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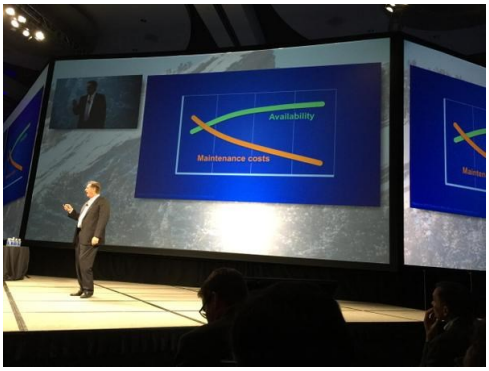
Inside this issue:

Your key to the latest industrial automation and process control information

## Cover Story: Emerson Exchange– Not a Rocky Mountain High

Emerson's Global User Exchange met in Denver's enormous convention center in October. It appeared to be more somber than most. It was smaller than last year's exchange, with fewer Emerson people and even the users were somewhat muted.

Sonnenberg talks about being committed in the long term




Sonnenberg: Reliability is a business strategy

**No Financials**

Steve Sonnenberg, Emerson Process Management CEO, started off by completely skipping the traditional overview of Emerson's financial performance in the year just ended. It's hard to say anything good about bad numbers, so it appears that Sonnenberg decided not to say anything at all.

He went on to introduce the concept of Top Quartile Performance, and showed statistics that indicate that the gap between Last Quartile and Top Quartile is huge and full of money that could be used in manufacturing rather than wasted on slow projects, poor engineering, and could be delivering better return to stockholders. He proposed "reliability" as the way to fix the poor performance of Last Quartile performers. That's why the theme of Exchange is "Elevate Your Expertise" he noted.

Sonnenberg introduced Jim Nyquist, president of systems and solutions for Emerson, who took the Reliability challenge on, and started a discussion of project failure.

Nyquist talks about project failure

**Mega Project Failure**

Nyquist said that of projects in the "mega" range, over $1 billion, over 65% are failures. In the under $500 million range, 35% of projects fail. There is an answer, Nyquist proclaimed. "The path to top quartile project performance is right in front of us," Nyquist said. "The technologies and proven methodologies are here. But it will take the commitment and a collaborative effort between end users, contractors and Emerson." Nyquist said that Emerson calls this new collaborative effort Project Certainty.

INSIDER INDUSTRIAL AUTOMATION & PROCESS CONTROL HealthWatch

*My Sabbatical is Over and The News Is Still Bad!*
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## Cover Story: Emerson Exchange (continued)

"Project Certainty," he went on, "is enabled by new technologies, but it's only realized when we change processes and methodologies. If we do that, we will be successful in transforming the way projects are done, and bring Project Certainty back to capital projects."

**Reliability**
According to Nyquist, Reliability is a process, not just a goal. Systems and projects that are designed for reliability don't fail, and they produce higher results than if Reliability is not a consideration.

Top quartile performers are better by four times than last quartile performers. They do this by transforming themselves into Reliability centered companies.

**Entertainment?**
No Emerson Exchange would be complete without a goofy keynote speaker. This year, the burden fell to Michael J. Gelb, who is obsessed with Leonardo da Vinci, having written a book called ***How to Think Like Leonardo da Vinci***. The less said, the better.


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Sonnenberg continued beating the Reliability drum at the press events. Projects fail. Costs are sunk. The customers want a transformational reset from the automation vendors to reduce costs of projects dramatically. The way we have done things forever has to fundamentally change. Nyquist again took over and said the same things.

A team of customers, led by Exxon Mobil's Sandy Vassar, trooped up to say that they have all decided that they will be working with Emerson (exclusively??) from project start to end, and they will be producing templates so they can reduce engineering costs, purchasing costs, and installation and commissioning costs. This will, of course, work just fine until somebody wants a different solution, builds it, and proves that it was better than the "standard method" Vassar is promoting.

**Acquisitions Will Save Emerson**
Emerson's lackluster performance over the past two years isn't being saved by their star performer, Emerson Process Management any longer. Emerson has been unable to unload Network Power, which Emerson Chairman David Farr has admitted was not one of his better moves.

The knock on Emerson is that its larger competitors, ABB, Siemens, Schneider, and even Rockwell Automation have the ability to provide a complete suite of automation in manufacturing, from power into the plant to discrete automation, robotics, and process automation, while Emerson cannot.

Emerson Process Management has stayed resolutely in the process automation arena, and Emerson Electric's Industrial Automation division is rather anemic compared to competition. This was fine, as long as the oil and gas business was blowing and going, but with the drastic fall of oil prices and projects being cancelled left and right, Emerson's 20% reduction in orders really hurts.

Vice president of wireless Bob Karschnia talks acquisitions

And Emerson's shareholders are well aware. Last year, the Board slashed Farr's bonus for non-performance. Recently, Farr released an internal "all hands on deck" video in which he promised that if performance didn't turn around, jobs would be slashed.

So it was not a surprise that one of the themes of Emerson Exchange was growth by acquisition. One of Emerson's newer additions, Spectrex, is a leader in open path flame detection, and they had a huge space on the show floor with all their products, soon to be renamed Rosemount Analytical.

Cascade, next to Spectrex on the show floor, is a manufacturer of laser based gas detection instruments, especially for environmental compliance. One of their fascinating new products was an aerosol leak detector which permits aerosol cans to be tested and quality controlled in much faster time than previous tests.

Not everything is hardware. Emerson proudly showed off Energy Solutions International (ESI) which produces software suites that can be used to manage pipelines as add-ins to Emerson's pipeline SCADA products. Also on display was Enardo, a manufacturer of tank and terminal safety equipment, which will join Fisher Controls.

## Cover Story: Emerson Exchange (continued)

Acquisition rumors abounded at Emerson Exchange. For some, "Big R" didn't mean "Reliability." It meant "Rockwell."

There were significant rumors that Emerson plans a run at Rockwell Automation. This would provide Emerson the factory automation products and systems they do not have, and Rockwell's profitability would provide Emerson with just the lift they need in order to stave off acquisitions aimed at them.

Rumors were everywhere about that, as well. Honeywell is said to be desperately in acquisition mode, perhaps even more than Emerson, and a HPS Emerson merger would prop up two businesses hurt by the oil price crisis.

The INSIDER expects to see large acquisitions involving Emerson in the next year.

**Other Cool Products**

On the show floor, Emerson partners exhibited their wares, and some very interesting developments. Pepperl+Fuchs showed off their new acquisition of MACtek wireless products, while Mynah and ProSys showed off their increasingly closer cooperation.

Emerson CTO Peter Zornio does everything except say Emerson wants to acquire Seeq.

By far the most interesting partner this year was a new startup called Seeq. It is a breakthrough product devoted to time-series data investigation. Seeq provided readymade integration examples of Seeq software with Emerson technologies, such as Fisher valves and the DeltaV distributed control system (DCS), demonstrated how Seeq is enabling faster investigation of data collected from Emerson equipment and systems. The result is better insights, sooner, for key scenarios such as asset optimization, operations excellence, and situation awareness.

Seeq CTO Brian Parsonnet

"The opportunity for analytics in industrial plants is promising," said Peter Zornio, Chief Strategic Officer, at Emerson Process Management. "We're excited to work with Seeq as an early user of their technology, and in proving out the results."

"We are pleased to showcase Seeq's innovative application at the largest assembly of Emerson partners, customers, and employees. Our work with Emerson Process Management to enable faster employee and customer insights has been a key deliverable of our collaboration," added Brian Parsonnet, CTO and co-founder of Seeq Corporation.

Kepware was on hand to showcase its brand new "IoT Gateway" which seamlessly streams real-time machine and sensor data into cloud-based software platforms for real-time analytics. With a plug-in design offering long-term scalability, it leverages the 150+ drivers within the KEPServerEX communications platform to connect to any t**hing** from one user interface.

Kepware says their IoT Gateway provides access to new and non-traditional SCADA applications, allowing you to implement best of breed solutions. Because it uses open-sourced, standards-based communications (**REST** and **MQTT**), Kepware says you can-choose the vendors and communication methodologies right for your system. Because of these open standards, it positions Kepware to be a significant player in the IBM/GE Scada war.

Perpetua powers pressure product

Looking more like a wire brush than a power source, Perpetua (whose closest competitor is Perpetuum—go figure) showed its "made for Emerson" energy harvesting power supplies. Here you see one powering a Rosemount 3051S WirelessHART transmitter. The INSIDER has believed for many years that energy harvesting products would be the solution to replacing thousands of batteries in wireless process transmitters. It appears the technology is becoming mature.

Interestingly, one of the partner exhibits was GE Healthcare, showing its bioreactors and listing itself as an Emerson strategic partner. If GE ever figures out how many OT businesses it has and structures itself accordingly, it will be the biggest and baddest player in automation overnight.

