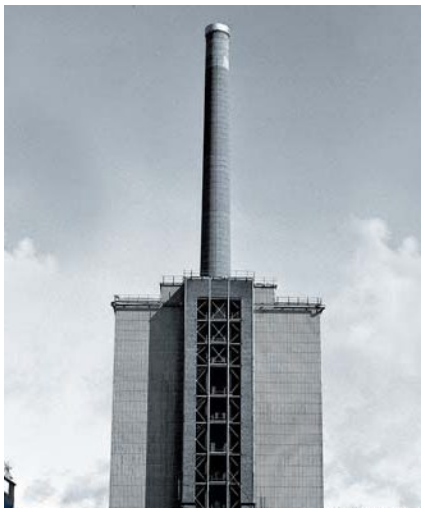
Business Review

In the *"Changes"* Review, Altendorf concentrates on 'Co-operation', within the group and between group companies, but also with the countries and people with which the sales offices interface. Particular attention is paid to Southeast Asia and the ASEAN nations, which was highlighted as an area of dynamic growth in the 2014 report. One story notes that an E+H Coriolis meter is the first meter installed on a ship's oil bunkering tanker, and approved by the Singapore Maritime and Port Authority for operations off Singapore. Another story explains the Sadara Chemical Company project in Jubail, Saudi Arabia, where E+H have a team of 39 people involved in design, production and installation of their instrument systems on the plants. For pH, conductivity and oxygen measurement, as well as samplers, E+H is the sole provider across the complex: Coriolis and vortex flow and level measurement systems plus liquid analysers are also being supplied. Application stories are also included describing Raman analysers in European chemical plants from Kaiser Optical Systems, and gas analysers from SpectraSensors on a North Sea platform. In this gas production platform installation for Statoil, the analyser measures the percentage of hydrogen sulphide present in the methane, which has to be controlled to below 2.5ppm. Above this level, serious corrosion problems occur. SpectraSensors have installed multiple systems on 12 North Sea platforms, and these have produced considerable maintenance savings for the operators, compared to the previous technology used.

Another article introduces Analytik Jena, tracing the history back from the reunification of Germany, and the acquisition of the analytical business activities of Carl Zeiss. The article however that sparked my interest most was about the plans to introduce a fourth water treatment stage to Swiss sewage plants, to remove the last traces of micropollutants, like the last hormones, pesticides, drugs (such as blood pressure treatments like beta-blockers), cosmetics – and some trace elements. The fourth treatment stage might involve ozonization, or the use of powder-activated carbon. But the process will need monitoring systems, ie laboratory type analytical systems, maybe using the techniques now being developed by Jobst Technologies. Many operators in Germany are also considering similar micropollutant monitoring, to assess the need for such treatment: particularly as the water in our rivers is cycled through our taps and sewage works many times before it reaches the sea.

Recruiting Design Engineers

For those working in HR and recruitment, this is how Sellafield Ltd, the company cleaning up the Sellafield (previously known as Windscale) nuclear plant site in the north-west of the UK, advertises to recruit good engineers wanting a challenge. The site is also located on the coast of the Lake District, one of the most beautiful national park locations in the UK. Their advert, under the picture of the chimney, reads:



Sellafield Stack

"This is a first generation reprocessing plant. Constructed during the late 1940s and early 1950s, high-hazard reduction protocols weren't factored into its creation. The plant contains four highly active cells, each containing redundant radioactive material. Before we can even begin to think about how we can demolish this building, we need to work out how we can safely remove the 61m stack that's housed on the roof. And we can't begin to do that until a new ventilation plant has been completed. If that wasn't complicated enough, the building is located in a highly congested part of our site and space is extremely limited. Getting this right couldn't be more important – the positive impact will affect the lives of millions across the UK for generations. There's absolutely zero margin for error. Welcome a 100-year transformation project. Welcome to design engineering at Sellafield Ltd."

Sellafield has always been amongst the first of all the process plants in the UK to apply both Profibus networks and WirelessHART networks, when they were novel techniques, and has financed the development of many novel sensors for their more difficult applications – for example in monitoring the filling of glass encapsulated waste containers! I personally spent many happy hours working on such problems in the 1980s…. ***ND***

ABB Wins Order from Bumi Armada Berhad

ABB has won an order from offshore services provider Bumi Armada Berhad, to supply both electrification and automation systems for a floating production, storage and offloading (FPSO) vessel, which is to be moored on a recently discovered oilfield off the coast

Nick Denbow's Roundup (continued)

of Angola.

The project being managed by Bumi Armada, an international offshore services provider based in Malaysia, is to build the FPSO by reconfiguring the former Armada Ali supertanker (now renamed the Armada Olombendo FPSO), which has a storage capacity of 1.8 million barrels.

Armada Olombendo FPSO

This is to be chartered by the Italian energy company Eni, and will be positioned over the Cabaça North and Cabaça Southeast fields, about 350 kilometers northeast of Luanda.

With fields so far offshore and 500 meters below the ocean's surface, the vessel will control the entire extraction process, storing up to 80,000 barrels a day of oil, until offloaded into shuttle tankers.

The ABB systems will distribute and manage the power necessary to inject 120,000 barrels of water a day into the reservoir, and compress up to 120,000 million cubic feet of natural gas also produced. Eni is the concessionaire of the Cabaça fields, which are estimated to have a capacity of some 230 million barrels.

To enable and monitor safe and reliable operations, ABB will deliver complete e-house solutions - which house medium voltage and low voltage switchgear - and systems for integrated electrical distribution, control, safety and power management, including ABB's 800xA distributed control system.

ABB System 8ooxA

"FPSO vessels offer a competitive solution for the development of deep water and remote oil and gas fields, such as those in the West of Africa. We are pleased to contribute to Bumi Armada Berhad's latest FPSO project to ensure safe and reliable floating production," said Stein Guldbrandsoy, ABB's Global Market Segment Manager for Floating Production Units. This order is the fourth collaboration between ABB and Bumi Armada, the fifth largest FPSO supplier in the world. Past projects include a modular e-house package for FPSO vessels operating off India's west coast; a package for the Kraken oil field in the North Sea; and also a complete automation package for an FPSO vessel operating in the Balnaves oil field off western Australia.
The total value of the Bumi Armada Berhad contract to supply, operate and maintain the FPSO is about $2.9Bn.

Old wives' tales
Never trust an old wife's tale. I'm reliably informed that even the simplest ones are reversed after 50 years. So you don't make a cut bleed to clean out any germs, that just gives the germs access to your bloodstream.

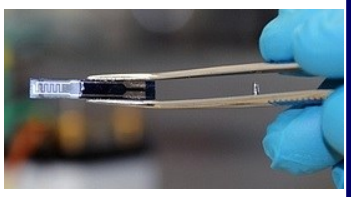
Leaky Pipe in Situ

It now appears the same is true of drinking water mains pipes. Research at the University of Sheffield shows that a leaky high pressure main is not safe, just because of the pressure inside. Dynamic pressure drops can occur in the pipework system – maybe known as water-hammer in smaller pipes. When there are valve or pump failures, or sudden demands on the system, such as when large volumes of water are required for fighting a fire, a pipe leak can indeed go into reverse.

