

INSIDER

INDUSTRIAL AUTOMATION & PROCESS CONTROL

VOLUME 19
NUMBER 2
ISSN2334-0789
February 2015

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INSIDER HealthWatch
INDUSTRIAL AUTOMATION & PROCESS CONTROL

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Your key to the latest industrial automation and process control information

Alphabet Soup: ARC Forum, GE Oil and Gas, ABB Automation and Power World -The INSIDER Reports

The Insider is being published somewhat later this month because we felt it was important to get the information on the ARC Forum in Orlando and the GE Oil and Gas meeting in Florence into the magazine.

ARC Forum Sets Interesting Tone



ARC CEO Andy Chatha

The ARC Forum in Orlando, Fla., from February 9-12, had a large crowd, interesting presentations, and some press conferences of note, but, as always, the interesting stuff was in the hall, in the exhibit room, and the restaurants. ARC's Forum is legitimately the only neutral space left in the automation and controls industry where everyone, or everyone who shows up, can meet and discuss the future of the industries served by the automation and controls vendors.

The theme for the Forum, "Industry in Transition: The Information-driven Enterprise for the Connected World," seemed to connect with the participants and there was significant interest in the future of the Industrial Internet of Things, and connectivity from the plant floor to the enterprise, and from the supply side to the distribution side of the supply chain.

But there were some interesting things happening that were under the radar. There was a good deal of whistling past the graveyard about the impending effects of the oil price crash on automation and controls projects in the Oil and Gas sector. Most of the people we talked to said they figured the price of oil would be back to \$90 a barrel by December, but nobody could really give good reasons why that might be so. Several vendors privately said that they'd been the victims of order delays and cancellations already, and more were likely. We pointed out that the INSIDER's Industry Health Watch had predicted trouble coming last year, at least two months before the price crash.



Takashi Nishijima, Yokogawa President and COO

Unlike past years, very few top executives from the major automation vendors were in attendance, with the exception of Takashi Nishijima, the COO of Yokogawa Electric, who attended at the last minute to preside over a celebration of Yokogawa's 100th Anniversary as a company. Yokogawa announced that they would begin shipping their Centum VP v6 by mid year to a "large Asian oil company."

Emerson was notably absent, except for the attendees at the side meetings, like standards and the FDI meetings. Siemens, which spon-

Cover Story: Alphabet Soup (continued)

sored the evening entertainment at Epcot, didn't have many senior executives, nor did Schneider.



Greg Bentley, CEO Bentley Systems

There were some interesting things at the obligatory press conferences this year, as Greg Bentley from Bentley Systems showed some incredibly novel ways to make 3D visualizations of plants, using ultralight aircraft and drones with standard digital cameras. This works better than point cloud technologies.



Honeywell Unisim 3D Connect

Then Honeywell showed their Unisim 3D simulation technology, which could marry Bentley and produce video game children. I had seen the Unisim 3D Connect technology last year in Houston, but it was still cool to see it and see the hard-bitten press ooohing and aaahing over it.

New products from PAS, GE, and for the first time, Bedrock Automation were big draws in the exhibit room. It was entertaining to watch the M&A people from the major vendors circling Bedrock like polite vultures.

—Walt Boyes

GE Oil and Gas Meeting in Florence

GE Oil and Gas had their annual meeting and customer conference in Florence at the



President and CEO Lorenzo Simonelli

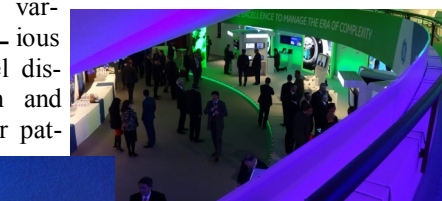
end of January. GE Oil and Gas, within GE, seems to be the main regular supplier of PR to the **INSIDER**, and somewhere within this part of GE there lurk the Measurement and Control businesses acquired over the years - like Druck, Panametrics, Bently Nevada.



Palazzo dei Congressi, Florence Italy

But I was looking for the peripherals, the automation and control aspects.

The event was held in the Palazzo dei Congressi, an impressive theatre and Congress centre in the middle of Florence. The delegates were welcomed by Lorenzo Simonelli, President and CEO of GE Oil & Gas, and over 1000 people listened to his 15 minute address, starting at 0830 on the Monday morning. Subsequent speakers were from industry leaders such as PEMEX, Statoil, US EPA, ExxonMobil, with



GE Exhibit Area

various similarly composed panel discussions. The afternoon and Day 2 followed a similar pattern, with some added break-out sessions on specific topics.

There was surprisingly little in the way of GE applications or developments to report from the presentations, it was more a discussion about the future production and supply of oil and gas.

Around the foyer, and outside the building, were various examples of GE solutions and technology: for example the Safire flowmeter, a development in collaboration with Chevron, which is reported later. There was no other apparent input from Chevron to the conference programme. The 'nodding donkey' outside, ie the Lufkin

Beam Pumping Unit, showed off one of the most recent GE company acquisitions, but there was no physical presence for Druck or Bently Nevada.



GE Oil & Gas

From GE Power and Water, a new membrane development on display, the SWSR Series, can treat any water used for well injection to remove sulphates, hence reducing well scaling and souring. The membrane also removes suspended particles, bacteria, pyrogens and colloids, but allows transmission of sodium chloride, so reducing the work needed to be done by the membrane, and the re-

Cover Story: Alphabet Soup (continued)

quired operating pressure.

Offshore and Marine Business

Having developed increasingly compact packaged power and other systems for marine and offshore use, not only on FPSOs and platforms, but for supply to other cruise ships and freighters, GE has established GE Marine. This brings together the packages for power, switchgear, compressor systems, motors and drives used and needed by marine customers.

With the packages available having their own embedded control systems, within the module, communicating with the central control system, the latter is becoming more of a SCADA display system and requires less complexity. Indeed by using SmartSignal and the Proficy Monitoring and Analysis Suite of software quoted previously, the whole marine shipboard environment can be monitored on a safe, portable device, which can identify and locate equipment that needs attention, and provide the information needed by the operators at the scene. Not only can the device offer pictures and instructions as to how to make changes or repairs, it can be used as a communication tool to discuss any problem areas with shore based experts, or equipment manufacturers. The portable device, or laptop, will also note the actions taken on the equipment record. GE developed this approach and technology initially out of work on an electronic damage control and recovery system for naval vessels, but are now extending the ideas into use on FPSOs, drilling rigs and offshore platforms.

From the Global, to the Detail

Meanwhile, do you remember the business right down at the bottom end, that used to be called Bently Nevada? They make the base sensors for vibration and displacement, monitoring the shafts and bearings of the pumps, turbines and compressors, that all this Proficy Monitoring and Analysis depends on. They also make the frequency analysis systems that do a lot of the finer prediction work to show exactly what is going wrong where, based on this measurement data. Probably a lot of their B-N 'System 1' software is incorporated in the SmartSignal software suites that are now on offer.

One of the press releases issued by GE Oil and Gas, in the Florence meeting this month, advised that in a deal struck with Meridium Inc, the Meridium Asset Performance Management (APM) software is to be incorporated within the Bently Nevada System 1 condition monitoring and diagnostic applications software, to introduce "Production Asset Reliability" (another re-arrangement of the same words). This does seem a little like the sensor department making a bid for independence from the big software system, but on the other hand it parallels a move made by their competitor CSI, via their parent company Emerson some 6 years ago: the Emerson PlantWeb AMS Suite Asset Portal is also powered by Meridium APM software. Maybe the customers asked for this capability, even from their own in-house simpler systems.

Service deal with QAFCO

GE also announced a six year service agreement with the Qatar Fertilizer Company to service and repair the power and compression equipment installed on site at the QAFCO Masaieed facility, which comprises 6 gas turbines, 33 centrifugal compressors, 17 steam turbines and 16 centrifugal pumps.

—Nick Denbow

ABB Automation and Power World 2015— Free Admission and Disco Too



Spieshofer

After cancelling A&P World in 2014, and then attempting to replace it with a "virtual" user group meeting, ABB is once again holding their twin user group meeting. Both the automation user group and the power user group will meet simultaneously in Houston at the George Brown Convention Center from March 1-5.



Sullenberger

Keynote speeches will be given by Ulrich Spieshofer, ABB CEO; Alan Mulally, retired CEO of Ford and former President of Boeing Commercial Division; and Chesley B. Sullenberger III, the hero pilot of the "Miracle on the Hudson."



Mulally

The preliminary publicity for the event promises daily industry forums designed to facilitate peer-to-peer dialogue and problem solving of challenges and issues unique to each industry: chemical, oil & gas; manufacturing; marine; metals; mining & minerals; and pulp & paper, along with luncheon keynotes, sponsored by Microsoft, featuring Norm Judah, CTO of Microsoft Services, on the Internet of Things and Mike Quinn, General Manager of Cybersecurity and Data Protection for Microsoft Enterprise and Partner Group, on cybersecurity—as well as nearly 350 educational workshops, forums, panel discussions and hands-on training courses, developed around applications and best practices, offering the opportunity to earn professional development hours (PDHs) for each one you attend.

ABB promises a free ARC white paper, "Overcoming Automation Challenges," at the ARC booth, which is advertised as a \$2500 value.

There will be entertainment by Kool and the Gang.

The capstone of the revitalized event is that admission is free.

—Walt Boyes

GE Has a Busy Month

GE has a busy month



GE's Roadshow at the Ark

Over the last month, GE in Europe has had a busy time. In the last week of January there was the GE European Roadshow, organized by GE Intelligent Platforms, discussing and demonstrating how the use of Industrial Big Data can be used to improve enterprise profitability. This half day Roadshow kicked off in London, and travelled round major European cities such as Paris and Milan: it seemed to be bringing the message previously broadcast in the USA at the GE IP 2014 User Summit in Orlando in October, which

was entitled “Making the Industrial Internet Real”.

Then early in February the regular GE Oil and Gas Annual Meeting and Customer Conference in Florence welcomed well over 1000 guests from the industry to listen to some of their major leaders speak on the future for oil and gas companies, and to see some of the latest GE Oil and Gas technology in the associated exhibition.



GE's Brian Courtney

GE+IP European Roadshow

The message here followed the theme evident from the many GE+IP press releases that can actually be found on their website, and trumpeted at the October Orlando meeting, which announced the launch of a new version of the Proficy Monitoring & Analysis Suite (PMAS), integrating the industrial data historian, Proficy Historian, with the advanced analytics capabilities of Proficy SmartSignal. The new offering was also said to utilize the GE Predix software platform for working over the Industrial Internet. Brian Courtney, General Manager of the GE Industrial Data Intelligence product group was there reported to say: “The Industrial Internet is all about gathering much more data, Industrial Big Data, more efficiently and over longer periods of time, and using Advanced Analytics to interpret this data in more meaningful ways. PMAS brings this to life to help customers collect, organize, and analyze equipment and process data to maximize productive output and lower operating costs,

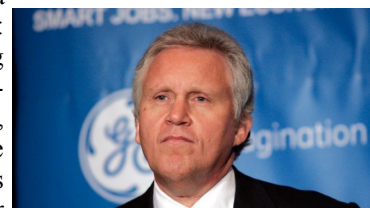
with fast payback and low risk.”

GE is a many fingered megalith, and their interest in collecting and processing the data comes basically from needing to monitor their own power plants – they produce 30% of the power in the world, employ 307,000 people, and sell a lot of “Big Iron” - like turbines, compressors and pumps - which cost a lot of money to repair. So they needed to monitor these assets, to avoid downtime and breakdowns - and bought a few companies, like Bently Nevada and SmartScan - and set up some monitoring centres. Because the operation of these centres has been proven on their own sites, GE can offer a proven service to their “Big Iron” customers from these centres, or can set up a monitoring system using PMAS for use in-house by the customers.

