INSIDER
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Your key to the latest industrial automation and process control information

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Year End Odds and Sods!

IHS, Vintage Inspiration, Oil and Gas Investment Souring?, ABB Appoints New Chairman

The IHS Technology industrial automation conference held in Whitehall, London in October 2014 brought together the expertise and analyst teams that make up IHS, coming originally from IMS Research, iSuppli, Displaybank and Screen Digest – with the addition of various external speakers, to discuss "Opportunities Amid a Manufacturing Revolution".

The audience consisted of 85 industrialists drawn from across Europe, 10 UK based editors, and 37 IHS staff from various countries. The event presented speakers focusing on emerging regional and vertical opportunities, economic impacts, and key technology trends.

Much of the interest in the discussions and presentations was in the contrasts highlighted between world regions and economies, and how the falling oil prices will affect existing investment projects.

Most of the discussion from experts on various industries and regions, mainly from within IHS, was on the markets for the supply of automation equipment and machinery: the suppliers are mainly EU based – the EU supplying 3x that from the USA. Within the EU, over half the output originates from Germany and Italy: within these two Italy has the less modern designs, and output is declining currently. Germany has downgraded their machinery growth forecast to 1% from 3%, mainly as the effect of a decline in Russian business - but this is only 11% of their total. The main customers for such capital expenditure are in Asia Pacific: here China has slowed significantly, as their trade with the West declines, so there is little investment other than in the area of food/beverage. This is possibly to target the Chinese middle class, which is resistant to the downturn. The Chinese Government is likely to boost investment in restructuring industry. Japan is very uncertain. Russian devaluation has made capital equipment too expensive, stopped investment.

In the USA half of the Capex is going into oil and gas projects: but since the shale projects are debt leveraged, the opinion was that many such investments would fail if oil drops below $75/barrel. Such low prices will also halt Arctic E&P plans.

Andrew Orbinson, IHS UK

It was also commented that automation in Brazil is restricted by penal protectionist import duties, up to 80%.

The good news? Mexico and Canada are benefiting from US shale developments and activity. Oil and gas investment is still active because of the high level of risk felt to supplies from Iraq, Libya, Nigeria and Sudan. Automation equipment investment is growing faster than general industrial investment.

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Health Watch

is on Vacation this month and will return in January, retooled, shiny and new.

Cover Story: Year End Odds and Sods! (continued)

The internet of things is attracting investment, and demanding automation for "made to order" and smart manufacturing.

IHS Automation Market review

IHS produces regular reviews of the Process Automation and Instrumentation markets. At the October conference, Andrew Orbinson of IHS provided a published collection of some comments and figures relating to these markets, from analytical work IHS carried out in 2013, based on 2012 market data. Orbinson advises that the forecasts made then are now being reviewed, because of the significant effects of the changes in the oil and gas market, and a new revised study will be issued in the first half of 2015. No doubt IHS would appreciate any input available from ***INSIDER*** readers.

However, the 2012 data itself is of interest. The hybrid industries were seen as the major battleground between DCS control, based on the process industry, and PLC control, based solidly in the discrete industries. So the competition between the two in terms of Automation Controllers is felt most in the Food and Beverage industry, Packaging, Pharmaceuticals, and Water and Waste industries. As ever, it seems. Other comments were that Integrated Control and Safety Systems were now the norm in greenfield projects, because of cost savings, but stand-alone SIS still had a significant presence in brownfield projects, and particularly in critical environments. Automation vendors migrated their businesses to meet the opportunity of selling the services previously done in-house, but perhaps dropped for cost reasons, or because of the retirement of these skilled workers. IHS saw an opportunity growing for the replacement of obsolete controls in the heavy process industries in Europe and North America.

World market for DCS hardware, software and services was seen as $17Bn in 2013, which was then forecast to rise at $1Bn pa. Within this, Software services was seen as representing 45% of the total market: regionally Asia-Pacific and North America were seen as growing at the same rate, forecast to increase 33% in 5 years: the European market was mid way between the two in size, but only likely to grow 20%.

Control systems markets

In figures, the World market for DCS hardware, software and services was seen as $17Bn in 2013, which was then forecast to rise at $1Bn pa. Within this, Software services was seen as representing 45% of the total market: regionally Asia-Pacific and North America were seen as growing at the same rate, forecast to increase 33% in 5 years: the European market was mid way between the two in size, but only likely to grow 20%.

The major end user market for 2013 was identified as in Power (27.5%), but adding Oil and Gas (20.9%) to Refining and Petrochemicals (11%) plus Chemicals (14.9%) covered the bulk of the business. Food and Beverages and Pharmaceuticals each only list at 3-4%. Interestingly the Process Safety Systems world market at $1.8Bn (in 2012) was split with the Americas and Asia both at $0.5+Bn, plus Europe at $0.7+Bn. The Safety Services business was expected to grow faster at 10.3%pa, compared to 7%pa for the hardware and software.

Market for level and flow sensors

Level and flow sensors are always brilliant topics for a good market survey, and IHS produced some interesting forecasts.

Their chart of level measurement products by technology would make for a fantastic after dinner debate: maybe this is why IHS asked us not to discuss it too closely, and not to print it!

The total level measurement world market was listed at around $2.6Bn in their base year of 2012, anticipated then to grow by over 30% by 2017.

Can nobody yet forecast a decline in the huge market slice taken by hydrostatic/DP techniques, along with the nearly moribund gamma nuclear level gauge business? TDR/GWR radar was seen as a growth area, as was non-contact radar, but the rest just seem to be ambling along as ever.

The flow market forecasts are more interesting. In 2012 the flow market totals in Americas, EMEA and Asia/Pacific were all much the same, around $1.5Bn. But for 2017 the forecast for A-P was $2.6Bn, against $2.1 in Americas and $1.9 in EMEA. The leading three technologies in 2012 are said to be DP, Coriolis and Magnetic, all with 20+% of the market, around $1Bn in sales, followed by Ultrasonic at 13% and $600m sales. The fastest growth rates were seen with Coriolis and Ultrasonic meters, over 10%pa till 2017, but magnetic, thermal mass and vortex all showed good growth forecasts.

Just one last word: variable area meters are shown with 2.4%pa growth rate, and $210m sales, nearly 5% of the market – at least that proves Nick Denbow did not waste those 10 years spent promoting them!

Vintage Inspiration— User Groups Fixate on Automobiles

The European Control and Automation industry in 2014 appears to have been looking to the vintage car market for inspiration on future projects.

It all started at the beginning of April, with the Emerson European Exchange, in Stuttgart. Several presentations through the event, and the associated press conference, made reference to motor racing teams, and the technology used in Formula1 cars – both current and past models. Maybe Emerson might consider sponsoring a F1 car for 2015? It did not sound like it, from the answer to that question given by Peter Zornio. Perhaps they could sponsor John Berra, former Emerson Chairman, in a racing career?

Sweet Ferrari much like the one John Berra, retired Emerson Chairman, drives at the Formula One track in Austin, Texas

Classic 911 restored at the Porsche Museum

That evening, after the press were sent home, all the remaining conference delegates were invited to an evening touring the Porsche Museum in Downtown Stuttgart.

However, things were looking up in July, when the Yokogawa European User Group Meeting was held in Berlin. Here oil and gas supply was a major topic for discussion, but the evening visit, cocktails and dinner at the Classic Remise was an enjoyable informal affair.

Berlin's Classic Remise

Classic Remise is an old tram depot, converted into a storage, display and workshop area for all types of vintage and classic car and motorcycle, some for sale, and some just stored in glass cubicles – 88 of them! Naturally there were American classics, as well as French, German and English varieties: and the pictures show that the press were included in this event: Thank you, Yokogawa….

Classic 'stang at Classic Remise

More Classic Remise

Moving on to November, the third European User Group meeting this year was the Honeywell User Group EMEA, or HUG, from Honeywell Process Systems, held in The Hague.

This time the automotive theme was really comprehensive, with an evening visit to the Louwman Museum, a unique private collection which houses a collection of 250 vintage and classic cars, covering the period 1886 to about 1970, plus some modern racing cars. Something memorable, not to be missed – except by the press, who were 'invited' to attend a separate dinner. One image from the website is presented here, the James Bond Aston Martin DB6, on display in the Louwman.

The Bond Aston Martin DB6 at the Louwman

— Nick Denbow

Oil and Gas Investment Souring?

The recent fall in the price of oil, exacerbated by the lack of any OPEC move to restrict production output, has brought major reviews of investment plans in the oil and gas production industry, in Europe and the Middle East. This has resulted in a move by investors out of the sector, and share price falls for the companies involved, in those regions. Because of the shale oil and gas boom in the USA, from the European viewpoint this seems not to have been the case in America, despite the commodity price falls.