Simple CO2 sensor

Normally the gas detection systems seen on these pages are laser based spectroscopic devices. However, a novel development from research at ETH Zurich and the Max Planck Institute of Colloids and Interfaces has developed a new type of sensor, and this one measures the carbon dioxide concentration at low levels in air.

Reported by Les Hunt, in the UK magazine *Design Products and Applications*, the sensor uses a composite material that is doped to change its electrical conductivity according to ambient CO2 levels, typically from 0.04% to 0.25% by volume.



New CO_2 Sensor

The sensor material uses a chain-like macromolecule (polymer) made up of salts (ionic liquids) that are liquid and conductive at room temperature: such polymers are called 'poly-ionic liquids', but they are solid rather than liquid. By mixing these with specific inorganic nanoparticles that react with CO2, a chemo-resistive sensor is created, where the conductivity is proportional to CO2 concentration. The novel feature is that this design works at room temperature: previously such properties have only been seen at high temperatures. The potential is for small portable sensor devices that use minimal energy to operate.

Nick Denbow's Roundup (continued)

A purpose-built test facility used 141m of mains water pipe maintained at pressures representative of UK networks: a section of pipe was damaged, and the leak enclosed by a box containing gravel into which dye was injected to simulate a contaminant. When that section of pipe was subjected to a dynamic pressure drop, up to 60mL of the dye was sucked into the pipe. Another Victorian myth exploded!

Wireless Pressure Sensor for $190

In the UK there is an interesting catalogue operation, a distributor/reseller, known as PVL – Pressure Vacuum Level Ltd. They do what they say on the header, mainly to OEMs in machine building, hydraulics etc, but they do have some panache. So when they advertise a wireless pressure transducer for under GBP120 (currently $190), you take notice.

IIoT strikes again! Wireless Pressure Sensor for less than $200!

Yes for sure, it's a standard hydraulic type pressure sensor, but it has a Bluetooth capability to link to a passing laptop or iPhone, and could be pretty useful as a tank contents gauge anywhere. Or an OEM can use Bluetooth to connect to remote supply lines or tank sources, or drains.

Looking closely, the photo PVL supplied shows the sensor to be labelled from Transducers Direct in Cincinnati, Ohio – a privately held pressure transducer, pressure sensor and industrial components manufacturer. Their webpage also says the company was founded 16 years ago, but since the TD website seems not to have been updated since 2010, the pedigree might be longer.

Apparently more international distributors are sought: but with OEMs already buying direct, like Milacron, Van Dorn Demag, Pillsbury, General Motors, SMC, Budd, Rexroth, Parker, Numatics, John Deere and US Navy, maybe they don't need more middle-men.

New shipping orders for Alfa Laval

Alfa Laval is to supply a new design of heat exchanger for gas fuel conditioning on board six LNG carriers to be built by Daewoo Shipbuilding and Marine Engineering of South Korea. The order for the first ship set has been received and is worth SEK24m ($3m). These new and innovative compact heat exchangers can handle temperatures and pressures far beyond the normal range of welded plate heat exchangers: with a dual functionality, they will re-liquefy the boil-off gas from the LNG tanks, and also condition the gas being used as fuel in the ship's engines.

Lars Renström, President and CEO of Alfa Laval, commented: "This order shows that Alfa Laval is a company that quickly reacts to changing customer demands by adding new and innovative products". An interesting aside was that "for Alfa Laval, the value opportunity per ship is the same - no matter what fuel is used".

Elsewhere, Alfa Laval has been appointed as the preferred supplier of ballast water treatment systems for retrofit to the container fleet of the Mediterranean Shipping Company, a project that is expected to bring in orders worth SEK230m ($28m) in the next year. Ballast water treatment by an IMO approved system is expected to be mandatory within a few years.

Potentials for Electricity savings

A new research study from Siemens Financial Services (SFS) in Europe estimates the industrial electricity-efficiency potential, which is defined as the proportion of current electricity consumption that could be saved if more electricity-efficient equipment were installed, varies from 14% to levels approaching 20%. The study finds significant variations between countries. In the UK, the industrial electricity-efficiency potential is about 14.2%.

Together with Spain (14.2%), it ranks among the leading countries in industrial electricity-efficiency, followed by Germany (14.5%) and France (15.1%). The electricity-efficiency potential is greater still in developing economies such as China (17.2%) and Russia (19.1%).

Despite the high level of electricity efficiency in UK manufacturing, further potential to reduce electricity consumption remains, particularly in production processes where production control systems and variable speed motors can radically cut electricity usage. Spain's leading ranking can be partly attributed to Spanish manufacturers being particularly active in generating solar power onsite to subsidise their electricity requirements. In Russia, the established industrial sector is often characterised by less energy-efficient, older equipment.
There are therefore ample opportunities for electricity- efficiency gains from plant upgrades and replacement.

Nick Denbow is European Editor of the Industrial Automation and Process Control INSIDER. He has had a long career in PR and Marketing in the Automation Industry, and blogs regularly at "Nick Denbow's Industrial Automation Insider Blog" http://www.nickdenbow.com.

Heard on the Street: Mitsubishi Hosts U.S. Sales Meeting

It was May 18 thru 21 and over 320 attendees descended on the Point Hilton Tapatio Cliffs Resort in Phoenix Arizona.

Mitsubishi Electric held its annual North American sales meeting including distributors and channel partners from the USA, Canada and Mexico.

Point Hilton Tapatio Cliffs Resort in Phoenix, Arizona hosted the Mitsubishi Electric North American Sales Meeting

The mood was very up-beat while Mitsubishi Electric discussed their success and global market shares: 50% in Japan, 23% in Asia, 12% in Europe and 11% in North America giving them an 18% overall share in the controller and drive product market. Mitsubishi Electric overall has very aggressive growth plans for the Americas to reach $200M in 2016. From the mood of all attendees, employees, independent distributors and key system integration companies, above market growth seemed to be solidly achievable.

In addition to a wide range of new product introductions, two factors were prominent in Mitsubishi Electric messaging.

This was the first time partners were allowed to attend the event. https://us.mitsubishielectric.com/solutions/capabilities/alliance-efactory The Mitsubishi Electric partner program is called e-F@ctory Alliance. e-F@ctory Americas currently includes 19 companies; Datalogic, Dream Report, Lutze, ePLAN, Rollon, Balluff, SMC, eWON, Delta, Tolomatic, CLPA, MOLEX, Cognex, MDT, Iconics, Kepware, Powerit, Schaeffler, and Secomea.

These partners demonstrated their products to Mitsubishi employees, distributors and system integration companies over the three day event. Mitsubishi Electric prominently displayed these partnerships in both general sessions and with scheduled visits in their Alliance Partner demo area. The message from Mitsubishi was clear. These are "Best in Class" automation partners that have been brought in for all to get to know better and incorporate into Mitsubishi Electric solutions.

Another major theme included the positioning of CC-Link as standard communications across all Mitsubishi products.

On the enterprise side, a special emphasis was put on CC-Link IE (Industrial Ethernet) as the solution for enterprise data connectivity.