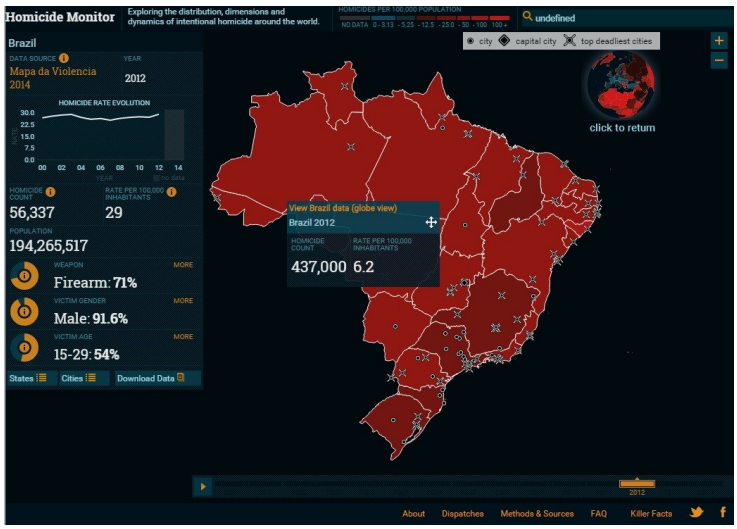
**Emerson Exchange 2016**

Emerson will be going home for Exchange next year. Located in the Austin, Texas, convention center the Exchange will be less than 20 miles from Emerson headquarters in Round Rock. This should permit users to meet and get to know the Emerson experts who generally don't get to attend Exchange because of travel budgets.

2016 will be a challenging year for Emerson. The INSIDER will be watching events closely.

# Even More Trouble in Brazil

The Petrobras scandal in Brazil continues to play itself out. Background information can be found in the July, August and September issues of the INSIDER.




Brazil has one of the highest murder rates in the world.

But first, here is a brief safety item. A well-known Brazilian comedian's car was shot at a few months ago --- despite gun ownership being illegal in Brazil. This month, a couple's car was shot at and the wife died of her injuries. Both incidents occurred close to home but the common thread is that the drivers were directed to unsafe neighborhoods by their GPS navigation systems due to automated routing and by selecting the incorrect town respectively. This can happen almost anywhere in the world so it pays to be careful --- even when travelling locally.

The Petrobras investigation was in its 19th phase last month… but who knows now because they stopped announcing phases in the nightly news and maybe (hopefully?) they stopped counting. The sitting president of the lower house of the legislature was accused of corruption to the tune of approximately USD 5 million parked in Switzerland that is allegedly related to the Petrobras scandal. The INSIDER opines that the president's arrogant behavior is reminiscent of other people who accumulated extreme wealth and may indicate that the USD 5 million may be only the tip of the iceberg. Reflecting on extreme wealth, do you remember the Petrobras director who will return approximately USD 200 million to the Brazilian government? In contrast, this particular director was contrite (after being caught) and was one of the first people to turn states' evidence when virtually everyone else clammed up.


Demonstrations against corruption in Brazil have been huge.

Moving along… there appears to be a disagreement as to whether the president of the legislature has bank accounts in Switzerland. The president vehemently said that he did nothing wrong and testified that he had no bank accounts in Switzerland. To the contrary, Swiss authorities reportedly found that the president and his family had five Swiss bank accounts in Switzerland and further, outlined movements of the money allegedly from the Petrobras scandal.

Alarmingly, the president may gain favor in some corners because he is in the position to initiate impeachment proceedings against Dilma and is actively so contemplating. It pains the INSIDER to even consider that the president might avoid trial and not be punished if guilty.

The Brazilian Real recently peaked at almost 4.25 Reals per US dollar (intraday) before the Brazilian government reportedly used foreign reserves to stop the decline by purchasing Reals. At its peak, the Real effectively lost half of its value in a little over a year thereby making imported goods considerably more expensive. These goods include items consumed by average people such as bread because 60 percent of the wheat consumed in Brazil is imported --- despite Brazil having a large agricultural industry.

**Inflation in Brazil will be almost 10 percent in 2015 so the average person will feel the pinch.**

At the same time, layoffs are increasing unemployment, people are fearful of losing their jobs, and wages are stagnant at best. The Real has since gained some strength --- reportedly because the USA Federal Reserve did not increase interest rates. In addition, fewer Brazilians are traveling outside of Brazil this year as compared to last year.

Inflation in Brazil will likely be almost 10 percent in 2015 so the average person will feel the pinch. GDP projections for 2015 are negative --- strongly suggesting a contraction of the economy. Projections for 2016 are not much better. Fuel prices were increased to

## More Trouble in Brazil (continued)

generate more revenue (for Petrobras) --- interestingly at the same time that the cost of fuel in North America was falling.

Aggravating this overall situation is that relatively few people in the Brazilian workforce really remember the economic and financial conditions that existed prior to the mid-1990s when inflation peaked at approximately 70 percent per month and the USD was relatively strong. This is in sharp contrast to the last 10+ years when the Real was strong and Rio de Janeiro ranked as one of the most expensive cities in the world.

**Any world-wide crisis in the short or medium term would likely provide a significant headwind to the Brazilian economy.**

Overall, problems relating to exports, internal demand for goods and services, minerals, agriculture, Petrobras and the devaluation of the Real resulted in a reduction of confidence in the government. Add to this the political environment where President Dilma is reportedly being accused of overspending prior to her 2014 re-election in order to present a rosy picture of her government and garner votes. In short, the average person is fed up with Dilma and corruption and cronyism and…

Brazilian President Dilma Roussef

Brazilians may take to the streets again and the impeachment movement may gain some traction but the INSIDER opines that Dilma will remain in office and effectively run out the clock for the next three years. She remains defiant and has reason to do so because she was tortured during the military regime and knows that she is tough enough to withstand any criticism and calls for impeachment that come her way. In this economic and political climate, Dilma will likely implement the minimum reforms necessary to satisfy the international financial rating agencies and not alienate her remaining supporters too much.

How does this affect people buying, selling and using instrumentation? The INSIDER opines that inflation within Brazil and the devaluation of the Real will increase the cost of instruments in Brazil --- especially imported instruments. To remain profitable, operating companies are already reducing personnel and shelving projects --- especially large projects. Anecdotal evidence indicates that some operating companies are slowing or stopping production in their Brazilian operations and sourcing their products for the Brazilian market from their plants in other countries. Therefore, overall instrumentation sales have declined and many instrumentation companies have reduced personnel substantially and/or are increasingly likely to do so in the near future.

The INSIDER opines that there appears to be a "perfect storm" brewing in Brazil that will eventually resolve itself --- but not in the short term. New leadership would help but Dilma has three years remaining in office and no "Fernando Henrique Cardoso" or "Rudy Giuliani" is on the radar screen yet. Brazilian politicians (similar to other politicians worldwide) will not likely have the political will to make the changes necessary to aide in the recovery of the Brazilian economy. Therefore, the recovery will likely be a drawn out affair. In addition, any world-wide crisis in the short or medium term would likely provide a significant headwind to the Brazilian economy that could drastically prolong the depth and length of this downturn. This is especially true if the crisis is a crisis in China, which is one of Brazil's largest trading partners.

Brazil is not yet a First World country, and in the past, one of the outcomes of unrest like this has been a military takeover. The INSIDER believes this may be possible, depending on how long the crisis continues, and how badly the economy is affected.

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## ABB Tiptoes Through Their Results for Q3— But So Does Everybody Else

ABB calls it steering through challenging markets. We call it putting a good face on bad results. But they are far from alone, as the Health Watch column makes clear. Emerson didn't even mention their results at Emerson Exchange for the first time in at least 10 years.

ABB says their order pattern reflects adverse market conditions, with base orders -3% total orders comparison impacted by record Q3 2014 large orders (-12%), but the book-to-bill ratio was positive at 1.03x and year-to-date 1.07x. It was barely positive, and we hope nobody cancels any orders or it will go negative in a hurry.

Revenues were -2% on lower short-cycle volumes, but operational EBITA margin up 50 basis points to 12.5% and operational earnings per share 2% (constant currency). ABB said that their financials were impacted by currency translation due to the strong appreciation of US dollar.

**Spiesshofer says Stage 2 of Next Level strategy aimed at accelerating ABB's transformation will fix it**

"Our Q3 results reflect the challenging markets we face. Short-cycle demand in oil and gas, China and the US was down and the orders compare to a strong Q3 2014 when we won a record amount of large orders in Power Systems and Process Automation," said CEO Ulrich Spiesshofer. "However, building on our Next Level strategy, we were able to win key customer orders and to deliver margin accretion as well as a positive book-to-bill ratio in spite of significant market headwinds," he said. "We delivered a 50 basis point improvement in operational EBITA margin and higher operational earnings per share by building on our strong focus on execution, restructuring and cost measures as well as the Power Systems 'step change' program."

"We have launched Stage 2 of our Next Level strategy aimed at accelerating ABB's transformation," Spiesshofer said. "Markets are expected to remain challenging well into 2016. In this environment we continue to drive "self-help" by focusing on growth opportunities in a disciplined way while mitigating the impact of market headwinds through capacity adjustments, productivity measures and cost reductions. Executing our 1,000- day white-collar productivity and ongoing restructuring programs is pivotal," he said. "We kicked off the announced strategic portfolio review of the future Power Grids division and are on track to complete it in 2016, as previously stated.

"Overall, we will continue to drive the execution of our Next Level strategy to deliver on profitable growth and sustainable value creation in challenging markets," he said.

> **" ...building on our Next Level strategy, we were able to win key customer orders and to deliver margin accretion as well as a positive book-to-bill ratio in spite of significant market headwinds." —ABB CEO Ulrich Spieshoffer**

ABB CEO Ulrich Spiesshofer

**Q3 2015 Group Results: Market overview**

Demand in ABB's three major customer sectors was softer than in the second quarter, reflecting ongoing macro uncertainties and challenges in many markets. Utilities remained cautious but continued to make selective investments in infrastructure-critical power transmission projects. For example, ABB won a large order for a high-voltage direct current (HVDC) interconnection between the power grids of the United Kingdom and Norway, to increase power supply for both countries and support the integration of more renewable wind and hydroelectric energy into their networks.