The idea here is that the centres collect data from any style of supply, or historian - they are vendor agnostic. The software processes the data and highlights trends, where such trends might have been seen before, so working off experience maybe at other plants, or noting trends not seen before, as unusual. The analyst in charge of each site monitoring system discusses all noted trends with his contact on site, maybe weekly, and areas of potential concern can be highlighted.

The business aspects

A quote attributed to Jeff Immelt, the GE Chairman and CEO, was that this business transition was like “You go to bed as an industrial company, and wake up as a data and analytics company”: the approach is that by using “The power of 1%” in continuous performance improvement, the business efficiency gains are enormous. As a result of this thinking GE has invested over \$1Bn in a software centre of excellence in San Remo, California, and this centre acts as a hub and interface to all the other development projects within GE.



GE's Jeff Immelt

Many of the clients who use this software, and analytical service, are triggered into the action because there has been a catastrophic breakdown, with significant consequential costs. Others have already been convinced, and want to run the system themselves, in-house. In the latter category was Total, who have spent 20 years developing their own in-house predictive analytics systems. Despite this, between 2006-10, their offshore systems had 38 breakdowns, mainly compressors and injection pumps. With the help of GE staff they have now implemented a PMAS system in-house, to monitor offshore assets located near the UK, Russia, Argentina, Angola and the Emirates, and have had no breakdowns since start-up in 2012.

GE's Busy Month (continued)



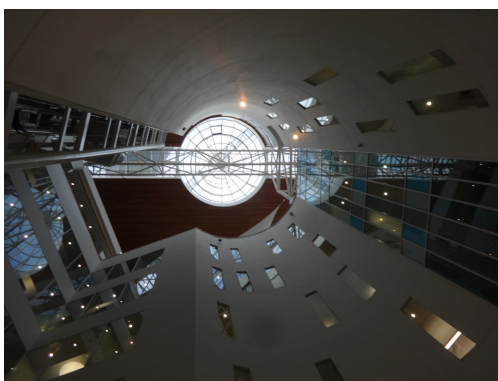
Inside the Ark

Another example quoted was Linde, who run 130 CO₂ plants and 300 Air Separation Units in production, with these plants supplied by four different vendors, capturing performance data in four different ways using separate historians.

All the data is standardised within PMAS and performance can still be compared between plants. The GE monitoring centres are located in Chicago, in Germany, in South Africa and in SE Asia: plus there seems to be a satellite office in Scotland, presumably to enable communica-

tions in the local dialect with the offshore platform operators and wind farm engineers.

GE claim that they work with all the major oil and gas operators, and numerous wind farms and power plants. The extreme case was also quoted, where the same PMAS centre operators also monitor the feeding patterns of cows in a dairy herd, and can indicate to the farmer which cows should be looked at as a result of noted changes in feeding behaviour. Other systems monitor hospitals, from patient waiting times to drug use.



Inside the Ark—Looking Up!

was that GEIP would be split, and this global business of soft-

ware monitoring production efficiencies and potential disruptions would be renamed as the GE Software business.

In London this leg of the Roadshow was held in the GE Oil and Gas building, in the “Ark”, right next to the Hammersmith flyover – an impressive building, much bigger on the inside, as you can see from the photos.

Multi-phase flowmeter from GE

Our last in depth review of ultrasonic flowmeters was reported in the May 2013 *INSIDER*, after the CEESI European conference in Lisbon. This GE event lacked any significant input from GE Panametrics, which was disappointing, as the name used to be synonymous with ultrasonic technology leadership. Around the 1970s and 80s Larry Lynnworth of Panametrics was the name permanently on my inter-library request slips to get first sight of the latest articles about his transducer and flowmeter developments. It seemed Lynnworth had a close working relationship with the US Navy, bound up inside sonar underwater systems, maybe nuclear systems as well.



Larry Lynnworth

After the acquisition of Panametrics by GE, the name and the technology leadership slipped away, and the mantle was taken up by others, like Flexim in Europe, and Caldon in the USA. However it seems that some of the original Panametrics business culture has survived, as in early 2014 GE Oil and Gas announced a formal technology alliance with Chevron Energy Technology, primarily to build on an on-going collaboration between Chevron and the GE Measurement and Control business, which had been developing the GE Safire multi-phase ultrasonic flow meter, then being tested and deployed on Chevron land-based oil well production lines in the western United States.

This product itself had arisen from original work by the Los Alamos National Laboratory, using Swept Frequency Acoustic Interferometry (SFAI), initially developed for oil and gas flow metering in an earlier alliance between just Chevron and LANL. So by this move, GE has leap-frogged back into the business again, and it is quoted that there will be other GE/Chevron collaborative projects.

Rolling out the Marketing?

For the Los Alamos Laboratory it sounds as though the deal is good news politically, with Duncan McBranch, chief technology officer, saying “Los Alamos develops unique technologies



Duncan McBranch, LANL

GE's Busy Month (continued)

for our national security missions and these can have powerful applications for US industry..... As the Chevron GE technology alliance demonstrates, national laboratories can serve an important rôle in connecting different industry partners to strengthen the US innovation landscape.”



A year on from the initial announcement, multiple Safire units are seen pictured and reported as installed on a Chevron



Safire Meters Installed at Chevron

site, and last November the product was awarded a mention in the R&D Magazine's annual R&D 100 awards, as an innovative solution, “a multi-phase flow meter that provides cost-effective, real-time and accurate estimates of oil and water production”.

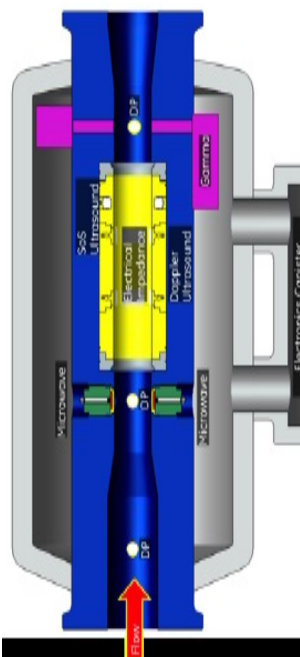
But other than that there still is nothing visible on the GE websites in terms of product information.

There is not much information on the LANL site, either other than the self-congratulatory blurb about winning an R&D100 award. Winning one of those is prestigious, but other than the meters pictured here, we haven't found more.

The question, therefore, is why? Are the terms of the agreement with Chevron that they get to use the meters first, and then they can be sold generally? Or are they not yet ready for

prime time?

In a presentation given in 2012, GE claimed to be constructing a new production line, to be ready in April of 2013, with the capacity of 1100 units per year. Now in 2015, the INSIDER would very much like to see those units in the field.



Safire cutaway visualization from talk given in Kuwait in 2014

Peter Espina, the Global Commercial Leader for the Safire product, attended the GE Oil and Gas Conference in Florence in February 2015: he was previously in a similar role with Controlotron (now also swallowed, but by Siemens).

In a very brief description Espina said that the SFAI technology uses several flow measurement techniques, such as Doppler, Time-of-Flight and Correlation, as well as swept frequency attenuation measurements used to determine the liquid composition.

Whether the Safire can cope with and monitor a gas fraction was not stated. It does seem to offer an obstructionless flow path, and Espina claimed the Safire to be ‘unique’ in being able to correctly monitor and account for reverse flow in the meter.



GE's Peter Espina

Other GE Ultrasonics

GE produces pipeline inspection systems that use ultrasonics to identify and measure Stress Corrosion Cracking (SCC). On display outside the conference venue, this UltraScan CD inspection tool assembly had been successfully used to inspect more than 23.000km of pipeline (approx 20" diameter) around the world, and had identified SCC even in its sub-critical stage. It uses the 45 degree shear wave inspection technique, from the transducers visible on the photo, and can reliably detect cracks, scratches and grooves as short as 25mm and as shallow as 1mm.



GE UltraScan CD

—Nick Denbow, with additional commentary by Walt Boyes

INSIDER Special Report: Steven Las Marias on Rockwell in Asia

Optimizing Oil & Gas Operations

Rockwell Automation participated in OSEA2014 to showcase its integrated information, control, power and safety (ICPS) solutions and demonstrate how oil and gas operators can maximize their assets while reducing operational costs. Stephen Las Marias reports.

Companies operating in the oil and gas industry are seeing weakening profits amid rising production costs and falling crude oil prices. Despite this, industry veteran John Westwood, Group Chairman of analyst firm Douglas-Westwood, said during his keynote at The 20th International Oil & Gas Industry Exhibition and Conference (OSEA 2014) in Singapore on December 2, 2014 that the industry should continue drilling to cope with the world's unquenchable demand for oil and gas.



John Westwood

Westwood noted that offshore development wells need to grow by 17% by 2018 to keep pace with the global demand for oil and gas. He added that despite plunging oil prices, the world continues to burn around 90 million barrels of oil per day—leaving no option but to continue to drill more and more wells.

APAC will dominate global demand

According to the Baker Institute, the Asia-Pacific region will account for about 70% of global oil demand from 2010 to 2020. The burgeoning middle class across the region is driving this demand, resulting in the further exhaustion



Robert Buttermore

of onshore and offshore water reserves. Countries such as China, Indonesia and Australia are developing shale gas and CBM projects in the long term, while the offshore market is characterized by FLNG projects and drilling in both shallow water, as well as deep water, the Baker Institute added.

Robert Buttermore, Regional Director, Southeast Asia, for Rockwell Automation, said the oil and gas industry is still the

leading investment area in Asia-Pacific. “The impact of falling crude oil prices has no doubt slowed the movement of money for major investments across the region. It is important to note that investments to keep operations running are all moving forward, so Opex has continued well. However, Capex has slightly slowed,” Buttermore told *CE Asia* during an interview on the sidelines of OSEA 2014.

“Nonetheless, oil and gas remains the number one investment in the region, accounting for 30% of the regional business. When you look at the investments that are in the pipeline, they are significant and will remain so; dominated by the state-owned national oil companies (NOCs).”

Asia Pacific is also becoming more and more the dominant player in the oil and gas industry because of the shipyards, according to Buttermore. “Almost all offshore vessels—whether we are talking about jackup, drillship, or FPSO—are starting to be built in Asia, especially in South Korea, China and Southeast Asia. Beyond the investments by the NOCs, the shipyards will also continue to propel the growth of the oil and gas industry in Asia,” he said.

Jae Kyu Kim, Oil & Gas Manager, Southeast Asia, for Rockwell Automation, highlighted the importance of EPCs in the region.

“They are getting more progressive and aggressive in terms of positioning in the oil and gas industry,” said Kim. “I think that will continue, and their businesses will continue to grow here in APAC.”

Buttermore agreed, saying that when it comes to multinational EPCs, if there is a project going on globally, there is definitely someone managing that same project in APAC. “The global massive investment projects—all of them run through EPCs in Asia,” he said.

“The impact of falling crude oil prices has no doubt slowed the movement of money for major investments across the region.”

Optimizing costs

One of the key issues facing companies in the oil and gas sector is production costs. In his presentation at OSEA2014, Westwood noted several reasons for this, including increasing technical challenges, over-engineering, and skills shortages.

ages.

“Optimizing the cost of their operations, especially with the slumping oil prices, continues to be oil and gas operators’ top challenge. The second challenge is the vast amount of legacy equipment in the industry, with many companies acknowledging they really need to invest and migrate to new technology, including connecting all the disparate systems,” Buttermore said. “In today’s world, oil and gas companies are trying to collect as much data as possible from their field operations, so that they can make critical business decisions at headquarters – eliminating the need to have a myriad of resources on the production platform or offshore facilities, to opti-

INSIDER Special Report: Steven Las Marias on Rockwell in Asia (continued)

mize cost.”