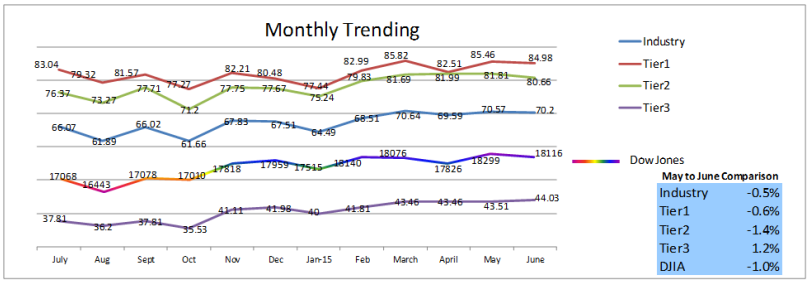
A number of alliance partners demonstrated new SLMP (Seamless Message protocol) drivers as part of their CC-Link IE collaboration.

CC-Link was originally created by Mitsubishi in 1997 and was released as an Open Network in 2000.

The CLPA (CC-Link Partner Association currently boasts over 1200 compatible products. Mitsubishi highlights CC-Link as the number one protocol in Asia with an estimated 21.3% share. http://www.cclinkamerica.org/home.html

Alan Beaulieu, economist from ITR Economics wow'd the general session with his automation market forecast. He is clear, concise and very entertaining. Alan predicts a USA growth rate of 2.4% is 2015 and 3.7% in 2016. It was clear that a great deal of effort was put in to the event, also attended by over half a dozen managers from Mitsubishi Corporate in Japan. http://itreconomics.com/

Things Look Better with Oil at Above $60!



INSIDER
INDUSTRIAL AUTOMATION & PROCESS CONTROL

Health Watch

By Mary Samuelson

The period between May and June reflects minimal movement for the ACI Index or the Dow. While the change between reporting periods is negative in all instances except for Tier 3, the change is less than 1.5%. The largest decline, a very small 1.4% drop, occurred for Tier II companies, but overall the ACI outperformed the Dow by a half a percent. Not much to brag about, but definitely moving in the right direction.

Taking a broader look provides a happier picture. Compared to January, the average stock price for all levels of the ACI has moved in a positive direction and all Tiers have outperformed the Dow by at least 4%. The industry as a whole beat the Dow by 6% over the past six months, with Tier 1 and Tier 3 companies ahead by 7%.

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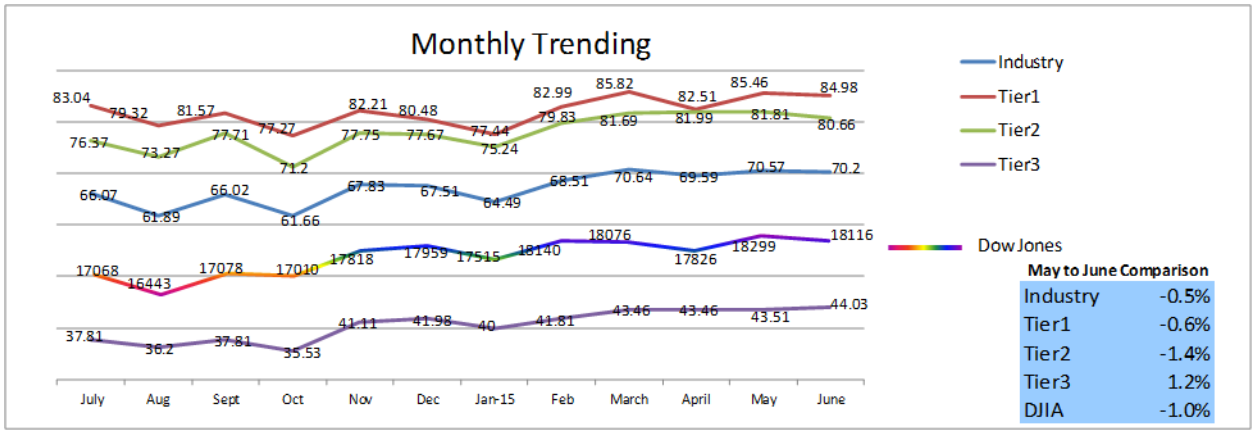
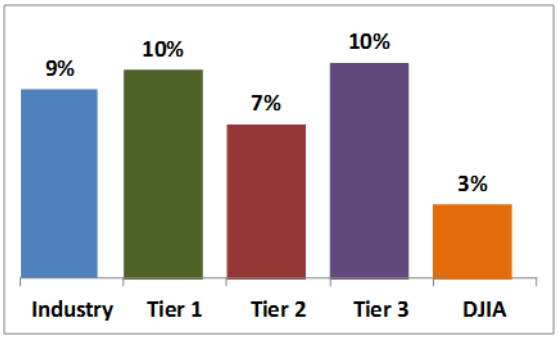


Some specific companies have weathered the slippery slope economic conditions better than others. For example, MKS Instruments stock hit a 52 week high this month as reported by Zacks Equity Research on June 9th. Zacks believes that "current tailwinds in the semiconductor industry are triggering MKS Instruments' business growth," aided by "rapid global industrial growth and technological advancement across variable economies. "

MKS' primary focus is on solar energy, thin film, and led; medical and biopharm, and general industrial. By combining initiatives that include lowering operating expenses through workforce cost reductions, strategic fund allocation, and expanding its product portfolio through innovation with new products such as the new Cirrus ™ 3-XD Atmospheric gas analysis arrangement, I-250, I-500, and I-1000 Mass Flow Controllers, and Granville-Phillips Series 500 cold Cathode Gauge, MKS has moved forward where many others in our industry have struggled to keep from going in the opposite direction.

When the going gets tough the tough get going, and that is the case with several companies in the ACI, for example Hollysys. After a steep stock price slide in mid-February that hit a low of $17.18 per share in mid-March, Hollysys rebounded to a high for the year of $26.84 on June 15. The boost was prompted in part by the release of Hollysys' financial results on May 14, 2015. In its report for 3rd Quarter of Fiscal year 2015, Hollysys reported the fol-

Things Look Better With Oil above $60! (continued)



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lowing:

*In industrial automation business, during this quarter, we continuously insisted in executing our strategies to penetrate the high-end industrial automation market and provide more complete solution. In March 2015, we signed a significant contract to provide our Distributed Control System (DCS) to 2*1000 MW ultra-supercritical Thermal Power Generating Units in Datang Sanmenxia Power Plant in Henan Province; this is the fourth contract we signed in the GW level the rmal power industry, which demonstrate our leading technology and firm our market position in the high-end thermal power market in China.*

Besides high-end thermal power market penetration, Hollysys also focused on penetrating into other high-end industries such as chemical, medical, food and beverage and environmental protection related industries, and providing total solution such as software solution, safety protection and critical hardware solution. We were also focusing on building strong after-sale department and setting long-term goals on improving after-sale services. Our total solution in reducing waste emission and environment protection proved successful. Even though in the short term we have pressure under the current weak external environment, but with our leading technology and proprietary customized solution, we have gradually recovered and performed better than the previous quarters.