Russian President Vladimir Putin

In Russia however the problem has been compounded by the effect of sanctions over the Ukraine disputes, which started with the downing of Flight MH17. In an announcement during a visit by Russian President Vladimir Putin and Gazprom Chief Executive Alexei Miller to Turkey early in December, Putin proposed scrapping the planned $40Bn South Stream project to supply 63Bn cubic metres per annum of natural gas to south-eastern Europe, and diverting the gas supply to Turkey via a modified pipeline project.

In Brussels, the EU had frozen the project approval process for South Stream as part of its overall sanctions package: although state-controlled Gazprom supplies almost a third of Europe's demand, which in turn makes up 80% of Gazprom revenues. The EU view is that the project was barely viable before the recent price reductions, and the discount offered to Turkey would make the project very dubious: plus the pipeline would be able to supply four times the annual requirement existing in Turkey. On a broader outlook, the Russian Rouble has lost 50% of its value in the last few months and their domestic interest base rate has rocketed to 17%pa currently: so they cannot retaliate by cutting off gas supplies without sacrificing their economy.

Wood Group optimistic

The UK based Wood Group, like other oil and gas and power industry service companies, has seen its share price fall 30% since last Summer. While based in Aberdeen, Wood Group is international in operations, employing 40,000 people and having worldwide sales of GBP7Bn: only 10,000 people are UK based.
A pre-close trading update for the 2014 calendar year anticipates full year performance in line with expectations, and up on 2013. This is because Wood Group Production Services Network (PSN) Division will deliver strong growth, attributable to a strong US performance led by shale related activities.

Wood Group also announced the acquisition of Swaggart, a provider of civil construction and fabrication services to the US oil and gas and industrial sectors. Headquartered in Hermiston, Oregon with offices in Idaho and New Mexico, Swaggart operates in the US Lower 48 with a special focus on shale basins including the Permian, Eagle Ford, Niobrara, Bakken, Marcellus and Utica. Swaggart employs 200 people, and was acquired for an initial $36.3m, with a further payment in 2017 based on future performance. The business will continue to be led by its existing management team under Lincoln Swaggart.

Wood Group PSN have seen the operator focus on efficiency and the recent reduction in the price of oil leading to a re-consideration of spending plans for 2015 with a consequential impact on service company activity, but see their longer term contracts as providing resilience. Internationally, Wood Group secured a number of important contracts in 2014 including Woodside in Australia, and ExxonMobil in Papua New Guinea and Malaysia, and are benefitting from customer-led expansion in Iraq with TAQA and BP.

This has resulted in a move by investors out of the sector, and share price falls for the companies involved, in those regions. Because of the shale oil and gas boom in the USA, from the European viewpoint this seems not to have been the case in America, despite the commodity price falls.

Wood Group Engineering report their anticipated reduction in 2014 EBITA will be less than the 15% predicted. In Upstream, activity on offshore projects including Det Norske Ivar Aasen, Hess Stampede and Husky White Rose, together with onshore work in the USA have lessened the impact of the slower pace of award of significant detailed engineering work. They continue to work on more early stage projects than in recent years and see this as a good indicator of future activity. Onshore US pipelines activity continues to be strong, driven by shale related infrastructure development. Downstream project work has benefitted from the impact of lower gas prices, boosting refining and chemicals activity.

Also announced in December was a five year contract with an estimated value of $750m from BP. Under the contract Wood Group PSN will deliver engineering, procurement and construc-

Gas Investment Souring?, continued...

tion services to six UK continental shelf offshore upstream assets and the Forties Pipeline System onshore midstream facilities in Grangemouth.

Effective January 2015, the contract will create 150 new jobs and secure more than 700 existing positions. Wood Group already provide engineering, procurement and construction services for six BP offshore assets - Clair, Magnus, ETAP, Andrew, Bruce, and its new Glen Lyon FPSO which is currently being constructed and is due to come online in 2016.
The statement ends on an optimistic note: "Our balance sheet remains strong and supports our continued investment in further acquisitions and organic growth."

INEOS leads in UK shale gas

European chemicals giant Ineos has announced plans to invest $1Bn in UK shale gas exploration and appraisal over a period of four to five years. Substantial further investment would follow if the company moves into development and production.

INEOS bids large for UK shale gas

If the company wins all the Petroleum Exploration and Development licences (PEDLs) it has bid for from the Department of Energy & Climate Change (DECC), it would become the biggest player in the UK's shale gas industry. A large majority of these Ineos bids are in Scotland and the North of England, where the local populations have either a mining or an industrial heritage.

Gary Haywood, the CEO of shale development subsidiary Ineos Upstream, said, "Whilst the awarding of the licences is a matter for DECC, we believe our knowledge and experience in running complex petrochemical facilities, coupled with the world-class sub-surface expertise we have recently added to our team, means that Ineos will be seen as a very safe pair of hands".

Ineos already owns two substantial shale licences in Scotland comprising over 720 square miles, and has invested a further GBP400 million in a project to ship in US shale gas to its Grangemouth refinery and petrochemical complex in Scotland. Ineos wants to use low cost shale gas to supply its chemicals plants with energy and feedstock.

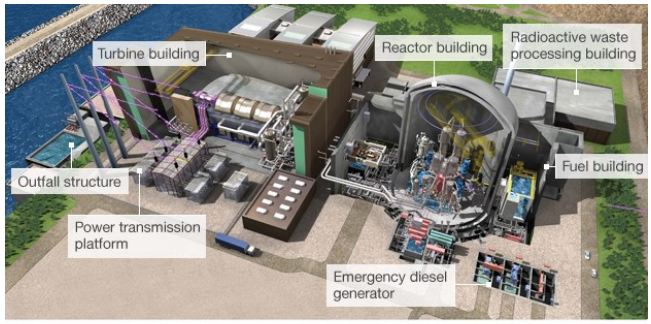
The company plans to give local communities 6% of the revenues from any shale gas it produces, divided between home and land owners above the well (4%) and the wider local community (2%). This offer would typically be worth GBP375m ($234m) to a community hosting 20 wells. The approach is unique in the UK shale gas scene, and should make the local Scots fairly formidable objectors to the presence of any anti-fracking English green enthusiasts wanting to camp outside Scottish sites.

A report in June by the British Geological Survey estimated that the Midland Valley in Scotland, where the existing Ineos licence areas are situated, was likely to contain 80 trillion cubic feet of gas and 6 billion barrels of oil in shale formations, with only a proportion of this recoverable.

Jim Ratcliffe, Ineos founder and chairman, said: "I want Ineos to be the biggest player in the UK Shale gas industry. I think Shale gas could revolutionise UK manufacturing as it has done in the USA. I believe Ineos has the resources to make it happen, the skills to extract the gas safely and the vision to realise that everyone must share in the rewards".

Nuclear power faltering?

Always worth monitoring, the UK journal HazardEx reports that the French state controlled company Areva, due to provide the two reactors for the



Artist's rendering of Hinkley Point C Project

GBP25Bn Hinkley Point C nuclear power project in the UK, plus 10% of the finance as a shareholder, has run into financial problems. Areva has supplied reactors for two new build projects in Europe, Olkiluoto in Finland and Flamanville in France. Both are now significantly over budget, and delayed. Areva has issued its third profit warning in four months.

On Hinkley Point, Steve Thomas, professor of energy policy at the University of Greenwich, said: "The project is at very serious risk of collapse at the moment. Only four of those reactors have ever been ordered. Two of them are in Europe, both of those are about

ABB Shakes Up Board— Picks New Chairman

three times over budget: one is about five or six years late and the other is nine years late. Two more are for China and are doing a bit better, but are also running late." He said it was "inconceivable" at this stage for Areva to contribute its 10% stake, which is the equivalent of about GBP2Bn.

Professor Steve Thomas, Univ. of Greenwich

EDF Energy originally had an 80% stake in the consortium, but this has fallen to 50% and it is trying to offload a further 15%, possibly to Saudi Electric. Two Chinese companies now account for 40% of the finance, but are demanding to supply equipment to the project, which EDF Energy is resisting. But don't worry: everyone has been reassured by the UK Department for Energy and Climate Change, where a spokesperson said: "We are confident in the Hinkley Point C project. EDF still expects the power station to come online around 2023." This is based on reassurances made by the French Government, which now seems to be where the UK DECC looks to for leadership……—Nick Denbow

ABB Picks New Chairman— Peter Voser

After several quarters of disappointing results, and two or three tries at musical chairs for top executives, ABB has decided that changing business unit leaders just isn't enough to satisfy the analysts, institutional investors and critics of the mighty engineering company.

Former Shell CEO Peter Voser

On December 18, just as this issue of the INSIDER was going to press, ABB announced that the Board has nominated Peter Voser to be the new Chairman of ABB Ltd.

Voser, who was CFO of ABB Ltd.from 2002 to 2004, replaces Hubertus von Gruenwald, who, along with Director Michael Treschkow, "chose not to seek re-election to the Board."In the meantime, after leaving ABB, Voser served as CFO and then CEO of Royal Dutch Shell, and as a member of the board of directors of companies such as Roche, UBS, and Aegon.