Now more than ever, companies in this sector should start to rethink their processes, and adopt advanced technological solutions that will help them improve the efficiency and safety of their production. To help petroleum companies address these challenges, Rockwell Automation focuses on three areas: productivity, sustainability and agility. By integrating ICPS solutions, oil and gas operators can maximize assets and minimize costs for more robust overall operations.

“We can help them across the whole lifecycle with a variety of tailored services: from front-end engineering-design [FEED] studies and conceptualized engineering designs to safety consultancy, ICPS solutions and even complete turnkey solutions. By comparing the total cost of ownership of the existing distributed control system (DCS) to that of a new automation system, we can easily determine if migration from a legacy system is warranted. Migration solutions can help plant managers incorporate newer technologies at a pace that is comfortable for them. The mission is to minimize downtime, maximize operational success and drive system lifecycle cost savings.”

“For instance, to optimize their energy cost on a pump, we can provide a variable frequency drive, rather than a low-voltage or medium-voltage one, to automatically provide the optimal voltage, resulting in energy savings. Alternatively, to optimize their crack tower, we have software technologies, resources and expertise, to help them with advanced process control to not only optimize the process, but to ultimately improve their profits,” explained Buttermore.

Process safety is also a strength of Rockwell Automation. “When a customer has a new application or even an existing application that needs to be upgraded to a higher safety level, we have the process-safety expertise,” said Buttermore. “Again, we can provide end-to-end service and support from designing the system, delivering the system, and providing long-term support of the system. When it

“Nonetheless, oil and gas remains the number one investment in the region, accounting for 30% of the regional business. When you look at the investments that are in the pipeline, they are significant and will remain so; dominated by the state-owned national oil companies (NOCs).”

comes to the day-to-day operations, we have robust asset-

management solutions to oversee engineering, maintenance, and support. Our remote-monitoring capabilities can actually examine our customers’ facilities, alert them to the status of every pump or shaft, and advise whether something is going wrong based on the data collected. We want our customers to see us as a one-stop-shop for their industrial automation needs “

Solutions on display

At OSEA2014, Rockwell Automation showcased its full suite of Integrated Information, Control, Power and Safety (ICPS) solutions, alongside its PlantPax process-automation system, for offshore platforms and offshore facilities to demonstrate how oil and gas operators can boost productivity, minimize total cost of ownership and lifecycle expenses, while increasing safety.

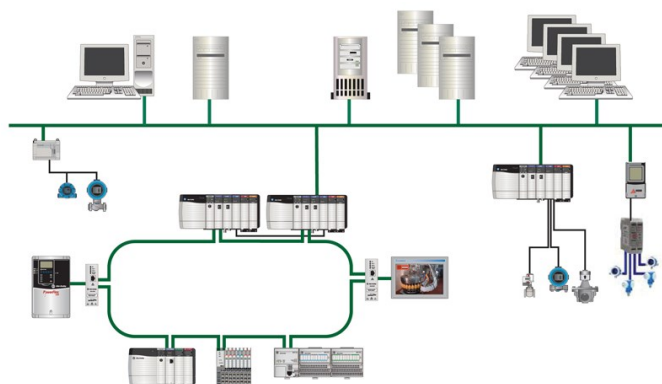


Rockwell booth at OSEA2014

One of the key highlights was the PlantPax solution, which, built on the Rockwell Automation Integrated Architecture, seamlessly integrates multiple components including advanced -process control, process safety and critical control, variable-frequency drives, intelligent-motor control, condition monitoring and protection and power packages.

“PlantPax is more than just process -automation technology. It provides a single integrated plantwide solution with limitless control and scalability with redundancy throughout. With integrated architecture, information, visualization and asset-performance manage-

ment, this single solution enables all technologies to communi-



INSIDER Special Report: Steven Las Marias on Rockwell in Asia (continued)

cate through one integrated network. It offers a seamless flow of information,” said Kim.

Meanwhile, most people would admit that though safety is always a top priority in oil and gas exploration and production, most companies do not necessarily do what they pledge to do in this vital arena. It may be unfortunate, but that is just human and corporate culture when it comes to safety.



Rockwell's Paul Gruhn

“We have safety standards and regulations around the world to safeguard people and assets,” said Paul Gruhn, Global Process Safety Consultant, Rockwell Automation.

“However, when accidents do happen, investigators mostly

find that people were not doing what they should have been doing all along. So, while safety is a high priority, execution is often weaker than what we would like it to be.”

Rockwell Automation has a variety of platforms that can be used for safety. “We are not trying to force fit and say this is the best product for your applications,” said Gruhn. “We have multiple offerings for different applications, so each customer receives a solution tailored specifically to meet its needs.”

From drill rigs, to platforms and FPSO units, to subsea production systems, Rockwell Automation showcased a comprehensive range of integrated solutions to help operators improve drilling uptime, optimize production throughput, enhance subsea system reliability, boost energy efficiency, reduce project risk, and monitor and report conditions throughout the process – executed globally and supported locally.

“We are displaying ‘real’ implementations—not just simple, conceptualized messaging to the

customer—but real solutions that they can immediately apply to their facilities throughout all of their offshore platforms,” said Kim.

The future of oil and gas

As stated earlier, even with falling oil prices, investments in the oil and gas sector are expected to continue to grow strongly in APAC.

“As the oil and gas industry in Southeast Asia is continuously evolving, Rockwell Automation is also making a lot of investments to serve our customers,” said Kim. “We have full capabilities to help NOCs and ONG suppliers across the region.”

“The oil and gas sector is one of the top growth engines for our company in Southeast Asia. As a priority, we continue to invest in events like OSEA2014, and we continue to invest in resources across the region. We are building a new manufacturing facility in Indonesia, and have

opened a new entity there that allows us to sell solutions directly to the NOCs,”

said Buttermore. “There is tremendous investment from our side vis-à-vis

resources, facilities and capabilities. As our number-one growth engine in Asia-Pacific, we are going to continue to expand our footprint here and our relationships with our customers and prospects across the geography.”

“The oil and gas sector is one of the top growth engines for our company in Southeast Asia.”



Stephen Las Marias is Editor of *Control Engineering Asia* and contributes occasional special reports from the Asian perspective to the INSIDER.

Endress+Hauser Reports

Endress+Hauser Group results for 2014 showed a net sales increase of 11%, to a total just over Euro2Bn (\$2.3Bn), maintaining their claim to be the largest manufacturer of field instrumentation in the world.

These figures consolidated those for Analytik Jena and Kaiser Optical Systems for the first time – the organic growth in net sales was just under 6%. Operating profit and net income also improved compared to the previous year, and despite problems with the value of the Ruble affecting the results at Analytik Jena, other developments in foreign

exchange rates created a slight tailwind, in contrast to the year before.



E+H's Schultheiss

CFO Luc

Schultheiss commented that the current strength of the Swiss Franc does pose some challenges, for the Swiss manufacturing operation, but most production is based in the Eurozone or US Dollar areas.

In Finland, the joint venture sales and service company run in co-operation with Metso is to revert to Metso ownership: E+H will establish their own exclusive representation in Finland, through a wholly owned subsidiary. A similar JV arrangement in Switzerland will be transferred to become wholly owned by E+H.

INSIDER Special Report—Walt Boyes on the Future of Level Measurement

There are several technologies in common use for level measurement. A common one is differential pressure, which is being covered in the next section. Applications for level measurement devices include:

- Liquid level in tanks and reactors
- Level of solids and powders
- Interface level
- Open channel flow

Level measurement technologies include weighing, capacitance/admittance, ultrasonic, guided wave radar level, pulse radar, and FMCW radar designs. There are still mechanical and electromechanical level measurement devices, and nuclear level gauges, and those will continue in use. Other level measurement technologies include fiber optics and video capture.



Canty vision capture

The trends in level measurement technologies are reduced cost, simplicity, and easier measurement of difficult or impossible measurements.

Simple level measurements, such as liquid level in a tank, or open channel flow, will need less costly devices. Even inventory and custody transfer level measurement applications will benefit from the trend to simplicity and lower cost.



Inexpensive Radar Level Sensor

Pulse radar will begin to be used in open channel and open tank applications, thanks to the recent (2014) decision by the US FCC to permit it. Pulse radar

will push the price of sensors down, and push the price of simple ultrasonic level

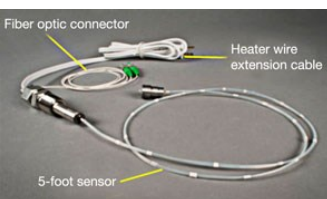
sensors well below \$1000. The unit pictured has a retail price of US\$186.00!

Sensors and transmitters will become smarter, with onboard calibration, diagnostics, and digital communications standard.



Inexpensive Ultrasonic Level Meter

End users will expect simpler, easier and less costly ways to make difficult measurements.



Fiber Optic Level Sensor

Measurements like the level in an agitated reactor with several thicknesses of fiber wool and a cooling/heating jacket are hard to do. We do them with nuclear gauges or load cells now. In the future we may do them with fiber optics or penetrating radar.

Another example of a difficult measurement is interface level. The interface between two levels is often very hard to detect, since the specific gravity of the two fluids may be very close together, and there may be a rag layer. Experiments have been done with video and pattern recognition software to detect interface. This may be a profitable area of exploration as the cost of video, fiber optics and computing power



Video Interface Detector

continues to go down.

Using differential pressure and hydrostatic pressure measurement for standard and interface level will continue.



dP Level Sensor

TMC Solutions in China

China National Petroleum Corp (CNPC) is building a gasoline desulfurization plant as an expansion of the original 10Mtpa refinery at the Daqing Petrochemical Company, based in Daqing City, in China's Heilongjiang province, situated in the far Northeast. The new gasoline desulfurization plant will help improve air quality in China, and is to meet a government requirement.



Daqing Petro gas desulfurization unit

Daqing Petrochemical has selected the HIMA FlexSILon TMC solution as a complete solution for achieving full automation of turbines and compressors on the plant: with unified control, regulation and monitoring functions—and the ability to limit overspeed rotation—FlexSILon TMC is a cost-effective alternative to individual components from various manufacturers, and is based on the fully redundant HIMax platform. Daqing Petrochemical attributed its selection of the FlexSILon solution to positive experiences with other HIMA products, as well as HIMA's extensive experience implementing TMC solutions, overall safety expertise and its ability to provide service throughout the system lifecycle. "We installed several HIMA systems for Safety Instrument System (SIS) in our refinery plant," says Mr Sun Qiang, E&I Manager. "This is the first time we have used HIMax, and our experience shows that the HIMax system is fast, stable, safe and reliable."

INSIDER Special Report: Walt Boyes on Level

(continued)

Multiple technologies will be used for interface level. GWR for the interface and ultrasonic or pulse radar for top level, as an example. Other technologies, such as capacitance or admittance can also be used.

The whole area of solids and powder level measurements is in the difficult measurements category. Problems to solve include clumping of material, caking on walls and measurement devices, and ratholing. Angle of repose issues make using downward looking ultrasonics and radar gauges difficult.

Along with rotary paddles, bobs on cables, and capacitance and admittance level sensors, ultrasonics (low frequency), microwave, radar, and laser technologies have been tried with varying success. Recently, a Canadian company has introduced a form of LED-based level gauge called Leddar.

Higher computing power should improve the abilities of these technologies to operate successfully in highly difficult applications. Several companies such as Emerson have reported success with 3D profiling systems, which operate specifically because of the high computing power that is available.

The Future for Level Suppliers

The key takeaways for level gauge manufacturers are low cost, simple, replace rather than

repair. Regardless of the level measurement technology, the pressure to produce simple, low cost devices that are inexpensive enough to be disposable will increase throughout the next decade.