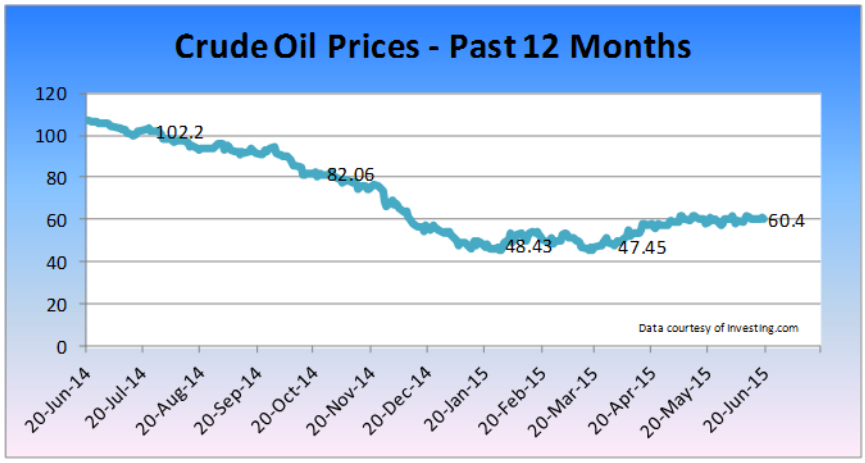
> *"In industrial automation business, during this quarter, we continuously insisted in executing our strategies to penetrate the high-end industrial automation market and provide more complete solution."*
> *— Hollysys*

Penetration of new markets, strong sales in thermal power, and a new focus on after-sale services, has allowed Hollysys to recoup and operate well in a challenging economic environment.

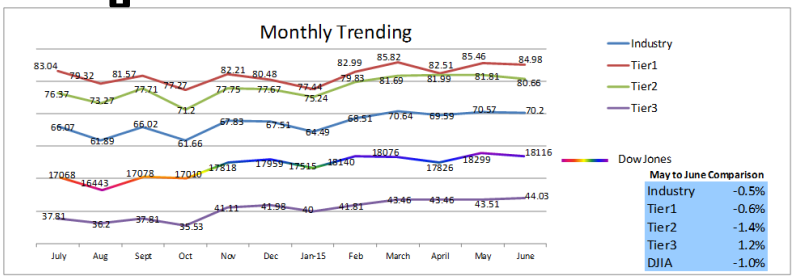
For those ACI companies who depend heavily on the oil industry, the recent increase in the price of oil is a welcome and long overdue sight.

In the past three months, crude oil has increased from $45.45 to $60.40 a barrel, still a long way from the $115 per barrel prices of a little over a year ago, but much better than the $45 range prices seen in March.

Even those ACI companies whose main target customers are feeling the pinch of low oil prices can succeed with careful planning. Take for instance, Aspen Technology, whose primary customer targets are oil, energy, chemical, and gas companies. According to Pete Barlas, with *Investor's Business Daily*, Aspen's stock (NASDAQ: AZPN) has trended higher most of this year in spite of dips in oil prices and Aspen's current challenges



Things Look Better ... continued...



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associated with working through a major business transition. "Aspen Technology stock is up almost 25% this year, after falling 16% in 2014."

Pete believes that the key to Aspen's success lies in the focus of their products. Aspen produces software that helps refineries find the most cost-efficient ways to turn crude oil into gasoline and other fuel products. Refineries are considered "down stream" operations, as opposed to upstream operations such as exploration companies which currently have limited funds for capital expenditures. In fact, during this time of financial cutbacks, Aspen is in an enviable position because refineries and chemical plants are trying to save in every way possible, and the software Aspen provides helps them do that.

> "The exposure of Aspen Tech to upstream is only 12% of revenue, whereas their exposure for downstream is almost 28% — and those 28% of companies are making tons of money. That is why the stock has done very well."

Monika Garg, an analyst for Pacific Crest Securities points out that, "The exposure of Aspen Tech to upstream is only 12% of revenue, whereas their exposure for downstream is almost 28% — and those 28% of companies are making tons of money," Garg told IBD. "That is why the stock has done very well."

Another benefit for Aspen is its diverse customer base which provides diverse revenue sources. Garg says the company's revenue breakdown is roughly 38% from energy companies, 31% engineering and construction and 26% chemicals. The other 5% comes from customers in a number of fields, including pharmaceuticals, consumer packaged goods, and mining.

Further along on the spectrum of specific company's who depend on the oil industry is Thermon Group, whose petroleum customers represent a significant portion of their business. Thermon serves upstream exploration production, midstream transportation, and downstream refining by providing new facility construction which they term "Greenfield projects" as well are recurring maintenance, repair, and facility upgrades and expansions (MRO/UE). Thermon has seen a year over year reduction in backlog of $9.1 million, about $7 million of which they attribute to the depreciation of most foreign currencies against the US Dollar.

Thermon's revenues for fiscal 2015 were $308.6 million, compared to

The *INSIDER* Health Watch(tm) is written by Mary Samuelson, Quantitative Research Practice Lead at Spitzer and Boyes, LLC.

Ms. Samuelson was director of research at Maritz Research, and vice president at Rockhopper Research, and a Senior Project Manager with The Right Brain People.

"The Health Watch shows what we are capable of, in quantitative research, at Spitzer and Boyes, LLC.," she said. "If you are looking for research that is different from the kind you get from the usual suspects, give us a call."

Spitzer and Boyes, LLC has a complete qualitative and quantitative research capability, focused on the automation industries. For more information, contact Walt Boyes at waltboyes@spitzerandboyes.com.

The *INSIDER* Health Watch™ is available for license to use in other publications. If you are interested in doing that, please let Walt Boyes know.

Mary Samuelson is available for speaking engagements about the Health Watch™ and other quantitative marketing issues. Contact Walt Boyes for details at waltboyes@spitzerandboyes.com.

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By Mary Samuelson

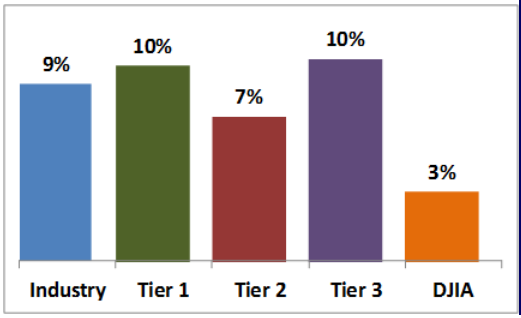
Things Look Better...Continued...

$277.3 million for fiscal 2014, an increase of 11%, but the company also notes in its annual report that fiscal year 2015 showed a reverse of their normal revenue stream, which is typically 60% Greenfield and 40% MRO/UE. They attribute the reversal to decreased Greenfield (new facility construction) opportunities globally. Thermon's stock price has held steady but it will be interesting to see how continued lower than normal oil prices affect this heavily oil invested company. Pentair is another player with a less than cheerful outlook for the remainder of 2015. On June 9 Zacks Investment Research downgraded Pentair stock to Rank #5, (strong sell). The change is based on Pentair's downtrend in earnings estimates since reporting first quarter results in April, combined with an 8% decline year over year in earnings estimates caused by the strengthening of the U.S. Dollar and the oil price decline. In addition, oil & gas (approximately 19% of Pentair's sales) trends remain volatile, particularly in upstream applications where management sees continued project delays and incremental pressure from declining oil prices. Moreover, power (5% of sales) and mining (3% of sales), demand trends remain weak.