The official announcements included paeans to von Gruenwald's leadership, but failed to mention his celebrated disagreements with ABB CEOs, including his weekend firing, in February 2008, of Fred Kindle, over Kindle's refusal to try a takeover bid for Rockwell Automation. Kindle's refusal left ABB with on the close order of $4 billion in the bank during the 2008-2009 downturn, allowing it to continue all operations during that time with little or no retrenchment— the only major automation company to be able to do so.

Soon-to-be former ABB Chairman Hubertus von Gruenwald

The next question remains that of the fate of ABB CEO Ulrich Spiesshofer, who has presided over the disappointing results since the hurried and surprising departure of Joe Hogan "for personal reasons" in 2013.

Hogan spent his tenure trying to make "One ABB" out of a company famous for its internal fault lines and layered reporting and responsibility organization. INSIDER editor Walt Boyes reports that he once asked for a Table of Organization for ABB and was informed that there isn't one. "It is too convoluted," his informant said. "There's no directory tree...it would have to be an overgrown shrub." At one point, US ABB employees were reduced to carrying business cards with the 15 logos of companies ABB acquired in the 1990s on them so they could identify themselves to former customers of those companies.

ABB has had trouble getting traction with its "Automation and Power" combined business offerings, and its acquisition of Thomas and Betts has required retrenchment and selling off what the company now regards as "non-core" assets, such as their successful services business.

The INSIDER has difficulty understanding why, with a host of terrific products, and highly competent people, it is that ABB has the trouble it is having with results. It is to be hoped that new chairman Voser will be able to corral the chaos and get Joe Hogan's dream of "One ABB" to actually work. We will be watching, and we will be hoping to see better things at ABB's Automation and Power World conference in Houston, March 2-5, 2015.

—Walt Boyes

Selling with Video in Sales Calls and Creating Successful Trade Shows

Mike Jingozian, CEO and Founder, AngelVision, Portland, Ore., presented a series of live webinars that addressed using his company's custom videos to "widen your sales funnel" and also help you exhibit more effectively at trade shows.

Mike Jingozian, AngelVision

AngelVision even provided the coffee via a prepaid Starbucks card.

Jingozian claimed that 70 percent of people make decisions before talking to a representative. If this is even close to correct, it would behoove you to use superior sales tools upon first contact with your potential customers. He suggested that a video focused on the customer is one way to present your product in a professional and controlled manner. Mike proposed a laundry list of ways to use what he called "Impact Videos" in your sales process (to which you can likely add a few more unique to your company).

- One-on-one demonstrations on your laptop
- Customize them for sales agents, representatives and distributors
- Use them for sales training and education
- Feature them on your websites
- Link them to your banner advertisements and Google AdWords
- Feature them in newsletters, direct mailings, and other advertising
- Play them in kiosks, monitors or digital picture frames in your office lobby
- Promote them in podcasts, blogs and websites
- Add them to your e-mail signature lines and buttons
- Distribute them on CDs and USB flash drives
- Use them to telemarket more effectively
- Use them at Trade shows (discussed in more detail below)
- E-mail them to prospects, contacts and the media
- Get the message out to the media
- Promote them on social media sites
- Play them on YouTube and other sites that host corporate and industry videos
- Spread them throughout a company before a sales call
- Play them at the start of your sales calls
- Use them with partnerships and cooperative marketing
- Translate them to other languages to expand into foreign markets

Implementing a successful exhibit at a trade show is a multidiscipline multi-faceted endeavor with much attention to detail and minutiae. Most of us perform most of the activities well but it is easy to fall down on a few given their number and diversity. Some ways to effectively use "Impact Videos" at trade shows include:

- Link them to the show website and online directory
- E-mail them to clients prior to the show
- Play them prominently in your booth
- Display them in your partners' booths
- Hand out USB drives and/or CDs with the videos on them
- Show them during breakout sessions or in your suite
- E-mail them to clients after the show
- Use them for on-demand demos at the show

The sales process is not easy to navigate. Initial contact with a prospect that is less than stellar can make it much more difficult. Jingozian asserts that his effective professional Impact Videos can make the sales process smoother and have a huge influence on your bottom line. It should be noted that impactful videos do not have to be made by AngelVision. Jingozian's laundry list, above, applies to any marketing videos, for use in sales calls, demos and at trade shows.

—David W. Spitzer, PE

New UK and Ireland Sales Director for Rockwell

The newly appointed UK Sales Director for Rockwell Automation is Bill Dennison. Marcel Woiton, Northern Regional Sales Director for Rockwell Automation in Europe, said, "Bill's insight into the operational needs of our customers across multiple industries with particular expertise in software and process solutions, alongside his track-record in business development made him the stand-out candidate to take us forward in the UK & Ireland."

Dennison commented: "I'm looking forward to the challenge immensely."

Rockwell Automation delivered in excess of 4% growth for the year to October 2014 and is predicting similar growth for the forthcoming year. Prior to taking up his current role at Rockwell Automation, Bill has held several senior positions for Honeywell International, and has been a vp of sales for EMEA at several specialist software companies in the process and oil and gas arenas.

PlantPAx in Cogen and Germany Boosts Startup Funding

PlantPAx for gas-fired power plant

At the Power-Gen International 2014 conference in Orlando, Florida, Brett Weber, operations and maintenance manager for Ripon Cogeneration in California, explained that they had achieved unprecedented plant performance – including a 30% reduction in start-up time – by replacing their obsolete distributed control system with the PlantPAx process automation system from Rockwell Automation.

Brett Weber, Ripon Cogen

The new system has reduced the number of nuisance trips by nearly 90%. Multiple fail-safes were hard-coded into the previous DCS, so even small deviations in process variables would trip the entire system offline and force the 50MW plant to shut down. Operators and technicians at the 25-year-old, gas-fired plant could only react to the safety trips, which occurred as often as three times each day.

New Control Room at Ripon Cogeneration Facility

"Besides significantly reducing costly shutdowns, the PlantPAx system has helped us comply better with state emissions and other regulations," said Brett Weber. "That's because the controls are automated, and operators can easily monitor variables through the PlantPAx dashboards in real time."

Steve Pulsifer

The PlantPAx system includes an information-enabled, scalable, multidiscipline control platform that combines process and safety control with communication and state-of-the-art I/O, using an Ethernet/IP network. "The PlantPAx system provides all the core capabilities expected in a world-class DCS – plus the multiple benefits of a single, cohesive, open communication protocol," said Steve Pulsifer, Rockwell Automation director for Process Market Development.

German Government Kicks Off New Year with Start-Up Push

German business and governmental officials have decided to take a brave step to get and keep German industry on the bleeding edge with an infusion of "blood" for start-ups.

German Economy Minister Sigmar Gabriel

On December 18th, Economy Minister Sigmar Gabriel invited a number of German financial and industrial leaders to Berlin to share his plan for a new German market to encourage new investments and ventures in the previously risk-averse and moribund market.

Bloomberg.com quoted Gabriel as to the reason for the new support. "Start-ups are the lifeblood of our economy," he said.

This move comes at a crucial time in the automation and control industries. German firms have traditionally held strong positions in these industries but with the combination of new breakthroughs in areas such as sensor technology and the rise of new forms of corporate funding through crowd-sourcing the automation and control markets perch on a new dawn in innovation.

Germany has also been in the forefront of the new theories of manufacturing, under the banner of Industry 4.0. German automation company Siemens has been promoting this for several years now, as can be seen by the Industry 4.0 article beginning on page 12 in this issue.

Can Germany's new market keep the technology juggernaut at the front? 2015 could be the year that unveils that answer.

INSIDER Special Report— Steven Las Marias Reports from Indonesia's Bogusari Flour Mills

Taking Production to the Next Level

To ensure continuous and efficient manufacturing, this Indonesian wheat flour miller upgraded its industrial networks to gain visibility over its processes and address issues as they happen.

Bogusari Mill

Bogasari Flour Mills, a division of PT Indofood Sukses Makmur Tbk, is not only the largest integrated flour miller in Indonesia but also the largest installation of its type in a single location anywhere in the world. It has two flour mills – one in Tanjung Priok, Jakarta, and another in Tanjung Perak, Surabaya – and has a daily production capacity of 10,000 tons of wheat, according to Christianus S. Kaluli, Vice President, Technical Support. Its integrated factory in Jakarta alone covers 32 hectares, has 15 mills (Mill A to Mill O), and has rows and rows of massive wheat silos.
Bogasari produces a variety of wheat flour – under the Segitiga Biru, Kunci Biru, and Cakra Kembar brands – for use in the production of noodles, breads, cakes, brownies, and other baked snacks. It is also the largest producer of pasta not only in Indonesia, but the whole of Southeast Asia. Marketed under the La Fonte brand, Bogasari's pasta products – spaghetti, macaroni, and fettuccini, among others – are not only for local consumption but also exported to countries including Japan, the Philippines, and South Korea.