In addition, ABB won orders in China to boost power capacity and grid reliability. This included two new UHVDC power transmission links that are designed to transport 8,000 megawatts each of wind and thermal power from Shanxi to Nanjing and from Jiuquan to Hunan, to meet the electricity needs of 26 million consumers.

Demand from industrial customers was subdued. Low oil prices resulted in a continued restraint of discretionary spending by oil and gas customers in the quarter. However, the need for cutting edge solutions to increase efficiency and to use renewable power generation to lower the environmental impact continued to be important demand drivers. In this context, the company won a $90- million order for a high-voltage cable system to supply power from the Norwegian power grid to the Johan Sverdrup offshore oil field. Supplying electric power from shore for offshore oil and gas production avoids the need for offshore resources and to burn diesel or gas out at sea to power the equipment, which is much safer and more energy efficient. In addition, demand for Robotics solutions in general industry is growing as there is an increased need for auto-

## ABB Tiptoes Through the Results, but So Does Everybody Else (continued)

mated processes and productivity. YuMi, ABB's collaborative robot, helps meet this need and is in high demand.
The infrastructure and transportation market was mixed, with continuing strong demand from the renewable energy sector. For example, the company won a strategically significant order in the quarter from Socabelec to install a microgrid solution to boost renewable energy use in a remote community in Kenya. ABB's stabilization system will be integrated into the existing power network and will interface with existing diesel power station controls, to maximize renewable energy penetration and utilize excess wind energy generated.

**Orders were down 22 percent in US Dollars**
Total orders received in the quarter were 12 percent lower on a like-for-like basis (22 percent in US dollars) compared with the third quarter of 2014 in which the Group won a record amount of large orders in its Power Systems and Process Automation divisions. The higher US dollar versus the prior year period resulted in a negative translation impact on reported orders of 10 percent. The order backlog at the end of September 2015 amounted to $25,371 million, an increase of 4 percent (down 6 percent in US dollars) compared with the end of the same quarter in 2014. Base orders (below $15 million) decreased 3 percent (14 percent in US dollars) compared with a strong third quarter of 2014. Base orders were steady in Process Automation while declining in the remaining divisions. Large orders ($15 million and above) decreased 38 percent (46 percent in US dollars) compared with the same quarter of 2014 when ABB won numerous large orders. In Low Voltage Products and Power Products large orders were higher compared with the same quarter last year, while they were lower in the other divisions. Large orders represented 17 percent of total orders compared with 25 percent in the same quarter a year ago reflecting the continued cautious ordering pattern of key customer segments.
Despite double-digit order growth in countries such as Germany and Norway, overall orders declined in Europe. For the Americas and Asia, Middle East & Africa (AMEA) total orders decreased by 1 percent and 18 percent respectively even though total orders were up in the United States, China and India. Service orders declined 4 percent (17 percent in US dollars) compared with the third quarter last year and represented 16 percent of total orders compared with 15 percent a year ago.
The book-to-bill ratio in the third quarter remained positive at 1.03x compared with 1.14x in the same quarter a year earlier. For the first nine months, book-to-bill remained positive at 1.07x and was above 1.0x in all divisions.
Revenues
Revenues in the third quarter declined 13 percent in US dollars. Revenues increased in Power Products and Power Systems due to strong execution of the order backlog. Revenues in the other divisions declined, primarily due to a lack of short-cycle volumes and weak demand in many parts of the distribution channels in the first nine months of 2015. The higher US dollar versus the prior year period resulted in a negative currency translation impact on revenues of 10 percent; 2014 divestitures had a negative impact of 1 percent.
Total service revenues were down 11 percent in US dollars and were 16 percent of total revenues.
Operational EBITA
Operational EBITA declined 9 percent in US dollars, reflecting the lower revenue base. Currency translation negatively impacted operational EBITA by approximately 8 percent.
The operational EBITA margin increased 50 basis points to 12.5 percent, led by the turnaround in Power Systems and ongoing restructuring and cost savings measures. The increased profitability in Low Voltage Products reflects a strong focus on cost savings and execution. The operational EBITA margin in Discrete Automation and Motion decreased principally due to a decline in the share of higher-margin standard products and services in total revenues, mainly resulting from weaker demand in the oil and gas sector in recent quarters. Process Automation was negatively impacted by reduced short-cycle discretionary spend for oil and gas. In Power Products, the operational EBITA margin was steady, as higher revenues offset unfavorable mix effects and ramp-up costs associated with new production facilities in key markets.

**Operational EPS and net income**
Operational EPS on a constant currency basis was at $0.35, increasing 2 percent. Basic earnings per share amounted to $0.26 in the third quarter compared with $0.32 in the same quarter a year earlier. Net income for the quarter decreased 21 percent to $577 million and was negatively impacted by significant currency translation effects. In the same quarter in 2014, net income was positively affected by an after-tax gain from the sale of businesses of $145 million.

**Cash flow**
ABB reported steady cash flow from operating activities of $1,173 million in the third quarter compared with $1,169 million in the same quarter of 2014. The impact of the lower net income was offset by stronger working capital management.

**Management changes**
ABB announced the following changes to the Executive Committee effective January 1, 2016:
Claudio Facchin, currently President of the Power Systems division, will assume responsibility for the new Power Grids division. Tarak Mehta, currently President of the Low Voltage Products division, will assume responsibility for the new Electrification Products division. Bernhard Jucker, currently President of the Power Products division, will assume new responsibilities as President of the Europe region and chairman of the newly-created Divisional Transformation Team. Veli-Matti Reinikkala, currently President of the Europe region, will retire after 22 years with the company. One wonders if Reinikkala, who is certainly not retirement age, wound up without a chair in Ulrich's Game of Musical Chairs, and had to take one for the team based on poor performance when he ran Process Automation, and now in the year he ran Europe.

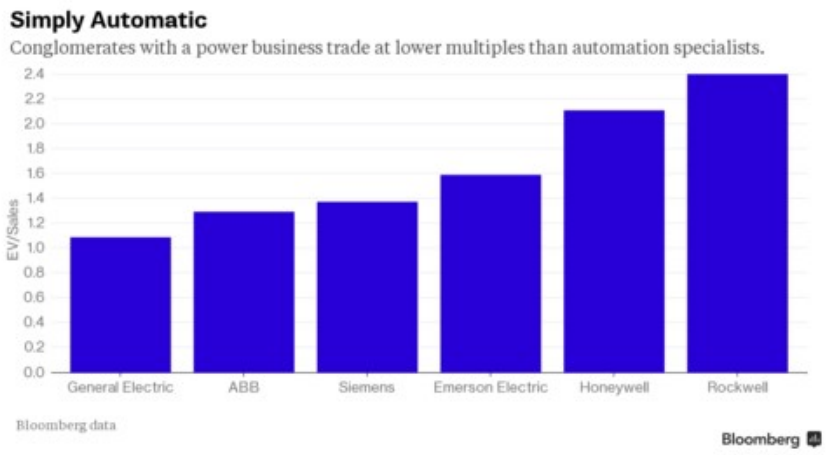
# ABB Tiptoes Through Their Results for Q3— But So Does Everybody Else

**Q3 Division Results**

*Discrete Automation and Motion*—orders declined:
Total orders declined in the quarter due to lower demand for standard products and services such as large motors and drives used in the process industries in key markets such as the US and China. Continued investments in automation for general industries continue to drive growth in robotics. Revenues reflect the lower short cycle business which could not be compensated by executing the strong order backlog. The operational EBITA margin decreased mainly as a result of lower volumes in the quarter and a lower share of standard product revenues. Focused capacity adjustments and restructuring are being further ramped up and are underway.

*Low Voltage Products*: steady orders means a bright spot
Orders were steady despite the difficult market environment. Europe's positive order development offset declines in AMEA and the Americas. In particular, product orders were softer in China, the US and Canada. Revenues were impacted by the timing of execution of the systems order backlog. The higher operational EBITA margin reflects targeted productivity measures, increased cost savings and the strong focus on execution.

*Process Automation:* -- huge declines in orders because of the oil price drop:
The significant decline in orders mainly resulted from the comparison to the very high large orders booked in Q3 2014 and lower spending in the oil and gas sector. Subdued short-cycle orders in the first nine months of 2015 translated into lower revenues. Operational EBITA and margin declined due to weaker revenues and an unfavorable mix. Capacity adjustments are underway, as are white collar cuts.




*Power Products*:
Total orders for the quarter were steady as increased orders for power transmission projects in the US and China offset weaker demand for base orders from the industry sectors. Revenues increased during the quarter, mainly due to the successful execution of a strong order backlog. The operational EBITA margin was steady as higher revenues offset unfavorable mix effects and ramp-up costs associated with new production facilities in key markets.

*Power Systems:*
Orders during the quarter were lower than the third quarter of 2014 largely due to the timing of large orders, challenging macroeconomic conditions and project selectivity. Revenue growth was mainly driven by steady execution of a strong order backlog. During the quarter, the company achieved two important milestones in its offshore wind business by successfully commissioning and handing over the DolWin1 project and installing DolWin beta, the world's most powerful offshore converter station for the DolWin2 project, in the North Sea. In addition, the first phase of the North-East Agra transmission link was energized in India. Operational EBITA and the related margin increased mainly as a result of ongoing 'step change' measures and continued cost savings to return the division to higher and more consistent profitability.

The INSIDER wonders if ABB is interested in divesting some of its poorer performing groups, like Process Automation. That may be what is happening with activist investor, Cevian Capital AB, which has built up a 5.1% stake in the company, making it the second largest shareholder.