Zacks also reports that in the Valve & Control segment, orders were weak and backlog declined 4% year over year following a 7% decline in the fourth quarter. Core orders declined 15% and total orders declined 22%, including negative foreign currency translation, as orders dipped across all four industries in the quarter. The company does not expect orders to improve during 2015 since projects are being released at a slower pace owing to the global economic uncertainty and low inflationary environment as project owners are taking more time to adequately review costs and risks. Valves growth will likely be under pressure in 2015.

> Overall, the ACI industry is holding its own and outperforming the Dow...

Pentair's largest vertical, Industrial, representing roughly 29% of sales is expected to register a 4% to 6% decline in sales in 2015 due to slowdown in global capital spending. The infrastructure vertical, which accounts for less than 10% of Pentair's overall sales, is projected to be 1% to 3% in 2015.
Overall, the ACI industry is holding its own and outperforming the Dow, with some companies thriving, even though oil prices continue to be sluggish and the currency situation is painful and detrimental to the bottom lines of many. As the roller coaster ride continues, those with the foresight to move into areas less impacted by the current hurricane that is sweeping the economic and financial landscape will be the ones who survive. Those who cannot adapt will become candidates for buy-outs, takeovers and bankruptcy.



Enhanced water cleaning

Researchers at the University of Southampton are promoting 'StarStream', a new method of cleaning using low volumes of flowing cold water, which is enhanced using ultrasonics. No cleaning detergents or additives are required. Power consumption is very low, and flow rates are typically 2 litres/minute: the technique is particularly useful for cleaning out grooves or cracks. It can be used for cleaning hands, instruments, including surgical instruments, and is superior to ultrasonic cleaning baths, where the liquid can become a 'contaminated soup of bacteria'.

During testing on a steel plate, StarStream reduced the number of a specific micro-organism, Pseudomonas aeruginosa, by 10,000 fold. This equates to a four log reduction. A prion-specialist lab took delivery of a commercial StarStream unit in 2013.

The patented ideas have now been developed and commercialized by Ultrawave Ltd, a UK manufacturer of precision ultrasonic cleaning systems.

Collaboration partners, with microcleaning and critical cleanliness requirements, are now sought by Southampton University, to develop new ways of employing this technology. In comparison to power/pressure washers, it produces far less aerosol and therefore reduces the risk of secondary contamination through droplets.

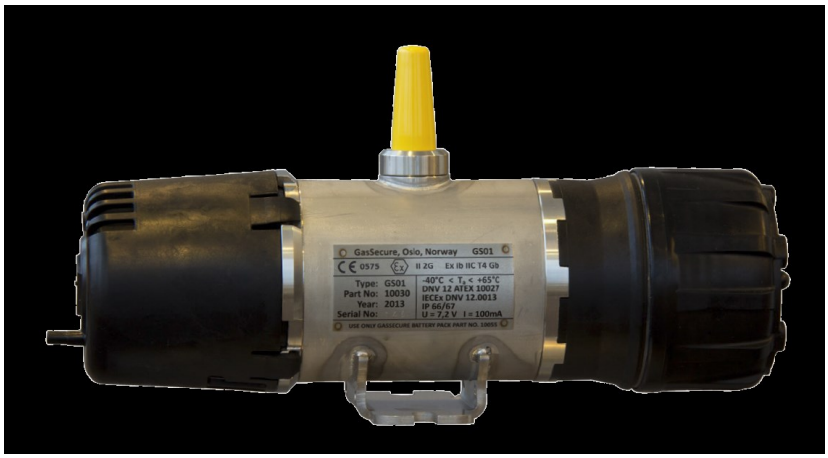
Important potential applications are for cleaning without dismantling, or clean in place duty, in the nuclear industry, or in biomedical labs.

GasSecure Achieves SIL2 Certification for GS01 Wireless Gas Detector from exida

GasSecure has announced that they have successfully secured third party Safety Integrity Level (SIL) 2 certification for the GS01 wireless gas detector.

GasSecure, a Norwegian company, was recently acquired by Draeger, as reported in a previous issue of the INSIDER.

After months of detailed assessments the GasSecure GS01 wireless hydrocarbon gas detector was recently certified by 3rd party assessor Exida as SIL 2 capable for use in Safety Instrumented Systems per IEC 61508 : 2010 Parts 1-7.



GasSecure GS01 Wireless Gas Detector

Going further the assessment also supports the use of PROFIsafe communications to allow a fully certified SIL 2 loop to a control system which is a world first for a wireless gas detector.

Achieving SIL 2 means that the GasSecure GS01 is now proven as suitable for use in safety system executive actions such as shutdowns. This opens up a whole new group of applications in process safety systems where users need the certainty that the device will meet their requirements in a Safety Integrated Function.

Commenting on this capability, GasSecure CEO, Knut Sandven stated; "We have many clients that have been waiting for this certification as it allows them to use the GS01 in their safety critical applications onshore and offshore".

GasSecure believes that achieving SIL 2 per IEC 61508 will give any user the confidence that the GS01 has been thoroughly assessed as reliable.

This confidence, according to the GasSecure literature, naturally extends to use in non-SIL systems such as monitoring and indicating the presence of hydrocarbon gases.

As part of the assessment it was determined that proof test period could be extended from 1 year to 2 years and stands as a testimony to the stability and reliability of the GS01 technology.

Commenting further on the achievement Mr Sandven said; "After years of developing the world's first truly wireless gas detector, and successfully bringing it to market, proving SIL 2 capability is recognition of the experience, knowledge and determination of the whole team."

All clients will now be able to use the GasSecure GS01 and benefit from the potential of a wireless system to dramatically reduce project costs, shorten and simplify the design process and achieve a flexible installation that is simple and cost effective to expand in the future.

Research on Sensors and Signal Processing

An Academic Industry Meeting day (AIMday) in Sensors & Signal Processing, is being planned at the University of Edinburgh, for companies looking to find an innovative solution to challenges in this technology area.

Sensors & Signal Processing is a key area of expertise at the University: questions about relevant industrial problems submitted in advance will be discussed, each for a one hour period, on the day, by several groups of academic experts. They will outline several possible pathways to a solution to the problem posed: in the past these AIMday events have proved successful in establishing collaborations and identifying new solutions to challenges facing industry today. Companies and suppliers within this sector are increasingly looking to R&D to extend their existing products and to reach into new markets. The multiple discussions throughout the day will allow companies to assess the strength and depth of expertise at the University of Edinburgh in several areas of sensor and signal processing technology.

While the AIMday will not take place until 7th October 2015, to submit your questions for consideration for discussion on the day, the deadline is Friday 17th July.

