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Inside this issue:

| | |
|---|----|
| Cover Story: Top 50 Analysis by Nick Denbow | 1 |
| LNG from Queensland Shipping to Asia | 4 |
| Emerson Acquires Cascade Technologies | 5 |
| Valmet Completes the Profile | 6 |
| Rockwell VantagePoint Goes Mobile | 7 |
| Tofino's Eric and Joanne Byres Retire | 8 |
| INSIDER Special Report: Walt Boyes on the Future of Flow | 9 |
| CSIA Conference Announced; Bob Lowe to retire; CDP Studies Big Monitors | 12 |
| New SCADA Software Market Study from IHS | 14 |
| The ARC Forums are coming to Orlando and Amsterdam | 16 |
| The Way I See It: Editorial by Walt Boyes | 17 |
| Profile: MCAA's Cynthia Escher by Joy Ward | 18 |
| Rajabhadur V. Arcot: India as Economic Growth Engine | 25 |



Your key to the latest industrial automation and process control information

About *Control's* TOP 50

Nick Denbow analyzes the Top 50 listings from CONTROL magazine

Those TOP 50 Figures – Food for thought?

Control magazine's December 2014 issue has published their annual review of the Process Control and Automation industry suppliers, to list their sales volumes in the sector, and identify the largest global and then North American Top 50.

As usual this is a combined effort between Control



Allen Avery



Larry O'Brien

and ARC's Analysts: this year the line-up is headed by Allen Avery, automation research analyst at ARC, Larry O'Brien, vp for research at ARC, and Jim Montague, executive editor of Control magazine. This team is without the input of Walt Boyes, who had led this project for the last ten years as editor of Control magazine, until leaving there last year: Walt is delighted to see that Larry O'Brien is back providing a guiding hand for this year's analysis, as the two of them were the major contributors until a few years ago, when O'Brien left to join the Fieldbus Foundation.

Nevertheless, from a view across the Atlantic, the approach is still from a

US viewpoint – tempered this year by the inclusion of some more names that are distinctly European in origin. However, the task they have achieved is extremely difficult, since not many suppliers actually give turnover figures split into useful product categories, that might enable such an analysis by the competition – all the suppliers reading this will have much better data about their own companies, and no doubt criticize the figures. Many times the splits will depend on what the companies themselves define their significant business areas as.

The technologies included within the "Automation" definition work against the ranking of some major suppliers which might be included within any review of process control, as major equipment like heat exchangers, compressors, generators, centrifuges, and electrical switch-



Jim Montague

gear, transformers, etc., are excluded. At the same time AC drives are included, but pumps and motors are not: plus for some reason motion control systems and CNC systems are also included, but robots and material handling systems are not.

Rubric Changes

It should be noted that the definition of what is included and how the numbers are compiled is somewhat changed from previous years.

INSIDER HealthWatch
INDUSTRIAL AUTOMATION & PROCESS CONTROL

The 2014 recap is found on page 20, and is an interesting comparison to the Cover Story

Cover Story: CONTROL's Top 50 (continued)

Analysis for this year

The figures provided by Control give the data for the 2013 calendar year, as near as possible, using the annual results published by each company – inevitably three months or more after the end of their nearest financial year end.

Worldwide sales of the Top 50 suppliers increased to \$107Bn, about 5% up on 2012, which is presumably a reflection of the Top 50 companies buying up and absorbing smaller companies, so that the biggest companies will always continue to grow. So if that inherent growth is around 5%, the 15.6% growth in the total North American sales achieved by the North American Top 50 is significant, at a total size of \$28Bn, showing at least an extra 10% of growth in the US market.

This is the major trend running through the results this year, that in general the US market and sales figures are up, and the "Rest of the World" (ROW) figures are down. So the overall result for each company tends to depend on their involvement in these two parts of the market, and we see some interesting shifts of position in the tables resulting. As might be expected there are identifiable factors affecting groups of companies: for example any major involvement with the oil and gas/petrochemical has boosted results. A smaller effect seems to be that the German companies have done well in the ROW business, but it is not possible to analyse much more, as the exchange rate fluctuations have made significant differences over the last 2-3 years, and it is not obvious how the figures from Control were all consolidated into USD.

ROW Rankings for 2013

2013 Automation Vendor's revenues

| ROW Rank | Company | Sales \$Bn | % of Total | Growth 2013/2012 Total sales | NA Sales |
|----------|------------|------------|------------|------------------------------|----------|
| 1 | Siemens | 11.4 | 91 | -11.0% | -10.0% |
| 2 | ABB | 8.8 | 80 | -4.1% | 27.0% |
| 3 | Emerson | 5.0 | 56 | -3.0% | -11.0% |
| 4 | Schneider | | | | |
| 5 | Elec | 4.3 | 75 | 0.0% | 0.0% |
| 6 | Mitsubishi | 3.4 | 95 | 0.0% | 0.0% |
| 7 | Yokogawa | 3.1 | 92 | -21.0% | -16.0% |
| 8 | Rockwell | 2.9 | 48 | 1.3% | 8.4% |
| 9 | Honeywell | 2.4 | 72 | 3.2% | -3.0% |
| 10 | GE | 2.4 | 63 | 4.7% | 11.4% |
| 11 | Omron | 2.1 | 88 | -4.2% | -4.0% |
| 12 | Phoenix | | | | |
| 13 | Cont | 2.1 | 95 | 7.3% | 7.0% |
| 14 | Danaher | 2.0 | 57 | 3.8% | 3.8% |
| 15 | E+H | 1.9 | 80 | 11.5% | 7.2% |
| 16 | Fanuc | 1.8 | 97 | -3.0% | > -75% |
| 17 | IMI | 1.8 | 78 | 0.8% | 8.1% |
| 18 | Invensys | 1.4 | 69 | -7.0% | -21.0% |
| 19 | Cameron | 1.3 | 61 | 2.0% | -16.0% |
| 20 | Spectris | 1.3 | 68 | -4.0% | -4.0% |
| 21 | Festo | 1.3 | 85 | 6.0% | 6.0% |
| 22 | Flowserve | 1.1 | 66 | 3.8% | 5.0% |
| | Yaskawa | 1.0 | 79 | 0.0% | 6.0% |
| | Ametek | 0.9 | 45 | 8.6% | 25.0% |

The tabulation shows the figures derived from the Control data, showing the TOP 20 ROW (Rest of World, so not including North America) rankings for the major suppliers.

Here, compared to last year, there is little change in the relative positions: Siemens and ABB dominate, at #1 and #2, but Schneider Electric is now the only contender for #3 against Emerson, as Yokogawa fell back in 2013, dropping below Mitsubishi to #6. Adding the Invensys sales (listed at #16, as last year) into Schneider would accelerate them to above Emerson currently.

With Rockwell Automation at #7, Honeywell and GE swap places again

this year, but GE still looks under-rated at #9. Endress+Hauser moves up to #13 from #15 last year, with strong growth both in NA and in ROW, similar to the Phoenix Contact performance but against the run of play for many others.

Just below this TOP20 the Control TOP50 tabulations also include such names as National Instruments, Mettler Toledo, Metso, Pepperl+Fuchs, Krohne and Eaton, all with well over 50% of sales in ROW, all in excess of \$500m. While Burkert and Vega also manage to squeeze themselves into the global TOP50 sales league, it is surprising not to see names like Danfoss/Vacon with their variable speed drive

Cover Story: CONTROL Top 50 (continued)

businesses? Smar from Brazil seems to have dropped out, without any comment, although readers of this magazine should probably have guessed that this would happen, based on the investigative journalism of David W. Spitzer and his article about Smar's legal difficulties earlier in 2014.

Others such as Hollysys from China are not yet there: their reported total 2013 sales were \$350m, well below those from Vega, coming in to the tables at #50 with \$400m global sales in 2013.

Growth rates

The tabulation gives the total control and automation business growth rates for the global sales and the NA sales separately. Notable figures for the total business include a 21% drop in Yokogawa sales, due to their restructuring, and then an 11% drop at Siemens, after a 3% drop the year before. Interestingly Siemens did not fare much better in the NA market, showing a 10% drop there. ABB and Emerson also showed a fall in sales globally, making a sad picture at the top of the chart. In NA ABB's sales rose significantly, as ABB consolidated their newer acquisitions like Baldor and Thomas & Betts, but Emerson fell back even more, by 11%. Good performers in NA were Rockwell, GE, Phoenix Contact, Endress+Hauser, IMI and Ametek, while in global terms Endress+Hauser led the field with 11.5% growth, followed by Ametek, Phoenix Contact, GE, Danaher, Flowserve and then Honeywell at 3.2%. Invensys at -21% and Cameron at -16% had a torrid time in the NA market, with Cameron falling back to #11 in the rankings, from #8 last year.

Siemens was the major loser in the NA ranking table, falling to #6, below Danaher and Schneider Electric. Ametek moved up to #8 from #10, replacing Cameron.

The Control review of the year

The review of these tabulations presented by Jim Montague of Control was remarkably upbeat and positive, considering the number of negative growth figures shown in these tables. Steve Sonnenberg of Emerson talked about good figures in 2014 (compared to the year before), with the oil and gas market in NA giving figures 12% up, and 6% rise in the ROW markets. Emerson needed rises like that to return to the business levels seen in 2012!

Vimal Kapur of Honeywell was also quoted as being enthusiastic about the North American oil and gas industries migrating to using the new natural gas supplies available, as Honeywell has its main market in the refining/processing rather than exploration and development. So they should see their small set back in NA for 2013 reversed next year.

Montague maybe missed the point about the technologies covered in this review, when he concludes that major changes are coming in the oil and gas industry for 2014, with the Siemens acquisition of Dresser-Rand, and GE acquiring the Alstom and steam turbine business. The Control tabulations do not cover these products.

Montague, and other interested parties, might do well to consider the results of the Top 50 in light of the first year results of the Industry Health Watch, Mary Samuelson's detailed analysis of the Automation and Controls Industry based on 78 companies and their results. **"The 2014 Overview and What Is in Store for 2015"** begins on page 20.

For example, contrasted against Mr. Sonnenberg's optimistic remarks, as quoted by Mr. Montague, note that the Emerson Electric Board was so unhappy with results that David Farr's annual bonus was cut 10%. Honeywell Process Solutions' move from Automation and Control Systems to Specialty Materials is intriguing, depending on whether you find synergies in belonging to a group that is all about automation and controls, or a group that is entirely about chemical processes and manufacturing. The INSIDER is watching this carefully, and a cynic might want to suggest that it would be easier to spin off HPS in its current configuration.

Whither the Industry in 2015 and beyond?

The biggest question, going forward into 2015, is what will happen when the convergence of massively lower oil prices and pushback against unconventional drilling and fracking are felt. Many projects around unconventional drilling are already being cancelled as this becomes less economically viable with conventional oil being priced at levels we have not seen in many years. Companies that have put all their marbles in the oil and gas industry may find they are looking at empty baskets. The entire resurgence of manufacturing in the US and Western Europe is predicated on the availability of inexpensive natural gas. With oil at ridiculously cheap levels, what will this do for the fabled Industry 4.0 and Smart Manufacturing in the USA?