Several analysts have noted that with faster growth projected for ABB's automation operations and its power business facing decline, a split may make sense. Automation specialists have an enterprise value of about 2.3 times revenue, compared to a multiple of about 1 for power-equipment makers. Cevian may be headed toward pushing for a breakup of the company.

They are certainly comparing ABB's EBITDA of 12 percent of revenue to that of Rockwell Automation, whose EBITDA is 21 percent.

ABB shares have performed worse than any of the company's main peers during the past five years. The stock gained just 1.2 percent in that time before today, while Rockwell and Honeywell International Inc. more than doubled. Siemens AG and General Electric Co. also did better, as did Emerson Electric and Schneider Electric.

Rumors abound that Kuka and Thyssen Krupp would be interested in ABB's robotics business. Cevian and Investor AB (ABB's largest stockholder) are certainly thinking about what to do next.

The question is whether Ulrich can turn the ship around faster than his investors can make him break it up. ABB isn't the only automation company that's in trouble, by any means.

# Nick Denbow's Roundup for October 2015

**Terminal Automation from Yokogawa**

Yokogawa India has been awarded a turnkey project valued at 730m rupees (US$11m) to automate truck loading terminals for the Bharat Petroleum Corporation Ltd. (BPCL). This comprises the Yokogawa Terminal Logistics Suite VP terminal automation systems (TAS) and ProSafe-RS safety instrumented systems for 11 BPCL truck loading terminals in northern and eastern India.

The Terminal Logistics Suite VP will be used for the monitoring and control of the storage tanks, gantries and other loading/unloading facilities at each of the BPCL terminals. This will satisfy the various operational demands associated with the monitoring and control of tank farms and loading/unloading facilities as well as quality management, inventory management, and loading schedule management for the company's main oil, fuel, and chemical distribution terminals.

As a key strategy for its control business under the Transformation 2017 mid-term business plan, Yokogawa is targeting the entire energy supply chain, from upstream to downstream. Yokogawa has wide experience in implementing solutions for truck loading terminals and other facilities that serve as way stations between oil and natural gas plants and end users. Yokogawa will accelerate its global efforts to help optimise operations at oil and gas loading and transport facilities.

**Low voltage circuits for IOT applications**

Even accepting that the people telling this story are professionals at extracting money to finance early stage inventions or innovations, and are called Invention Share - from Ottawa, their new offer does sound interesting.

The CircuitSeed family of inventions are said to enable manufacturers of electronics to develop IoT devices more quickly and efficiently and at a much lower cost. The size and power requirements of the devices is also reduced: CircuitSeed circuits will operate down to less than 0.1V using a 100% digital process.

The CircuitSeed family of building block circuit designs includes a new CMOS Field Effect Transistor (CiFET) with unique properties, useful for processing analogue signals. The designs all use 100% digital workflow components, overcoming many of restrictions of traditional analogue circuits. The inventors already have an extensive track record of inventions and patents, arising from finding unique ways to overcome circuit design problems.

Their circuit designs are simple, they do not require 'matched pairs' or 'current mirrors' and will function on 40nm or smaller integrated circuits. They run at logic speed and are self-biasing, working over a large frequency range, with high stability, sensitivity and accuracy.

**E+H in Spain**

E+H has opened a new purpose built HQ and sales centre in Spain, at Saint Cugat in the West of the Barcelona Metropolitan region. The opening of this building, an investment of Euro 8m (US$9m), marks the 25th anniversary for this Spanish member of the E+H group. Over 4000 square meters of floor space accommodate modern offices and canteen facilities, plus a well-equipped solutions laboratory and customer seminar facilities.

New E+H building in Barcelona, Spain

Antonio Carulla, managing director of E+H in Spain, said "The new building allows us to improve our offering of hands-on training courses and seminars and to further strengthen our customer relations". Carulla has led the company since its first establishment in 1990, and he will retire in December to hand over to his successor, José Manuel Lado.

The Spanish organisation has over 70 employees, with 50 in Barcelona at present. There are also regional sales offices in Madrid, Valencia, Seville, Bilbao and Zaragoza, mainly serving the water and wastewater, food and beverage and chemical industries.

**The Robot Report**

Frank Tobe continues to issue "The Robot Report" http://www.therobotreport.com/ and reminds us that it was Steve Jobs who said "*A lot of times, people don't know what they want until you show it to them".* Will people want personal assistant robots? Four thousand Pepper robots in Japan and 7,500 Jibos will soon be in the hands of consumers. In the SME marketplace, the Universal Robots URbots along with the new Sawyer and upgraded Baxter robots from Rethink Robotics are selling hundreds monthly.

Jibo personal assistant

In his latest report Frank reviews the IFR statistical recap of the robotics industry in 2014; gives details of recent acquisitions of robotic companies to show how companies are adding robotics to their product lines; notes that funding of robotic start-ups continues to break records; and looks at how China's robotics industry is growing by leaps and bounds.

The Robot Report strives to keep you informed about new start-ups, acquisitions, IPOs and fundings; about successes, failures, techno-

## Nick Denbow's Roundup (continued)

logical achievements, and forecasts.

**Data Centre built in 9 months**

Emerson Network Power has completed a new modular data centre in Barcelona, Spain, to enable T-Systems to capitalise on the significant current growth in the provision of cloud services in Europe.

"The construction of this data centre is the cornerstone of T-Systems' consolidation and transformation program, and allows us to provide cloud services across Europe," said Raúl Saura, Head of Dynamic Platform Services at T-Systems Iberia. "It was absolutely strategic to quickly and successfully deploy this data centre to fulfil T-Systems' vision for the future."

Scott Barbour, business leader of Emerson Network Power, added: "Our technical expertise, including our deep domain knowledge in power, thermal management, modular construction and our service capabilities enabled us to complete the facility within nine months, versus the traditional 24-36 months generally estimated for a stick-build construction. This all allowed Emerson to make T-Systems' deployment possible and assist them in realizing their business objectives."

The facility has been tested and achieved a Tier III designation, which calls for 99.982 percent availability, infrastructure redundancies and more: it consists of 38 integrated modules, nearly 300 racks, and has a modular capacity of 1.1 MW. The high efficiency design enables T-Systems to reduce its overall electrical consumption by 30%, compared to previous versions, so minimizing operational costs.

**Rotork Acquisitions**

Rotork has announced the acquisition of the Bifold Group Ltd, a leading UK manufacturer of pneumatic and hydraulic instrument valves and components, bringing valves and pumps for the oil and gas industry, with expertise in subsea and wellhead control systems. Bifold also has market leading technology in solenoid valves with ultra-low power requirements.

Peter France, Rotork Chief Executive, commented: "The acquisition of Bifold represents an exciting step forward in the continued development of Rotork Instruments. This strategic acquisition of a long held target of Rotork's is directly in line with our core strategy of strengthening Rotork's presence in the flow control sector and broadening our product portfolio".

Established in 1960, the last 12 months have seen a significant number of acquisitions by Rotork. These include Roto Hammer chainwheels in the USA, M&M International solenoid and piston valves in Italy, a sales distributor in Turkey, and Young Tech Co Smart positioners in Korea. Previous acquisitions included Xylem Controls/Midland ACS in the UK, Shischek explosion-proof actuators for the HVAC industry, the Renfro Associates valve adaptation business in Oklahoma, GT Attuatori rack & pinion pneumatic actuators in Italy and Germany, and K-Tork pneumatic actuators in the USA. Rotork acquired US companies Flow-Quip in 2009, and Jordan Controls in 2002.

**ICT acquires Raster in Holland**

In The Netherlands, ICT Automatisering is an independent provider of industrial automation services employing over 700 automation professionals. Established 37 years ago, they were known as Humiq BV until 2012. Sales in 2014 were Euro 63m, with profits around Euro5m. ICT has now acquired Raster IA BV, a major Dutch systems integrator in the field of industrial process automation.

Raster describe their activities as production automation, software development and consultancy, delivering these services to multinationals and Dutch companies in the offshore oil and gas, heavy lifting, chemicals, pharmaceuticals and defence sectors. They are accustomed to working with ISA-88, ISA-95, Safety, Gamp, SIL, OEE / SPC and tracking and tracing, and staff are experienced in the safety issues needed by various industries, including TÜV Functional Safety, VCA, NEN 3140, Basic Offshore Safety and Emergency Response Training. Raster also act as an importer and distributor in Holland for products from suppliers such as eWon, Softing, Prosoft Technology, Zigbee (4-noks) and Korenix.

This acquisition marks a significant step forward in the growth strategy of ICT, expanding the ICT Industrial Automation activities, and making a strong platform for continued partnerships with their existing software vendors such as Schneider Electric, Siemens and Rockwell Automation.

**ABB $90m order for 100MW 'power from shore' cable**

A new 200-kilometer cable system to be supplied by ABB will deliver 100 MW of electricity from the Norwegian grid to the Johan Sverdrup offshore facility on the Norwegian Continental Shelf.

ABB won this order, worth around $90 million, from leading international energy company Statoil, for a high-voltage cable system to supply power from shore to the Johan Sverdrup offshore oil field. Located 155 kilometres (km) west of Stavanger in the North Sea, Johan Sverdrup is considered one of the largest offshore oil fields on the Norwegian Continental Shelf (NCS). Once fully operational, production is estimated at 550,000 – 650,000 barrels of oil per day, accounting for nearly 40 percent of total oil production from the NCS.