Please submit these via the AIMday website, www.aimday.se/sensors-edinburgh-2015/

HONEYWELL AND INTEL SECURITY TEAM TO SECURE CRITICAL INFRASTRUCTURE AND INDUSTRIAL INTERNET OF THINGS

Honeywell Process Solutions (HPS) and Intel Security (what was formerly McAfee) announced during the Honeywell User Group Americas meeting that they will collaborate to help bolster protection of critical industrial infrastructure and the Industrial Internet of Things (IIoT). Intel Security's McAfee technologies will be integrated with Honeywell's Industrial Cyber Security Solutions, providing Honeywell customers with enhanced security software to protect their control systems from malware and misuse.

Intel Security Technologies to be Integrated into Honeywell's Industrial Cyber Security Solutions for Process Control

HPS is a leader in the industrial automation space, and was one of the earliest adopters of a proactive cyber security posture. It was an early adopter of ISAsecure cyber security methodology from the ISA Security Compliance Institute, and its Industrial Cyber Security Solutions group has a dedicated global team of industrial cyber security experts that provide products, services and technologies to help protect industrial automation and control systems against cyber threats. The collaboration between Intel Security and HPS will combine the latest advances in cyber security technology with Honeywell's unique industrial process domain knowledge to provide tailored security solutions for the industrial environment.

Jeff Zindel, global business leader for Cyber Security at HPS

"The threat of cyber attacks on industrial and critical infrastructure targets is growing rapidly and our customers are demanding effective cyber security to assist them in protecting their assets and people. Working with Intel Security expands our capabilities to enhance the availability, reliability and safety of customers' industrial control systems and plant operations," said Jeff Zindel, global business leader for Honeywell's Industrial Cyber Security Solutions group. "Our collaboration with Intel Security will enable integrated, validated solutions for our industrial process customers to more rapidly deploy and better protect their investment. This approach is critical to enable the productivity potential of Honeywell automation solutions and the Industrial Internet of Things."

The growing threat of cyber attacks to industrial targets is a major global concern according to a global survey on cyber security conducted by Ipsos Public Affairs in September 2014 on behalf of Honeywell. Two-thirds of those surveyed thought that the oil and gas, chemicals and power industries were particularly vulnerable to cyber attacks. This survey was covered extensively in the April issue of the INSIDER.

Initially, Honeywell will qualify Intel Security's Application Whitelisting and Device Control with its own proprietary cyber

Major board plant modernization

Stora Enso, Finland and Europe's largest pulp, board and paper manufacturer, will use process automation, safety system and manufacturing optimization technologies from Honeywell Process Solutions to modernize one of its key mills and help it meet rising demand for renewable packaging board. This project is part of the modernization and optimization effort at their paper mill in Varkaus, Finland, which will convert the facility to produce kraftliner, a virgin-fiber-based containerboard.

"Stora Enso's business objective is to produce and deliver the highest quality paper and board products in the world, and Honeywell's portfolio of technologies will help them reach this goal safely, reliably and efficiently," said Ali Raza, vice president, HPS. "We have worked with Stora Enso for about 40 years and I am pleased that Honeywell can help them modernize this facility." HPS is a major supplier of automation and control technologies to the paper industry in more than 2,000 sites worldwide.

Honeywell's VP Ali Raza

The installation will migrate the previous control system to Honeywell's Experion PKS, , and includes integration of process safety data and systems using Honeywell Safety Manager. The OptiVision MES will also help plant operations: this is designed to help pulp and paper companies and flat sheet manufacturers address critical issues determining profitability.

Honeywell and Intel (continued)

security for its Experion Process Knowledge System, providing a fully vetted and qualified solution designed to increase security without sacrificing reliability.

Honeywell is also offering Intel Security's Enterprise Security Manager and Next Generation Firewall to its customers. The products will be supported by Honeywell's Industrial Cyber Security Risk Manager, which provides a continuous evaluation of cyber security risks within industrial environments.

> **"Technologies in the IIoT space have a tremendous amount of potential, and we can't let security concerns undermine that; instead, security has to enable the growth of IIoT..."**

The McAfee Application Whitelisting maintains system integrity by allowing only authorized code to run. McAfee Device Control allows users to specify and categorize what data can and cannot be transferred to various plug-in devices.

The Honeywell qualification of Intel Security's Application Whitelisting and Device Control is a tangible result of this strategic relationship.

The benefits from the integration include:

- Tested, proven and validated protection from known and unknown malware threats against systems using Experion Process Knowledge System.
- Consistent protection for both connected and air-gapped systems with no addional need for signature updates.
- Change Policy Enforcement so that system changes are made according to authorized policy and process.
- Integrated management and analysis of cyber security risk using Honeywell Industrial Cyber Security Risk Manager.
- Ideal for isolated systems within industrial control systems, this solution is designed to work without having access to the Internet or any other network.

Intel Security CTO Raj Samani

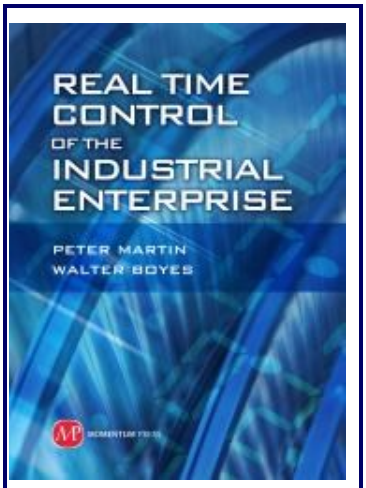
"Protecting our critical infrastructure and the emerging IIoT from cyber threats is a priority, and the collaboration of two industry leaders will go a long way toward that goal," said Raj Samani, vice president and chief technology officer, Intel Security. "Technologies in the IIoT space have a tremendous amount of potential, and we can't let security concerns undermine that; instead, security has to enable the growth of IIoT, and that's what our engagement with Honeywell will do."

In addition, see the Editorial in this issue for further comment.

Ex d Thermostat with remote control

Quintex GmbH have developed and produced a new electronic thermostat contained in a flameproof Ex d type enclosure that can be fully controlled via an infra-red remote control without having to open or switch-off the unit. This overcomes a common problem for engineers trying to adjust electronic type controllers located in hazardous area environments: normally the power supply is required to be switched-off, before opening the flameproof enclosure housing – a procedure that makes accurate setting on site a near impossible task.

The Quintex EXTC 100 electronic temperature controller in an Ex d housing solves this problem. The unit is adjusted by means of an intrinsically safe remote control, using an infra-red beam communication. All settings are securely kept and stored, only being accessible via a 4-digit password, and are fully legible through a large inspection window, with the operating and actual temperature set points being displayed simultaneously. Detection and sensing are carried out with 'Ex' type PT100 temperature sensors. Electric trace heating circuits or other heating systems can be directly connected and operated via the 16A switching capability of the controller. Quintex released this product at ACHEMA in Frankfurt, 15-19 June.



SMART MANUFACTURING? INTERNET 4.0? READ THE BOOK!

In the last fifty years, almost all of the productivity gains in manufacturing have come from better automation and control of the processes: continuous, batch, hybrid, and discrete. The secret to sustainable manufacturing is better control. So, why aren't the theories that have led to enormous gains in productivity being used above the plant level? This book explains how better controls can be applied to the supply chain, and to enterprise financial management. It provides managers the insight and tools for achieving a fully integrated automated manufacturing enterprise, from the technical side to the business management side. It is helpful to anyone seeking to bring the non-technical parts of a manufacturing operation in line with the already automated production, inventory management, and plant management. The book is available from www.momentumpress.net, Amazon and other retailers.