Reported by Nick Denbow with additional commentary by Walt Boyes and Mary Samuelson.

LNG from Queensland Shipping to Asia

BG ships first LNG from Queensland

The first cargo of LNG has been loaded and shipped from the BG Group Queensland Curtis LNG (QCLNG) facility in Queensland, Australia. Loading commenced 28 December, onto the LNG transporter vessel *Methane Rita Andrea*. The second cargo was loaded onto the *Methane Mickie Harper* in the first week of January.

QCLNG is the world's first LNG project to be supplied by coal seam gas, and the first deliveries are the result of more than four years of development and construction on Curtis Island. The second LNG liquefaction train on Curtis Island will start up in the third quarter of 2015: by 2016 full production of around 8 million tonnes of LNG a year will be



Methane Rita Andrea

achieved.

Currently BG is shipping the Curtis Island LNG to Japan, China, Malaysia and Korea, alongside their other shipments of US origin LNG from terminals like Lake Charles and Sabine Pass.

Bechtel LNG projects on Curtis Island

The lead contractor on the design and construction of the LNG plant for QCLNG was Bechtel, the engineering and construction group, who say that over 6000 people have been involved with this one project. In fact Bechtel is constructing three very similar



Two of the plants on Curtis Island

liquefaction plants on Curtis Island for three different clients: the other two are for Santos Gladstone LNG (a joint venture of Santos, Petronas, Total, and Kogas) and Aus-

tralia Pacific LNG (a joint venture of ConocoPhillips and Sinopec).

Alasdair Cathcart, Global LNG General Manager at Bechtel, said "Intricate planning began more than five years ago as our team began working towards developing a new LNG hub in Queensland to service the Asian energy market. Building three multi-train LNG projects side-by-side, simultaneously on an island will certainly be listed as one of Bechtel's greatest achievements in our 116-year history when they are completed in 2016."

The total output capacity from Curtis Island will be around 25m tonnes LNG per annum. Both the Gladstone and the

Australia Pacific LNG plants will come on stream later in 2015 – the wells that will supply all three projects are already supplying gas for domestic consumption in Australia. [The Gladstone project was described in an article on www.iainsider.com of 4th July 2013, which discussed the remote operations centre in Brisbane that monitors the thousands of distributed wells that collect the CSG].

GE agreement with QCLNG

GE this month released an article for press use advising that GE technology of gas turbines, centrifugal compressors and generators are integral parts of this BG QCLNG facility. Mary Hackett, GE Oil & Gas Regional Director, commented: "This is a historic milestone, not only for GE and our customer, BG Group, but for the oil and gas industry globally. This conversion of CSG to LNG on a large-scale truly unlocks this resource and GE has been working closely with our customer to deliver solutions across the entire hydrocarbon delivery chain to achieve this." GE signed a 22-year Contractual Service Agree-

ment with QCLNG in 2013 to provide for a broad range of advanced technology services, which include reliability guarantees on the equipment. —Nick Denbow

Emerson Acquires Cascade Technologies

Cascade Technologies is a leading Scottish manufacturer of gas analysers and monitoring systems using their own Quantum Cascade Laser (QCL) technology, which can measure multiple gas compositions simultaneously.



Emerson's Tom Moser

Their products help improve industrial emissions monitoring, production efficiencies and environmental compliance in various industries - such as petrochemical, food and beverage, marine, automotive and pharmaceutical.

The acquisition will expand the Emerson analytical monitoring capabilities by adding this innovative laser technology to its Rosemount Analytical gas analysis portfolio. Tom Moser, group vice president of the Emerson Process Management measurement and analytical businesses, said "The acquisition of Cascade Technologies is an exciting step as we further strengthen our gas analysis portfolio. Customers depend upon Emerson to solve their toughest analytical measurement problems. We are now better positioned to serve that need." Emerson considers that QCL technology has introduced a step change in gas analyser performance through its increased sensitivity, speed of response, and fingerprinting capability.

they novel technology. They appear to employ over 40 people, and have over 500 analysers in the field. Initially the product was targeted at marine emission monitoring analysis for the monitoring and control of flue gases and emissions, to meet MARPOL and EPA regulations: by 2009 their product was established in this application and sales supply agreements were signed with both a partner covering the marine emissions monitoring market, and another covering flue gas setting analysers for domestic boiler production. The next year saw the start of sales of their aerosol leak detection system, and an exclusive supply agreement with a supplier of automotive test equipment. The CT3000 multi-component gas analyser for automotive emissions testing achieved sales of 200 units within 24 months

The last three years have seen rapid acceptance of the QCL technology in the pharmaceutical leak detection market, and the process industry, with the first process analytics QCL analyser at an ethylene production plant in the UK. This has also been used for natural gas moisture measurement applications. The analyser is also used for Continuous Emissions Monitoring Systems (CEMS) for industrial gaseous effluent emissions: for example they consider that typically there would be 15 CEMS on each refinery in the USA. The whole installation of a single CEMS would cost \$200k-400k, and 30% of this historically has been for the analyser.



Cascade CT2100 On Stack Gas Analyzer



Dr. Iain Howieson

Dr. Iain Howieson, chief executive officer of Cascade Technologies, added: "Joining a global leader like Emerson represents an incredible opportunity for business growth. The Emerson global presence and market leadership will have an immediate impact on the adoption of our cutting edge QCL gas analysers and monitoring systems."

The Cascade CT2100 On Stack Gas Analyzer is a multi-component gas analyser for automotive emissions testing. It uses QCL technology to measure multiple gas compositions simultaneously. The analyser is also used for Continuous Emissions Monitoring Systems (CEMS) for industrial gaseous effluent emissions.

Cascade appear to have several boom areas for the application of their technologies.

Cascade QCL technology

The Cascade technology is based on a principle called Tunable Diode Laser Absorption Spectroscopy (TDLAS), which can measure the concentration of gas species in gaseous

The growth of Cascade Technology

Cascade Technologies is now based in Stirling in Scotland, and was established in Glasgow in 2003, based on

The advantage of QCL is that it avoids any need for cryogenic cooling and gas lasers. QCL uses semiconductor ma-

Emerson Acquires Cascade; Valmet Completes the Profile

materials having a series of quantum wells, so that higher power emission can be produced. In addition the lasing wavelength is not determined by the material itself, but by the physical thickness of the semiconductor layers. The patented Cascade Laser CHIRP technique enables the detector to work in the MHz region, with high speed room temperature detectors.

The result is a solid state compact design, giving reliability and easy integration: the technique competes strongly with gas chromatography, ion mobility spectrometry, and mass sensitive detector techniques. The Cascade development of multi-component TDLAS analyser platforms (capable of measuring up to 20 different gases in one instrument), allows a single multi-component analyser to replace multiple analysers in the field (for example those previously based on NDIR, chemi-luminescence). The QCL technology provides significant advantages in production throughput, accuracy and cost.

— Nick Denbow

Valmet completes the profile

It is just a year since Metso and Valmet finally split into two separate companies. The idea was to enable the two parts to be more closely focused and their respective managements motivated to develop in their two separate markets. The separation had been publicly discussed for at least six months, so presumably had taken a good year of work from the management. However these things never seem to run smoothly: the standard explanation of this would be the famous quote, said to be provided as an answer by Harold Macmillan (British Prime Minister 1957-63) "Events, dear boy, events!" – like the current recession.

Back in December 2013, the **INSIDER** report on the separation highlighted the apparent illogicality of the Valmet business supplying the capital plant to pulp and paper machines, and eco-boiler plant, while Metso would supply the Metso DNA automation systems and some quality control equipment to these same plant customers and projects. Even the associated PR issued by Metso and Valmet that December highlighted the Metso DNA systems going into Valmet plants, and the breakthrough into the South Korean market for biomass power plants achieved by the Metso DNA systems.

However, the two companies are made from the same Finnish DNA (sorry! - Ed), so should be able to work together closely, as many companies in Scandinavia do. However, as might be expected, the responsibility of

making the two separated companies thrive continues for their managements even after the separation. Doubly so, when their masters, the major Scandinavian shareholders, are common to both companies, and would apply pressure to sort out any anomaly caused by an error in the split. That gives Metso a powerful reason to let the PAS Division go. So in a mutually agreed deal, Valmet has acquired the Process Automation Systems Division (PAS) of Metso, in a deal signed on 15 January 2015. The acquisition cost is Euro340m – with the low value of the Euro this is currently \$393m.

Problems for Valmet

Valmet results for 2014 are not yet available. In the year to December 2013, sales were Euro2600m (\$3Bn), and operating loss was Euro59m (\$68m). The quoted 3 year trend of their three main business segments was that "Services" were stable, and had grown 10% to Euro1032m (\$1.2Bn) over the period. "Paper" capital plant and machinery was in decline, having dropped 20% in 3 years to Euro674m (\$780m), and "Pulp and Energy" had grown 30% over three years to Euro907m (\$1.05Bn), but had big fluctuations, with a decline of 25% year-on-year in 2013. The decline seems to have been attributed to problems in the sales of biofuel plants, pulp seemed to be holding up.

Pasi Laine, President and CEO of Valmet, presented the logic for the acquisition, saying that the automation systems business represented a stable, profitable business to add alongside their stable "Services" business, leaving the remainder of the business as the (unstable? And maybe lumpy?) capital projects, represented by the Pulp, Paper and Biofuel capital plant orders. Elsewhere in the presentation, it seemed to be stated that the stable "Services" part of the PAS business only represented 45% of the Euro300m (\$350m) total, but another slide adds all this Euro300m into the slice of the chart that showed the acquisition increasing their stable business to Euro1300m in total, but never mind!



Pasi Laine, CEO Valmet

The whole PAS business has been steady and growing, and has shown a relatively stable EBITA margin of 10-12% over the past 10 years - so it is anticipated that this acquisition will help Valmet achieve its target EBITA margin of 6-9% in

Valmet, continued...

the future.

The business logic

The Process Automation business being acquired employs 1600 people, and has assets of Euro55m (\$64m): the turnover figure quoted of \$300m related to 2013.

Of these sales, Laine stated that 80% of this value is sold to the same customers that are also his customers for the capital plant and installation services etc. Valmet supplies small automation

systems for sections of these plants, which have to interface with the overall automation system as supplied by Process Automation.

In a difficult explanation, he estimated the business represented by this small scale automation from the Valmet sales effort to be around 10% of the PAS sales. It is difficult to see how this was estimated from the “carved up” pre-demerger figures only. This customer overlap is the main area where synergy benefits will arise, and particularly in improving the efficiency of the existing plant operations for the benefit of customers, working on the 4500 Metso automation systems already installed.