Like pressure sensors, temperature sensors, and others, level sensors will be designed by people from outside the automation industry. Currently, 168 sensors projects have been started on Kickstarter.com, with a significant number of them funded successfully. This includes at least one level sensor project, by a company that makes low cost moisture sensors. The key feature of those designs is almost always low cost.

The Internet of Things is expected to be real—and it will need large multiples of the number of sensors vendor make now. And in order to make it possible to purchase and install those thousands of extra sensors, they will have to be available, inexpensive, simple, easy to use, and replaceable easily by inexperienced and poorly trained operators.

The other extreme disruptive force impacting the level sensor market is wireless. There are dozens of level applications where a simple, low cost, wireless sensor is the optimum solution, but until recently, they've not existed. They will, count on it.

The gap between "commercial" sensors and "industrial" sensors is narrowing, as well. Industrial sensors have always been expensive because they have had to be in large, steel housings. They have had to be hazardous area rated. But as the number of Class I Division 2 areas is declining because of the success of fugitive emissions control programs, simple, inexpensive, commercial style sensors will be used instead in many applications.

Walt Boyes is a futurist who specializes in the automation and controls technology space. He has delivered seminars, speeches, and custom research on these topics for years. He is available to work with YOU! Contact him at waltboyes@spitzerandboyes.com to discuss your needs.



"Leddar" level gauge



Rosemount 3D Profiler Level

North Sea Oil "Winding Down"



Wood Group founder Sir Ian Wood

Sir Ian Wood, a UK Government advisor and founder of the Wood Group in Aberdeen, says the North Sea oil industry is "winding down": 15,000 jobs could go in Scotland and production could fall 10% in response to falling oil prices.

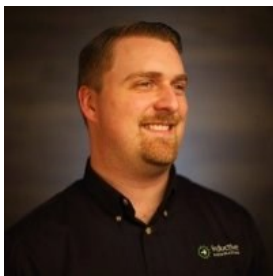
Total current employment in oil production in the UK Continental Shelf is 375,000, and production is forecast to fall this year to 800,000bpd. He added that "There are structural reasons to believe that the price of oil should recover, probably late 2015 early 2016, and there are reasons to believe that the industry should be in better shape to attract even more investment then because of initiatives currently underway."

The UK Treasury's tax take from the North Sea has more than halved over the last year. Data published last month showed that their revenue from North Sea oil profits through the petroleum revenue tax have slumped 62% year-on-year to GBP413m (\$640m), up to the end of October – in the previous year the revenue was GBP1.1Bn (\$1.7Bn). Wood said that "With the actions taken by the Treasury and the new Regulator, the UKCS should be able to resume its role as one of the better mature investment regions globally, as the oil price recovers."

Inductive University a Big Hit; Heide Refinery Modernizes Safety System

Inductive University to Add New Courses

Inductive Automation will be expanding its course offerings on its free online training website, Inductive University (www.inductiveuniversity.com). These will be the first courses added since the initial site launch with 24 courses. Track & Trace, Web Services, and Instrument Interface courses will be coming next month.



Travis Cox

Inductive University has been heavily used since its launch. According to Travis Cox, director of training:

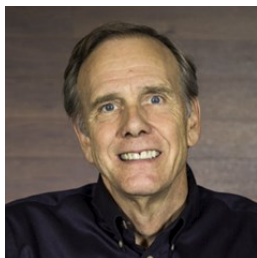
Videos watched: 266,296
Challenges taken: 78,730

Challenges passed: 22,223 (Pass rate: 28%)
Searches: 17,803
New users: 2,012
Specializations earned: 6,028
Credentials earned: 145 (117 Ignition, 28 MES)

The pass rate compares favorably against all online education venues.

Inductive University credentials can be earned in both Ignition SCADA and Ignition MES. There are 20 courses for SCADA and 4 courses for MES. All courses consist of one- to five-minute videos which are led by Ignition experts and are organized into topics. Each topic concludes with a challenge to test the users' understanding.

"The launch of Inductive University is part of the company's dedication to changing the way that SCADA software is



Don Pearson

SCADA software is

made, sold, and supported," says Don Pearson, chief strategy officer for Inductive Automation. "By giving our user community the depth and breadth of knowledge to fully leverage Ignition, they will be empowered to implement positive changes in their enterprises and industries."

To learn more about Inductive University, visit www.inductiveuniversity.com.

Heide Refinery modernizes safety systems in just two weeks

Heide Refinery is part of the Klesch Group and employs approximately 500 people. The company has a processing capacity of 4.5 million tons of crude oil per year. The refinery, built in



Heide Refinery

1940, produces classic mineral oil products, such as automotive gas, diesel fuel and aircraft fuel. In addition, it produces light

heating oil as well as base materials for the chemical industry. In September 2014, Heide Refinery used two weeks of planned downtime at its pyrolysis plant to migrate to new safety systems as part of their extensive DCS replacement project. It replaced the pyrolysis plant's reliable 20-year-old safety technology with new HIMax systems from the same manufacturer, HIMA Paul Hildebrandt GmbH.

"With the HIMax safety system we are investing in the future," said Thomas Romahn, MSR Technician at Heide Refinery "In the new project we again chose HIMA because we have had years of positive experience with the company. HIMA safety controllers that process a total of approximately 7,500 I/Os have been in use at the refinery for more than 40 years," he added.

Integration of the safety systems in the operating and observation level of the previous process control system, TDC 3000, and of the

Bentley Acquires Acute3D

Bentley Systems, Incorporated, announced that it has acquired France-based Acute3D, provider of Smart3DCapture software for reality modeling. Rapid technology advancements in scanning and photography – and especially the burgeoning application of unmanned aerial vehicles (UAVs) for these purposes – are making the capture of such observations broadly and continuously affordable.

Acute3D software automates the generation of high-resolution, fully-3D representations from digital photographs taken with any camera, whether highly specialized or embedded in a smartphone. Scalable from site to city, and with precision limited only by the quantity and quality of photography, Acute3D technology can assure that existing conditions are considered throughout the architecture, engineering, construction, and operations of any infrastructure asset.

Now that photo sequences from UAVs are likely to become the most feasible source for surveying, construction monitoring, and inspection workflows, Acute3D's industrial-level accuracy and unlimited scalability are making it a preferred technology for UAV manufacturers and professionals around the world.

Acute3D was co-founded in 2011 by Dr. Jean-Philippe Pons and Dr. Renaud Keriven.

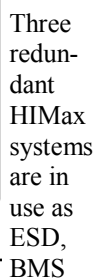
Since its founding, Acute3D has attracted a rapidly expanding user base that includes Nokia, PASCO, and Saint-Gobain, and OEM licensees that include Airbus Group and Autodesk.

In China, Internet giant Tencent is working with Acute3D to do large-scale 3D city modeling for several mega-cities, from both aerial and street view photography.

Other applications of Acute3D have included existing conditions capture for construction sites, manufacturing facilities, mining operations, pipelines, and oil and gas exploration.

HPS Announces UniSim Competency Suite

are based on percentage revenue growth over five years.



Redundant HiMax Systems

and F&G systems. A HIMatrix F35 system functions as pump controller. Overall, the safety controllers in the pyrolysis plant process approximately 2,000 signals. For the migration, most of the existing marshaling racks were retained; this measure reduced procurement costs, as well as installation, wiring and test efforts.

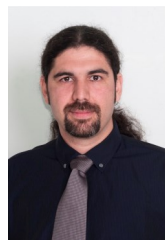
In addition to the hardware and software solution, HIMA also provided detail engineering, training, PLS integration and commissioning. The safety experts also provided support with the specification, concept development and TÜV acceptance. "As project manager, I supported the migration process from concept development to commissioning. The project engineer, Karsten Schwerin, was the direct contact on site for our customer the whole time. Thus we ensured that all quality standards were complied with, and that the project ran smoothly," said Philipp Schmidt of HIMA.

Waterfall Security in Deloitte Fast 500

Waterfall Security Solutions (Waterfall Security) announced that it has been selected to be in the Deloitte Technology Fast 500 EMEA 2014, a ranking of the 500 fastest growing technology companies in EMEA. Rankings

“Securing a position in the Deloitte Technology Fast 500 is an impressive feat, especially in the highly competitive and rapidly changing environment of the technology industry,” said David Halstead, Deloitte UK and partner in charge of the Deloitte Technology Fast 500 EMEA program.

As security threats of all types continue to increase, critical infrastructure sites are recognizing the need to evolve and embrace new industry best practices to protect themselves. “Our inclusion on the Deloitte Technology Fast 500 list is a testament to our growth and expansion and also speaks to a shift in the critical infrastructure industry, which is seeking stronger-than-firewall technology solutions in the form of Unidirectional Security Gateways to improve the safety and reliability of critical control system networks.” said Lior Frenkel, CEO and co-founder of Waterfall.



Lior Frenkel

In addition to ranking in the Deloitte Technology Fast 500, Waterfall ranked No. 20 in the Israel Deloitte Technology Fast 50, which is a ranking of the 50 fastest growing technology firms in Israel.

The Deloitte Technology Fast 500 EMEA program is the region's most objective industry-ranking to focus on the technology field.

Combining technological innovation, entrepreneurship and rapid growth, Fast 500 companies – large, small, public and private – span a variety of industry sectors, and are leaders in hardware, software, telecom, semiconductors, internet, media, life sciences and emerging areas, such as clean technology.

Honeywell Process Solutions (HPS) announced its new UniSim Competency Suite, which improves operator competency and helps prepare them faster through realistic training experiences for console and field operators in the process industries.

Leveraging more than 30 years of experience in process simulation and operator training, Honeywell's new suite of simulation software offers an integrated, robust training experience that will help industrial facilities address a growing shortage of trained operators.

“In the near future, many operators at industrial plants in developed countries will retire, while process industries in emerging economies will continue to face the challenge of critical skill shortages,” said Ali Raza, vice president and general manager for Honeywell Process Solutions’ Advanced Solutions business. “The expanded UniSim Competency Suite helps our customers train its workforce faster in a more realistic environment.”

The UniSim Competency suite features proven simulation models as well as new technologies including:

[UniSim Operations](#)
[UniSim Curriculum](#)
[UniSim Tutor](#)

UniSim Field View and UniSim 3D Connect

Learn more at <http://hwll.co/UltimateOperator>.

ABB: Dazed and Confused by Mary Samuelson, Insider Health Watch columnist

Have you ever read a press release and felt total confusion? You read the words and looked at the attendant charts but couldn't seem to make sense of what you were seeing? That was my reaction when I read a recent ABB yearly earnings press release. On February 5, ABB released the following information:

ABB - Robust orders growth, dividend increase

Sounds like they had a great year, right? I just couldn't quite wrap my head around that. My confusion stemmed in part from the fact that the Industry Health Watch told me differently. Because ABB is one of the 70 companies whose data is used each month to calculate the industry report; and press releases and other articles are reviewed to gain insight into why changes occur within our industry, I have reviewed financial information on the company on a regular basis. I thought I remembered that their 1 year ROI was in the negatives by over 10%, and when I checked, sure enough it was -12.66%. In addition, the way information was phrased within the press release left me with more questions than answers. And what does a research analyst do when there are questions? We look for answers!

One of my first questions concerned the dividend increase. ABB notes in its report that the board "proposes 6th consecutive dividend increase to CHF 0.72 per share." So how much is the actual proposed increase? I went hunting and found the following information posted by Bloomberg Business analyst Alex Webb.