Siemens Closes Deal For Dresser-Rand

Siemens has announced the closing for the transaction to acquire all of the issued and outstanding common shares of Dresser-Rand by way of a friendly takeover bid. Siemens bid is unanimously supported by Dresser-Rand's Board of Directors. Siemens will pay all Dresser-Rand shareholders US$85.20 per share. The purchase price comprises the offer of US$83 per share plus a time-dependent ticking fee totaling US$2.20 per share for the months of March to and including June 2015. The overall consideration for acquiring all outstanding Dresser-Rand shares including the assumption of outstanding financial debt of US$1.2 billion is about US$7.8 billion.

> "As the premium brand in the global energy infrastructure markets, Dresser-Rand is a perfect fit for the Siemens portfolio. "
> —

Joe Kaeser, Siemens CEO

Siemens is financing the purchase price from operating and investing cash flows and with newly issued USD bonds. The shares of Dresser-Rand Group Inc., which is headquartered in Houston, Texas (U.S.) and Paris (France), are currently listed on the New York Stock Exchange (NYSE). This listing is to be discontinued as of July 2015.

Dresser-Rand's business – together with Siemens' compressor unit and the related service business – will form a new Dresser-Rand unit within Siemens Power and Gas Division with a primary focus on the oil and gas industry. Dresser-Rand's current CEO, Vincent Volpe will lead the business through the initial integration phase. Starting September 1, 2015, Christopher Rossi, 28-year veteran of Dresser-Rand, will take over the CEO position at the new business. Siemens manager Heribert Stumpf will serve as the unit's CFO. Siemens is anticipating annual synergies of about €200 million from the integration of Dresser-Rand by 2019. As a world-leading supplier for the oil and gas industry and for distributed power generation, Dresser-Rand generated revenue of around US$2.8 billion in fiscal 2014 and had about 7,900 employees. The well-established brands from Dresser-Rand's portfolio will be continued. The acquisition complements Siemens offerings with rotating equipment for oil & gas and industrial applications. Applications covered are high-pressure field injection and oil recovery, gas liquefaction, gas transmission and refinery processes.

Siemens and Dresser-Rand together have the industry's most comprehensive portfolio of high-speed rotating equipment and services. As Siemens works on product rationalization and new, advanced technologies, the company believes that its equipment solutions will become even more competitive. This merger combines two highly complementary businesses to create a leading world-class supplier to the oil and gas industry. With its expanded capabilities and comprehensive offering, the new business will focus on serving customers with applications for Offshore Production, Onshore Production, LNG, Pipelines, Air Separation, Chemicals, Industry and Refining / Petrochemicals.

THE WAY I SEE IT
Editorial

And How Do We Get Cyber Security Traction?

At Honeywell User Group Americas in June, I was speaking with Raj Samani, vice president and chief technology officer, Intel Security (what used to be McAfee). He was nearly in despair over the fact, borne out in recent surveys, that fewer than 35% of individuals and companies are adequately protecting their assets via cyber means.

Samani reported on the work he has done in bringing down botnets with Europol and the Dutch Cyber Security Authority in his keynote at HUG. He disclosed how many computers were involved in the beebone botnet, and how many *new* ones, even after the hack has had significant publicity for months and a patch has been made available, that are infected every day.

I pointed out to Samani that the problem is one of motivators and blockers. While intellectually nearly everyone cares that they might be hacked and damaged, they are blocked from doing so by the emotional weight of the necessary overhead.

Overhead? Yes. In the traditional model of cyber defense, we use a combination of defense in depth, defense by design, and social engineering to make sure that we are protected. Yet, as the number of nodes in the networks continue to increase, as they will with the Industrial Internet of Things, the threat surface increases exponentially, increasing the amount of overhead dedicated to cybersecurity, that would otherwise be dedicated to actually doing our jobs. It is pretty clear that we are not going to be able to afford the amount of overhead necessary to defend ourselves adequately in the coming Internet of Things Age.

But from the metaphor of infection that we have always used comes the potential for a new metaphor for how cyber security should work.

This is absolutely terrifying. Since the coming currency is going to be data and analytics, if you aren't terrified about letting criminals and not-very-nice nation states into your data for free, you are deaf, dumb, and blind.

But from the metaphor of infection that we have always used comes the potential for a new metaphor for how cyber security should work.

The auto-immune system of all animals works on the basis that at least 90% of invasive agents (bacteria, viruses, pollen, mold, and so forth) are regularly taken care of automatically by the phages that inhabit our bodies. We are constantly bombarded by attempted infection by bacteria, et al., and most of the time, our immune systems take care of it, without any notice or need for overhead from us. It is only in the last 10% or so of invasions that we notice, because we have symptoms due to the infection. We are sick, so we stop and employ additional treatment.

If we were to look at cyber security the same way, we would be designing systems that would defend us automatically against the 90% of attacks, and we would only have to deal with the 10% our cyber-immune systems can't handle automatically.

It isn't going to be easy to transition to such a design metaphor, but it will sure as heck be easier to do that than to turn everyone in the world into cyber security authorities.

Let's think about this as we rush headlong into the Industrial Internet of Things, Big Data, and Big Analytics. After all, we know it is going to be a problem already, so we should know that we have to provide a good solution.

If we don't, we may find that, despite the incredible potential of the IIoT, we may not be able to implement it.

Comments? Talk to me!
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Read my Original Soundoff!! Blog:
http://waltboyes.livejournal.com

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Rajabahadur V. Arcot: Who will rule the world of the Industrial Internet of Things?

The technology world is all excited about the new era of manufacturing and how Industrial Internet of Things (IIoT) in conjunction with advanced analytics and cloud computing will play a transformative role in redefining manufacturing.

The report, "The Industrial Internet of Things – IIoT Report," McRock Capital, a dedicated Industrial Internet of Things (IIoT) venture capital fund, says that "The Industrial Internet of Things is the next wave of innovation impacting the way the world connects and optimizes machines. The IIoT, through the use of sensors, advanced analytics and intelligent decisioning, will profoundly transform the way field assets connect and communicate with the enterprise."

The report "Industrial Internet of Things: Unleashing the Potential of Connected Products and Services" prepared by World Economic Forum (WEF) in collaboration with Accenture says that "in the next 10 years, the Internet of Things revolution will dramatically alter manufacturing, energy, agriculture, transportation and other industrial sectors of the economy which, together, account for nearly two-thirds of the global gross domestic product (GDP)."

Technology companies in the lead

There is a big push from some of the technology firms such as Cisco, Google, IBM, Microsoft, and others in positioning IIoT or Cyber Physical Systems along with advanced analytics and cloud applications as the technologies that will propel manufacturing to achieve greater degree of industrial enterprise connectedness and autonomous operation.

Technology companies, seeing a great future in IIoT and its transformative power, are vigorously positioning themselves as thought leaders in this space so as to capitalize on this emerging business opportunity; IBM's Smarter Planet initiative which includes smart grids and smart cities among others is a good example of how these companies are forging ahead to become leaders in leveraging IoT, advanced analytics and cloud.