There was quoted likely to be little in cost savings resulting from synergy between the businesses: but Laine was tasked with major cost savings in his first year of operations, not yet reported. More likely the benefit to accrue will be from customers wishing to have an overall project contract with one legal entity, and not have to deal with two separated halves of the business. Possibly this lost them orders in 2014.

The remainder of the PA business, 20%, is with pure process industry customers, like Neste Oil, Petrobras, Akzo Nobel, Surgutneftgas (a Siberian oil company with an export terminal on the Gulf of Finland).

The future?

The combination of Process Automation into Valmet produces a better, rounded company. The PA business

also brings with it some specific pulp analysers, web break systems, and paper QC instrumentation that should have been incorporated before. Hopefully it will enable the new

Valmet to present itself once again as having a complete capability, and that will enable the business to become more profitable, even in their cyclical capital business.

It reinstates Valmet as a major pulp and paper (and biofuel plant) industry supplier (as Metso was originally), enabling Valmet to compete with ABB and Honeywell in particular. The other quoted competitor was BTG (Biomass Technology Group) in the field of bio-fuel processes. Valmet will have a presentation to investors at their Capital markets day in London in March – closing the acquisition will take place on April 1st.

More likely the benefit to accrue will be from customers wishing to have an overall project contract with one legal entity, and not have to deal with two separated halves of the business. Possibly this lost them orders in 2014.

Rockwell VantagePoint Software Goes Mobile

The VantagePoint v6.0 software now includes VantagePoint mobile, a component that enables users to create displays and interact with data across any HTML5-compliant browser and mobile platforms, such as iOS and Android. Users can now easily log in to the VantagePoint system and automatically view Web-based KPI content that is responsive to the device they are using – from smartphones to tablets to PCs.

This is a significant change from the conventional, costly and time-consuming approaches that enable desktop or mobile access to manufacturing data. No user-specific configurations created by network administrators or IT staff are required, enabling manufacturers to quickly on-board more users and deliver value to increase productivity.

“The VantagePoint mobile component instantly detects the type of device being used to access information and adjusts the user experience for that screen,” said Angela Rapko, product manager for FactoryTalk VantagePoint software, Rockwell Automation. “This out-of-the-box solution will enable more users to access valuable operational insight while lowering the cost of delivering that data.”

Another new key capability is the “composer” feature, which allows VantagePoint v6.0 users to browse through data and easily customize content based on individual roles, priorities

VantagePoint Goes Mobile, and Eric and Joann Byres Retire

and viewing preferences. Using the software's drag-and-drop interactive tools, users can create personalized displays to quickly find the information that is most important to them. The "favorites" capability also allows users to

configure KPI data in the visual formats they prefer, from bar graphs to gauges to plant maps. They can then save the data or share it with a group using the



VantagePoint mobile software

using the VantagePoint mobile component.

"Customers have expressed a big need to drive usage of data across their organization for frictionless productivity," said Kyle Reissner, mobility platform leader, Rockwell Automation. "With portability in mind, we wanted users to be able to move between devices seamlessly, allowing them to be more responsive and reducing time to solution. The VantagePoint mobile component is now at the core of the FactoryTalk VantagePoint software to deliver this ease of use."

For OEMs, this streamlined connectivity provides the framework for delivering an information-enabled machine. Plus, they gain the ability to visualize data without the need for custom development.

For system administrators and integrators, improved diagnostics built into the VantagePoint v6.0 software on the server side – as well as more application-centric data sources – allow them to view and display the overall health of the system and specific applications. The VantagePoint v6.0 software also includes improved tag-provider templates to allow anyone initially building the model and applications – whether a system administrator or a customer – to accelerate design and deployment time.

All users will benefit from the flexibility of receiving and applying the VantagePoint software updates without having to uninstall, re-install and, in some cases, re-validate their current application.

"With the VantagePoint mobile framework, we intend to release software updates more frequently, including new display widgets and capabilities," Reissner said. "We're focused on eliminating friction, realizing productivity value, and ensuring users are able to do more with fewer barriers."

From Eric Byres: We're Retiring

Joann Byres (Tofino co-founder and Belden Vice President) and I are retiring from the Tofino Security group at Belden effective January 30, 2015.

As we reflect back on almost a decade and half in the industrial security business, we remember the wild ride it has been to create and grow both a SCADA security business and the industry as a whole. From our early days of critical infrastructure security research, to [Stuxnet](#), to last year's release of the [Tofino 2.0 product line](#), we have seen a lot of changes.

When we think about what we aimed to achieve, we're glad that some of our core beliefs have gained widespread acceptance. This includes the principle of "security simplicity" and the necessity of [Deep Packet Inspection \(DPI\) for industrial protocols](#). We also tried to contribute to the ICS security industry overall and our work on standards, particularly with ISA, was rewarding.

Stepping away from industrial security, Tofino firewalls and endless airport security checks is going to be a big change. We're ready for the change.



Joann and Eric Byres holding the innovative [Tofino Security Appliances](#).

If you want to contact Eric and Joann after January 30, 2015, they can be reached by email at:

eric (dot) byres (at) byressecurity (dot) com

joann (dot) byres (at) byressecurity (dot) com

INSIDER Special Report— Walt Boyes on the Future of Flow

There are 11 or 12 types of flow meters depending on whom you talk to. Each type of flow meter was designed to meet a specific requirement. Some will go away, some will stay. All will change. This article explores trends in flow meter design, operation and usage in pipelines, process plants, water and wastewater plants, industrial water treatment and water distribution systems.

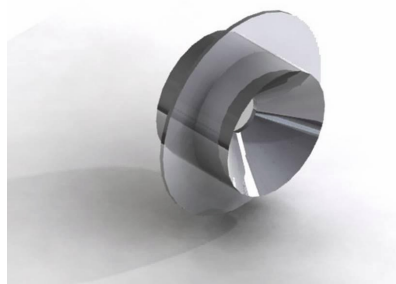
Electro-mechanical Flow Meters

It is hard to imagine many significant changes to devices like turbine meters, gear meters and other positive displacement flow meter designs, but there will be changes.

Gear-driven propeller and turbine meters will completely give way to designs where the rotation of the blades will be sensed electronically and produce an electronic pulse that can be immediately multiplied, divided, and converted to either an analog signal (4-20 mADC) or a digital signal for transmission (HART, Foundation fieldbus, Profibus or Industrial Ethernet). Units used for inventory or custody transfer will have built in flow computers and electronic calibration data.

For these types of flow meter, other key design trends will be ease of repair and maintenance, and new and more durable materials of construction. At the same time, the overarching trend for sensor cost reduction will apply even to electro-mechanical flow meters.

Differential Pressure Flow Meters



The Torus Wedge flow element

Differential Pressure Flow Meters will continue to be one of the most-used flow meter types. They will have significant

changes, both in sensors and in flow elements.



Kinetic Flow Meter (Malema)

New orifice plate designs, with lower pressure drop, will be created. Old flow element designs like the wedge meter will spawn new designs, like the Torus Wedge. Flow elements will need to be more durable and re-

quire less maintenance.



Battery operated magmeter

Simple, inexpensive differential pressure sensors and transmitters specifically designed for flow measurement will be a key design trend. Integrally mounted flow element/flow sensor/final control element devices will reappear. Battery operation and wireless communication will be another key trend.

Electromagnetic Flow Meters

The market for spoolpiece magmeters (as opposed to insertion devices) will enlarge, especially in water treatment, wastewater

Valmet commercial news Biomass boiler order

Valmet is to supply a biomass-fired boiler plant to a new steam heating station in Nokia, Finland: the 68MW Hybex fluidized bed boiler will use local fuels (forest residue and woodchips), and supply process steam to the SCA Hygiene Products paper mill and to the Nokian Tyres factory, plus supply local district heating. The value to Valmet will exceed Euro23m (\$27m), and will include a Metso DNA automation system. Valmet has installed more than 200 Hybex boilers and conversions worldwide.

Tissue line order from Poland

Valmet is to supply a complete tissue production line to ICT Poland, the fourth line to be supplied to ICT after previous installations in Italy and France. The new line will add 70,000 tons a year of high quality toilet and towel grades to the European market. The delivery will also include an extensive automation package from Metso Automation.



Bertel Karlstedt

New President of Pulp and Energy

Bertel Karlstedt has been appointed President of Pulp and Energy business line at Valmet, effective February 2015. Karlstedt was previously President/CEO of Nordkalk Corporation, a producer of limestone products, but has previously worked for Metso.

INSIDER Special Report: Walt Boyes on Flow

(continued)

treatment, and irrigation. Key design trends will be ultra-low-power, battery operation, inexpensive materials of construction (PVC, CPVC, PVDF, etc.) and custody transfer accuracy. Onboard datalogging and historization will be desired features, as will pulse, analog and fieldbus outputs.



UFM's Inexpensive Vortex

Magneters will need to be as easy to install and operate as a propeller meter. Patent expiry on multiple point insertion magnetic flow meters will permit competition. There will be a trend away from single point insertion magnetic flow meters because of poor accuracy, and maintenance difficulty.

Vortex and Other Fluidic Flow Meters



Beijing Fishermeter Swirl Meter

The market for vortex

shedding flow meters will continue to grow. Design trends will include reducing cost, improved maintenance ability, and providing inexpensive materials of construction (various plastics, PVDF, PFA, etc.). Design for CIP and 3A will also be a design trend, as more meters are used in food and pharmaceuticals, as well as in

silicon foundries.

The use of vortex precession (swirl) meters will increase as new ways of making them more inexpensive and interchangeable with conventional vortex shedding meters are designed. The basic patents expired long ago, so we should expect competition from makers of these devices, especially as Chinese manufacturers attempt to go



Sontex Coanda Flow Meter

global. They are more vibration insensitive and they require virtually no straight run upstream.

Coanda effect fluidic flow meters will continue to be used in district heating and HVAC applications, and may see a resurgence in water metering applications. Because they have no moving parts, have no upstream straight run, and may be built out of extremely robust materials, Coanda meters may find a resurgence in harsh metering applications such as crude oil.

Coriolis Mass Flow Meters

The market for Coriolis Mass Flow Meters is



Malema All Plastic Coriolis Meter

Nuclear dirty washing

The UK government has stripped private consortium Nuclear Management Partners (NMP) of their GBP9Bn (\$14Bn) contract to clean up the Sellafield nuclear waste site in Northwest UK. NMP is a consortium that includes AMEC from the UK, Areva of France and URS, a US-based engineering group: they employ 10,000 people at Sellafield. NMP have been working on the site for more than six years. The change is as a result of reports from the UK Public Accounts Committee and the National Audit Office, who have both accused NMP of cost overruns and delays. The Nuclear Decommissioning Authority (NDA), which awarded the contract to NMP, last year increased its estimate for cleaning up the UK's nuclear sites by 7% to GBP110Bn (\$165Bn) over the next 120 years, with Sellafield accounting for the vast bulk of that. The NDA recently recommended that the way the Sellafield site was managed should be changed: UK Energy and Climate Change Secretary Ed Davey said Sellafield Ltd would now become a subsidiary of the NDA. "The new model will, in due course, see a strategic partner appointed by Sellafield Ltd, to strengthen the program management and commercial capability at the site, as well as playing a key role in managing capital projects and contracts" he added.