12:17 AM CST February 5, 2015

ABB today proposed increasing the dividend to 72 centimes per share from 70 centimes. The company already in September announced a \$4 billion share buyback to reward investors after the stock of the \$42 billion sales company underperformed rivals such as Siemens AG and General Electric Co.

So the proposed increase is 2 centimes, or

about 2 cents.

Next I started reviewing the charts contained within the ABB press release. The Qtr 4 2013-14 and year over year charts included in the original ABB release are shown below. Both charts reflect what was seen for the industry in general. The Qtr 4 2013/14 comparison contains a lot of negative numbers, with orders down 6%, backlog down 4%, revenues down 9%, etc.

From ABB Press Release of Feb 5, 2014

Then I started looking at the year-over-year summary. The ABB Full Year Summary reports that:

- ABB delivers 10%1 order growth to \$41.5 bn on focused growth initiatives
- Base orders up 5%1, large orders up 50%1, positive book-to-bill at 1.04x3

The chart, however, tells a different story. It indicates that the year over year results aren't nearly as impressive as the careful wording of the press release would have you believe. For example, revenue is down 5%, net income is down 7%, and operational EBITDA (Earnings Before Interest, Tax, Depreciation, and Amortization) is down 11%.

My confusion increased. I was seeing neither the robust orders growth nor a meaningful dividend increase which the title of the release led me to expect.

Based on what I found, it would appear that ABB didn't do so well in 2014, in spite of the positive spin contained within the press release. The stock declined from 23.04CHF to 19.07CHF, a drop of 17% over the past 12 months, compared to the Swiss Market Index which rose 3% over the same time period.

In fact, Webb also notes in his article that:

ABB Ltd., the Swiss maker of grid connections and robots, reported profit and sales that missed analyst estimates amid fewer orders for its power business.

HPS Announces HUG Americas 2015

Honeywell User Group is turning 40. The most influential user group in the automation industry will celebrate that anniversary in San Antonio, Tex., June 21-26th.

As always, user presentations are the height of the meeting, and Honeywell has put out a call for presentations. Abstracts must be received by March 31, 2015.

Oakland A's manager Billy Beane, of "Moneyball" fame, will be one of the keynote speakers.

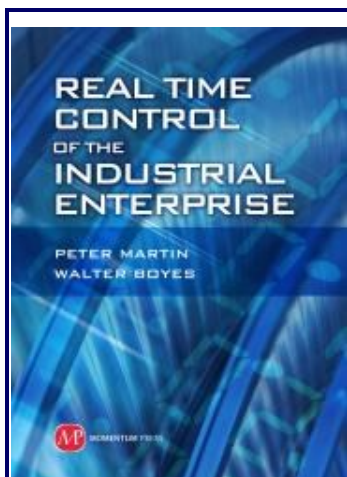


JW Marriot Hill Country

The meeting will be held at the J. W. Marriott San Antonio Hill Country Resort as was last year's HUG Americas, which is not downtown.

Honeywell is certain to show its UniSim simulator products, as well as its renaissance field instrument product line, and of course, the Experion Orion DCS product line.

Honeywell employees and User Group Steering Committee members are already tweeting about HUG Americas using the hashtag: #HUG15.



SMART MANUFACTURING? 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.

ABB's Earnings Confusion (continued); Hollysys Declares Dividend

Net income was \$680 million in the fourth-quarter, compared with an analyst estimate of \$694 million. Sales dropped 9 percent to \$10.3 billion, the company said in a statement today.

"Utilities continued to be cautious in capital expenditures," said Chief Executive Officer Ulrich Spiesshofer. "Higher like-for-like revenues in the company's short-cycle businesses, especially in low-voltage products, were not sufficient to offset revenue decreases in the power divisions."

The results are a setback for Spiesshofer, who took over in 2013 and had pledged to turn around the power systems unit, which has been grappling with delays to complex renewable energy projects. From: ABB Misses Estimates Amid Fewer Orders for Power Business by Alex Webb, 12:17 AM CST, February 5, 2015

Other analysts are also concerned. Gael de Bray with Paris-based Societe Generale, commented that the company missed analyst estimates because of "higher corporate costs and lower sales at most divisions." De Bray recommends selling ABB stock. "It looks pretty light both in terms of orders and the margin is a touch below consensus as well." He said the currency impact was slightly higher than analysts had estimated.

In a video posted on the company website, Spiesshofer notes that, "On the execution side, 2015 is a tough year ahead "We need to focus on our cost reduction and our improvement on our working capital."

So where does ABB actually stand compared to last year? Their stock decline, the actual numbers posted, and Spiesshofer's comments tend to point toward a 2014 that mirrored the troubles experienced by of many of their competitors, with an expected rough 2015 ahead.

Hollysys Misses Targets, Declares Dividend Anyway

Hollysys Automation Technologies missed both EPS and revenue targets for 2Q15, but said they had done well for the first half of the fiscal year.

EPS were \$0.40, working out to \$0.04 short of expectations, while revenues for the second quarter were \$130.3 million, a reduction of 15.1% year over year, for a miss of \$6.57 million.

When combined with Q1, however, things don't look bad at all. Non-GAAP net income attributable to Hollysys was \$50.7 million, an increase of 9.6% compared to the comparable prior year period, while total revenues were \$271.0 million, an increase of 1.6% compared to the comparable prior year period. Non-GAAP gross margin was at 39.0%, compared to 34.1% from the comparable prior year period. Non-GAAP diluted EPS were at \$0.86, an increase of 7.5% compared to the comparable prior year period.

Hollysys declared a \$0.40 per share dividend, identical to their EPS numbers.

This slowdown in the second quarter is substantial and sudden. But it is not unexpected, since most of the other automation vendors globally are seeing the same thing. The rapid fall in the price of oil has caused many projects to be put on hold, or slowed down, or even outright cancelled.

Unless the price of oil goes up substantially, we can expect to see more earnings declines from automation suppliers, East and West.

—Walt Boyes

Yokogawa and Cisco Partner to deliver Shell SecurePlant Worldwide

Yokogawa Electric Corporation has announced a collaboration with Cisco Systems Inc to deliver the Shell SecurePlant initiative for Shell worldwide.



Takashi Nishijima, Yokogawa President and COO

SecurePlant is a comprehensive security management solution for plant control systems that was jointly developed as an initiative between Cisco, a leader in the IT industry, Yokogawa, a leader in mission-critical plant automation systems, and Shell.

The three companies have agreed to proceed over the next three years with the implementation of SecurePlant at around fifty Shell plants globally.

Industrial producers around the world face a wide range of operational challenges in areas such as cybersecurity that pose a pervasive threat to safety and availability. Most companies with global operations, however, still take a relatively simplistic plant-by-plant approach, such as implementing operating system security patches and anti-virus pattern file updates. As a result, security levels tend to vary at each plant.

In the general practice of control system security management, individual control system vendors extensively validate security patches and anti-virus pattern files to confirm that they do not interfere with system operation, and then report the results to their customers for implementation. Since plants tend to use a variety of control systems and equipment from different vendors, occasionally with multi-generation platforms from a single vendor, this process is often complicated. For this reason, plants increasingly have a need for plant-wide integrated services that take a more holistic and efficient approach to the management of system security.

With the aim of standardizing security prac-

tices at Shell plants around the world and minimizing control system vulnerability, Yokogawa and Cisco collaborated on the design of the SecurePlant service and will jointly provide deployment and operational services.

The SecurePlant solution is designed as a standard solution that consists of the delivery of OS patches and anti-virus pattern files for control systems and the provision of real time and proactive monitoring of solution delivery, as well as a help desk operation to manage this solution.

Supplier-certified Windows security patches and virus signature files are distributed from a SecureCenter to the SecureSite at each plant via Shell's existing global network. The real time and proactive monitoring capabilities enable the centralized management of plant security.

A customer help desk operated jointly by Yokogawa and Cisco is available 24/7/365 to manage solution related incidents.

Moving forward, Yokogawa and Cisco will continue to offer comprehensive security solutions involving the deployment, operation, and monitoring of control system environments.

These services are applicable to plants of all sizes in a wide variety of industries, including facilities spread out over a large geographic area.

In addition, both companies will leverage their technologies and experience to develop deep industrial automation (IA) solutions such as remote system maintenance, remote plant asset management and Big Data on the top of a secure remote access platform to help companies in making faster decisions, reducing total cost of ownership (TCO), and achieving operational excellence.

The announcement was made at the ARC Forum in Orlando, Fla. This is Yokogawa's 100th Anniversary.

—Nick Denbow

SNC-Lavalin Partners with HPS for OTS

SNC-Lavalin announced that it has signed an agreement with Honeywell Process Solutions to jointly offer an operator training solution to improve plant safety and efficiency.

Under the agreement, SNC-Lavalin Global Training and Simulation (GTS), a division of SNC-Lavalin Inc., integrates its immersive training simulator, FieldOp3D, to Honeywell's UniSim Operations training simulation



Honeywell Unisim 3D

platform to extend simulator training to the field operator.

FieldOp3D allows trainees to safely practice essential tasks in a 3D environment. Standard and emergency procedures can also be validated and optimized. The integrated solution was demonstrated at the Honeywell User's Group last June, and is currently displayed at Honeywell's Customer Experience Center in Houston, which opened in December.

UniSim Connect and UniSim Operations are designed to appeal to the young operator who grew up playing video games, and who is comfortable using a joystick to navigate the simulation.



THE WAY I SEE IT

Editorial

Help Dick Morley Get Back On His Feet— We Owe Him!

The Automation industry is fascinating because it is a very young industry, barely a century or so old. It really didn't take off until the late 1960s, when a pugnacious MIT dropout named Dick Morley, along with his skiing buddy, Otto Struger, came up with a way to replace hard wired relays in machines in factories. "We called it a programmable controller, so we wouldn't scare the electricians, but we knew it was an embedded computer all along," Dick told me once. And in order to make it even less threatening, Dick created the most widely used programming language ever: ladder logic.

Ladder even penetrated process automation, and customers wanted Dick's controllers to talk to each other, so he and his team created what he called the "Modicon Bus" or Modbus for what became Schneider Electric in 1979, Modbus is the longest lived industrial digital protocol, and nearly everybody uses it still.

Dick didn't like working for companies. He found his calling as a consultant. So he was responsible for the development of anti-

lock braking for General Motors, the people-mover for Disney, and Dick was the inventor of the floppy disk.

Later, he founded Andover Controls, which produced the first modern, zone-control building automation systems. He sold it to Schneider, where it has become a linch-pin of

Dick is the most important inventor of the last half of the 20th Century, and he doesn't deserve to have financial problems.

Schneider's claim to be the largest energy management company in the world.

For quite some time, he was chair of the President's Council on Manufacturing, and has consulted widely for companies and governments. He has done everything from make gourmet chocolate to seminal stem cell research on how to cure cancer.

For him, he said once in an interview with Ken Ball, "wealth is the ability to make choices."

Dick and his wonderful wife, Shirley, who passed away a couple of years ago, chose to live very simply in "The Barn" in New Hampshire, and raise foster children. At last count

they had helped over 40 young people, most of whom went on to become successful citizens.

Unfortunately, Shirley's long illness, and Dick's own health problems, have left him financially distressed. He needed to sell his beloved "Barn" and move into assisted living, but before the deal closed on the Barn, a water line froze and burst, leaving him with even more expenses.

Some of Dick's friends, led by Schneider Electric Vice President Don Clark, have set up a GoFundMe site for Dick. It is "Put Dick Morley Back on His Feet" <http://www.gofundme.com/lv6bho>.

Dick is one of my friends, one of my heroes, and if you work in automation, he should be one of your heroes too.

Dick is one of the smartest people I have ever met. He thinks sideways better than anybody I know. If you want to get a flavor of Dick, visit "[Oranges+Loosely Coupled Sets+Oil Sands](#)" on YouTube. Just like we used to at Geek Pride Day, you can still sit at the feet of the master.

