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Honeywell Goes Its Own Way: the 46th Honeywell User Group Meeting

Honeywell Goes Its Own Way

For years, people wondered why Honeywell Process Solutions would invite its best customers to bake or broil in the June heat in Phoenix, Arizona, when the company was headquartered there. This year, for the 46th rendition of the Honeywell User Group Americas, the company found a location which was almost as hot and unfriendly as Phoenix. This year's event was held at the J. W. Marriott Hill Country Resort, just outside San Antonio, Texas. About 1500 of Honeywell's closest friends and customers gathered to hear the latest news and product information from both the company and the User Group.

Honeywell's User Group, unlike many other vendor-sponsored customer forums, has teeth. For many years, Honeywell has provided the Users with a substantial budget and engineering assistance to produce additions, new features, and product fixes that the Users themselves vote for and select. This User Input Subcommittee (or UIS) makes the contribution of the User Group to Honeywell substantial and more important than just obediently filling out purchase orders—and it makes Honeywell beholden to its users for more than praise and complaints.

Like every other major automation vendor, Honeywell has been talking about connecting the enterprise and using the buzzwords of Big Data and the Industri-

al Internet of Things. Unlike all the other major automation vendors, however, Honeywell has two major differentiators that make their take on the future of automation and process control quite different.

The first is that Honeywell Process Solutions is part of "big Honeywell" which owns a large number of process plants throughout the world. This gives HPS an unparalleled test bed, assuming the plants are willing to try new things. As Honeywell Process' CEO Vimal Kapur remarked in his keynote address, "sometimes it is harder to sell to our internal plants than our external customers' plants."



HPS CEO Vimal Kapur

The second major differentiator is that HPS is a sister company of Honeywell UOP, which, in its over 100 year life, has produced most major process improvements in the oil refining and petrochemicals industries. This, according to Jason Urso, vice-president and chief technology officer, is a big part of what makes Honeywell Process different. "We don't just provide a DIY platform and tool box," he said. "and we aren't just data scientists digging into the data." For a great story about why this doesn't work well, see Walt Boyes' editorial in this issue. "What we do is to leverage the extensive experience of both UOP



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Honeywell's HUG(continued)

and HPS, and produce embedded process models into which we can feed the data and produce high quality results." He went on to say, "Our digital-twin is augmented with Honeywell UOP process expertise, as well as our own."

The goal, of course, as a succession of Honeywell Process Solutions' presenters noted, is to solve real world problems quickly and efficiently, to produce real world improvements.

As has become a tradition at HUG, Jason Urso began his technical presentation with a parody—this time of Star Wars. Instead of "The Last Jedi" Urso was costumed as Luke Skywalker and presented "The Last Migration." Honeywell Process Solution intends this to be a final chapter of sorts in the continuous evolution story of its ground-breaking TDC distributed

"We're learning that it's okay to replace hardware with software, and so this is the last TDC migration you'll ever need to perform," said Urso. "In 2013, we presented a vision of TPS and TDC systems merging with Experion, and today, we're realizing that vision."

In short, the path forward involves turning the company's legacy control hardware infrastructure and operator displays into virtualized applications that run on the com-

pany's Experion control system platform and fault-tolerant Ethernet (FTE). Importantly, even decades old applications and operator graphics can be virtualized, continuing Honeywell's longstanding commitment to its customers' intellectual property investments.



Jason Urso points the way to "The Last Migration."



How the Last Migration Will Work...

Group meeting to introduce some new, and in some cases, quite innovative, technologies.

This is a bold gamble for Honeywell. Changing its long-time business model from upgrade-and-replace to a virtual system that is instantly upgradable via the cloud is to potentially open up their installed base of TDC systems to competition.

Some of their customers may not want to migrate their systems virtually. One customer the INSIDER spoke with under condition of anonymity said, "Oh, well. Do I HAVE to do it that way?" I

It is possible that there will be a sizeable number of TDC users who will want Honeywell to pry their systems out of their cold dead fingers before they migrate. Notwithstanding the potential for customer resistance, it is really Honeywell's only option in the long term. There are significant numbers of TDC systems that are up to forty years old. In IT terms, that's like trying to run an entire enterprise on a single Osborne One computer.

What Honeywell is doing is leveraging the real power of virtual systems and the cloud. We can expect that after the initial shock wears off, the fanatical TDC users will embrace the new concept as a way to keep their DCS systems basically forever.