INSIDER Special Report: Walt Boyes continued...

expected to expand, and there are some identifiable design trends that should be kept in mind. One trend is to



Largest Coriolis Mass Flow Meter

“economical” pricing. Another trend is to low power (loop powered) devices. At least one try at an all plastic Coriolis Mass Flow Meter has been made, and we should expect to see more of this kind of design.

Coriolis meters that handle large amounts



From small, PEEK, to...



Clamp-on versions...

Large diameter Coriolis meters (up to 20 inch/508 mm) will be designed and built. Self-diagnostics and self-

calibration will be much valued as design elements by end-users.

Ultrasonic Flow Meters

Ultrasonic flow meters have existed since the early 1970s in one form or another. Typically divided into Doppler and Transit Time versions, they have been used as niche market flow measurement devices. Recently, multiple path Transit Time ultrasonic flow meters have captured much of the custody transfer market in oil and gas.



RMG Multipath gas flow meter

We can expect to see smarter ultrasonic flow meters, meters that handle changing particle concentration and density, meters that handle entrained air and gases, and many new multiple path designs, including substantially inexpensive ones.

New Designs and Technologies for Flow

New technologies for flow measurement will appear, including cross-correlation designs, CAT scanning designs, and flow visualization in real time. We will see devices able to compute volumetric flow, flow velocity, flow profile, and both mass flow and density in real time.

Flow measurement designs will become simpler, easier for untrained operators to install and operate, and have simple, powerful transmitters that are significantly smarter than today's instruments. Flow meters will become less expensive, and there will be a trend to commoditization of devices. We should expect to see more low-power, battery-operation and wireless communication options in devices.

NEXT: A Look at the Future of Level

Bechtel and Westinghouse Alliance

Bechtel and Westinghouse Electric Company have announced a partnership to provide decontamination and decommissioning services for nuclear power plants throughout the United States.

“Customers can trust that Bechtel and Westinghouse will provide integrated services and solutions to safely decommission, decontaminate, and dismantle a power plant, and prepare the site for other uses,” said Michael Graham, general manager of Bechtel's global environmental business.

Bechtel has more than three decades of experience in clean-up, decommissioning, remediation, and closure at more than 500 contaminated sites across the world, including nuclear waste facilities in Washington state, New Mexico, Idaho, Tennessee, and South Carolina. Bechtel also performed extensive decontamination and decommissioning work after the accident at the Three Mile Island nuclear power plant in Pennsylvania.

Westinghouse technology is the basis for nearly half of the world's operating commercial nuclear power plants.



Bechtel's Graham

CSIA 2015 Conference Announced, Lowe to Retire

Control system integrators and industry suppliers from around the globe will gather in Washington, D.C., U.S., April 29 – May 2 for the CSIA 2015 Executive Conference.



Alan Beaulieu

Economist Alan Beaulieu, president of ITR Economics, will open the conference with his latest economic outlook for manufacturing. This year, Beaulieu will be joined on the stage by Nick Setchell, CEO of Practice Strategies,

for a “stump the experts” session, during which attendees can ask the speakers questions on external and internal financial influences on their business. Their presentations will be the first of more than 20 educational sessions offered throughout the three-day event.

New this year are two workshops that will be held in conjunction with the conference. The Best Practices Training workshop will be offered Tuesday, April 28 – Wednesday, April 29, for those who are interested in learning more about the application of CSIA’s best practices to improve their system integration businesses. The training will focus on the management areas that are most challenging for growing integration companies.

A second workshop created for project managers, control engineers and designers will be held concurrently with the Executive Conference. A Commonsense Approach to Automation Upgrades and System Migrations will be offered Thursday, April 30 – Friday, May 1. Workshop



CSIA’s Bob Lowe

participants are invited to participate in all conference social events.

Those attending the conference will have multiple opportunities for networking, including an industry expo, awards banquet and a closing reception during which Executive Director Bob Lowe will be honored. Lowe is retiring in June.

Last year, a record-breaking 538 people attended the conference, including more than 80 system integrators, partners and guests from outside the United States. See the complete details and register at the [CSIA 2015 Executive Conference](#) website.

NEW CSIA Members

The Control System Integrators Association (CSIA) announces the following control system integrator companies have joined the association, Industrial Control Specialties Inc., Prince George, Virginia, U.S.; Rocatek, Bogota, Cundinamarca, Colombia.

New partner members include: SICK Inc., Minneapolis, Minnesota, U.S.; Tempered Networks, Seattle, Washington, U.S.

Recently recertified members include: AmFax Limited, Blandford, Dorset, U.K. ESE Inc., Marshfield, Wisconsin, U.S. Revere Control Systems, Birmingham, Alabama, U.S.

To become a CSIA Certified member, a member company must pass an independent audit with stringent performance standards in nine management categories: general; human resources; marketing, business development and sales;

Market study of pumps for oil and gas

In the research study “Global Pumps Market in the Oil and Gas Industry”, Frost & Sullivan finds that the market earned revenues of about \$10Bn in 2013 and estimates this to reach more than \$14Bn by 2020. The study covers centrifugal and positive displacement (PD) pumps. This is as a result of the escalating investments in the exploration and production of conventional oil and gas. F&S believes that the Western hemisphere will lead the way in uptake as production surges owing to the shale oil and gas boom in North America, oil sands in Canada, and conventional reserves in Brazil, Venezuela and Mexico.

“Increasing awareness on the economical and functional advantages of PD pumps is prompting customers to shift away from centrifugal pumps,” said Frost & Sullivan Industrial Automation and Process Control Research Analyst Sakthi Sobana Pandian. “PD pumps will prove indispensable in various applications such as hydraulic fracturing, the mixing and injecting of chemicals, and the mixing of solid propellants with water.” The need for water and wastewater management during the extraction of gas and oil from shale has added to the demand for pumps. Efficient pumps are gaining importance as environmental concerns threaten market growth.

CSIA continued... and COP Studies Big Monitors

financial; project; system development lifecycle; supporting activities; quality assurance; and service and support.

Certified members are re-audited every three years and recertified if they meet current performance standards. The certification criteria is spelled out in CSIA's Best Practices and Benchmarks, the accepted roadmap for system integrators committed to delivering the level of quality, performance and long-term support their customers expect.

Industry Survey on Effects of Large Screen Monitors

The Center for Operator Performance is conducting a survey on the use and effectiveness



Large Monitor Control Room from Planar

of large screen monitors (32" or larger) across the process control industry.

In addition to size and number of monitors, the survey elicits input on the intent of the monitors, the formatting of the data, and suggestions for use.

The results of the survey will be used to guide research on HMI and control room design. The survey takes approximately 20 minutes and is appropriate for supervisors, operators, and engineers/designers. This survey is open to any operating facility and company, with results provided to all who participate. The survey will remain open until April 15, 2015.

To participate, go to <https://www.surveymonkey.com/s/H53FDRJ>

The Center for Operator Performance (www.operatorperformance.org) is a collaboration of operating companies and DCS suppliers that conducts research into ways to improve operator performance. The operating companies include Chevron, Koch Industries (Flint Hills Resources, Invista Chemical, Georgia Pacific), Marathon Petroleum, SUNCOR Energy (PetroCanada), and NOVA Chemicals. DCS suppliers include Emerson, ABB, and Yokogawa. The Center is based at Wright State University in Dayton, Ohio.

Contact: Tom Kindervater

Center for Operator Performance

7087 Corporate Way



Dayton, Ohio

513-713-3847

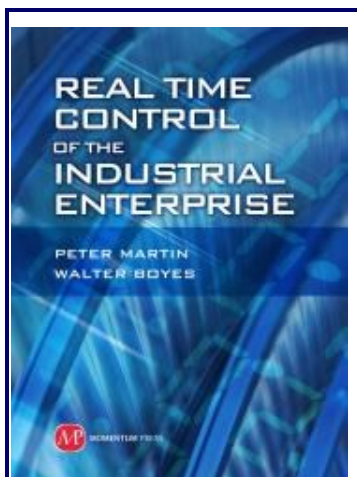
Email Tom Kindervater at: tkindervater@operatorperformance.org

New ABB SynRM motor

In Europe ABB has launched a Synchronous Reluctance Motor (SynRM) and VSD package, which offers energy efficiency improvements with accurate process control.

Synchronous reluctance motors combine the energy saving benefits of permanent magnet technology with the service-friendliness of an induction motor. The SynRM has no rotor windings, so there are virtually no power losses and the rotor temperature remains low, giving losses typically 40% below an induction motor. Lower temperatures also mean longer bearing life and longer re-greasing intervals, extending the maintenance interval. SynRM is lighter, less expensive and easier to repair than a permanent magnet motor - yet gives the same performance levels. The motor is available in two packages: (1) a motor which is the same physical size as a standard IE3 induction motor but operates at the higher IE4 efficiency levels; or (2) the "High Output" model, which is two frame sizes smaller for the same power and IE3 energy efficiency.

The VSDs used to control the ABB SynRM motors deliver direct torque control, for highly accurate motor torque and speed; safe torque-off, giving reliable isolation for maintenance; and advanced programming tools - for fine-tuning to meet specific process requirements.



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.

The World Market for SCADA Software

SCADA Market Expected to Enjoy Strong Growth in the Future

Alex Hong, senior analyst for industrial automation for IHS, Inc. has released a new study on the market for SCADA software.

Compared with the industrial automation hardware business, market for SCADA software automation products is expected to experience higher growth in the future.

This is partly because SCADA products are mostly used in large investments in the energy business—such as in oil and gas and power facilities—an area that is performing better than other sectors. SCADA's strong growth is also due to an increasing number of customers becoming aware of the importance of such software, which can enhance their production lines' efficiency.

As the most important market for industrial automation investments, the Americas region generated the most SCADA sales revenue worldwide in 2013. The biggest contributor is the United States, which accounted for most of the revenue in the Americas region. The major factors driving the scale

Russia and the Middle East were the main contributors for global oil and gas production, which is suffering from the declining price of crude oil. This price decrease is diminishing the investment opportunity.

China's leadership has identified financial stability as its most important objective, with only moderate stimulus applied. Because of that, many investments have been delayed.

and growth of the Americas region are investments in the oil and gas markets, as well as the strong domestic consumption in the food and beverage and power markets. Canada and the Latin

American countries also contribute copious opportunities in the oil and gas industry.

Europe was the second largest market for SCADA in 2013, only slightly smaller than the Americas.

The market driver for Europe is its strong machinery and manufacturing industries. Germany is the key SCADA user in the region mainly due to the country's cornerstone automotive industry.