Dick is the most unsung inventor of the 20th century, and he doesn't deserve to have financial problems too.

Please visit the GoFundMe site and donate.

Walt Boyes

Comments? Talk to me!
waltboyes@spitzerandboyes.com

Read my Original Soundoff!! Blog:
<http://waltboyes.livejournal.com>

A Look At Skkynet

by Mary Samuelson



INSIDER

INDUSTRIAL AUTOMATION & PROCESS CONTROL

Profile

(Mary is substituting for Joy Ward this month. She talked to Xavier Mesrobian of Skkynet at the ARC Forum)

Xavier: About 4 years ago as a company our founder was completely surprised by what took place in Fukushima where there was a nuclear power plant disaster and no one had remote access to it. He thought, “I can solve this problem.” Three and a half years of development and 6 months of testing later, we now have a secure end to end platform that isolates all connecting devices and all plants yet allows for data to seamlessly be moved with no open inbound firewall ports and no VPN required.

Our premise is simple. We believe that the bully (everyone had a school bully); the bully cannot steal your lunch money if he can’t see you. It’s a very simple concept but a very complex problem. And so, we turn around the master/slave relationship in a plant. Everyone knows that a plant itself is actually very insecure. In order to work a plant you have to poll the PLC; you have to ask it for the data. We turn the master/slave relationship upside down so the net result is that we publish the data outwards from the plant system and into our Cloud service. Everyone is concerned about this issue of concern with my data. What we do is an outbound push. If the plant side connector, the Cogent DataHub, is configured for bidirectional communications then it requests one and at that point we will open a web socket through closed ports.

So we are actually moving data bidirectionally through an outbound port. It’s like a sealed tube and to make sure that the tube is completely sealed we use a rigorous SSL certificate. That’s not an open SSL certificate, it’s a rigorous one. It is an authenticated certificate and that prevents anyone from doing a man-in-the-middle attack. There is no exposure on the plant side but the data still flows bi-directionally.

When people hear “cloud” they assume that we are a data repository. We are not. We’re a data broker and we work through a hub-and-spoke approach, roughly speaking. The data comes into the hub from one or many plants, from one

or thousands of devices, and it goes to the hub. The user then decides where to publish that data. I may want to take that data as a company, and let’s say I was GE, I might want to take that data and publish just a portion of that to my customer service department, just to keep an eye on various metrics of my wind tower; maybe the gear box temperature. So I might just want to take a look at the gear box temperature. That is all they can see. They can’t see all the plant data. The plant data in the hub is only as good as the last data published, which means that we are not storing historical data in the database. We are just the router to move and publish the data, and let users subscribe it to/from however many number of places they need it. When they connect to the hub through authentication, the net result is that the data that they have permission for flows to them.

An example might be Kraft. They would have their multiple plants around the world and they can push the data up to the hub server and say I want all the data sent to a big data repository in Toronto. The result is that all the data from all their plants would be funneled straight to Toronto. It’s just that simple. It’s very safe data and it’s a very safe transport because there is no attack surface on the firewall, hence, you can’t attack what you don’t

We believe that the bully (everyone had a school bully); the bully cannot steal your lunch money if he can’t see you.

see. And if the plant is properly configured, from a security standpoint...we know that many plants need to have better security but there are ways to do that. We support proxy servers which is a critical security component that every plant should be putting into place. We don’t have to be disruptive to their IT department, we don’t have to be disruptive to the plant, the Cogent DataHub works without touching any of the processes of the plant and if they

have a remote facility they want to connect to, like a remote water connection, we have our Embedded Toolkit that can be loaded on any device; it only requires 64k of memory, and will allow you to take any little device that is monitoring one sensor or many, and move data securely to the cloud. It’s just that simple. (Ockham’s razor... the simplest solution is typically the most effective.)

Mary: Where did you come up with the name Skkynet?

Skkynet

by Mary Samuelson (continued)

Xavier: Skkynet is actually short for Sky Networks. The idea of a cloud is the sky, and it's a network in the sky. When you look at things from a hub and spoke approach, you have to look at it, not from a Cloud perspective, but as a big wheel in the sky. You're feeding the data up into the wheel and out of the spokes. The data then falls down into the appropriate places.

Mary: What about the safety of the individual devices that people use to access the system?

Xavier: I can't stop a user from going into the device itself and looking at a password or changing things, but what I can do is encrypt that information. So, when I go into the Cogent DataHub and say, "I'm going to tunnel this over here," they don't see the password. There is no password that's exposed to them so they can't actually see... someone who does not have authority doesn't see passwords. The cloud service is completely encrypted. The data is completely separated from the security server. In fact, if someone wanted to hack the cloud server, and managed to get in the most you would get to is one millisecond of data. But to do that you'd have to hack into the policy servers that are so far down the line and secured at so many levels that it's just not going to get you there.

Mary: What is it that got you started on this?

Xavier: It came down to Andrew's (Andrew Thomas is CEO of Skkynet) vision to be able to remotely monitor and intervene in a power plant. That was the number one stimulus for our founder. In Fukushima there was the nuclear meltdown caused by the tsunami. He couldn't understand why they didn't have remote access to the plant and why people walking around with Geiger counters couldn't post real time data to save lives. Andrew is a very smart man. He said, "I have an answer for this." So three and ½ years of development and 6 months of testing and we have an answer. The product only became available Jan 27th. It is less than 2 weeks old. Our most important piece was to make sure the service was running but we have approximately thirty companies using the service already.

Mary: Walt Boyes was talking about water, wastewater

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and power can run without automation but gas and oil can't. Why is it that oil companies can't use this product as readily?

Xavier:

It's not so much a matter of which industry, but what kind of control within a plant or facility. Water, wastewater, and power all have primary control processes that you wouldn't want to put into the cloud. Gas and oil are the same. But most industries, including gas and oil, can benefit from extending their SCADA systems to the cloud. Pipeline monitoring comes to mind as a good example.

If you had an embedded flow meter every 100 feet of a pipeline, and could link those devices directly and securely to a cloud system, you could detect breaks and leaks in seconds, at very low cost. If you also had your cut-off valves integrated into the system, a human operator or an automatic trigger could close them, avoiding spills and costly cleanup.

Rather than putting SCADA in the cloud, we prefer to talk about extending

SCADA to the cloud, where processes can run in a secured environment behind firewalls, but managers can monitor and run the facilities remotely. The primary control level requires hardened industrial networking, hardened solutions, so that you aren't attempting to do interlocks outside the PLC. The secondary, cloud level control should also be as robust as possible, with multi-network protocols, so that if the internet goes down with AT&T the plant is also tied in with Sprint or Verizon. We do provide fail-over. For example, we work with a B&B device that has multiple SIM cards, and we will support failover to the multiple SIMs. But at the end of the day you have to be careful. You cannot offer today a true real-time SCADA system when your network latencies are thirty-six milliseconds because if you're running a power plant thirty six milliseconds is enough to blow up a neighborhood. If you're running a paper mill, thirty-six milliseconds is enough for a paper break that could hurt somebody. You have to have proper, local interlocks and shut downs.

What we are offering, quite simply, is a secured way to isolate any remote facilities or plants from ever exposing an Internet attack surface yet still being able to interact with them in a supervisory fashion.

What we are offering, quite simply, is a secured way to isolate any remote facilities or plants from ever exposing an Internet attack surface yet still being able to interact with them in a supervisory fashion.

Skkynet

by Mary Samuelson (continued)

Mary: Are you currently working on ways to make this viable for oil and gas?

Xavier: In 1999, a company was formed which everyone thought was crazy. That company was Salesforce.com. People said, “Who would ever put their customer and prospect data on the web?” Everybody said, “That is the most critical piece of information any company can own. I’m never going to put that out there.” Today, fifty-two percent of sales force automation is now done through the cloud, so what was once considered the most secured information from any company... there is not a company out there that isn’t putting information out on the Cloud. There are massive companies that are putting information on the Cloud, ADP, Proctor and Gamble, everyone.

When you look at SCADA however, we’re restricted by the speed of the networks. Do I think that web-based enhanced SCADA is coming?

Absolutely! Do I think that PLCs will go away? No. Do I think they are going to get any more secure in the next ten years? I’d highly doubt it because no matter what you do to the SCADA system itself or to the

PLC the data still waits to be polled and as long as it’s waiting to be polled it’s still insecure. So, I would tell you that it will come, but its limitation is what we are dealing with. It’s exactly what Salesforce.com was dealing with in the beginning. And that is that there was no infrastructure to support it. But they created it and people came. By the time that Salesforce.com went public, I believe that every one of their competitors had a cloud solution but by then it was too late. So my message would be that if the ABBs and Siemens of the world are not looking at this from that perspective they should be. I know I am and I’m not anywhere as close as they are, not nearly as large as they are. But the only way you are going to get there is to solve security first.

When we won the IoT Best Security Solution Award, we were very proud that we won the award but more importantly it proves that the security we have works and it’s the security you have to address first. That’s at the top of our requirements; security. I can always partner with someone to do a better HMI, I can partner with someone to do a historian or an analytics system but we have made our solution so simple that anyone can use the solution and do ex-

Until the manufacturers start thinking “secure by design” we aren’t going to progress anywhere.

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actly that. We are vendor agnostic so we talk to any of the SCADA systems, we are hardware agnostic, we can talk to any hardware, for remote monitoring control using a small mobile gateway we are vendor agnostic. Our ETK will load on a device as small as 64k. I have heard on the street that shortly there will be modems coming out that will be sub-one hundred dollar modems, so all of a sudden a sensor, with a 64k ETK loaded on it with an analog connection will be about \$105.

Mary: Speaking of price, what do you think the effect of the low priced sensors that are rumored to come out soon will be? Will the large companies be affected?

Xavier: No, because they are solution providers. They are in a different world. They will utilize those sensors within their platforms. They’ll take advantage of them as well. They’ll use them for their smart

manufacturing facilities. But let’s talk about smart manufacturing. Last year we talked about securing devices. Everybody said, “Why is it that all of the hardware devices and routers are all shipped with the same password? It doesn’t make any sense to me, especially since today all of our facilities are smart manufacturing facilities. They know what the back address of the device is before it leaves the assembly line so why wouldn’t they burn a different password into the devices? I wouldn’t buy a car that worked with the same key as every other car of that kind. How difficult could it be to burn a separate password? Until the manufacturers start thinking “secure by design” we aren’t going to progress anywhere. As far as our product though, there is no way to circumvent the security. It’s that simple.

Mary: Well, congratulations on your award and the launch of your new product.

Xavier: We have such a smart team. Andrew, Paul, Ken, Bob.

Mary: They seem very dedicated and engaged in what they are doing.

Xavier: Yes they are.

Mary: Well, our time is up and I know you have other meetings. Thank you again for taking the time to talk with me.

Xavier: Any time.