Addressing competition

"Demand has been increasing year-by-year," says Christianus. "The flour market is growing, not only because of the population growth, but also the changing consumer habits and the growing middle class in Indonesia. People now are eating bread and pasta more. Before, it's only rice and noodles."
In line with the continuously growing demand for flour products, more and more companies have established milling operations in Indonesia.
"Currently, there are around 20 flour mills in Indonesia, compared to just three a few years ago – Bogasari Jakarta, Bogasari Surabaya, and Eastern Pearl Flour Mills in Sulawesi," he explains. "Before, our market share is about 90%; but now, it's only about 55-60% because of the competition."
Christianus emphasizes on the importance of product quality to keep up with the competition. "Our main challenge is quality. We need to make sure that the quality is uniform for all the batches of the products, especially now that there are other players in the market. The quality has to be good," he says. "We are already ISO and GMP certified. We are now working on getting the FSSC 22000 certificate."
Apart from quality, Christianus notes that capacity is also an issue. "Our Jakarta plant is now more than 40 years old. As our machineries are already old, our capacities are reduced. That is why we need to upgrade some of our systems," says Christianus, noting that they are now on the process of migrating their systems to newer models and versions. He says they started this process by upgrading three of their mills in Jakarta to increase their capacity, and improve their yield and efficiency.

From Profibus to Profinet

Bogasari was initially using Profibus as the communications platform for its HMI, controllers and I/Os. Its Mill A, B, and C have various instruments such as flowmeters, which are also running on Profibus.
But Christianus notes that they sometimes have issues regarding I/Os of their field devices. One particular intermittent issue is between the Profibus and the Ocrim milling system. Christianus says previously, if one system fails, the whole network goes down, thereby halting production.
"We are a big flour mill. If we stop even for just one hour, you can just imagine the capacity lost within that that period," says Christianus.
Ato Ansori, Business Development at Java Diamond, a Siemens Partner in Indonesia,

GE European Roadshow

"Predict for Profit" is the presentation by GE Intelligent Platforms to demonstrate solutions that allow customers to transform information from the industrial internet into useful data about their processes and machines.

This will be the topic for half day presentations to take place in London on January 27th, Paris on January 28th, and Milan on January 29th. The Industrial Internet is a key part of the GE strategy: it satisfies the need to combine machines, data, insights and people together in a connected infrastructure, a network that can be accessed by all operators regardless of the geographical position of devices and plants.

The correct analysis and understanding of these data allow operators and managers to anticipate faults before they happen, and to plan the corrective action needed in advance. The result - overall cost reduction, or even cost avoidance, and profit increase, thanks to scheduled maintenance and leaner and more optimized operations.

'Predict for Profit' is a not-to-be-missed event for users that want to learn real application stories of companies that gained competitive advantage from the quantifiable production, profits and asset management improvements available using GE Solutions. It will be specific for professionals that want to know how to leverage the Big Data asset that each enterprise already owns.

INSIDER Special Report: Indonesia's Bogusari Mills

(continued)

worked with Bogasari regarding the system upgrades at its mills. "Regarding migration, we have to know completely what the existing applications are – from the basic applications like the HMI, or SCADA, to advanced applications like reporting, or communications, or interfacing with another software. Sometimes, the engineers do not use standard software, let's say for PSA. One big issue here is reporting. For instance, WinCC already has add-on tools for reporting, but the engineer prefers to use non- WinCC options. The OEM in fact was using Excel by DDE. If we convert, we will get errors," explains Ato.

To address the above issues, Bogasari worked with Java Diamond to migrate its Profibus network to Profinet. It is also no using TIA Portal Version 12.

"The migration was easy," says Christianus. "After we migrated to Profinet, we will get just message alerts if there are some issues, for instance, 300ms or 400ms of failure, and therefore we don't need to stop the plant."

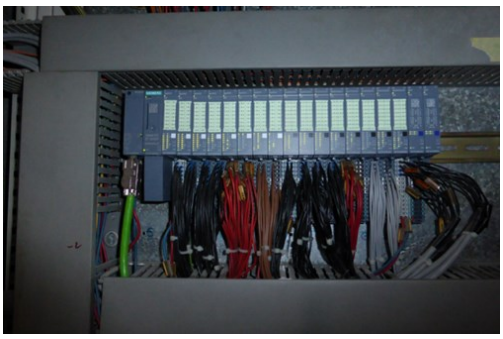
Another big advantage was the easy integration of the existing Profibus instruments into Profinet with Proxy technology, in this case Siemens IE/PB-Link.

With the migration to Profinet, Christianus says the reliability of the system is higher than before. He notes that now, they can also pinpoint the particular field device that is causing problems in the production. "It made the system more robust and flexible in topology," Christianus notes. "After the migration to Profinet, the operator now gets the error message easily – which, sometimes could just be a network disconnect. The important thing here is that there are no more production halts or disruptions. If it is a critical operation, then it will be stopped; but otherwise, If it is a critical operation, then it will be stopped; but otherwise, it will just continue."

So far, so good

Bogasari and Java Diamond finished the Profibus-to-Profinet migration in December last year. "It's been more than around six months already. There are many benefits, but one main thing is that with the upgrade, the system has been running smoothly and without disruptions," says Christianus. "The spare parts are also easier to get."

On why choosing Siemens solutions, Christianus highlights the fact that one of their main criteria is the automation system itself. "Siemens has good solutions, and being a big company, they can develop the software and the hardware; and the development is continuous. Secondly, in Indonesia, Siemens is popular. It's easy to get the spare parts. Every region, there is Siemens—Surabaya, Semarang, Medan. That is our main consideration."



With the migration to Profinet, operators can now easily determine which nodes in the production line have issues or error alerts.

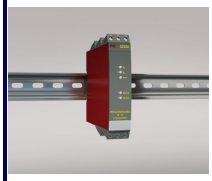
Docking stations for the Siemens HMI Mobile Panels for fast access to the HMI.

Bogasari's parent company, Indofood, also has a lot of Siemens systems installed at its plant, especially the noodle group. "If Siemens systems are good for some processes, we also implement them in the units in other divisions," says Christianus.

PR Electronics expands

Signal conditioner specialists PR Electronics has established a new sales subsidiary in Leuven near Brussels, to serve the Belgian market.

"We are very pleased with the opening of the local office in Belgium. In the future, our Belgian customers can expect even more dedicated support to maximize the performance of their process and automation operation," says Chief Sales Officer at PR Electronics, Simon Bisbo.



PR signal conditioner

Global ambitions

Previously, sales and support of PR Electronics products to Belgian customers were channeled through a local distributor. The opening of the new subsidiary is part of PR electronics' ambition to grow internationally.

"Opening of subsidiaries in selected countries is part of our globalization strategy and it will bring us closer to our customers in countries where we do not have a dedicated distributor, executing a long-term growth strategy today. Customers in these countries will be able to receive support and talk to a PR employee who is close by and speaks the local language," Simon Bisbo explains

Currently there are nine sales subsidiaries within the PR Group: the others are located in Sweden, Germany, UK, France, Italy, Spain, USA and China.

INSIDER Special Report continued...

NEC and Singapore EDB Partner

NEC Asia Pacific has partnered with Singapore's Economic Development Board (EDB) to develop smart energy products and solutions in Singapore. This partnership will focus on product research and solution development in the areas of energy management and control, smart grid, energy storage and renewable energy integration. NEC will spearhead research initiatives to create innovative energy solutions through enabling integration of multiple renewable energy sources such as wind and solar photovoltaic with its existing energy management control and storage capabilities.

"The relationship that we have with EDB is to do research and product development and support in the region in energy management control, energy storage, and renewable integration. These are areas that not many companies are working on," said Manish Kasliwal, Head of Smart Energy Business Incubation Centre at NEC Asia Pacific, in an interview. Kasliwal said smart energy, including renewable energy, is one of the key focus areas for the Singapore government.

Smart grids in APAC

Smart grid is a very broad definition, according to Kasliwal. "As we get deeper into it, more and more avenues are getting involved in it. Electric companies look at it in a very different way. Then there are the IT companies, who also look at it from a very different perspective. And then there is the communications industry, which is looking at it from yet a different perspective. Because if all these things are to work together, they need to communicate: so, three industries are merging. That merger is creating new applications, and that's where we see the emergence of this smart grid industry taking place," he explained.

Compared to the United States or Europe, the smart grid in Asia Pacific (APAC) will have a very different story, according to Kasliwal. "This is because APAC is a unique region in that it is a combination of underdeveloped countries such as Bangladesh, Vietnam, Myanmar, Cambodia; developing countries like the Philippines, India, Malaysia, and Thailand; and developed countries including Australia and Singapore. Very different landscapes and each with its own set of problems," he said.