HON New Product Intros

Of course, Honeywell Process Solutions used their User

Honeywell's HUG (continued)

Honeywell's newest industrial automation technologies include:

Experion® Elevate is real-time supervisory control and data acquisition (SCADA) delivered as a secure and scalable service, reducing the need for on-site hardware and support. Yes, Honeywell is putting SCADA in the cloud and they say you will like it!

LEAP™ for Operations extends LEAP project efficiency principles to optimize, simplify, and run ongoing operations more efficiently. Apparently, LEAP, which used to mean "Lean Execution of Automation Projects" is just a trade name now as Honeywell tries to extend the brand to all operations, both project and ongoing.

Honeywell Trace™ is documentation and change management software that reduces configuration errors, improves troubleshooting, reduces unplanned shutdowns and improves auditing and regulatory compliance.

Secure Media Exchange (SMX) reduces cyber security risk and operational disruption by monitoring, protecting and logging use of removable media such as USBs. This, it seems to us, is clearly infant technology with many more applications in the plant than just Honeywell data. Properly used, this could eliminate the USB input vector entirely.

Experion® Unit Operations Suite leverages a new ControlEdge™ Unit Operations Controller along with Experion Batch Manager to optimize pharmaceutical, specialty chemical, and food & beverage applications. Honeywell describes this as a better batching system than they've produced before.

Predict RT is a novel, intelligent data analytics framework transforming the refining industry from traditional, reactive degradation management, to real-time, proactive, corrosion management through online, real-time corrosion prediction and monitoring. Once again, this stands the idea of Big Data on its head. Instead of collecting data and trying to make sense of it, the data analytics are used to correlate to high resolution models of corrosion prediction and monitoring.

Enterprise Risk Manager provides cross-plant cyber risk visibility across all site Risk Managers, providing a solution that measures and manages high priority industrial cyber risk. With the cyber warfare from Russia and other state actors becoming more frequent and much more debilitating, it is necessary to produce an enterprise-wide risk managing system.

ControlEdge™ RTU provides improved management of field assets through simplified and efficient remote monitoring, diagnostics, and management. It reduces equipment monitoring and

diagnostics from hours to minutes, and integration with Experion® SCADA reduces configuration time by 80%. Does the world need another PLC? If you are Honeywell, the answer is yes. Integration with Experion, batching, and handling the hybrid operations in a plant make it necessary to use PLC-type devices and Honeywell suggests that their customers might as well use one that says Honeywell on it.

Open Virtual Engineering Platform (VEP) is a secure and reliable cloud engineering service for convenient and instant access to an off-process full functional Experion system at any release, accessible from anywhere at the lowest total cost of ownership. Once again, this leverages the accessibility, reliability, and easily-upgraded nature of cloud-based software.

Deep Cyber

"You are witnessing a pivotal point in cyber security with weaponized tools released into the wild," said Eric Knapp, who, with Jeff Zindel, briefed customers and media about the strong posture that Honeywell has taken with respect to securing both their own and their customers' plants, processes, and data. The acquisition of NextNine and the fact that Honeywell has been working hard on cyber security for nearly a decade bodes well for their customers' security and safety.

Operator Competency Assurance

It has always bothered the INSIDER that the person who runs the boiler in the plant must be licensed, and the person who operates the waste treatment plant at the outfall of the plant must be licensed, but the people who actually operate the plant have no licensing requirements at all, other than intra-company. Honeywell has seen a necessity, and a requirement to become an ad hoc certification provider, and they expect this business to grow significantly in the next decade.

UOP Integration



Dr. Rebecca Liebert

PhD chemical engineer Rebecca Liebert, president and CEO of Honeywell UOP, provided UOP's viewpoint on the tight integration of UOP's process models with the Honeywell Experion DCS systems. She gave some history of UOP, and why the collaboration between the two Honeywell sister companies is unique and powerful.

The INSIDER's June 2017 Roundup

Siemens' Automation Summit Digitization of the Factory

The 2017 Siemens Automation Summit was held 26-28 June 2017 in Boca Raton, Florida. Approximately 700 people registered for the event, approximately 200 of which were Siemens solutions partners and Siemens employees. The overall tone was positive but (anecdotally) seemed to reflect business conditions that were neither trending up nor trending down.