Russia and the Middle East were the main contributors for global oil and gas production, which is suffering from the

declining price of crude oil. This price decrease is diminishing the investment opportunity.

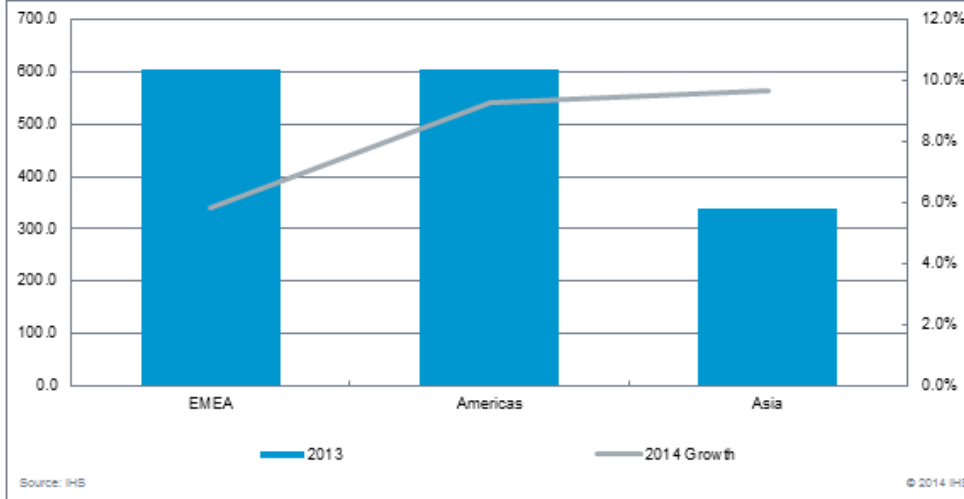
Europe as a whole is slowly dragging itself out of recession. With tight fiscal policies and credit conditions in several countries, excess industrial capacity

The World Market for SCADA Software (continued)

and still relatively weak export demand, there are few signs of a strong upturn for the region in the near future.

mestic consumption, such as food and beverage and water and wastewater.

The World Market for SCADA Software & Services by Geographic Region
2013 Regional Revenues (\$M), 2014 Regional Growth Rate (%)



Asia-Pacific, which had been one of the fastest growing regions in the past few years, is undergoing a major deceleration. China is the major cause for that.

China's leadership has identified financial stability as its most important objective, with only moderate stimulus applied. Because of that, many investments have been delayed. Thus, the overall Asia market had a lower growth in 2013 compared with past years.

However, Asia still experienced the highest rate of expansion of all world-wide regions due to its small revenue base and plentiful investment opportunities. Extensive investments are being made in industries related to basic do-

Another important country in Asia is Japan. Since 2012, the Japanese government pushed forward strong economic incentive plans by applying fiscal stimulus, engaging in monetary easing and

Since 2012, the Japanese government pushed forward strong economic incentive plans by applying fiscal stimulus, engaging in monetary easing and implementing structural reforms.

implementing structural reforms. But when measured in U.S. dollars, the market

showed a decline in growth in 2013 because the currency had depreciated

by more than 10 percent in terms of exchange from the yen to the U.S. dollar.

Contact alex.hong@ihs.com with questions or requests for more information.

Hima-Sella to build ESD system for off-shore rig

Hima-Sella has been awarded a contract to develop an Emergency Shutdown (ESD) system for a North Sea oil platform. The platform's new ESD will be a HIMA HIMax, a Programmable Electronic System (PES) designed for use in production processes that can ill afford downtime. HIMax delivers SIL3 protection that is 'NON-STOP', in that hardware and software changes can be made without interrupting the functionality of the system. It also offers scalable redundancy (which HIMA brands as 'XMR') for operation in quad, triple, dual or single mode. Eddy Turnock, Hima-Sella's Sales & Marketing Director, comments: "HIMax is proving incredibly popular within the oil and gas sector." He goes on to say that improved drilling techniques and better access to subsea wells are extending the life of many oil and gas platforms, which need to be modified to accept and process product: "And with functional safety applicable to the entire lifecycle of a platform, the ESD and other safety systems must keep pace." Hima-Sella is building the ESD at its headquarters in Stockport, UK using HIMA's SILworX programming tool. In addition, the development and verification of the ESD's functionality is being overseen by Hima-Sella's dedicated Functional Safety Management Team. Factory acceptance testing is scheduled before the end of Q1 2015.

ARC 2015 Industry Forum Takes Shape

The eight programs at the ARC Forum in Orlando this February promise to be interesting and useful for executives of manufacturing and automation companies.

For example, here is a description of the Cyber Security Solutions program.

Cyber Security Solutions for Industry and Infrastructure

Cyber security attacks of various kinds continue to escalate, growing in sophistication and reach every year. Even though most of the attacks have been directed at commercial targets (such as banks) and individuals (such as identity theft), the number of attacks on industrial plants and infrastructure, such as ports, oil facilities, and the electric grid, continue to increase. Protecting our industrial base

from cyber attacks requires a variety of techniques and solutions that go beyond those used in commercial industries, like banks. Industrial facilities have different systems (for example, control systems) and risks (for example, loss of lives and environmental impact), involving a totally different community of hackers and defenders. This community has been working for many years, but hackers and technology are moving very fast. We must continue to invest in existing programs and initiatives, but we also need to address advanced persistent

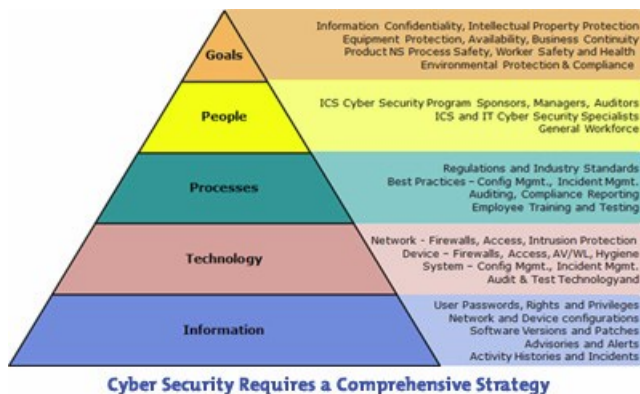
threats, examine new requirements, and search for new ways to think about more secure solutions.

ARC's Cyber Security Solutions for Industry and Infrastructure program is the ideal venue for you to get the information you need to develop a winning strategy and identify the best solutions. You will learn what others are doing, how they are doing it, and the benefits they are achieving. You will also have a chance to discuss your challenges with peers and leading cyber security researchers, service providers, and solution providers.

ORLANDO FORUM PROGRAMS

Click on these links to get more information on these programs:

- ▶ [Analytics for Industry](#)
- ▶ [Asset Performance Management](#)
- ▶ [Cloud Computing Solutions](#)
- ▶ [Cyber Security Solutions](#)
- ▶ [Energy Management Solutions](#)
- ▶ [Industrial Internet of Things](#)
- ▶ [Innovations in Automation Systems](#)
- ▶ [Workforce Development and Training Solutions](#)



information confidentiality, or a pure control system perspective, where the focus is on system availability. ARC's program is the only event that considers all of these cyber security challenges and the need for an integrated strategy from the enterprise to the plant floor. Stakeholders in IT, automation, operations, product development and supply chain will benefit by gaining a broader understanding of all of these challenges and the need for collaboration and comprehensive strategies.

Grit blasting safety offshore

Operational trials on platforms offshore in the North Sea have been used to assess the performance of the GasSecure wireless gas detector system during grit blasting operations. These operations can take place over periods of several months during lifetime extension projects on existing structures, and the sheeted habitats enclosing work areas, and the dust resulting from the work, have a severe impact on conventional optical gas detection systems - particularly on any open path / line-of-sight (LOS) detectors, where the beam will be blocked. Operators need an alternative, robust and flexible supplementary gas detection system, and the GasSecure GS01 battery powered wireless unit provides an answer to this problem.



The GasSecure GS01 units offer a technically approved system recognized by the safety authorities, a cable free environment which avoids any trip hazards, and a unit able to withstand the dust and aggressive environment. Tests showed that the detector sensitivity was not affected by the clouds of grit blasting dust, even after prolonged exposure directly in a zero visibility dust area. The client involved is now scaling up the use of the GS01 around grit blasting in life extension operations offshore.



THE WAY I SEE IT

Editorial

Thank You... and that's a fine cyber howdy do.

I want to thank all of my friends and readers who commented on my recent serious health issue. I came very close to the final editorial. My heart, with its zipper, cloverleaf, onramps, and truck runaway ramp, is getting much better, and I appreciate the good wishes for my continued health.

But now back to the business of automation and control systems. I have a question for you all, readers.

Recently, Kim Zetter, in the January 8 issue of WIRED, reported on a cyber attack of an industrial control system that resulted in the serious damage of an unidentified German steel plant. Calling it only the second known and verified incident where a cyber attack caused physical damage to equipment (Stuxnet being the first), Zetter said that the report, from the German Federal Office for Information Security (BSI), indicates that the attack came through the plant's business network, but that, "The know-how of the attacker was very pronounced not only in conventional IT security but extended to detailed knowledge of applied industrial controls

and production processes," Zetter says the report said. The attack made it impossible to shut down the blast furnace in an orderly fashion and caused great damage.

And we now know why the FBI and NSA were so sure the Sony hack, which we discussed last issue, was done by North Korea. Accord-

"We knew North Korea hacked Sony because we had hacked them first, and we watched them do it."

ing to the White House, we knew because we had hacked them first. And we watched them do it.

The obvious question for you all, then, is what is going to happen when, not if, this sort of hack becomes more commonplace? Who is going to be seen as responsible? The hacker, the asset owner, or the control system integrator or vendor?

Obviously, the hacker is at fault, but it will not be easy, or even possible to find out who it is, let alone collect damages. This is especially true, if, as is likely, the attacker is a nation state.

Most probably, the insurance companies will have to bear the costs, but it is a certainty that they will attempt to recoup by blaming the system integrator and control system vendor for the vulnerability that led to the hack damage. This is, I believe, a foregone conclusion.

The large automation vendors, perhaps, have enough leverage with their customers to ameliorate the damage, and the damages. Perhaps. I am certain that there are agreements to save and hold harmless the vendors in the case of such attacks. But how defensible those agreements are has yet to be tested.

The companies that are out on the sharp end, and completely unprotected, are the smaller vendors and the typical control system integrators, neither of whom have the cash, wherewithal or stroke to be able to defend against a serious lawsuit.

So, what are we going to do, as an industry, to see to it that this doesn't happen? Even the biggest automation vendors have limited stroke (unless you're Honeywell and own your own chemical plants) with end-users to make sure they operate the system in a cyber safely manner. And any control system can be hacked. The Industrial Internet of Things will just make it that much more interesting.

So, what are we going to do?