ABB will design, manufacture and install an 80-kilovolt (kV) extruded direct current (DC) cable system with a capacity of 100 megawatts to transmit power from the Norwegian power grid to the Johan Sverdrup offshore production facility. At around 200 km in length, it will be the longest extruded submarine cable system to an offshore oil and gas platform facility in the world. Supplying electric power from shore for offshore oil and gas production avoids the need to burn diesel or gas out at sea to power the equipment and machinery on the platforms, resulting in substantial reductions in CO2 and nitrogen oxide emissions. In addition to the environmental benefits of powering the cluster of platforms from shore, the cable solution is safer and more energy-efficient than generating the power offshore using fossil

## Nick Denbow's Roundup (continued)

fuels.

"Delivering enhanced customer value through close customer collaboration is an important element of ABB's Next Level strategy and we are delighted to be supporting Statoil with this cable system as well as the HVDC converter stations," said Claudio Facchin, president of ABB's Power Systems division. "With this 'power from shore' cable solution, ABB will once again be pushing the boundaries of technology and lowering environmental impact, in line with our vision of power and productivity for a better world."

In March, ABB was awarded an order to supply the two high voltage direct current (HVDC) converter stations for the same project. One will be located onshore at Haugsneset, where it will turn alternating current (AC) from the grid into DC, which can be transmitted efficiently over 200 km to the second station which is on one of the oil platforms. There, the DC current will be converted back into AC and distributed to the rest of the field.

ABB's Claudio Facchin

ABB leads the way when it comes to cable systems delivering power-from-shore to both fixed as well as floating platforms. The company's track record includes Statoil´s Troll A 1&2 with 3&4 currently under commissioning. Other major references include the Gjøa platform which was commissioned in 2010, the Martin Linge platform which will be the world's longest alternating current (AC) cable from land to an offshore installation and the link to the Goliat power from shore installation in the Norwegian sector of the Barents Sea. ABB also performed the front-end engineering and design for the entire Johan Sverdrup HVDC power-from-shore system.

ABB is a global leader in high-voltage cable systems across applications such as integration of renewables, city centre infeeds, oil and gas platform power supplies and subsea interconnections. ABB has commissioned more than 25 DC and hundreds of AC cable links around the world.

**Emerson helps Qatargas LNG recover jetty boil-off gas**

Emerson Process Management has provided automation and engineering services for a Qatargas project that will hopefully reduce greenhouse gas emissions by 1.6 million tonnes annually. Now fully operational, the Jetty Boil-Off Gas (JBOG) Recovery facility is the biggest of its kind and one of the largest environmental investments in the world. It is expected to recover more than 600,000 tonnes of liquefied natural gas (LNG) per year – equivalent to the energy supply for more than 300,000 homes.

The facility is designed to recover the gas flared during LNG loading at the six LNG berths in Ras Laffan Port. The gas is compressed and sent to the Qatargas and RasGas LNG production facilities for use as fuel, or to be re-converted to LNG.

Emerson won this contract based on its leadership in oil and gas automation technologies, services, and expertise. Emerson specialists managed key elements of the project including automation engineering, configuration, startup, training, commissioning support and other services.

"Without Emerson's highly skilled team, completing the project would have been vastly harder," said Michael Koo, the Qatargas Project Manager.

The Emerson automation solution for the project used their DeltaV distributed control system to control and monitor operations, as well as Fisher control valves and Rosemount measurement instruments.

"The Emerson team welcomed this opportunity to help Qatargas execute the project safely, reliably and efficiently," said Alvinne Rex Abaricia, Emerson's senior programme manager for Qatargas. "We were able to apply flexible approaches to increase efficiency, such as testing hardware and software in parallel, and brought in dozens of experts from our own organisation as well as other suppliers to manage interfaces between existing and new systems."

Qatargas' Michael Koo

The $1 billion JBOG project is a landmark for the State of Qatar, demonstrating its commitment to balance industrial expansion with care for the environment.

**Stahl suggests Ethernet as the next fieldbus**

Back in June, at the ACHEMA 2015 exhibition in Frankfurt, R. Stahl AG announced that they are working with Siemens and the German Metrology Institute (PTB), and other partners, to develop an intrinsically safe Ethernet for use in process industry applications. The objective is to move Profinet into a fully competitive situation against two wire communications systems like 4-20mA and HART signals, or fieldbus systems such as Profibus PA or even Foundation Fieldbus H1. While H1 is limited to 31.25kBits/sec, their objective is to provide a system in the 100MBits/sec range of Fast Industrial Ethernet.

Stahl say that the PTB led team is now working to specify this intrinsically safe Ethernet, hoping to keep as closely as possible to the established IEEE 802.3 Ethernet standard. Aside from applications already possible today, future approaches revolving around the 'Industrial Internet of Things' concept are to be taken into con-

## Nick Denbow's Roundup (continued)

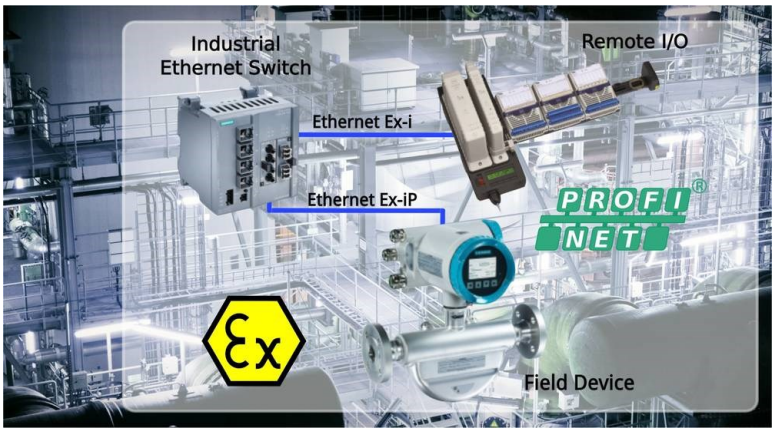
sideration as well. Within this framework, the working group has now defined two models for intrinsically safe Ethernet: 'Ethernet Ex-I' will enable transfer rates of up to 1GBit/sec to more complex devices that can be powered by a separate energy supply. For the simpler field devices, using line power, 'Ethernet Ex-iP' is the designated choice.

Emerson Program Manager for Qatargas Alvinne Rex Abaricia

Ethernet Ex-iP aims to replace the current two-wire fieldbuses, using an intrinsically safe power supply for the field device on an Ethernet cable suitable for full duplex 100 Mbit/sec communication. As an alternative to a conventional intrinsically safe supply, a so-called pseudo-linear -source ("F4-I") can be used for the power supply. This enables an intrinsically safe feed of up to 4W net power to a connected device.

The intriguing presentation from R.Stahl of the current state of this research project at ACHEMA provided a glimpse of their vision for this new Ethernet standard. Many interested visitors continued the discussions with relevant engineers at the stands of PTB and the members of the group involved in this research, discussing further details, possible applications and ideas.

Remember - the ***INSIDER*** of July 2015 - page 11 - mentioned that Siemens were encouraging customers to switch to Profinet, and suggesting that two wire intrinsically safe Profinet is the next step in the technology.




**Stahl trading results**

The 2015 half year report from Stahl was optimistic, early in August, with revenues up 12% at Euro 164m (US$187m) and EBITDA up 14.8% - but there was a comment that "Persistently low oil prices have led to a deterioration in the propensity of companies to invest in oil production equipment". There was also a significant loss made in Brasil, which cost the group around Euro 0.6m.

This story was turned the other way round in October, when Stahl reduced its forecasts for 2015, and "adopted a comprehensive set of measures to safeguard competitiveness over the long term". Now the statement admits that the oil and gas industry accounts for 50% of the total sales from the group, and this led to a low order intake and an impact on sales and earnings in the current half year. Full year sales and orders forecasts were reduced by Euro 20m – only 6.5% - but EBIT expectations of Euro 16-20m have been slashed to Euro 2-5m. These figures reflect one-off costs of Euro 8m (US$9m) for the current cost cutting measures, which include shedding 225 jobs.

**UK Power capacity versus demand**

In the UK, all is descending into chaos in the balance between the electricity power production capacity and the peak expected demand this winter: if the blackouts don't come this year, the Politicians will be convinced they can cheerfully continue as they are, and drive the country onto the blackout rocks 12 months later.

The problem arises because of power plant closures. Gas fired plants were closed down some years ago because the businesses were no longer profitable: this was caused by the natural gas prices rises compared to the power prices available from coal fired base load plants and nuclear plants. Now the EU pollution laws are finally forcing older coal fired plants to close, after they run out of their allowed running hours following the changes in legislation. Some nuclear plants have achieved life extensions, to step into the breach.

Gemma Stokes, corporate media relations manager at National Grid, said: "Margins [between supply and demand] are tighter. That has got tighter over the years because a lot of power stations are closing. Demand has stayed flat but power stations have closed."

Stokes said 25GW of power capacity had been lost from the system over the past year due to closures. However, she said doing deals with closed or closing power stations to produce energy as a last resort, and paying big users to alter their power use, would produce 2.6GW of capacity.

Last winter National Grid said peak demand hit 53.2GW, against a capacity of 70GW: so the gap was 16GW. Obviously the sums do not add up: but the extra 2.6GW quoted by National Grid includes paying large electricity users to suspend operations and take no power in critical periods. By doing this, and possibly even paying the legislative (pollution) fines imposed on generators to run their plants for longer than was allowed by EU legislation, the National Grid has increased the margin between available power and peak demand from 1.2% to 5.1%, they say.

Similar schemes last year were arranged, but did not get brought into play, as there was a mild winter, and the power

## Nick Denbow's Roundup (continued)

developed by the new wind farms was more consistent than expected: plus there is always the (politically unmentionable) import of electric power under the Channel from the French nuclear stations along their northern coastline!