> **"in the next 10 years, the Internet of Things revolution will dramatically alter manufacturing, energy, agriculture, transportation and other industrial sectors of the economy which, together, account for nearly two-thirds of the global gross domestic product (GDP)."**

Their pronouncements that massive economic expansion would result from IIoT deployments have created euphoria. Accenture estimates that IIoT could add US$14.2 trillion to the global economy by 2030 and says that there will be significant gains for the real gross domestic product (GDP) of mature economies.

These companies are investing in expanding their footprint in IIoT space, coming together to form alliances, and pursuing acquisition opportunities.

Recently, IBM announced that it will invest $3 billion over the next four years to establish a new Internet of Things (IoT) unit. The company is also building a cloud-based open platform designed to help clients and ecosystem partners build IoT solutions. [see coverage in the INSIDER April 2015 Cover Story.]

The *Industrial Internet Consortium (IIC)* is an open membership organization with over 160 members from numerous countries, formed to accelerate the development, adoption, and widespread use of interconnected machines and devices, intelligent analytics, and people at work. Companies such as AT&T, Cisco, General Electric, IBM, and Intel have funded it.

Rajabahadur V. Arcot: Who will rule the world of the Industrial Internet of Things? (continued...)

The *Open Interconnect Consortium (OIC),* with Intel and Samsung Electronics as lead members, aims at developing standards and certification of IoT devices involved.

Apart from creating consortia, some of the companies have been pursuing acquisition opportunities. Acquisition of Nest and Schaft Inc. by Google and acquisition of Basis by Intel are some recent examples.

Additionally, the Industrial Internet is attracting increasing levels of venture capital. The WEF report "Industrial Internet of Things: Unleashing the Potential of Connected Products and Services" points out that "large corporate venture funds, such as GE Ventures, Siemens Venture Capital, Cisco Investments, Qualcomm Ventures and Intel Capital" are primarily providing the venture capital funds for IIoT startups. In my belief, as the trend evolves and the IIoT outlook reaches the inflection point, one can safely expect some big ticket acquisitions.

"ever since the development of microprocessors and network-based instruments — companies in the process industries such as oil and gas, chemicals, refining, pharmaceuticals, manufacturing and mining have been avidly exploring how to use sensors to make their processes more reliable, efficient and safe."

Connectedness is important but the crux is seamless communication

The Internet Protocol IPv6, the backbone of IIoT, provides extreme ease of connectivity that the proponents of IIoT are leveraging to achieve enterprise's connectedness. Industrial companies have recognized for long that seamless flow of information along the value chain and between operations management systems such as DCS, PLC and such others and enterprise management solutions such as enterprise resource planning, supply chain management, sales resource management, customer resource management, and enterprise & plant asset management, manufacturing execution systems would facilitate effective collaboration among all the stakeholders and thereby help them to achieve business excellence. While, ensuring ubiquitous connectedness may be an important step, achieving seamless communication is critical and requires further initiatives.

Emerson's Peter Zornio

Excellent track record of automation companies

Peter Zornio, Chief Strategic Officer, Emerson Process Management highlights, in his article in Forbes, "Internet of Things? We've been doing that for 25 Years," that "ever since the development of microprocessors and network-based instruments — companies in the process industries such as oil and gas, chemicals, refining, pharmaceuticals, manufacturing and mining have been avidly exploring how to use sensors to make their processes more reliable, efficient and safe."

They have been in the forefront in integrating very large amounts of data to aid better decision-making and have developed and offered control systems such as DCS, PLC, and SCADA that met the requirements. They conceived, designed, and offered control systems that addressed industries' need for actionable information. While the systems worked more or less independently, they collected, analyzed, and processed information from numerous sensors and transmitters very efficiently on real-time basis. Automation companies have pioneered such systems that industrial companies extensively use.

For example, around 1975, Honeywell, the company which then was also a leading player in the computer domain, and Yokogawa introduced the first DCS systems. Honeywell was also the company that introduced smart transmitters around 1983. Foxboro, another leading control system company then went a step further and around 1987 it introduced Intelligent Automation (I/A) series DCS systems, which extensively used personal computers to develop applications and test them offline. It was the first open control system that leveraged standard technologies and object oriented programming.

Control system companies also were in the forefront in developing and introducing communication protocols including wireless to

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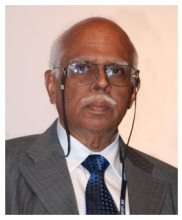

Rajabahadur V. Arcot: Who will rule the world of the Industrial Internet of Things? (continued)

link field transmitters with PLCs and DCS.

However, as industrial companies began investing in enterprise solutions such as ERP, SCM, MES, and PLM, the need to integrate them with control systems was felt. If control systems can communicate with enterprise solutions then greater value can be achieved was a later thought.

In response to that recognition, concepts such as Computer Integrated Management (CIM) and machine to machine (M2M) integration evolved.

Over the years, many companies have implemented them successfully using fieldbus and other standards to connect and communicate control systems with interoperable sensors & devices and OPC standards (Open Platform Communications) for application-to-application integration. End users, suppliers, and standards organizations have worked diligently over many years in developing the appropriate standards.

Additional challenge is in ensuring cyber security to the connected enterprises and this needs to be addressed on priority.

Who will overcome challenges and rule the world of IIoT?

If IIoT has to become a reality, similar if not greater efforts would be required to develop communications and interoperability standards.

Additional challenge is in ensuring cyber security to the connected enterprises and this needs to be addressed on priority. Achieving backward compatibility with existing systems is yet another serious issue. Resulting from cyber security challenges, industrial companies are turning cautious about connecting their systems to the Internet.

Presently the Internet architecture is a great platform to achieve connectedness but we have to go miles for it to become secure and a seamless collaborative platform and thereby it can live up to the promise.

Joining the IIoT bandwagon are some of the major consulting companies such as Accenture and McKinsey and they are beginning to lend credence to the transformative force of IIoT *aka* Industry 4.0. They are writing numerous reports about the great future that IIoT can herald.

The push from technology companies does pose challenges to automation companies. The automation companies can rightfully claim that they have been supplying interoperable and collaborative systems and that IIoT concepts are only extensions of what they have been supplying over the last 25 years. But to remain leaders, automation companies have to go beyond staking claims.

Technology companies have deep pockets, the ability to influence key decision makers and are determined to succeed. It is time for automation companies to revisit their positioning strategies.

Automation companies still continue to enjoy one big advantage and that is their successful track record in leveraging emerging technologies to build and offer plant level automation systems. It is time again for them to prove that they will continue to remain leaders in the coming era of IIoT. Their main challenge is probably in convincing themselves.

We are proud to announce the appointment of Rajabahadur V. Arcot as Director Asia Operations for Spitzer and Boyes LLC, the publisher of the Industrial Automation INSIDER. Contact him at **rajabahadurav@gmail.com.**

Spitzer and Boyes LLC is a technology consulting firm providing expertise in marketing, social media, M&A activity, technology transfer, and strategic advice to companies in technology fields such as automation and control system vendors, system integrators, distributors, and end users and asset owners.