Walt Boyes

Comments? Talk to me!
waltboyes@spitzerandboyes.com

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

Cynthia Escher

by Joy Ward



INSIDER

INDUSTRIAL AUTOMATION & PROCESS CONTROL

Profile

Cynthia Escher has led MCAA (Measurement, Control and Automation Association) since the organization broke from SAMA, the Scientific Apparatus Makers Association, several decades ago. She has seen the dynamic association grow from a handful of companies and two employees to today's influential organization. We caught up with Escher at the 2014 MCAA meeting where she shared her life in the thick of things at MCAA and the news of her upcoming partial retirement.

Joy Ward: Talk to me about how you got into running MCAA.

CE: I have a degree in English from Duke University. I actually graduated in 1969. Women didn't do very much in business. You could maybe go to law school. You could go to med school but in business, which is what I thought my skills would be, I ended up after college working for a small law firm. I had gotten married while I was in college and we moved to the Pennsylvania area and I continued to work for lawyers.

CE: My husband bought a Baskin-Robbins ice cream store. He was a teacher. In Washington you can actually do one of three things. You can work for a congressman or senator, you can be a lawyer or you can work for an association.

CE: So I went to work in 1978 for the Scientific Apparatus Makers Association (SAMA). At the time, SAMA had a staff of twenty and we actually had six sections. I was actually hired as the Administrative Assistant. I graduated from being basically an assistant to the president.

CE: Eventually I was president of SAMA and then we split off. I got into this just because in Washington I wasn't going to be a lawyer and I didn't like Congress.

CE: That's how I got into association work. That was 36

years ago.

CE: I really think that this organization has just figured out how to lace up its shoes and they are really on the move. It's really exciting to see the way they are working together; companies with different interests coming together.

CE: I have met some of the most incredible people in these thirty-six years that I just never would have had an opportunity to meet like that. Just having the opportunity to see the evolution of this industry and personally just working with some great people on the staff side as well as the board side. It's just been a hoot! Now it's even more fun because they're moving. We're doing things we never could have done before.

CE: Now I feel like I'm in a position that I can go out there and talk on behalf of the industry and try and find those connections and coalitions that will help us with the educational system and finding the right people, trying to solve issues with regard to product approval, and things that are important to the industry.

CE: From my career point of view I've always felt my job was to facilitate their objectives. You can always have two different kinds of organizations. You can have one that is staff led and you can have organizations that are member led. Many member led organizations have lots and lots of committees and they do very little. Many staff led organizations have staff that just does what they think is right and they just make sure that they have a group of people who will kiss off on that. I'm somewhere in between the two of them. I like to make sure that we have a consensus of what we want to get done and somebody then takes the ball and runs with it. Once somebody tells me what they want to do I'm on my way.

CE: I'm proud of that difference in the way that I see the way MCAA works and the way a lot of organizations who spin their wheels constantly. I want to take the next step forward. We have got some great people around right now who are energized about

The fascinating thing of my life right now, is as stuff starts to work and starts to prove itself, I'm actually facing more resistance at this point in my career than I did through the first part of my career.

Cynthia Escher

by Joy Ward (continued)

specific issues. I want to make sure that something happens. Can we change the world? Can we make everybody educated in a few years? No. None of this stuff happens immediately so I'm well aware that I can only put the wheels in motion but hopefully I can set the right wheels on the right track.

CE: I actually do have an exit strategy. I'll be retiring from MCAA in four years. This summer I will go to a part time position. I will be working three days a week and I'll be turning over the reins to Teresa Sebring over the next four years. So from my own point of view I'll be spending most of my time working on issues and writing.

CE: We're really trying to get many more things into publications, trying to develop more content for the outside. We have been an organization that has kind of held most of our stuff close to our vest. Now we realize, why are we doing that? We need to tell everybody. So now we're going to tell everybody.

I'm well aware that I can only put the wheels in motion but hopefully I can set the right wheels on the right track.

About MCAA

The Measurement, Control & Automation Association is the national trade association representing leading manufacturers and distributors of instrumentation, systems and software used in industrial process control and factory automation around the world. Our member companies include the leading multi-national companies together with a range of more niche-oriented providers.

MCAA helps the management teams of process and factory automation product and solution providers run and grow successful businesses by offering timely, unique and highly specialized resources acquired from shared management benchmarks and strategies where proprietary company information is secure.

MCAA serves members by delivering the reliable management data they need to succeed, by providing unique peer and customer networking/education opportunities and by offering a network of industry resources to help them solve their most critical business problems.



INSIDER

INDUSTRIAL AUTOMATION & PROCESS CONTROL

Profile

MCAA was incorporated as a not-for-profit 501(c)(6) corporation in the Commonwealth of Virginia in September 1994. The Association was founded in the 1940s as Recorder-Controller, Inc. and subsequently became associated with the Scientific Apparatus Makers Association (also known as the SAMA Group of Associations). As part of SAMA, the organization was known as the Recorder-Controller Section, the Process Measurement & Control Section and the Measurement, Control & Automation Section. MCAA is the principal trade association serving

North American MC&A producers. The Association's 150 plus member firms account for more than half of the U.S. MC&A product and services revenues with ten of the top fifteen producers represented in membership. It is

the North American trade association representing providers of process control, measurement instrumentation and factory automation systems and software.

Its programs provide tools to both manufacturers and distributors in the areas of market trends (including bookings reports), operating benchmarks, customer satisfaction (including benchmarks against industry peers and competitors), compensation and benefits, sales training and executive education and networking.

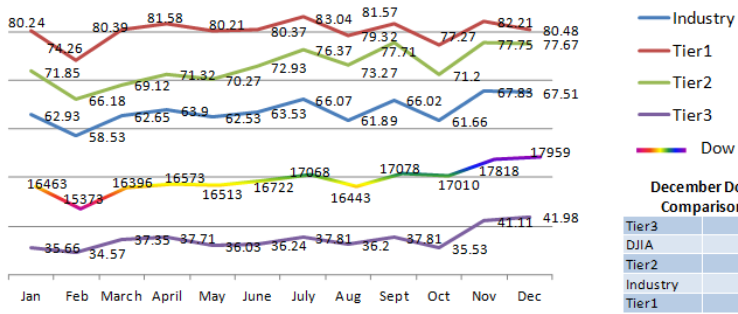
Joy Ward is qualitative research director for Spitzer and Boyes LLC, having been involved in consumer scientific research for more than 30 years. She holds a MA and an MSBA, and has provided research for companies as diverse as



Abbot Laboratories, Nestle Purina, Hughes Satellite, and Focus on the Family. "Through the methodologies I practice, Spitzer and Boyes can give you the answer to *why* your customers do what they do, or don't. Introducing new products, extending brand identities, and establishing major campaigns shouldn't be done blind, and they can't be done on the basis of quantitative research data alone."

Joy is available for consultation and for interviews, and speaking engagements. Please contact waltboyes@spitzerandboyes.com.

Monthly Trending



| December Dow Comparison | |
|-------------------------|-------|
| Tier3 | 2.1% |
| DJIA | 0.8% |
| Tier2 | -0.1% |
| Industry | -0.5% |
| Tier1 | -2.1% |

INSIDER

INDUSTRIAL AUTOMATION & PROCESS CONTROL

Health Watch

By Mary Samuelson

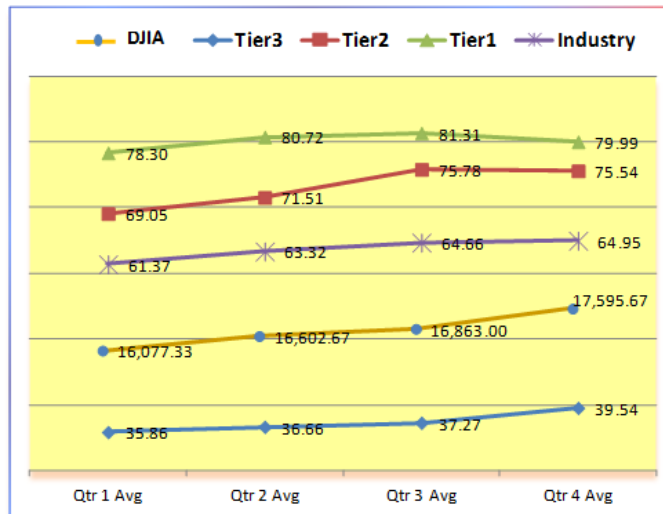
2014 Overview and What Is in Store for 2015

The second half of 2014 was a rocky year overall for the stock market in general and particularly for Automation and Controls Industry stock. Looking back, there were several months where the Insider Health Watch Industry Index outperformed the stock market but there were also several months where it did not.

February brought a large drop in both the Dow and the Index. October was also a particularly hard month for our industry, with the Dow outperforming the Health Index by almost 7%. As the calendar year closed, there was little or no industry rebound, and in the final analysis for the month of

December the industry overall lagged behind the Dow by .5% with larger Tier 1 companies underperforming compared to the Dow by 2.1%. On a more positive note, Tier 3 companies,

quarter, that pattern only held true for the industry through the 2nd quarter. Beginning in September (Quarter 3), we see a fairly flat picture emerge for the industry in general. Looking at

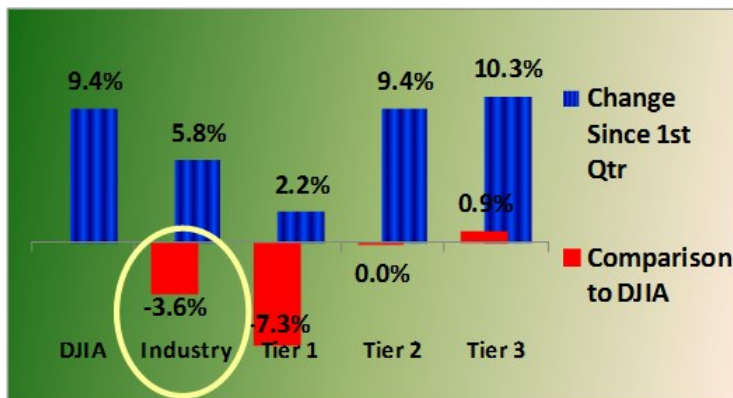


the individual tiers for the same time frame, Tier 1 companies show a slight reversal, Tier 2 companies are relatively flat and Tier 3 companies show an increase on par with the Dow.

The Dow increased 9.4% between Quarter 1 and Quarter 4 of 2014. The industry, however, only increased 5.8% for the year, leaving the industry overall lagging behind the Dow by 3.6%. The biggest companies were the hardest hit, with Tier 1 underperforming

by over 7%. the smallest included in our index, performed better than Tiers 1 and 2, rallying slightly in December to outperform the Dow by a small margin.