**Looking forward to next year**

In Scotland, the last coal fired power plant at Longannet will close in March 2016: having opened in 1972, Longannet is one of the biggest coal-fired power stations in Europe, at 2.4MW, and can consume 1000 tons of coal per hour. The plant has also co-fired biomass and dried sewage sludge, the latter amounting to 65,000 tons pa: various re-burning techniques have been used to reduce NOx emissions, and a CCS research project there was abandoned as not financially viable in 2011. The plant was scheduled to close in 2020, but Scottish Power is closing it early, in fact blaming the high cost of connecting to the national grid system, who prefer power generation in the South of the UK. Scottish Power also announced that it is abandoning plans to build a gas fired power station in East Lothian, Scotland, possibly quoting the same reason, and continuing with projects around London.

In Yorkshire, the power station at Drax, which supplies 7-8% of UK electricity, is switching over to biomass to reduce its reliance on coal. Most of this biomass fuel consists of wood pellets from the USA, shipped out of Baton Rouge. Drax Power is no longer to finance their part of the White Rose CCS project being tested on their plant, but will allow the project to continue its operations on site.

**Nuclear options**

The financing of the major new dual nuclear plants to be built by Areva of France for EDF, as Hinkley Point C in the UK in Somerset, seemed to need the intervention of the British Chancellor with the Chinese Premier, to persuade them to lend the French the money. Britain is to guarantee the GBP2Bn loan the Chinese will make to EDF, a French state owned enterprise. Power is expected from this plant in 2025, maybe, and will cost twice the current average price of electric power. This is assuming the continuing problems with commissioning the first two (French and Finnish) reactors of this type currently installed by Areva are sorted out soon. Possibly there is also an agreement from the UK Government that there will be some Chinese designed nuclear power plants built in Suffolk, as Sizewell C, alongside the Westinghouse PWR currently operating there as Sizewell B. At least the Chinese reactors will probably have Triconex NRC approved shutdown and safety systems installed, which are of an American/British (Invensys/Aveva)/French (Schneider Electric) design, depending on your point of view.

**Offshore wind turbine developments**

The size of the blades used by the UK offshore wind turbines has grown over the last ten years, and is still growing, according to Dong Energy, Danish Oil and Natural Gas, who operate most of the UK's offshore wind farms. Stuart Nathan of *The Engineer* interviewed Brent Cheshire, head of UK Operations for Dong Energy, who explained that offshore wind is the most expensive way we have of generating energy. There's not much difference in cost building offshore foundations for a large turbine, over a small one. So while ten years ago the turbines were 3.6MW units, and stretched 120m above sea level to the top tip of the rotor, the latest Dong wind farms are 8MW, and 222m tall. These are the Vestas MHI units being installed off Barrow-in-Furness and in Liverpool Bay. Siemens have a 7MW turbine, which is 190m tall.

The next developments are coming from Norway, where Sway Turbines have plans for a 10MW turbine, which has a 164m diameter rotor with a 25m open structure at the hub, which is an open generator, with two rotors sandwiching an iron free stator, and thereby achieving a significant weight reduction for the structure.

**Blade Dynamics**

Blade Dynamics, established in 2007 and based in the Southampton University Science Park, won a large (GBP1m) research and development grant from the UK Government's Grow – Offshore Wind programme, to develop an advanced turbine blade tip and blade design. The objective was to nurture sustainable, knowledge based, domestic manufacturing in the vitally important offshore wind energy sector, to produce a substantial positive impact on the British economy and environment. In August this year Blade Dynamics delivered "the world's first modular design 78m long turbine blade" for six months of testing at the Offshore Renewable Energy Catapult's test, demonstration and research centre in Blyth, Northumberland.

The Blade Dynamics prototype 'D78' blade has been designed and manufactured in both the UK and USA and made its way from the Blade Dynamics plant at the NASA Michoud Assembly Facility in New Orleans, to the UK, for commissioning and testing. Its modular assembly design is unique, enabling larger, more effective turbines with reduced weight and higher performance. It is planned that the final stages of the manufacturing process will be able to be completed close to the installation or deployment site, even offshore, allowing manufacturing to be distributed around the country, and providing a route for the future export of blade components from the UK.

In October, GE of the USA announced that they have acquired the UK company Blade Dynamics, which will now become part of GE Renewables, the new division created after the GE take-over of the Alstom wind energy business. A spokesman said "At GE, research and development is a key part of our long-term strategy. In our ongoing pursuit of cutting-edge wind technologies, we have followed recent advancements in composite manufacturing with great interest, and we believe modular blades could potentially become a transformational technology for the industry. Modular blades offer scalable blade architecture, enabling lower cost manufacturing methods and a more cost-effective long-term solution for logistics challenges associated with transporting current blade technology. We are excited to welcome the Blade Dynamics team to GE." Particularly when the R&D is being financed by the UK Government

## Nick Denbow's Roundup (continued)

presumably. The GE statement went on to state that "The company started work on the D78 blade late in 2012, winning GBP15.5m (Euro21.5m) in development funds from the UK's Energy Technologies Institute (ETI), a state and private venture research partnership, following a competition for proposals to 'address the current high generating costs of the UK's offshore wind energy sector'."

**Parker buys Bestobell Cryogenic valves**

The latest release from the Instrumentation Products Division of Parker Hannifin, in Barnstaple, UK, advises that Parker Bestobell is exhibiting at Gastech 2015, the natural gas and LNG conference expo, being held in Singapore this month. The official statement said "Parker Bestobell showcasing for the first time its innovative new range of high pressure marine valves for fuel gas systems. The exhibition is part of the company's strategy to increase its international markets even further for its high pressure globe and check valves, which have recently been supplied to a number of vessels internationally that are amongst the first to use LNG within their fuel gas systems."

John Greco, President Parker Instrument Group

You might be forgiven for not knowing anything about Parker in this business, as the background is that Parker last month acquired the President Engineering Group Limited (PEGL), which was based in Sheffield, UK. PEGL was formed back in October 2010 when the Conflow and Bestobell Valves businesses were purchased in a management buyout from Flow Group: Bestobell Marine and cryogenic valves seem to represent the major part of the Bestobell Valves business, and they describe themselves as "a world leading supplier of cryogenic globe and check valves for ships". The major customers are LNG tankers and their shipbuilders, and Bestobell Marine supplies high pressure globe and check valves for use on pump and vaporiser skids used in the high pressure fuel gas systems on the marine engine systems. The Conflow part of the business appears to be aimed primarily at the coal industry, significantly in the UK and USA, helping to monitor and suppress dust and ash during mining and surface operations.

A single Blade Dynamics Wind Turbine Blade on its way to the UK

Parker suggest that PEGL had revenues of GBP19m ($29m) in its latest financial year, with 120 employees. Parker will report 40% of the PEGL revenues as within their North American businesses.

"The addition of PEGL provides product and manufacturing technologies and expanded systems capabilities along with solid brand names", said John Greco, Vice President and President – Instrumentation Group. "This acquisition will strengthen Parker's position in the LNG, Industrial Gas and Mining markets. We are excited about the opportunities to combine our organizations and extend more solutions to our customers."

**Emerson acquires IntelliSAW business**

Acquisition adds monitoring capabilities for critical electrical power transmission and distribution equipment

Emerson has acquired IntelliSAW Inc., a leading provider of systems that protect electric power transmission and distribution equipment

Emerson group vice president for measurement and analytical technologies, Tom Moser

## Nick Denbow's Roundup (continued)

by measuring and monitoring temperature, humidity, and partial discharge using advanced sensor and analytic technologies.
The IntelliSAW suite of predictive maintenance, continuous monitoring systems enable users to reduce maintenance costs and increase quality of service. The systems also increase personnel safety and protect equipment from significant damage.
"Continuous, reliable power is essential to our customers' businesses, with outages potentially costing millions of dollars of lost production per day," said Tom Moser, group vice president for Emerson Process Management's measurement and analytical technologies. "Continuous and passive wireless monitoring allows users to safely monitor the health of critical power assets to avoid unplanned downtime, allowing for increased uptime and revenue generation."
The IntelliSAW product line will become part of Emerson's Rosemount™ portfolio of measurement and analytical technologies, which includes Pervasive Sensing™ applications that give customers a more complete view of their operations and facilities. The acquisition strengthens customers' ability to make better business decisions about their electric distribution systems.
IntelliSAW wireless monitoring capabilities consist of SAW-based temperature sensing, RF-based partial discharge detection, and humidity monitoring instruments along with an advanced human-machine interface. A suite of software tools seamlessly integrates the information into the user's asset management infrastructure, including standard historians and alarm systems.
Founded in 2011, IntelliSAW is located in Andover, Mass. Terms of the acquisition were not disclosed.

**The Smart Manufacturing Leadership Coalition Announces New Website**
**http://www.SmartManufacturingProject.com**
SMLC's current $11M DOE Project, 'Industrial Scale Demonstration of Smart Manufacturing Achieving Transformational Energy Productivity Gains', has launched its website!
As a sister site of http://www.SmartManufacturingCoalition.org, the http://www.SmartManufacturingProject.com site is focused on providing the broader community access to information about the existing grant including project updates, materials, upcoming events and results. Please check back for updates to the project. As the project progresses, collaboration tools will be set up to engage the broader community for input, feedback and focus groups from various industry segments.

**mGuard Security Router for Process Engineering**
Phoenix Contact's innominate subsidiary is exhibiting at the SPS/IPC Show in Nuremberg, Germany, during American Thanksgiving Week. One of the products they are showing is the latest mGuard device, a security router.