Raj Batra (President, Siemens Digital Factory Division) focused on digitalization during the opening session. Customers understand that they must embrace digital technology (aka digitalization). Many have started but Raj feels that they are not acting fast enough. Many companies realize that if they are not disruptive... they will be disrupted. In this age of disruption, the current level of digitalization has reduced incumbent revenue and EBIT by 45 and 35 percent respectively. In addition, Raj said that 50 percent of the Fortune 500 has disappeared since 2000.

Digitalization has been occurring (naturally) over the years. Milestones include automation (around 1996), linking design and production (around 2006) and the digital enterprise (2017). By way of example, the INSIDER adds that field instrumentation has taken a similar path from analog instruments with analog outputs to digital instruments with analog outputs to digital instruments with fieldbus outputs. Each development increases the digital content in the loop on the path to increased digitalization.

Billions of devices, machines and data currently exist. It is estimated that there will be 1 trillion connected devices worldwide by 2030 and that 25 percent of the world economy will be digital (as compared to 15 percent a few years ago). Using the data from these connected devices to drive a payback and return on investment (ROI) will require a cultural transformation that will tend to break down walls and silos in the organization.

Time to market is an important key to staying competitive. Needed is a holistic approach with digital simulation that brings the virtual world and the real world together. Raj stated that approximately 90 percent of the work used to be spent diagnosing the problem and the remaining 10 percent to fix it. These percentages will be effectively flipped with digitalization --- 10 percent diagnosis and 90 percent implementation. To this end, developing a digital model of the process allows a simulator to model the process to enable problem analysis and the testing of solutions.



Siemens Digital Factory President Raj Batra

Digitalization is a key enabler to produce customized products. Raj cited that the digitalization of shoes drastically reduced time to market and the start of production. Digitalization can also enable more efficient production of large complex products such as building an aircraft carrier with (literally) millions of parts.

Customer Excellence Awards were presented to Tearis Bay City, Janssen Pharmaceutical (Johnson & Johnson), Shaw Industry Group and INTEC Automatic Controls.

There were over 75 technical breakout sessions and 16 hands-on training sessions addressing productivity and efficiency, maintenance and operation, safety and industrial security, best practices and novel approaches, digitalization and roadmaps to improve Siemens products to better serve its customers. In addition, there were 14 stands in the Technology Café showcasing various Siemens products to include solution partners, industry services, cloud-based IoT, control products, energy management, low voltage motors and drives, large drives, digitalization, process automation, process instrumentation, factory automation, and communications and identification.

The process user roadmap discussion led by Stacey Jarlsberg (Product Manager at Siemens) focused on a recent and ongoing release of PCS7 – Version 9.0. Digitalization is key and (by design) starts in the field with transmitters communicating via Profinet which was loosely described as a combination of Ethernet and Profibus. Profinet uses a flexible scalable architecture that is 8 times faster than Profibus and more reliable than other fieldbuses while having fewer installation guidelines. In short, Profinet enables the reliable transport of more data per device to the control system.

The new entry-level controller (ET 200SP HA) has full functionality but is not scalable. Intended as a more economical solution for smaller applications, its remote input/output modules are fully rated from -40 to +70°C, have a smaller footprint and can be used in Zone 2 hazardous locations. The new hardware supports redundancy by routing the transmitter signal to two input/output modules --- one or both of which may be installed. This results in fewer terminations and the ability to easily add redundancy later.

Plugging in an input/output module causes it to download its

The INSIDER's June 2017 Roundup

configuration and parameters and start working. Connecting a new transmitter or replacing a transmitter causes the module to request and upload information from the transmitter. Siemens terms this functionality “plug-and-produce”. In addition, the firmware in the module can be upgraded automatically to incorporate future enhancements. This illustrates how digitalization can provide value by enabling system upgrades with minimal or no cost to the user. Planned additions include intrinsically safe modules and failsafe modules.

For example, the latest software version activated the existing non-volatile memory in the input/output module to provide more reliability by eliminating the use of memory that uses a battery backup. It also activated a chipset to improve cybersecurity by restricting access and capturing the occurrence of certain events. Such enhancements can occur with no interruption to the process and at virtually no cost to the user.

The Simatic compact field unit has freely configurable input/output modules (DI/DO/AI/AO). Fieldbus (and later HART) transmitters enable digitization all of the way down to individual instruments. Standard remote input/output enclosures will be available for 48 or 96 points with provisions for power supplies, fieldbus switches and a water sensor. This overall combination

provides the benefits of digitalization, the practicality of a standard hardware design and the ability to easily add more transmitters.