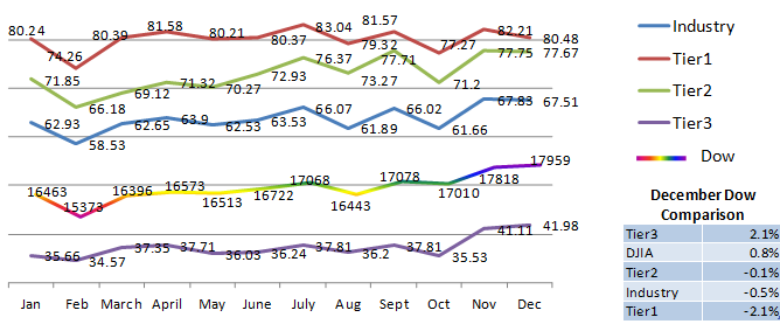
by over 7%.



When looking at quarterly averages for the industry, a more concise picture of the year emerges. While the Dow climbed slightly each

With so much volatility in the global market, oil prices down to a low not seen in years, and currency conversion rates fluctuating continuously, the largest global companies in the ACI field are suffering, underperforming compared to the Dow by over 7%. When discussing the projected performance of GE's Measurement and Controls Division for 2015 in their December 16 Outlook Investor Meeting, Jeff Immelt -General Electric Company-Chairman and CEO made the following remark concerning their ACI sales for 2015. "In the measurement

Monthly Trending



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INDUSTRIAL AUTOMATION & PROCESS CONTROL

Health Watch

By Mary Samuelson

and controls business, you have other people in your space, like Honeywell and Emerson, that are in that business. Some of that is MRO. A lot of it goes into industries other than just oil and gas, so we kind of view that [division] as being okay next year."

General Electric's diversification protects the company in some ways from the slump currently occurring in the ACI. Just being "okay" is not good enough for those whose primary focus is automation control. Industry leaders who are more heavily invested in our specific industry are being forced to take other measures. So, how are they coping? Below are other examples of how companies in our field plan to deal with the projected slump.

Honeywell

Honeywell reported, in a conference call with analysts on December 16, that it is counting on cost cutting to help boost earnings per share next year, as a weak euro and falling oil prices stifle sales.

Thomas Black of Bloomberg reports that: Honeywell International Inc. is counting on cost-cutting to help boost earnings per share next year by as much as 12 percent as a weak euro and falling oil prices throttle sales

Honeywell predicted earnings of \$5.95 to \$6.15 a share in 2015, up from \$5.50 to \$5.55 expected this year. Sales are forecast to grow as

"In the measurement and controls business, you have other people in your space, like Honeywell and Emerson, that are in that business. Some of that is MRO. A lot of it goes into industries other than just oil and gas, so we kind of view that [division] as being okay next year." —Jeffrey Immelt, GE

little as 1 percent to \$40.5 billion to \$41.1 billion, the Morris Township, New Jersey-based company said today during a conference call with analysts.

As the pace of growth in China slows and Europe struggles, Honeywell has increased capital expenditures and reduced costs through "restructuring" projects to boost earnings growth amid sluggish sales. The company today forecast \$125 million of additional savings in 2015.

"In an environment with increased fundamental headwinds and where

no news can pass as good news, a minimum 10 percent EPS growth supports outperformance on its own," Steve Tusa, an analyst with JPMor-

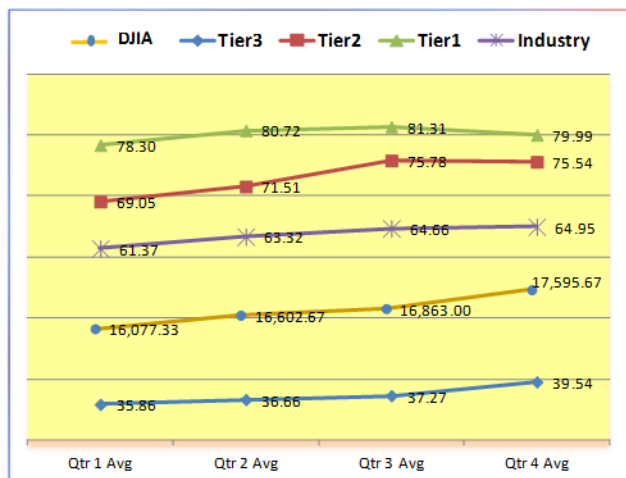
gan Chase & Co. analyst in New York wrote in a note today.

The weaker euro may shave about \$650 million off sales and cut earnings per share by 10 cents, Honeywell said. Excluding acquisitions, divestitures or foreign exchange, sales are forecast to rise 4 percent, the company said. Capital expenditures will rise to \$1.3 billion in 2015 from \$1.1 billion this year. Investment has increased from a range of \$800 million to \$900

million in previous years as Honeywell spends to boost growth.

Emerson

Emerson is also feeling the heat. Thomas Black remarked in his Bloomberg article on December 12 that Large multi-industry companies, including Emerson and General Electric Co., have slumped this year as Europe struggles and growth has cooled in emerging markets, such as China and Brazil. Cost cuts and sales of areas no longer aligned with the company's priorities are two of the measures Emerson is employing.



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Cost Cutting

In the same article referenced above, Mr. Black reported that: The board of Emerson Electric Co. (EMR) cut Chief Executive Officer David Farr's annual bonus by 10 percent after he marked down the value of an underperforming business this year.

Emerson announced in November it took a \$508 million charge related to the acquisition of Chloride Group Plc, which the company purchased in 2010 and soon thereafter saw its sales of uninterruptible power supplies dragged down by a weak European economy. Farr, who has been CEO since 2000, got a \$1.8 million bonus for the fiscal year that ended in September, down from \$2 million the previous year.

"Mr. Farr's annual cash bonus was down 10 percent, taking into account the impact of the Chloride impairment charge on reported earnings," Emerson said in a proxy filing today. Emerson fell 4.7 percent to \$58.43 at the close in New York, the biggest decline since May 2012. The St. Louis-based company's shares have declined 17 percent this year while GE's

have dropped 11 percent. The Standard & Poor's 500 Index rose 8.3 percent in the same period. The board increased bonuses of four other top executives between 10 percent and 12 percent. Farr's base salary in 2014 was frozen at \$1.3 million while the other executives listed in the proxy had salary increases 3.1 percent to 4.3 percent. Even with the bonus cut, the board

The board of Emerson Electric Co. (EMR) cut Chief Executive Officer David Farr's annual bonus by 10 percent after he marked down the value of an underperforming business this year.

made clear its support for Farr as CEO.

"Mr. Farr continued to provide exceptional leadership -- creating and inspiring the management team to new ways of thinking, learning and working together, driving results that benefit customers and shareholders and enhance long-term growth," the filing said.

Sale of Business Unit No Longer

Aligned with Emerson's Priorities

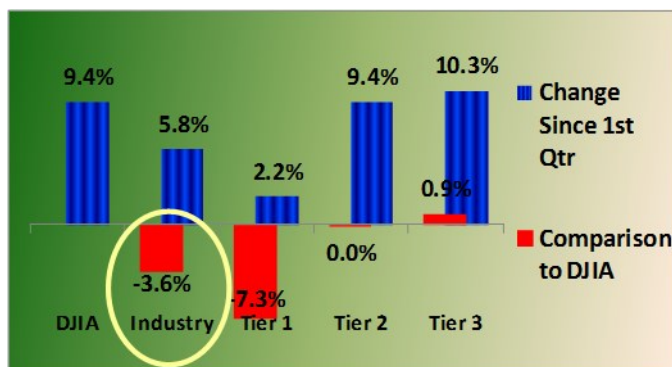
According to Andrew Noel, on Dec 15, 2014 Regal-Beloit Corp. (RBC) agreed to buy a power-transmissions business from Emerson Electric Co. (EMR) for \$1.44 billion to add products and clients.

The price includes \$1.4 billion in cash plus the assumption of some post-retirement liabilities, the Beloit, Wisconsin-based company said in a statement.

Regal-Beloit, which makes motors and other electrical parts, will gain a range of products including gearing, couplings and bearings under brand names such as Browning and Jaure. The deal is expected to generate \$30 million in annual savings within four years, the company said.

"This acquisition will be transformational for Regal," Chief Executive Officer Mark Gliebe said in a statement. The purchase "will broaden our portfolio, diversify our end market exposure and strengthen our global footprint."

Emerson said in June it was considering alternatives for the unit and that a decision would be made by the end of the year. The business no longer aligned with the company's priorities,



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St. Louis-based Emerson said in a statement today. Emerson said it would use the proceeds from the sale to buy back shares in fiscal 2015. It has sold assets worth \$554 million this year.

Siemens AG

Siemens AG is also selling subsidiaries that do not significantly enhance their portfolio. The following is an example.

Siemens Said to Sell Hearing-Aids to EQT for \$2.6 Billion

According to Aaron Kirchfeld, Alex Webb and Adam Ewing, Siemens AG (SIE)'s supervisory board approved the sale of the company's hearing-aids business to Swedish buyout firm EQT Partners AB and will announce the sale today, according to people familiar with the matter.

EQT will pay about 2.1 billion euros (\$2.6 billion) for the asset, said the people, who asked not to be named because the matter isn't public yet. Siemens, Europe's largest engineering company, had been planning to sell shares in the hearing-aids division on the stock market, with Chief Executive Officer Joe Kaeser saying that such a move would help the business to expand as an independent entity.

Market turmoil prompted him to seek a sale instead [emphasis added], people with knowledge of the matter had said.

Danaher

Danaher is further diversifying and betting that the economy will improve. Their Test and Measurement Division makes up only 18% of their current holdings, and they are investing heavily in areas outside ACI for 2015.

As an example, they are seeking to purchase a company that produces dental implants, an area which has not done well in the past few years due to lack of insurance coverage for the product combined with soaring unemployment.

Thomas Mulier of Bloomberg reported that Danaher Corp. (DHR) agreed to acquire Nobel Biocare Holding AG (NOBN) for \$2.2 billion after the Swiss maker of dental implants searched for a buyer amid a wave of consolidation in the health industry.

Danaher, an industrial conglomerate with products ranging from laboratory equipment to water-treatment chemicals, is buying a business whose sales still haven't recovered from the recession and financial crisis that began in 2008. After peaking at 90.75 francs in 2007, Nobel Biocare has traded below 20 francs for more than three years. As unemployment soared, people cut back on implants, which often aren't covered by insurance.

"Nobel had a very rich valuation, so

the upside was limited," said Oliver Metzger, an analyst at Commerzbank AG in Frankfurt. He said he doesn't expect rival bids. "For Nobel Biocare shareholders, it's still an attractive price compared with the share price of recent years."

Danaher plans to begin a tender offer for Nobel Biocare around Oct. 16, and expects to complete the purchase late this year or in early 2015, the company said. Suha Demokan, a spokesman for Nobel Biocare, said Chief Executive Officer Richard Laube wouldn't comment.

Danaher does not seem to be diversifying its ACI investments at this time.