One opportunity that Kasliwal is seeing is energy efficiency. "In all of these underdeveloped countries today, the building management system, for example, is very inefficient, and the energy bill is very high, cutting down on profitability. Energy is the number two OPEX. So they are trying to bring it down. To bring it down, you need energy efficient solutions. That is an opportunity," said Kasliwal.

On the renewable side, Kasliwal said solar and wind energy are intermittent technologies. "If I try to depend 100% on solar, it is not possible. If on wind, it is also not possible. The power quality is different. How do I integrate these two different sources of renewable energies? That's where we see an opportunity. And we provide energy storage solutions in that area," he said. "I see that at least for the next decade, there is going to be an enormous amount of opportunities in this area."

Through its grid size energy storage technology, NEC aims to improve energy quality and consistency from renewable power facilities and lower emissions, maintenance and capital costs of traditional power plants. This initiative with EDB also aims to reduce energy loss of utility companies, as well as enhance their effective capacity.

Manish Kasliwal

"Pretty much every country in this region is looking very seriously at revising their energy policy. Because of all these things, there will be a lot of developments taking place. And then I think a lot of learning will come from the other countries. For example, in solar energy, Germany is leading the entire industry, so we will be learning a lot from Germany. But it is not just a copy-paste approach; we will basically localize it, customize it to meet APAC requirements," Kasliwal concluded.

Maverick upgrades for power plants

Power plants have many types of systems and equipment not found in other process industry environments, so these projects have to be approached in a way that addresses those unique needs. Maverick Technologies, is the largest independent systems integrator in North America, has successfully completed program upgrades using a wide variety of platforms: the Maverick DCS Next program has been used to upgrade control systems in hundreds of plants.

Based on this experience Matt Sigmon of Maverick Technologies has released a new white paper, "What You Need to Know Before Replacing Your Control System," that describes the situation facing many electric utility companies: the advancing age of a distributed control system (DCS) at a generating plant. Their problems include increasing risks of system failures and declining availability of replacement parts.

In addition to control system strategy, the paper discusses the cyber security protections needed with any upgrade. This is particularly important for electric utilities since they fall under the NERC-CIP regulations. Two actual case studies round out the white paper, discussing upgrade projects at a gas-fired cogeneration plant in California, and at a municipal utility in Louisiana using conventional steam boiler and turbine technology.

And About Industry 4.0, Steve Hughes Explains...

REO's Steve Hughes

Industry 4.0 is a hugely popular concept, particularly when it comes to manufacturing. The term originated at the Hannover Messe a couple of years ago, when it was defined as the computerisation of manufacturing, including a transition to higher levels of interconnectivity, smarter plants and communication between machines and equipment. Here guest columnist Steve Hughes, REO UK's managing director, gives a further insight into Industry 4.0.

The story behind the concept

The first industrial revolution was the development of mechanisation using water and steam power. The second paradigm shift was the introduction of electricity in manufacturing environments, which facilitated the shift to mass production. The digital revolution happened during our lifetime, using electronics and IT to further automate manufacturing.

Industry 4.0 is considered to be the fourth in this series of industrial revolutions. Although it is still, relatively speaking, in its infancy, the idea relies on sophisticated software and machines that communicate with each other to optimise production.

In the concept of Industry 4.0, strong emphasis is placed on the role of intelligent factories— energy efficient organisations based on high-tech, adaptable and ergonomic production lines. Smart factories aim to integrate customers and business partners, while also being able to manufacture and assemble customised products.

Furthermore, tomorrow's smart plants will most likely be expected to take more autonomous decisions regarding production efficiency and safety. Industry 4.0 is more about machines doing the work and interpreting the data, than relying on human intelligence. The human element is still central to the manufacturing process, but fulfils a control, programming and servicing role rather than a shop floor function.

The Siemens (IW 1000/34) Electronic Works facility in Amberg, Germany, is a good example of the next generation of smart plants. The

Siemens Amburg Works celebrates 25 years of the "digital factory"

108,000 square-foot high-tech facility is home to an array of smart machines that coordinate everything from the manufacturing line to the global distribution of the company's products.

The custom, built-to-order process involves more than 1.6 billion components for over 50,000 annual product variations, for which Siemens sources about 10,000 materials from 250 suppliers to make the plant's 950 different products. This means the amount of data the system has to work with is truly overwhelming.

Despite the endless variables within the facility, a Gartner industry study conducted in 2010 found that the plant boasts a reliability rate of more than 99 per cent, with only 15 defects in every million finished products.

Thanks to the data processing capacity of Industry 4.0-ready devices, it is possible to generate the information, statistics and trends that allow manufacturers to make their production lean and more fuel efficient.

If you work in the food manufacturing indus-

ABB's SmartVentilation is a complete solution to the challenge of providing fresh air and venting toxic gases from subterranean mines. It also minimizes energy use by ventilating only those areas of a mine that require it. ABB estimates that this ability to work "on-demand" could reduce an operator's electricity bill by up to half. ABB's SmartVentilation offers a real-time analysis and control system to ensure working conditions are safe and energy efficiency maximized.
The SmartVentilation is divided into three "implementation levels", SmartBasic, SmartMid and SmartPerfect, which give different degrees of control over the mine's intake and exhaust fans. Mine operators have the option of installing one implantation level and then upgrading it at their own pace.
The fans and their drives come in modular form and are controlled with ABB's System 800xA, a world-class industrial automation platform. This provides operators, engineers and mine managers with an easy way to supervise and control the ventilation system, either from a central location or using mobile devices.
Patrik Westerlund, the global product manager for integrated mine automation at ABB, said: "The SmartVentilation is a state-of-the-art control solution for mine ventilation that was built to be easy to use and maintain during the lifetime of the mine."
ABB's worldwide service organization has a strong local presence and the customers' ventilation systems will run as effectively and efficiently as possible.

Industry 4.0 continued...

try, you probably know that many production lines today operate at less than 60 per cent, which means there is considerable room for improvement. Saving electricity and water are also key requirements for modern plant managers, who can achieve their eco-friendly goals by using smart plant connectivity.

The shift in manufacturing

In Germany and the US, governments have already allocated funds for strategic research and the implementation of Industry 4.0. Germany has dedicated €200 million for projects like BMBF's it's OWL or RES-COM. Similarly, the USA has launched several initiatives like the Smart Manufacturing Leadership Coalition.

Other countries, including the UK, are showing a lot of enthusiasm on the subject. Manufacturers and trade bodies like GAMBICA and the CLPA, have already endorsed the trend. Although no major official initiatives have been made public yet, there is definitely strong support for a move in the general direction of Industry 4.0.

The great news is that a lot of the technology associated with Industry 4.0 already exists. The not so great news is that implementing it will probably cost your company a pretty penny, especially if you aim to be an early adaptor.

For most automation companies, the move will be a gradual one, an evolution rather than a revolution. This is why continuity with older systems will still be essential for manufacturing in the years to come.

What the future holds

Industry 4.0 will ultimately represent a significant change in manufacturing and industry. In the long run, the sophisticated software implanted in factory equipment could help machines self-regulate and make more autonomous decisions. Decentralisation also means tasks currently performed by a central master computer will be taken over by system components.

In years to come, geographical and data boundaries between factories could become a thing of the past, with smart plants joining up sites located in different places around the world.

> The first step is taking the Industry 4.0 concept from the land of buzzwords, to the land of research and development.

Industry 4.0 is an excellent opportunity for UK industry to apply its skills and technologies to gradually start the shift towards smarter factories. New technologies will also lead to more flexible, sustainable and eco-friendly production and manufacturing lines. The first step is taking the Industry 4.0 concept from the land of buzzwords, to the land of research and development.

Humans Still Matter, says Siemens' Ulrich Kreutzer

In an article published on Siemens' website that discusses the Siemens Amberg digital factory showplace, Kreutzer talks about the human factor in Amberg's stunning success. "Sabrina Scherl's a good example of why human beings are still indispensable even in highly automated production facilities," he writes. "Scherl is a trained photo lab technician who has worked at the EWA as a machine operator for the past nine years. In addition to loading a machine with rolls on

Belden Redesigns Switch

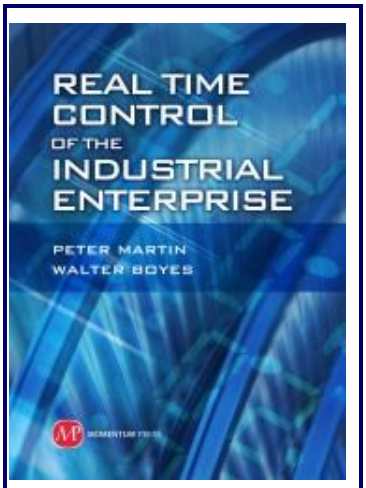
Belden Inc. redesigned its Layer 3 modular Gigabit switch to create a new version, the MSP30-X , for extreme environments. The switch is modular and flexible, and with enhancements, it saves customers costs and space by offering the ability to be placed near harsh environments.