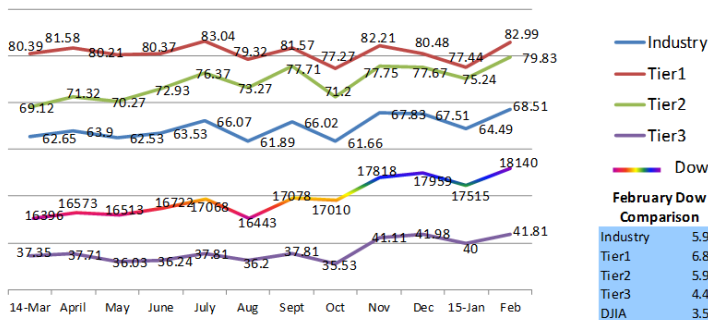
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Health Watch

By Mary Samuelson

Monthly Trending



February Dow Comparison

Industry	5.9%	+2.4%
Tier1	6.8%	+3.3%
Tier2	5.9%	+2.4%
Tier3	4.4%	+ .9%
DJIA	3.5%	

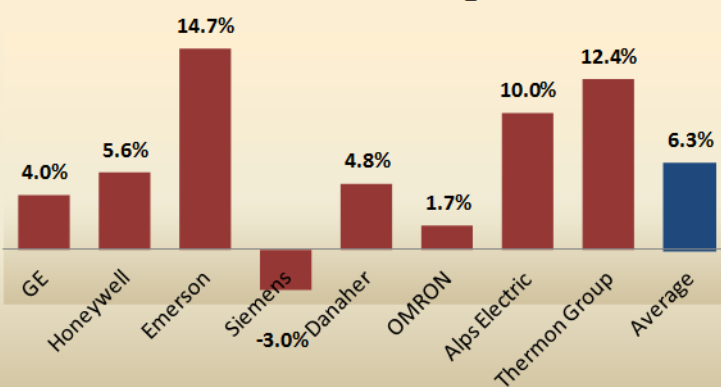
The Thing That Went Bump In the Night Was the Price of Oil

The new year so far holds cautious optimism for the ACI. After a steady drop that began in Novem-

ber, industry stock prices on average are once more on the rise. For the first time in several months ACI stock for all tiers is not only rising, but is outperforming the Dow. The difference is slight (+2.4%) but is hopefully a glimmer of better times to come. Tier 1 Companies show the highest gain compared with the Dow, outperforming it by 3.3%, with an over-

all increase of 6.8% since January. Smaller, Tier 3 Companies did not fare as well, only outperforming the general Dow market by .9% with a total increase of 4.4%. in annual reports showing less than expected earnings and lower than expected sales. The fact that the ACI overall is holding its own and stock prices are actually increasing is possibly due in part to the quick action and skilled guidance of CEO's, CFO's and Executive Boards within our industry who moved quickly to adjust to the changes that have played havoc with the economy in general. Several specific companies' strategies and comments were highlighted in the Year End Health Watch Review published in January. The average change for the specific companies mentioned in the

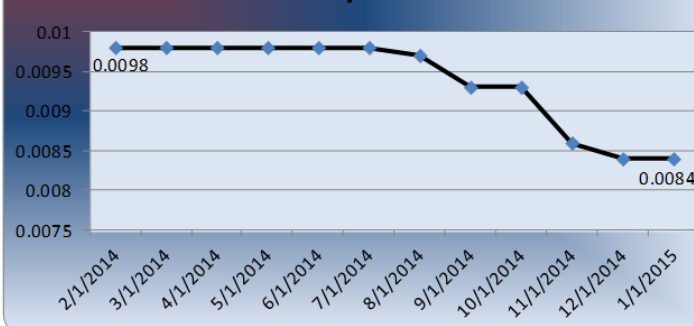
1 Month Change



Global unrest, plummeting oil prices, and fluctuating currencies, in many cases resulted

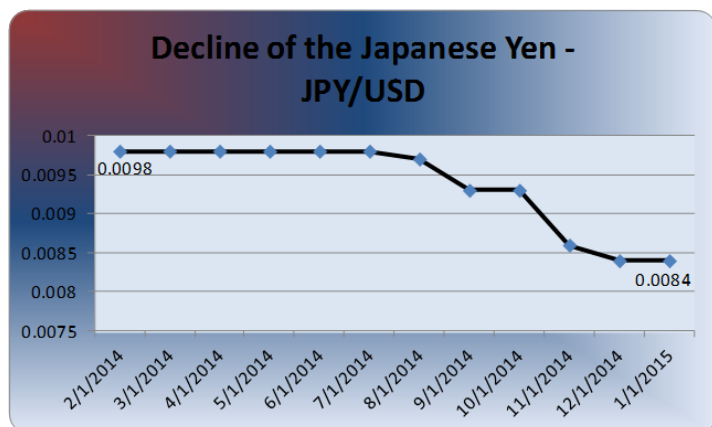
ber, industry stock prices on average are once more on the rise. For the first time in several months ACI stock for all tiers is not only rising, but is outperforming the Dow. The difference is slight (+2.4%) but is hopefully a glimmer of better times to come. Tier 1 Companies show the highest gain compared with the Dow, outperforming it by 3.3%, with an over-

Decline of the Japanese Yen - JPY/USD



January issue is 6.3%, slightly higher than the industry increase of 5.9% seen for the same period.

Our industry is by and large, global. Curren-



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cy fluctuations have had an impact on the industry's returns, but it is difficult to say to what degree that specific factor is responsible for the negative numbers posted by several large ACI companies recently. Because the Yen has been devalued so greatly over the past several months, its decline cannot help but have a negative impact on the revenues/profits of several of the largest ACI related companies.

After holding steady for several months at a conversion rate of .0098, the Yen began to drop in August and other than a slight hold in September, continued that decline through the end of the year. To put things in perspective for how this decline potentially affected Japanese companies' revenues, at the .0098 conversion rate, a stock on the Japanese market that sold for 1,000¥ was worth \$9.80 US per share. This was the case until August. That same stock, however, with no change other than conversion, traded for only \$8.40 US in December. This drop

alone equates to a 14.3% loss, with no other factors considered.

To try to get a clearer picture of approximately how much that one factor alone affected the industry and in particular, Japanese companies within our industry, we estimated the effect of that devaluing using the stock price of some of the Japanese companies included in the Health Watch Index. To calculate this difference at the industry level, stock data was pulled for several companies who trade on the Tokyo Exchange. The companies were randomly selected from the total group used for the Health

Yokogawa
OMRON
Fuji Electric
HITACHI
Horiba
Toshiba
IDEC

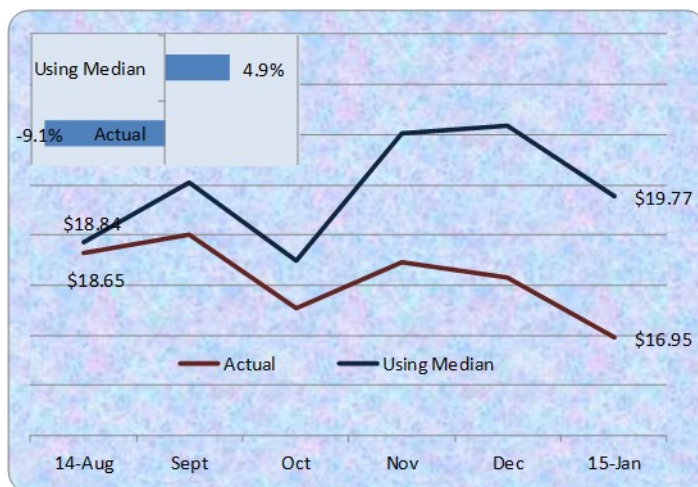
Table 1

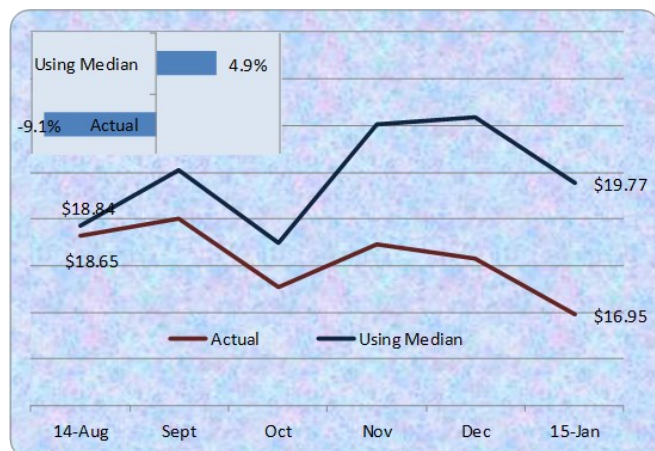
Watch Index and are listed in the table (Table 1).

Both the actual conversion rates which range from .0097 to .0084, and the median conversion rate of .0098 were then used to recalculate the stock prices of these companies for the months of August, 2014 through January, 2015.

When the stock prices are averaged and plotted, an interesting picture emerges.

Using the actual conversion rates, the Japanese stocks declined 9.1%





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between August and the end of January. Using the median, however, these same companies show a stock value increase of 4.9%. Holding all else constant, devalued currency alone accounted for a 15% difference in the cost of the stocks, and that one factor alone made the difference between a loss of 9.1% and a gain of 4.9%. Does this mean that the devaluing of the Yen caused Japanese companies to lose 15% of their income? No, but this exercise definitely shows that currency changes can make a large difference in the actual value of the dollars paid for projects over time, and the current currency changes have definitely played a part in the losses posted by some in the ACI.

Currency changes are just one small piece of the puzzle. With so many mitigating factors in play, many of which seem to have a detrimental rather than positive effect, where do we go from here? What will the remainder of 2015 bring? The future is yet to be revealed but one thing is certain. Upcoming,

short term future events are going to play a huge role in the answer to those questions. Lots of analysts are trying to predict what will come, but predictions are a very slim peg to hang one's hat on. An example can be seen in the predictions being sal-
lied forth on what is going to happen with the price of oil, which is

"Predicting something as volatile as oil prices is a fool's errand, of course, yet that doesn't stop analysts from insisting that this time, they really know what's going to happen."

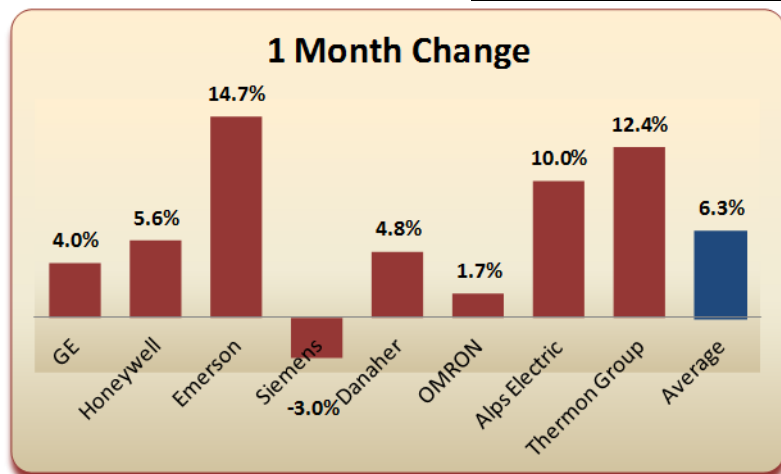
yet another factor that has a direct impact on our industry. There are so many predictions out there right now related to future oil prices that it is difficult to know what to believe. I found a recent article written by Rick Newman (Yahoo Finance) that I believe provides the most accurate and frankly honest information available on the topic.

I enjoyed it so much that I have included it here. In an article posted on February 18th, titled, *The future price of oil? Nobody has a clue*, Rick writes:

"Oil prices could plunge to as low as \$10 per barrel. Or they could soar to an unprecedented \$200 per barrel.

"This is the rather wide range of estimates coming from some of the financial world's most knowledgeable forecasters. Some will turn out to be right, but many will end up being very, very wrong. Predicting something as volatile as oil prices is a fool's errand, of course, yet that doesn't stop analysts from insisting that this time, they really know what's going to happen."

Rick goes on to discuss that most analysts prefer to play it safe, setting their predictions within a narrow range of current pricing. Some however, are stepping out on a limb and their forecasts pre-



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dict widely different outcomes. Some of the examples he gave include well known analyst Gary Shilling who argues that, “most producers will continue pumping oil even at superlow prices, causing a huge supply glut that will drive prices down to \$20 or even \$10 per barrel,” and oilman T. Boon Pickens, “who sees oil prices returning to typical levels of \$90 to \$100 per barrel within 12 to 18 months.”