Security is becoming an increasingly important topic in process engineering. With the new mGuard security router Innominate and Phoenix Contact are keeping abreast of this trend. The security router meets both the demanding standards for process industry hardware and for IT security products. In

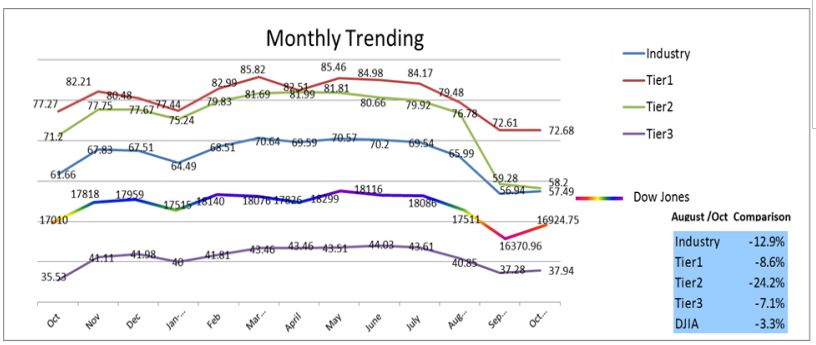
mGuard Security Router

terms of hardware features include an extended temperature range of -40 to +70 °C, IECEx and ATEX approvals for hazardous areas, and the testing for airborne contaminant gases to ISA-S71.04-1985 G3 Harsh Group A. With regard to the software, the additional security component OPC Inspector for the OPC Classic protocol, which is widely used in the industry, has been integrated alongside the well-known mGuard security functions.
The mGuard firmware, version 8.0 supports all mGuard Network Security Appliances.
Stateful Packet Inspection Firewall
User Firewall
Routing with NAT and 1:1 NAT
Highly secure IPsec Virtual Private Networks (VPNs) for secure remote access
Packet prioritization via Quality of Service (QoS)
Integrity monitoring of Windows file shares against malware infestation
Network Management Support

**Highlights**
Top performance, boots and configures faster than ever
Reliable update, flash and rollout procedures
Optimal flexible network integration, especially through the patented Stealth Mode
Efficient Configuration and management, central or local
Full-fledged Public Key Infrastrukturen (PKIs) support
VPNs Tunneling through HTTP and Web Proxy Server

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

# My Sabbatical is Over But the Bad News Persists!

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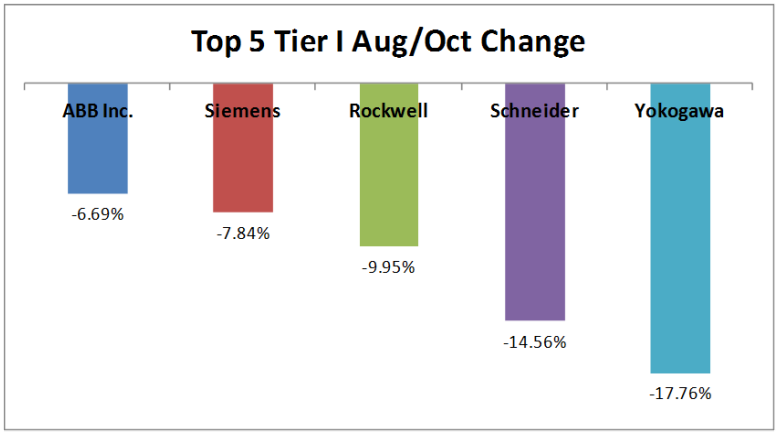
# Health Watch

## By Mary Samuelson

As one who hates to be the bearer of bad news, I took a sabbatical from the Health Watch Report in September to hopefully allow the market to do some correcting and report more positive results for October. That unfortunately, is not the way it turned out. The industry as a whole continues to suffer and stock prices have not recovered from the alarming drop that occurred between August and September. In fact, in many instances, they have continued to decline. As the Monthly Trending Chart indicates, the DJIA is down 3.3% since August, having recovered partially from the mid-September stock price landslide that occurred across the market. Our industry, however, after taking that same September deep dive has not recovered as adequately and is still down 13%. Tier I companies, the largest in the industry, appear to have remained almost flat after taking an 8.6% fall between August and September, but that is somewhat misleading due to Tier I company Cameron's acquisition by Schlumberger, which caused a Cameron stock price increase of 38%, artificially inflating the Tier I average slightly. Prior to the acquisition, Cameron stock was down almost 30%.

Tier II companies were hit extremely hard between August and September and stock prices for this group continue to fall through current reporting showing a drop of 24% since August. Tier III, the smallest in the Index, showed a very slight rebound between September and October, but are still over 7% below their August reporting price.

The Top 5 Tier 1 are not faring any better, and at times worse, than their smaller competitors.




Yokogawa, who had managed to pull ahead a bit in August, lost its momentum in September and October and fell back to its position before the August gain, dropping almost 18%. Schneider also dropped 14.6% since August. The other three in the Top 5 also took steep hits.

Looking at a larger portion of Tier I group across time, the picture is pretty much the same

INSIDER
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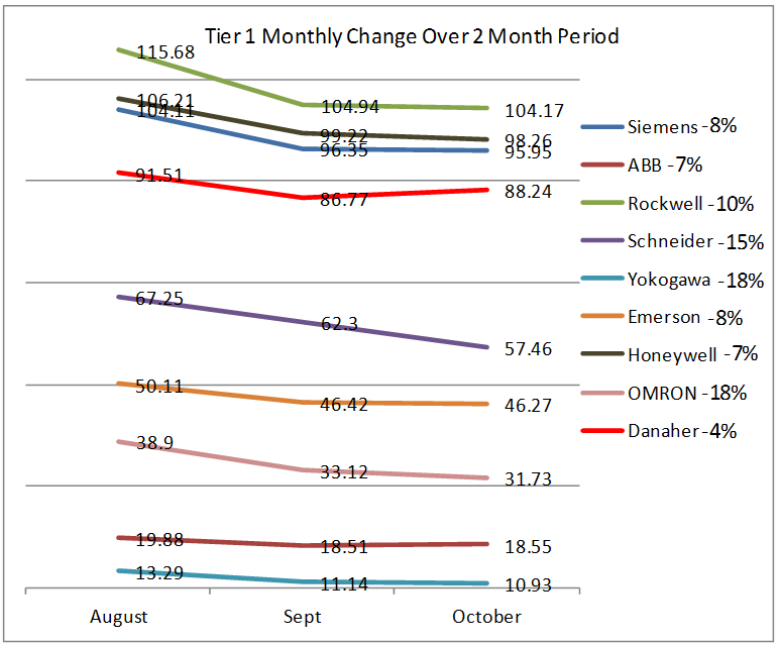
# My Sabbatical Is Over But the Bad News Persists!




across the board. A steep drop is seen between August and September, with little to no rebound for October. Omron dropped 18%, matching Yokogawa as the largest loser in the latest down turn.

A few companies show a slight uptick between September and October, but their stock price is still lower than it was in mid-August and they did not outperform the Dow, with the exception of Cameron where extenuating circumstances contributed. Rumors of further acquisitions are afloat, with major players expected to shift and change over the coming months. With oil and gas prices expected to stay low through 2016, those in our industry who are heavily vested in that area have no choice but to move toward more lucrative endeavors in other areas of the control automation field if they are to survive.

**Rumors of further acquisitions are afloat, with major players expected to shift and change over the coming months.**

# Health Watch

## By Mary Samuelson

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

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

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

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

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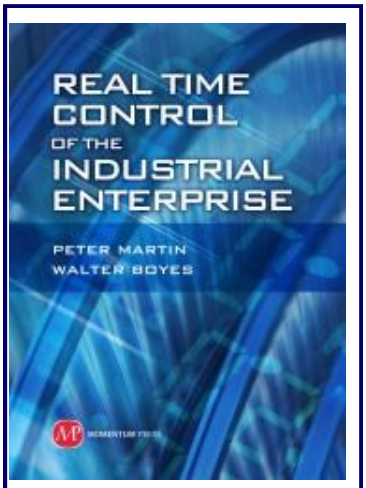
Mary Samuelson is available for speaking engagements about the Health Watch™ and other quantitative marketing issues. Contact Walt Boyes for details at waltboyes@spitzerandboyes.com.

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# THE WAY I SEE IT
# Editorial

## The Internet of Things, Sensors, and the IT/OT Split

The Internet of Things (IoT or IIoT, for the Industrial Internet of Things) is coming. There is no question about this. The question is how useful it will be in industrial settings.

We think it will be extremely useful. It should permit ubiquitous sensing strategies that we have been predicting for ten or fifteen years now. We think it will provide much more data and permit us to know much more about the processes we run, in real time. This in turn should make us capable of finer tuning of processes than we have ever been able to before.

But there are two things that have to happen before the Industrial Internet of Things gets really going.

The first thing is the end of the IT/OT Split. The war has been over for years, but they are still arguing over who has control of the networks. The fact is, the CIO reports to the CEO, so the CIO has the boss' ear. No matter how different the IT network is from the OT network, the IT folks are going to win. And the networks aren't so different now, are they? They use the same networking appliances, virtualization, cloud storage and computing, and they have sensors and devices that move in and out of the network. I ran a survey years ago in which I asked, "Who won the IT/OT argument at your place?" The best answer by far came from an Operations Engineering Manager who said, "We don't have those problems here, now that I run both shops."

IT will accept that OT is a special case network with special case issues, like the inability to be shut down whenever IT wants to, for patching and the like. OT network administrators are more often than not coming from IT anyway, and they understand both systems.