This Hirschmann switch has a combination of Layer 3 features, including time synchronization for time-critical data and wall-mounting capabilities.

"The Gigabit switch's ability to function in harsh operating areas is a first-time capability for modular switches, Hirschmann's," said Product Manager Vinod Rana. "Now, customers can have modular, flexible networking products and place them into the harsh operations area."

Approved by global GL standards for Environmental Category D, the switch is designed for the hazardous industries. "Customers have been asking for rugged, reliable and flexible Ethernet products that can withstand extreme industrial conditions, like 4g vibrations," said Rana.

Features include Precision Time Protocol version 2 for real-time data, Layer 3 routing capabilities for network extensions, an operating temperature range from -40˚C to +70˚C and up to 100 percent relative humidity, and a high number of security features to protect and facilitate maximum network availability. It also has additional brackets for mounting of modules on the main device body and Ethernet cables that can be tightly screwed onto the module using M12 connectors.



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.

Industry 4.0 and Siemens Amberg Showpiece Plant...

(continued)

which individual components are lined up, Scherl is responsible for quality testing. She visually checks the populated printed circuit boards on a computer to make sure they are complete. Without Scherl the fully automated machine would be unable to proceed."

> "After all, the machines themselves might be efficient, but they don't come up with ideas for improving the system."

"We're not planning to create a workerless factory," says Professor Karl-Heinz Büttner, head of Siemens Amberg's Electronics Assembly Division. "After all, the machines themselves might be efficient, but they don't come up with ideas for improving the system."

Büttner adds that the employees' suggested improvements account for 40 percent of annual productivity increases. The remaining 60 percent is a result of infrastructure investments, such as the purchase of new assembly lines and the innovative improvement of logistics equipment. The basic idea here, says Büttner, is that "employees are much better than management at determining what works or doesn't work in daily operation and how processes can be optimized." In 2013 the EWA adopted 13,000 of these ideas and rewarded employees with payments totaling around €1 million.

Siemens is proud of its showplace, and its testbed. Karl-Heinz Büttner said, "I don't know of any comparable factory in the whole world that achieves such a low failure rate."

The factory makes some 12 million Simatic products each year and, with 230 working days a year, this means that one product leaves the plant every second.

Production is largely automated. Machines and computers handle 75 percent of the value chain autonomously. Employees are responsible for the remaining quarter of the work. The only time a human hand touches the basic component – an unpopulated printed circuit board – is at the start of production when an employee places it on the production line. From that moment, everything is machine controlled. Simatic units themselves control the manufacture of Simatic products. Some one thousand of these controllers are in action from one end of the production line to the other.


Siegfried Russwurm

Siegfried Russwurm, Member of the Managing Board of Siemens AG said, "The Amberg Electronics Plant is the perfect example of implementing the Siemens 'Digital Enterprise Platform'. The production methods we deploy today will become standard in many manufacturing plants in a few years' time." The products control their own manufacture by means of a product code, which tells the machines their requirements, and which production steps are required next. Manufacturing in Amberg is already well on the way toward the future. The real and virtual worlds will merge in the production process. Products will optimize their production paths by communicating with each other and with the machines. In the future Factories will be more flexible than today and achieve greater economic efficiency by manufacturing each product individually, quickly, at low cost and at the highest quality levels.

Victor Marinescu: Tidal power energy generation at Austral Sea

It is often mentioned about the Argentine potential in nonconventional combustibles and renewable energies such as the wind, the sun, the seas and others. Nevertheless, until now there were few real projects that have been completed in these areas.

In order to address this, in 2012, YPF Tecnología (Y-TEC), the state investigation and development company created between the Petroleum Company controlled by the State and the Consejo Nacional de Investigaciones Científicas y Técnicas (National Council of Scientific Investigations and Techniques) (CONICET), announced the successful location of the mid-oceanic buoys that will allow the study of the potential of the Argentine Austral Sea as a renewable resource for the electrical energy generation from tidal and current action.

> There are three types of tidal power energy: due to the waves, due to the rising and falling of the tides and due to the current.

The objective of this study is to obtain data which will be useful for interpreting the energetic potential of the sea currents. The buoys have instruments for measuring currents, waves and meteorological parameters.

There are three types of tidal power energy: due to the waves, due to the rising and falling of the tides and due to the current.

Axys buoy

The buoy Axys, of Canada, was placed at Punta Loyola and works at big depths, measures the atmospheric pressure, the direction and velocity of the wind and waves profile. It also takes advantage of the tides increase without the necessity of making an estuary, since it is set over the same Rio Gallegos.

On the other hand, at Strait of Magellan, where the constant currents of the Pacific and Atlantic Oceans are, the buoy Wavescan of Norway was placed, and it works between 600 and 1,000 meters with a 'lander' that allows the instruments to be moved. This buoy gives information about maritime currents, direction and velocity of the wind, pressure, temperature and humidity.

Wavescan buoy

Straits of Magellan at Sunset

The multidiscipline project conducted by Y-TEC has the collaboration of the Universidad Tecnológica Nacional Facultad Regional Santa Cruz, YPF, regional institutes belonging to CONICET (CENPAT and CADIC), YCRT, Y-SUR, IEA SRL, Argentinian Navy and Argentinian Military.

The project, which has a duration of three years, involves, like a distinctive element, the development of young professionals, investigators and technical experts in such fields like maritime operations, electric energy generation through renewable sources, material study, corrosion and bio-corrosion, use of hydrogen and environmental studies.

—Victor Marinescu, Director of *Soluciones en Control*, is the Argentinian correspondent for the Industrial Automation *INSIDER*. He can be reached at victor@edcontrol.com.

Emerson gives STEM scholarship grant aimed at North St. Louis County including Ferguson, Mo.

Harris-Stowe State University has received a $500,000 gift from Emerson Electric to help the school provide scholarships in STEM-related fields — those involving science, technology, engineering and math.

The grants will specifically go toward STEM scholarships for north St. Louis County students, including those in beleaguered Ferguson, Missouri. Emerson's headquarters campus is located very close to downtown Ferguson.

Dr. Dwaun J.Warmack

"This scholarship will be a significant catalyst to support our on ongoing mission in STEM and allows us to continue to strengthen and increase recruitment, retention and graduation of STEM majors at (Harris Stowe)," said Harris Stowe President Dr. Dwaun J. Warmack.

According to research from the St. Louis Community College's Workforce Solutions Group, jobs in the STEM fields will grow by 12.4 percent in St. Louis and 10.2 percent in Missouri by 2022. That's compared with non-STEM jobs, which will grow by just 9.2 percent in St. Louis and 8.5 percent in Missouri.

ARC 2015 Industry Forum Takes Shape

ARC Forum Showcases the Future of Smart Manufacturing

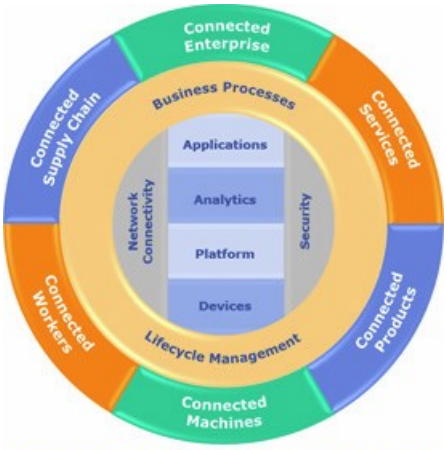
New information technologies such as Internet of Things, predictive analytics, wireless, additive manufacturing, cloud computing, mobility, and 3D visualization are beginning to disrupt and radically change the way industrial enterprises do business. Departing from the characteristic industry conservatism, leading companies now recognize that they must embrace new information and automation technologies to maintain a competitive edge.

The business environment is increasingly dynamic and volatile. New business models such as "Industry 4.0," "Industrial Internet", "Connected Manufacturing", and "Connected Asset Value Networks" are emerging. In addition to a host of potentially disruptive technologies entering the marketplace, companies also face rapid changes in government regulations, energy and raw materials availability, markets, and competition. By deploying leading edge technologies, today's companies can thrive.

Information and automation technologies will play a greater role in the production process than in the past. The target is to increase productivity, flexibility, and responsiveness by automating all industrial processes that don't require human intervention and empowering humans with the timely, in-context information they need to improve performance on the plant or factory floor and manage the business.

Process plants with continuous or hybrid manufacturing processes will leverage connected assets, together with third-party services, to improve uptime and asset performance. Discrete manufacturers will be able to produce customized products quickly, cost-effectively, and in small quantities. Soon, smart, cyber-physical components incorporating embedded systems will be able to actively tell machines what procedures to execute next. Background processes will trigger actions to ensure that individual component parts are re-ordered in time and any potential deviations are addressed and communicated to managers, executives, or customers as appropriate.

Leading industrial enterprises will take advantage of enhanced product connectivity to offer new value-added services to customers, and even change business models from 'selling and supporting products' to supplying the value delivered by products as a service to users.