OMRON

OMRON is attempting to increase sales in this tough economy through use of new manufacturer's representatives to fine tune their existing distribution channels. In a January 5 press release, OMRON announced that it "is pleased to announce Electro Mark, Inc. as its new manufacturer's representative for the upper Midwest market. "We are delighted to bring Electro Mark into the Omron family," said Kris Whitehouse, Director of Area Sales for Omron Electronic Components- Americas. "The Minnesota, North Dakota, South Dakota and Iowa markets are extremely critical, so it was important that we chose the right

2014 Overview and What Is in Store for 2015, continued...

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partner. I feel strongly that Electro Mark's team will deliver the new technology focus, along with superior service, to both our customers and our distribution partners. We look forward to a long and successful relationship."

Alps Electric

Alps Electric is building relationships with companies who complement and enhance their core offerings. On December 17, Yasuo Saso, Director of Alps electric's Components business made the following announcement: "Alps Electric and Qualtré [the leading innovator of Bulk Acoustic Wave (BAW) silicon MEMS inertial sensors] have forged a strong partnership because our core competencies complement each other so well. Whereas Alps Electric's strong sensor portfolio benefits from Qualtré's superior inertial MEMS technology and performance, Qualtré is able to benefit from Alps Electric's manufacturing efficiencies, to support high production volumes at attractive price points, and ability to access a broad customer base. We've been extremely impressed by the initial response to Qualtré's best-in-class products and are looking forward to our continued work together to provide outstanding experiences for our new and existing customers."

Thermon Group

Thermon Group is expanding its global footprint. In late December, Rodney

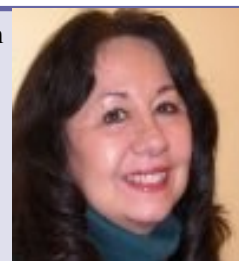
Bingham, President and CEO of Thermon, announced the acquisition of Unitemp. "The acquisition of Unitemp represents an attractive opportunity for us to extend our global footprint to include the African continent, enhance our ability to serve our global customers and expand our presence in the Sub-Saharan Africa market. The acquisition is consistent with our strategy of pursuing organic and inorganic growth opportunities within our core business."

And So Into 2015

As 2015 begins, acquisitions, sale of divisions seen as no longer compatible with the business footprint, enhanced business relationships, cost cuts, and other measures are all being implemented to help the industry survive what is projected to be a relatively flat year at best.

Only time will tell which companies made the right decisions and which did not and the Health Watch will be keeping a close eye on the companies reported above, and all the companies in the ACI, to see which strategies proved most effective.

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.

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

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

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



The global economic growth has been tepid during the past few years. The pre-release of Chapter 1 of the Global economic outlook of the

modity prices brings further cheer to the economy with some manufacturing sectors holding out promise.

Presently, India's economy is consumer-demand and private consumption driven in

World Economic Situation and Prospects 2015 highlights that most economies have seen a shift in gross domestic product (GDP)

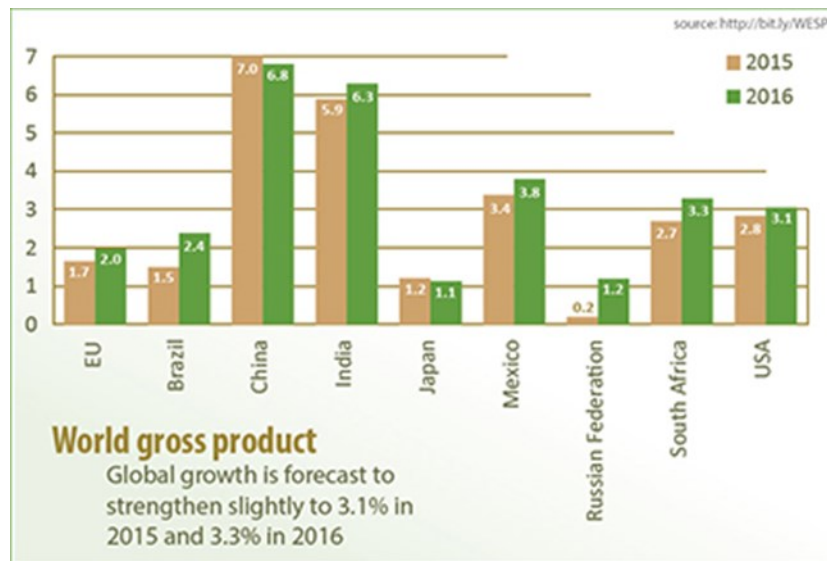
growth to a noticeably lower path compared to pre-crisis levels, raising the specter of longer-

"Thus for companies and economies that seek market access to robust demand centric markets, India is an attractive destination."

contrast to China's investment-led and export trade driven economy. India also depends on import of technology and capital to spur its manufacturing industrial growth.

Contrast this with the situation that prevails in China and many of the advanced economies that have the technology and the capital to invest but are grappling with declining domestic consumption challenges.

Thus for companies and economies that seek market access to robust demand centric markets, India is an attractive



term mediocre economic growth. The bright spots are China and India. The report projects the GDP these two countries to grow at 7.0 percent and 5.9 percent respectively during the year 2015; however, China growth is likely to drop to 6.8 percent, while that of India will go up to 6.3 percent in 2016.

India has the potential to emerge as an economic growth engine in the coming years. While the country's policy makers have made some right moves, the drop in oil and com-

destination. The recent "Come, Make in India" initiative by the State will provide further impetus for the growth of manufacturing companies in India.

Apart from this initiative, which calls on global manufacturers to make India their preferred place to produce goods for the global market, the State has taken measures to allow and increase foreign investment caps in defense manufacturing industry, insurance, rail transport, and such others. These policy

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

measures and the positive business environment that prevails in India should ensure the robust flow of capital and technology into the country. The EY's India *attractiveness survey 2014* report highlights that India remains one of the top global destinations for foreign investment and attributes solid domestic market, an educated workforce, and competitive labour as the main drivers.

Policy initiatives and favorable ambiance complement domestic demand

Apart from the robust domestic demand driven market that India offers and some of the supportive policy initiatives of the state such as the changes to the laws relating to land acquisition, allocation of coalmines and their auctioning, the country finds itself in a sweet spot because of the falling crude oil prices.

Declining oil prices will turn out to be good to India's economy as it can leverage this opportunity to correct some of the economic imbalances, such as high fiscal, trade, and current account deficits and to get the economy back on growth track.

While lax economic policies such as unsustainable oil and other subsidies contributed to unsustainable fiscal deficit, India's dependence on imported crude oil and gas aggravated the country's trade balance. India, an emerging economy, needs access to energy but unfortunately, the country depends on the import of crude oil and gas to the extent 80 percent to meet its needs, and this dependence will only increase as the economy expands further. Additionally, the fall in crude prices will provide the much need leeway to ease the monetary policies, which until now has been constrained by the high inflation. Inflation has come down in recent weeks to a level with which the central banker, the Reserve Bank of India (RBI), is comfortable. Soon RBI may take a decision to lower the bank rates and this will spur investments.

In recent years, the country has been importing large quantities

of coal and iron ore. The coal and iron ore prices, which in tandem with the crude oil prices, has fallen is a double whammy for India. Most of the electric power plants in India are coal fired and as such, the fall in coal prices will result in lowering the generation cost of electric power.

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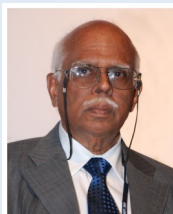
Therefore, India, aided on one hand by the policy initiatives and on the other the favorable external factors, is well positioned to embark on a long-term growth cycle.

India's manufacturing industry, which is a significant contributor to the country's economy, has excellent scope and a window of opportunity to expand and flourish. While consumer in India has unmet needs and wants and the State has

been proactive in taking the policy initiatives, now, it is up to captains of the industry to respond to the market needs, invest in creating production facilities, and deploy appropriate technologies to gain competitiveness and emerge as world's best-in-class producers and suppliers. Some industry segments are poised to benefit.

Industry snapshots

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



Power and Generation

The demand for electric power exceeds the country's power generating capacity and this is despite the position that it holds as the fifth largest producer. In order to meet the increasing demand for electric power, massive investments in augmenting generating transmission and distribution capacities is required. According to demand projections, the electric power industry will add around 200 GW to its generating capacity.

In order to reduce its dependence on coal, the country has set a highly ambitious goal of producing around 100 GW of solar power by 2022. Also, India generates close to 18 GW of wind power

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

and this will go up further. There are plans to double wind-power generation capacity by the end of the decade. While there is need to establish big power plants to meet the projected demand and transmit & distribute through a centralized national grid, the need is greater to make electricity available to almost a third of the country's population who have no access to it presently. The best approach to succeed in this mission is to take the path of distributed generation that is built on smart and microgrid architecture with renewable energy based power generation units connected to them. India has abundant sunlight and wind energy. The electric power industry thus offers excellent growth opportunities for global companies in the renewable energy and smart grid technology domains to plan their entry.

Cementing Gains

With a current production capacity of around 350 million tons per annum, India is the second largest producer of cement in the world. Major investments planned in infrastructure and construction sectors such as development of 100 smart cities will fuel the growth of the cement industry and push its production capacity to exceed 550 MT by the end of the decade.

Global players, such as Holcim and Lafarge, have plants in India and the competition council of India is examining the implications of their merger vis-à-vis in the domestic context.

Energy Conservation and Sustainability

With the cement industry being highly polluting and energy intensive, there is considerable scope for collaboration between global and homegrown companies in the areas of energy conservation, sustainable manufacturing, and such others.

India's Automotive Industry

The automotive industry, which accounts for almost 20 percent of the country's manufacturing GDP, is vibrant and expanding. Both domestic and global automobile manufacturers are the stakeholders.

The country is emerging not only as a manufacturing hub for compact car and two-wheelers but also as an exporter of automobiles and auto components. Some of the global automotive companies have already made their production and design-engineering facilities as global centers of excellence and this

trend will continue.

India Pharma Highly Ranked and Competitive

Globally, the Indian pharmaceutical industry ranks as the third largest in volume terms and 10th largest in value terms. The country has emerged as a global hub for generic drug production.

Overall, the industry has been growing close to 15 percent annually with its export earnings clocking better. It exports pharmaceutical products to many

countries including the US. Despite the facilities having the FDA approval, some of them have encountered serious problems in ensuring adherence to the required quality standards.

Homegrown pharmaceutical companies need to enhance their investments in enabling technologies to ensure compliance with 21 CFR part 11 that deals with the use of electronic

records and electronic signatures to maintain control, audit trails, documentation and such others. Technology solution providers have excellent opportunities to offer appropriate solutions to pharma companies in India.

India's Infrastructure is Key

Investment in building the country's infrastructure is key to India's economic growth and the State is actively involved in formulating the appropriate measures to attract global investments and to ease policy constraints.

The growth of the infrastructure industry has immense potential in creating livelihood opportunities and generating disposable income that in turn provide impetus for the growth of other industries, such as cement, steel, consumer durables, and similar others.

All in all, India is well posed to emerge as an economic growth engine and thus offers opportunities to companies that on one hand seek access to demand centric markets and on the other have the appropriate technology and the ability to mobilize capital.

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