**You are going to see the prices of sensors drop by 75% in the next five years. This has to happen, or sensors will be priced too high for the IIoT.**

The other thing that has to happen before the Industrial Internet of Things gets really going is the design and pricing of sensors needs to drastically change.

Sensors will need to be more robust, simpler and easier to operate, and considerably less costly than they have ever been. How much less costly?

You are going to see the prices of sensors drop by 75% in the next five years. This has to happen, or sensors will be priced too high for the IIoT. We have always been able to heavily instrument process functions, but we've never done it because the cost of ubiquitous sensing is, and has historically been, far too high to afford it.

Nobody who builds sensors now wants to hear this, but it isn't going to be possible to stick your fingers in your ears and go "Lalalalalalala!" for much longer. I understand that the problem is that the high margins currently obtainable on sensors and transmitters are a major component of the company's profit. You will have to suck it up and make many more sensors at a good margin at a lower price, or somebody else from a different market will do it to you.

Sensors are being designed by many people outside the normal instrumentation companies. We've just had Bedrock destabilize the controller market. We'll have somebody destabilize the sensor and transmitter market soon.

So, I'm taking bets on how fast the price of, say, a temperature transmitter falls. Anybody got a suggestion for a time frame and a cost floor?

It will happen, because that's how the IIoT will come into existence. Don't think so? Well, we will certainly see.

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

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## Rajabahadur V. Arcot: India Emerges as Global Refining Hub

Despite India's low per capita consumption of energy, the country has emerged as the world's fourth largest consumer of energy.

According to the report "Indian Petroleum and Natural Gas Statics 2013–14"released by the Ministry of Petroleum and Natural Gas, Government of India.

**India had surpassed Japan to become the world's third largest importer of crude after the US and China.**

The per capita of primary energy consumption in the country, in terms of kg oil equivalent, is only 465.96 while that of China is 2101.37.

The per capita consumption figures in terms of kg oil equivalent for North America, Europe and Asia Pacific are 5940.31; 3246.50; and 1206.32 respectively.

Jamnagar India: the world's largest petrochemical complex

Moving forward, for India to sustain its economic growth, the country needs a robust energy infrastructure. The country's oil and gas industry is playing its role well.

Oil and gas account for about 37 percent of India's total energy consumption. Presently India depends on import to the extent of almost 80 percent to meet its oil and gas requirements. Oil and gas import accounts for almost 30 percent of the country's import bill.

With an expanding economy and with little prospects of finding new sources in the foreseeable future to augment its existing crude oil production capacity, India's import dependence on oil will only continue to rise and the country will remain one of the largest demand centers for crude in the foreseeable future.

*Oilprice.com* has reported recently that India had surpassed Japan to become the world's third largest importer of crude after the US and China. Quoting International Energy Agency's predictions, the report also highlights that India will consume 4.1 million barrels per day (mb/d) in the second quarter of this year edging out Japan's 3.8 mb/d.

### India, a global refining hub and leading exporter of petroleum products

India, apart from becoming a significant consumer of energy, is also a leading exporter of petroleum products.

In the financial year 2014, India exported a little over 63.9 million tons of refinery prod-

## Rajabahadur V. Arcot: India Emerges as Global Refining Hub (continued…)

ucts and earned US$47.1 billion to emerge as the second largest exporter of petroleum products in Asia. However it ceded the top position to Singapore. But this situation could well change as the country continues to add new refineries.

In the next two years, the country's refining capacity is expected to go up by around 40 percent from the existing 220 million tons per annum (MTPA) to 310 MPTA.

The continuous ramping up of the refining capacity, which was only 62 MTPA in 1998, has contributed to the emergence of India as a global refining hub and a leading exporter of petroleum products. Although the export of petroleum and oil products from India started only a little over a decade ago, presently they account for almost 20 percent of the country's exports. The vigorous manner in which the industry continues to expand its refining capacities is an indication of its intent to continue to remain an important player in this market.

**In the next two years, the country's refining capacity is expected to go up by around 40 percent from the existing 220 million tons per annum (MTPA) to 310 MPTA.**

Availability of expertise to engineer and construct refineries, ability of firms to internally generate investible funds & attract capital, low construction labor costs, and such others have helped the domestic companies to set up greenfield projects especially in the downstream segment. They invested in state-of-the-art automation systems and technology solutions to maximize the return on assets and achieve high productivity levels and operational efficiencies. Apart from their ability to earn higher margins, many refineries in India conform to Euro-environment norms. These factors have placed India's refining industry in a highly competitive position.

Currently India operates some of the world's largest and complex refineries. While the 33 MTPA Reliance Industries' Refinery at Jamnagar has Nelson complexity index of 11.3 that of Essar Oil Refinery is 11.8. Indian Oil Corporation's new refinery that is under commissioning at Paradip is engineered for a Nelson complexity index of 12.2. Theses refineries are capable of processing lower priced heavy sour crudes. Even though setting up of such refineries is comparatively more capital intensive they deliver higher refining margins and as such some of the Indian refineries are operationally highly competitive. It was the industry's strategic response to the country's challenges on the energy front.

### Positive and multiple linkages with global oil and gas industry

Indian economy has complex multiple linkages with the global oil and gas industry. As a growing economy India needs greater access to energy. It depends on large-scale import of crude oil and natural gas to meet its energy requirements, it does not export enough merchandise goods to cover the country's energy import bill; and this results in trade deficit.

As a consequence of increased energy imports by India in the last few years, the country's trade deficit breached sustainable levels and this situation improved only in recent quarters due of drastic fall in oil and gas prices. Additionally until recently, the Indian State was providing massive subsidies to keep the prices of petrol, kerosene, diesel, fertilizers, and liquefied petrol gas affordable as a social welfare measure and this in turn affected the country's financial health and the fiscal deficit ballooned. In order to improve, at least on paper, the county's financial health, the Indian State forced the State Owned Oil Companies to share the subsidiary burden that resulted in adversely affecting their financial performance. It was a messy situation for a growing economy and companies. The recent drastic drop in oil prices has come as a blessing and has provided the country a window of opportunity to bring under control the trade and fiscal deficits. The State has reduced the subsidies and the burden on oil companies and this augurs well for both the country and the oil industry.

The oil and gas industry is capital and asset intensive industry and over the past five decades all stakeholders have made significant investments in creating them. In the initial years, it was mostly the government funded state owned enterprises, called as Public Sector Enterprises in India, such as Oil and Natural Gas Corporation, Indian Oil Corporation and such others. In recent years private companies such as Reliance Industries, Essar Oil, and Cairn India

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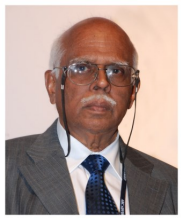

## Rajabahadur V. Arcot: India Emerges as Global Refining Hub (continued)

have made large investments both in upstream and downstream sectors.

The growth of the industry in India has contributed to the creation of career opportunities on one hand for highly skilled technical and managerial professionals spanning research and engineering, production, project management, and such others and on the other low profile jobs such as gas station attendants.

India developed competencies across the entire value chain of the industry; onshore and offshore oil prospecting; conceiving, engineering, and implementing upstream, midstream and downstream projects such as field development and production platforms both onshore and off-shore; refinery and petrochemical plants; storage, pipeline and other transportation & distribution logistics; and operations & maintenance.

**Some of the largest fieldbus installations are in India. These companies have been leveraging automation and information technologies to set global benchmarks.**

The current low crude-oil price trends are helping India not only to overcome its immediate fiscal and trade deficit challenges but also to initiate long-term plans. Looking ahead, domestic oil and gas companies are also taking advantage of them. Reliance Industries, which operates the world's largest refinery complex at Jamnagar in the state of Gujarat, is understood to add a new 400,000 barrels per day refinery at the same location.

Refineries owned by the State such as IOC, HPCL, and BPLC have plans to increase their processing capacities from around 135 MTPA to 200 MTPA by 2017. The Oil and Natural Gas Corporation (ONGC) which is India's largest oil producing company plans to invest over US$ 8.8 billion in bringing into production by 2018-19 its KG-basin oil and gas discoveries.

The firm also recently announced that its subsidiary company ONGC Videsh had signed a definitive agreement to acquire up to 15 per cent stake in CSJC Vankorneft, in eastern Siberia, Russia. Rosneft, Russia's national oil company, holds 100 per cent stake in Vankorneft.

Essar Oil is expected to increase its refining capacity by around 18 MTPA.

Globally, the refining companies are quick to adopt contemporary process control and automation related technologies, and its Indian counterparts are not an exception.

They deploy state-of-the-art automation systems such as distributed control systems, advance process controls, model based predictive and optimizations systems, programmable logic controllers, supervisory control and data acquisition systems, safety systems, tank farm systems, supply chain management systems, plant asset management systems, and such others to operate their production facilities efficiently.

Some of the largest fieldbus installations are in India. These companies have been leveraging automation and information technologies to set global benchmarks.

With refining companies in India having successfully built and operated world-class companies, the country has a pool of engineers with rich domain and project execution competencies.

Even global engineering procurement and consulting companies, such as Bechtel, Foster Wheeler, Technip, and Chiyoda leverage India's engineering expertise to participate in global refining projects including those coming up in the Middle East. Their engineering centers in the country further enhance India's competencies in refinery engineering and project management.

Rajabahadur V. Arcot is Director Asia Operations for Spitzer and Boyes LLC, the publisher of the Industrial Automation INSIDER. Contact him at **rajabahadurav@gmail.com.**

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