ARC's Industrial Internet of Things (IIoT) Model

What strategies can industrial enterprises adopt to help position them to take advantage of the latest round of technology changes while prioritizing their investments wisely?

"Join us at the Nineteenth Annual ARC Industry Forum to learn from your peers how an information-driven strategy can better position you to succeed and determine how you can best approach critical technology decisions," said ARC President Andy Chatha.

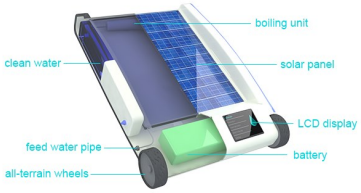
The INSIDER strongly encourages attendance at the ARC Industry Forums. The North American Forum is February 9-12, 2015, in Orlando, Florida. The European Forum is scheduled for March 4-5, 2015, in Amsterdam, The Netherlands.

For registration information, visit http://www.arcweb.com/events/arc-industry-forum-orlando/pages/default.aspx#register for the Orlando Forum, and http://www.arcweb.com/events/arc-industry-forum-europe/pages/default.aspx for the Amsterdam Forum.

Water from the Sun

An IndieGoGo campaign has been launched to move a small-scale desalination product from prototype into production.

The Desolenator is designed to provide drinking water to people living in communities without a clean water source, by harnessing solar power to produce pure distilled water. Each Desolenator is capable of producing up to 15 liters per day, requiring no power supply other than the sun. The Desolenator has no moving parts, filters or consumables, so while each machine will cost roughly $650, the cost per liter will be very low because that one-off payment will provide water for households for up to 20 years.



The Desolenator

William Janssen, CEO of Desolenator, said "Desolenator is different from existing technologies, maximizing the amount of solar radiation that hits its surface area through a combination of thermal, electrical and heat exchange. " Currently, the company has raised a little more than 50% of their goal. To contribute, visit https://www.indiegogo.com/projects/desolenator-transforming-sunshine-into-water , before January 14, 2015.

THE WAY I SEE IT
Editorial

Is the Sony Hack the Great Cyber Security Wake Up Call? Not.

This month saw a new chapter in what may well be nation-state cyber terrorism. Sony Pictures was apparently hacked by the North Korean government, angry over the portrayal of Great Leader Kim in a comedy film called, "The Interview." The United States, Iran, Russia, and China have all conducted nation state terrorism by cyber means, but the Sony exploits may generate enough ferment to actually get something done.

Or maybe not.

Industrial Control Security will probably not benefit from this newfound fervor one iota. Recently, the SANS Institute issued their 2014 Cybersecurity Difference Maker Awards. The only ICS cybersecurity practitioner to be mentioned in the SANS was Tyler Williams, now with Shell. While Tyler has had some influence on ICS cybersecurity, especially when he was Chairman of Wurldtech Security, the INSIDER can think of a host of others who are working in cybersecurity who should have been listed, either before Williams or along with him. Where are Eric Byres, Bob Radvanofsky, Jake Brodsky, Joe Weiss, Eric Cosman, and many, many others? The blurb makes it sound like Williams was the leader in all the cyber security development to date in the industrial control security environment. Tyler is a good guy, no mistake.. He has done lots of good things. His work at Wurldtech and at Shell have been first rate. But let's not forget the rest of the dedicated ICS security contingent, including all the ISA99 members, who have been working on ICS security for a decade. But recognition of only one person, and almost as an afterthought, is common when it comes to ICS Security from the point of view of the larger security apparatus, like SANS. This is a serious problem with ICS Cyber Security. It isn't as cool as national defense security, or banking security, or even security breach finders at Target and Home Depot. But let a major refinery blow up due to a cyber attack, or let the national power grid go down due to a cyber attack, and the entire security community will be after the ICS security folks for not doing their jobs.

But let a major refinery blow up due to a cyber attack, or let the national power grid go down due to a cyber attack, and the entire security community will be after the ICS security folks for not doing their jobs.

We are still hearing *soi-disant* experts claiming that there is no major difference between ICS and Enterprise Cyber Security.

And now we have the Internet of Things. Last month, at Rockwell's Automation Perspectives event in conjunction with Automation Fair, Bret Hartman, Vice President and Chief Technology Officer Security Business Group, Cisco Systems, Inc., calmly stated, as if it were a matter of common knowledge, that the Internet of Things is not defensible. And he was right.

There is no way that the firewall, that Maginot line of cyber security, can be used to defend the Internet of Things, or any factory connected to the Internet of Things because the threat surfaces are too numerous and the penetration means too varied.

So, now we are going to finally get down to cases. We are finally going to have to admit that technology can't save us from hackers. There are some things vendors can do, and they are doing them. Vendors are now patching with the speed of lightning. But we are going to have to come at this from the human side, if we actually want to have safe plants and a safe smart grid. Doesn't it always work that way?

Note: In last month's edition, Bedrock Automation was erroneously identified as a subsidiary of Micron Technologies. They are not. They are a subsidiary of Maxim Integrated. Further, their Black Fabric™ was erroneously referred to as "Black Mesh" which it is not. The INSIDER regrets the errors.

Comments? Talk to me!
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Read my Original Soundoff!! Blog:
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INSIDER
INDUSTRIAL AUTOMATION & PROCESS CONTROL

Profile

Dr. Peter Martin

by Joy Ward

Listening to Peter Martin talk about the challenges he has seen and faced in the automation industry is like having a course on the past and future of the industry. Martin, Vice President and Fellow at Schneider Electric, recently released a must-read book (authored with *INSIDER* Editor Walt Boyes) *Real Time Control of the Industrial Enterprise* (Momentum Press, 2014). We caught up with Peter after his speech at the 2014 MCAA Conference in Charlotte, NC.

Joy Ward: How did you get into this field?

Peter Martin: It was an interesting journey for me because when I graduated from college my background was all mathematics, and in the early 1970s you couldn't get a job in mathematics so I got a job in computer science—becoming a computer programmer for Digital Equipment Corporation; IBM 370s and 360s, really early machines—and learning computers.

After a while I found I wanted to become a high school teacher. I just loved kids so I went and became a teacher for a year and I realized I was spending eighty percent of my time with the five percent of the students who were causing issues and only twenty percent of my time with the ninety-five percent of the students who really wanted to learn. I found that to be a very frustrating balance.

I started looking for a job and the Foxboro Company was looking for an instructor. I had the teaching background in computers and they could use that because they were just starting to use computers in process control. So I joined the Foxboro Company, knowing nothing about process control.

It was a great experience because working in educational services at the Foxboro company I was able to take process control courses from some of the industry greats. After a few years of training I moved into project management. Then I moved into marketing where I was really a technical marketing expert on batch systems. My career got going from there.

I've been trying to focus on where industry is going ever since, because we have a lot of people focused on where business is. We need some more people focused on where industry is going. That's really what my goal has been for the last twenty, twenty-five years.

Engineers are really good problem-solvers and good at applying formulas and gear towards solving those problems. But the dynamic world is changing. If we get stuck in the rut of solving the same problems, we'll be solving the wrong problems. I believe engineers are among the most valuable people there are as long as they are solving the right problems. My focus is to figure what the next generation of problem sets is. I don't have the intelligence that some of the other engineers have but I could go to them and say, "Here's a problem. Can you tell me how to solve it?" Its remarkable how good some of these people are if you give them a problem. I get great enjoyment out of watching these very bright people do remarkably good things.

It's fun because I never want to be in a rut. If I ever find myself in a rut I get very antsy very quickly. I always want to be dynamic and out on the edge. So it's fun to find problems that can be solved and to watch them be solved. There's a lot of satisfaction in that. There's also a lot of frustration from the fact that humans tend to like the status quo, like things the way they are. If you're always looking at the next problem, you're sometimes looked at as a bit of a renegade or in more common vernacular, a pain in the butt.

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.

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. I think, as people saw me experimenting with some of this stuff they figured it was going to fail and they could kind of ignore it; this knucklehead who was off by the side trying to do some of this stuff. Now it's working. Actually Invensys and now Schneider Electric are building a structure on how to deal with clients around this. The traditional sales force really struggles with this because it's a new way of selling and interacting with clients. The engineers struggle with it because it's not the same thing they've always done.

The pushback bothers me a little bit because I'd love everybody to be able to see the end result that we can create together. But to be honest I also I enjoy it a little bit because the

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by Joy Ward (continued)

more pushback you get the more it causes me really to doubt myself. I'll sit back and say, "Wow, that's a really smart person and they don't think this should work." Maybe I'll go rethink it, even after I've seen it work fifty, twenty, thirty times. So it's always good. I mean the pushback is not a bad thing. I'm always impatient, I would like some of this stuff to gain traction a lot faster than it has but that's not practical in a very conservative engineering world like industrial automation.