He also quotes Abdel El-Badr, OPEC Secretary General as believing that “prices could soar to \$200 per barrel as many oil-producing nations fail to build new energy infrastructure, thus hampering supply.”

Rick believes the reason behind these widely varying predictions falls squarely on the shoulders of two factors, neither of which is any more predictable than the flip of a coin. According to Rick:

“The first is how oil producers will

react as prices hit different levels. Some will keep pumping because it’s still profitable

Econometric models can spit out accurate price predictions based on supply patterns that occurred in the past, but not on new patterns or innovations that haven’t happened yet.

ble to do so, while others will stop because otherwise they’d lose money. If you’re a for-profit company drilling oil, you also have to take into account how long prices are likely to stay at a given level and the costs of stopping and starting production, compared with staying in operation continuously. You also have an incentive to adopt or even invent new technology that lowers costs and allows you to profit at lower prices. Econometric models can spit out accurate price predictions based on supply patterns that occurred in the

past, but not on new patterns or innovations that haven’t happened yet.

“The second factor may be even harder to predict: Saudi Arabia’s de facto policy on pumping. The Saudis have typically reduced oil output during gluts, to keep supply tight and prices stable. During the current glut, however, they’ve kept pumping so as not to lose market share to

new North American shale-oil producers. The Saudis could shift course and curtail production any time, without telling anybody in advance. Most current forecasts seem to assume there will be no future surprises from the Saudis—the same assumption that led to many mistaken projections in 2014.”

Rick ends his article with the following sage words of advice concerning the future price of oil:

“Traders, investors and companies that consume a lot of energy —

The Thing That Went Bump In The Night Was the Price of Oil, continued...

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think airlines, shipping companies and manufacturers — have to make some assumption about future prices, as do consumers planning to purchase a car that might average 20 miles per gallon, or 30. The safest assumption, however,

may be that nobody really knows where oil prices are headed.

We may not know what oil will cost in a year, but we

don't have to be surprised by big moves in either direction."

So, Then, What Now?

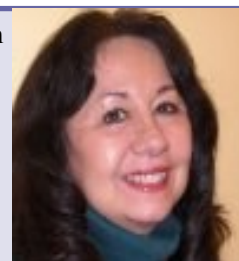
Oil and all its associated concerns is a factor, economic and social issues are a factor; there are so many potential elements that can and will effect what is to come,

that it is almost not worth worrying about. Instead, we can focus on the fact that in spite of current events, for this month our industry is moving forward, the Index is up and is once more exceeding the Dow's

...we can focus on the fact that in spite of current events, for this month our industry is moving forward, the Index is up and is once more exceeding the Dow's performance...

performance, and we have an extremely talented and skilled group of leaders who are working very hard to navigate through the shark infested waters of today's economic chaos to keep our industry strong, healthy and profitable.

The *INSIDER* Health Watch[™] 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.

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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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The INSIDER is edited by Walt Boyes. Nick Denbow is the European Editor. Joy Ward is a columnist. Mary Samuelson is a columnist. Additional reporting is done by David W,



Spitzer PE., Rajabahadur V. Arcot, Stephen Las Marias and Victor Marinescu.

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Rajabahadur V. Arcot: Despite challenges, Indian pharmaceutical industry's future is bright



India, a country whose economy was considered fragile a little over a year back, is back in the news as an economy which has the potential

try in India, its growth potential and its imperative need to invest in automation and enterprise solutions and work with consulting firms to bring about work process changes.

Overview

to emerge as the world's fastest growing country.

Morgan Stanley, in one its earlier reports identified India along with Turkey, Brazil, South Africa, and Indonesia as five fragile economies.

the proviso is that it is the turn for the captains of the country's industry to respond by investing in appropriate technologies to gain competitiveness and emerge as world's best-in-class producers and suppliers.

According to the industry reports, Indian pharmaceutical industry, whose contribution to the country's economy is very significant, ranks third largest in the world in volume terms and 10th largest in value

terms.

However, its January 2015 report "The Next India: Can Reform Power Sustainable Growth?" foresees a much brighter future for the country. It says India's new government has the strongest mandate in 30 years to deliver reforms that can resuscitate its economy and deliver sustainable growth for a foreseeable future.

The report goes on to say that India enjoys some fundamental advantages compared to others and that some initial reforms are already showing gains. True, India's economic scenario has dramatically improved, both on the domestic and external fronts, since the time the new government has come to power.

In my previous article, which appeared in the January issue of INSIDER, I wrote how the various Indian States initiated reform measures and the global trends such as the declining oil and commodity prices has the potential to spur the Indian economy; the proviso is that it is the turn for the captains of the country's industry to respond by investing in appropriate technologies to gain competitiveness and emerge as world's best-in-class producers and suppliers.

This article is about the pharmaceutical indus-

The industry, with strong scientific and technical human resources at its command, produces formulations in various dosage forms and active pharmaceutical ingredients (API) belonging to almost all major therapeutic groups. It has developed the necessary sophisticated processing technologies and operates GMP compliant facilities.

On one hand, the industry provides affordable medicine to the people of this country, many of whom live in less than \$2 a day and pay from their pocket for the medicine, and on the other, earns the much needed foreign exchange by exporting pharmaceutical products to more than 200 countries including mature markets such as the US, West Europe, Japan and Australia.

Last year, the industry's export earnings, which help India in a big way to bridge the trade and current account deficits, touched \$15 billion. The good news is that the pharma industry's exports will continue to grow at around 15 percent annually in the near term.

It has also created large number of quality jobs and, according to the PwC report, would be a \$50 billion industry by 2020. There are around 300 registered pharmaceutical firms with over

Rajabahadur V. Arcot: India, well posed to emerge as an economic growth engine (continued...)

100 of them US Food and Drug Administration (FDA) approved. In comparison, China and Italy have around 30 and 55 FDA approved facilities. The registered firms include multinational corporations and home grown private companies.

The industry, having a strong presence in the generic and vaccine markets, has a bright future both in the domestic and export markets.

In the domestic market, increasing affluence and greater awareness about health and hygiene issues among the people, higher incidence of lifestyle-related diseases among them due to changing lifestyles, increasing government expenditure on healthcare, and such others spur the growth of the pharmaceutical industry.

On the export front, increasing cost of providing health care in countries across the world provides the impetus for the use of generic drugs, the pharmaceutical firms.

With the domestic firms making forays into contact manufacturing and research and development and gaining experience in conducting clinical trials at affordable costs, the stage is set for them to expand beyond their traditional generic market.

While homegrown domestic pharmaceutical companies enjoy significant advantages, their global peers have to live with higher R&D costs and relatively few new drugs in the pipeline to replace the drugs that are expected to come out of the patent. According to industry reports around \$60 – 70 billion worth of drugs are expected to go off patent in the next few years and with the Indian pharmaceutical companies accounting for almost 35 percent of the Abbreviated New Drug Application (ANDA) approvals granted by FDA, the domestic industry finds itself in a sweet spot.

According to industry reports around \$60 – 70 billion worth of drugs are expected to go off patent in the next few years and with the Indian pharmaceutical companies accounting for almost 35 percent of the Abbreviated New Drug Application (ANDA) approvals granted by FDA, the domestic industry finds itself in a sweet spot.

forte of India's

However, the industry does face some strong headwinds. Some of India's leading pharmaceutical firms are having problems in ensuring compliance with the FDA regulations. After due process of inspections, the FDA has initiated actions against some of them on matters relating to quality issues.

Because of the recent FDA decision to maintain the required parity with the frequency of inspections in the US, there has been a drastic increase in the number of inspections in foreign plants including those in India. Therefore, it is not surprising to find a surge in FDA inspection activity and the resulting warning letters.

This decision to seek parity has come in the wake of the findings that that in 2009, regulators inspected

only 11 percent of foreign drug manufacturing plants, while they inspected 40 percent of US firms.

Arising from the inspections in recent times, FDA has pointed out data integrity issues with some of the leading Indian pharmaceutical companies that include among others names, Ranbaxy, Cadila, Sun Pharma, and Wockhardt.

Rajabahadur V. Arcot is an Independent Industry Analyst and Business Consultant with 40 years of senior management experience. Until recently, he was responsible for ARC Advisory Group's business operations in India. Contact him at rajabahadurav@gmail.com



Fortune magazine's article "Dirty Medicine" is about the Ranbaxy's multiyear regulatory battle with FDA and is a very damning report about Ranbaxy's data integrity travails. The report highlights that the company pleaded guilty of failing to report that its drugs didn't meet specifications and agreed to pay \$500 million in fines, forfeitures, and penalties.

The warning letter issued by FDA in November 2014 accuses Cadila of failing to have in place "proper controls ... to prevent the unauthorized manipulation of electronic raw data."

FDA found that electronic raw data generated by gas chromatog-

The data integrity challenges

Rajabahadur V. Arcot: India Well Posed to Emerge as an Economic Growth Engine (continued)

raphy units were connected to stand-alone computers capable of deleting data and "failed to have a back-up system for the data generated" by several pieces of manufacturing equipment.

FDA's letter to Sun Pharma pointed out that its inspections have revealed the deletion of chromatograms on a company's computer and went on to highlight that the "pervasive practice of deleting files" is unacceptable. FDA's warning letter to Wockhardt said it was "particularly concerned about the inability to implement a robust and sustainable quality system."

Future is bright

According to a PwC report, "India's pharmaceuticals industry looks set for a solid long-term growth" and "it is likely to become a competitor of global pharma in some key areas, and a potential partner in others."

The Standard & Poor's report, 'Indian Pharmaceutical Companies Have a Global Opportunity, If they Conquer Compliance Issues,' highlights the industry's global growth opportunities and the imperatives to overcome data integrity issues.

CRISIL in its "CRISIL Insight" issued in June 2014 says that strictures against domestic pharmaceutical companies have been relatively fewer and their share of abbreviated new drug application approvals has been more than those of global peers.

The report goes on to state that it believes that investment in training personnel at the shop-floor level, and pre-emptive and timely governance are necessary to avoid future regulatory actions and continue to register healthy growth.

The Keys to Success

If the industry can take proactive measures to overcome the data integrity issues that strike at the very core of good regulation, it can achieve its potential.

The drug companies in India must complement the standard operating procedures (SOP) and current good manufacturing practices (cGMP) with enabling technology solutions.

They must upgrade their control systems and invest in ISA 88 standard based batch control systems and ensure adherence to 21 CFR Part 11.

These control systems may be integrated with the manufacturing execution systems (MES) to manage the formulations using ISA-95 standard as a guide for the requirement definition and the selection of MES.

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It is time for the pharmaceutical companies to invest in purpose-built laboratory information management systems that supports specific FDA requirements such as complex testing, workflow, reporting, and regulatory requirements inherent in the drug development and manufacturing process.

The Indian pharmaceutical industry's future roadmap must include enhanced investments in enabling technology systems and solutions. Until now they have been lagging behind their global peers in leveraging the enabling technologies.

Their recent travails have changed all that and now there is greater awareness among pharmaceutical firms about the need to deploy state-of-the-art automation systems and enterprise solutions. This opens the door for technology solution providers to pitch in, highlight the value proposition of such investments, and become stakeholders.

Apart from investing in technology solutions, the industry must address issues that are related to attitudes. The CRISIL in its report, "CRISIL Insight," identifies cultural differences, inadequate understanding, and absence of due process as some of the issues that confronts the industry.

It is necessary for the industry to seriously engage with trainers and industry consultant's challenges and develop cGMP and SOP documents. The future is bright both for India's pharmaceutical companies and all their stakeholders.