I feel like as a community we have to learn how to look outside of the box that we've put ourselves in. It's really unfortunate that when I was in high school we took our best students and made them engineers. It was what you did. If you were really good you became an engineer. Unfortunately engineering training, and I'm going to get criticized for what I'm going to say now, doesn't teach innovation. It teaches applications. It actually teaches you how to think within the box, not without of the box. Therefore we end up with our brightest people, the best talent in the world, trained *not* to think outside the box. What I'd love to do is see if we can train some of the smartest people that we have so that they become more innovative, they feel comfortable trying the unknown and seeing if it works.

I really believe that industrial automation is key in solving the biggest challenges that the world faces: energy, water, hunger. We are right in the middle of the biggest social issues that exist in the world. If we do our job well those social issues will be solved. I think it's a responsibility of every human to try to apply whatever God has given them to those social issues. I believe it's critical to really get people to start thinking out of the box. Solving those issues is what we're trying to do. If we keep ourselves just doing the same thing we've always done, we're not going to really pick up on our responsibilities.

Realizing that social responsibility is critical, I feel that I've made a tiny step forward and that's all any human will make. But if we all start making those tiny steps I believe that world hunger could be solved in my lifetime and I'm old. I am absolutely convinced that if the people in the industrial world and industrial automation put their brilliant minds to this it will be solved.

JW: I'm hearing a real passion for teaching. Where does that come from?

PM: I'm one of ten children. Growing up you had to be able to articulate quickly if you wanted anything. My parents really emphasized the ability to communicate quickly, clearly and getting to the point. I do have a passion for clear communication and I believe everything I have done in my entire career has been based on teaching. Learning is done by feedback. So when I got into industrial automation and I saw feedback control I said, "My goodness, this is the same stuff I was doing when I was teaching." It all kind of wraps together. I find that I have an ability to be able to stand up in front of a group and get some passion across.

I think the best compliment I could get would be that he changed the way we thought about industry. Not in a big way, in a little way.

I would that from this point forward, we go about doing things in industry to approach those big challenges, that this is a trigger point that we start focusing on world hunger, world energy and so on. It's very important that we start doing something, we start thinking a bit differently than has been the tradition of industry. It matters if we hit the trigger point, the inflection.

I look at the characteristics of the Millenials coming up, of wanting a job with impact, want to make a difference, I think maybe that generation will force this inflection point, force this change.

JW: What would that trigger point be?

PM: I think it's where the whole industry starts to realize that our job is not just to make money for companies; our job is to use the gifts God has given us, to use the technology that we've developed to really improve the state of the world. We've been very commercially focused as an industry for a long time. If we could become a little bit more altruistically focused that would be the trigger point that I would like to see. My belief is that if you solve the altruistic problem you solve the economic problems. Everybody says you can either be altruistic or commercial. No, I completely disagree. The best way to clean the environment is to make it run commercially in the most effective way. I'm convinced the same is true for industry. If instead of aiming at money you aim at some of these other problems the money follows. The reward follows. That's, in the United States at least, a little anticultural right now, but I look at the characteristics of the Millennials coming up, in terms of wanting a job with impact, want to make a difference, I think maybe that generation will force this inflection point, force this change.

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Health Watch

By Mary Samuelson

The Insider Health Watch is on Vacation Until 2015...we are re-tooling the model to make it more informative and accurate, and the Health Watch will return, all bright and shiny and new in January 2015.

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Rajabahadur V. Arcot: Industry 4.0 May Not Restore Manufacturing Industry's Preeminence

Industrialization was an inflection point that forever changed, for the better, the way we live. While trigging massive global economic activity, industrialization enhanced the productivity levels of all activities of human endeavors, improved the quality of life, and created new livelihood opportunities. Industrialization started the virtuous cycle of demand creation for a wide range of aspirational wants, increased consumption, and investment and kept the cycle of economic activity & wealth generation moving.

All production facility machines, equipment, materials, and products will become cyber physical entities or Internet-of-things that are integrated tightly using Internet protocols.

The technological inventions and breakthroughs spurred the growth of the manufacturing industry that contributed to the demand creation for a broad portfolio of new industrial products and goods that cater to the basic needs and aspirational wants. Companies sprung up that created jobs that did not exist before.

As economies and markets expanded and competition intensified, manufacturing companies sought to gain competitiveness by leveraging automation systems, enterprise solutions, & the developments in the information technology and integrating them. Extensive application of automation at the plant level and enterprise solutions at the corporate level spurred further productivity improvements and efficiency enhancements in manufacturing industries and the trend continues. Reports, such as the *Factories of the Future Public-Private Partnership* and *Recommendations for implementing the strategic initiative INDUSTRIE 4.0,* a symbolic reference to the coming phase of industrialization, look at the landscape of the next generation manufacturing. These reports project extensive application of the state-of-the art embedded processors, sensors, transmitters, and faster & larger memory units including the use of cloud-based solutions and big data analytics. All production facility machines, equipment, materials, and products will become cyber physical entities or Internet-of-things that are integrated tightly using Internet protocols. The aim is to achieve enhanced productivity by making all processes & operations information driven and autonomous and empower workers to focus on creative, value-added activities instead of forcing them to perform routine tasks. Yet another expected outcome is that INDUSTRY 4.0 trends would help manufacturing to return to the shores from which it fled.

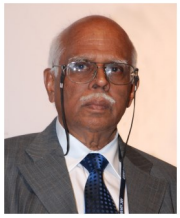
Industrialization led to the creation of companies that generated wealth for their shareholders and expanded new livelihood opportunities. Industrial firms took upon themselves the responsibility of imparting the necessary skills to aspirants seeking non-traditional employment opportunities. The basic technical knowledge came from the educational institutions and the manufacturing companies honed the aspirant's inherent attitude and commitment and helped them acquire the necessary skills. Industry needed skilled workforce and people found new livelihood opportunities outside the traditional agriculture, trading, and such others. It created tremendous interest in science, technology, engineering, and mathematics among the many job seekers and others.

The important contribution of the manufacturing industry has been the creation of wealth by improving the productivity of the human efforts and new livelihood opportunities for a vast majority, especially during the first two phases on industrialization, namely mechanization and electrification. While the next phase of industrialization, marked by the expanding role of electronics and convergence of information and communication technologies, witnessed to massive wealth creation among the industrialized countries and spread of industrialization to other countries such as Korea, Singapore, and others, outside the group of economically developed. It also triggered other

Rajabahadur V. Arcot: Industry 4.0 May Not Restore Manufacturing Industry's Preeminence, continued...

trends. The contribution of the financial sector in the wealth creation increased. Because of this trend, the manufacturing industry lost its preeminence to the financial sector, such as banking, finance, and insurance in advanced economies. In addition, some of the emerging economies, such as China and Korea, became manufacturing hubs because of labor arbitrage they offered.

Bain & Company's report "A World Awash in Money - Capital trends through 2020" says "The rate of growth of world output of goods and services has seen an extended slowdown over recent decades, while the volume of global financial assets has expanded at a rapid pace. By 2010, global capital had swollen to some $600 trillion, tripling over the past two decades. Today, total financial assets are nearly 10 times the value of the global output of all goods and services." It points out that the relationship between the financial economy and the underlying real economy has reached a decisive turning point. This trend resulted in the manufacturing industry losing its 'premier job creator' tag, especially in advanced economies.



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However, there is a growing recognition about the importance of the manufacturing industry to the global and national economies.

"Manufacturing remains critically important to both the developing and the advanced world. In the former, it continues to provide a pathway from subsistence agriculture to rising incomes and living standards. In the latter, it remains a vital source of innovation and competitiveness, making outsized contributions to research and development, exports, and productivity growth" says the McKinsey report, "Manufacturing the future: The next era of global growth and innovation." The US Department of Commerce report "The Importance and Promise of American Manufacturing" while endorsing the importance of the manufacturing sector says "manufacturing is a cornerstone of innovation in our economy: manufacturing firms fund most domestic corporate research and development (R&D), and the resulting innovations and productivity growth improve our standard of living."

Despite the recognition that manufacturing plays a crucial role in unleashing economic expansion through job and value & wealth creation, it is not clear whether the technology behind INDUSTRY 4.0 would help manufacturing industry to regain its lost preeminence.

For one, there are other more attractive and alternate livelihood opportunities at the global level and in developed countries, there is dearth of interest in STEM subjects, which is the foundation on which the enabling technological breakthroughs depend. The technology trends that constitute the driving force behind INDUSTRY 4.0 will most certainly propel manufacturing industry's productivity to higher levels, but it may not spur the best and the brightest to join the industry workforce. The manufacturing industry has lost its sheen and INDUSTRY 4.0 may not restore its glory. In a way, INDUSTRY 4.0 will further reduce the industry's dependence on middle and worker level workforce! Policy makers in advanced economies are hoping that technology behind INDUSTRY 4.0 would help in reshoring manufacturing but their efforts are mostly likely to succeed if they begin to focus on making the manufacturing industry the preferred employer of choice.