In a separate media roundtable discussion, Axel Lorenz (Head of Process Automation at Siemens) added that software enhancements include the Process Device Manager with enhanced recipe functionality that has the ability to re-utilize a configuration by copying/pasting it from one plant to another, vertical data integration for predictive maintenance functionality and a maintenance console where one can essentially push a button and print documentation.

The Technology Café included stands for many Process Industries and Drives products staffed by Siemens experts where a new fiber-optic multipoint temperature sensor caught my eye. Traditional

multipoint temperature sensors consist of a thermowell with multiple thermocouples or RTDs located at various points in the thermowell. For example, a 4 meter long 0.5 inch diameter thermow-

ell may contain 12 temperature sensors and their associated wires. Only a few companies can make these sensors reliably because the temperature sensors and their wires (both of which can be fragile) must be sufficiently small to fit inside a relatively small-diameter well. In addition, the small diameter wires can also pose measurement issues in some applications.

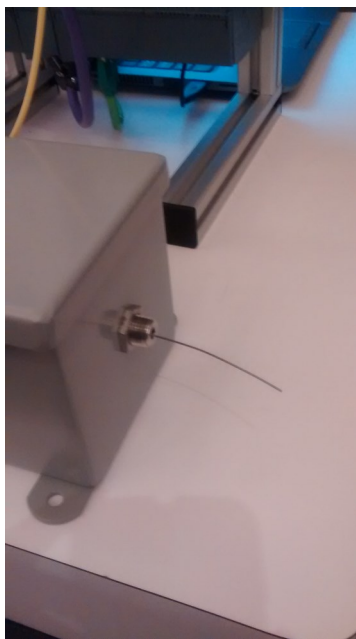
The new multipoint temperature sensor is comprised of a thin fiber-optic cable in a metal sheath with internal grooves located at the locations where temperature is to be measured by detecting the expansion/contraction of the fiber-optic cable at each groove. As compared to previous multipoint temperature sensors, this sensing technique enables multiple temperature measurements using a thin fiber-optic sensor (see photo) that can much more easily be inserted into the well and can be replaced during operation (if necessary) while also eliminating over 90 percent of the wiring associated with traditional sensors.

There were a number of technical break-out sessions presented by instrumentation users to include “Live Conversion of Critical Production Assets to PCS7” by Sharla DeFrain (GMA Regional Process Control Team Leader at Dow Chemical) who is leading the staged upgrade of key intermediate processes critical to the supply chain that must operate 24x7 and cannot be readily shut down. The existing control systems were 25-30 years old, have not been supported by the manufacturer for 10 years and were exhibiting an increasing number of failures. In addition, finding qualified support personnel has become increasingly difficult.

The conversion involves 32 processes with multiple parallel trains and approximately 10,000 inputs/outputs and 35 clients in 15 buildings spread out over approximately 0.5 miles. The first (trial) stage with 2 processes containing approximately 500 inputs/outputs is complete. The demonstration stage involving 7 processes and approximately 2000 inputs/outputs is at or near completion. The third stage (replication) with 20 processes and approximately 5500 inputs/outputs will be implemented in the next two years. The remaining upgrades are scheduled to be completed in 2021. Field instruments will not be upgraded as part of this project.

Key execution strategies included the staged migrations, strong support and leadership from operations and management, project management controls, partnership sourcing with Siemens and other contractors and testing at each stage of the project. The benefits have been improved operation where the gains can be replicated, improved operation via new procedures with flexible structures, improved alarm management (90 percent reduction) and the availability of tools that enable process optimization. Actual project benefits have not been quantified yet.

Brian Clemons (Process Automation Manager at Dow Chemical) spoke about “Maximizing Support Services” in a compa-



Multipoint Temperature Sensor

The *INSIDER*'s June 2017 Roundup (continued)

ny that has a large fleet of control systems. Challenges include upgrading proprietary systems dispersed around the world with various levels of expertise encountering problems that are not that visible to management. The strategy employed was to determine why the company does what it does (defining a mission, vision and definition of success), communicate catalysts such as safety, security and business growth, take down silos within and outside of the company and then identify the installed base and stake holders.

Putting the strategy into action entailed forming a Dow/Siemens process automation users committee to provide access to expertise and information, forming a Dow/Siemens alliance that included an embedded Siemens engineer, enabling access to a free support management services for legacy and other issues, and accessing training. Brian mentioned that 10, 20 and 70 percent of learning comes from formal training, coaching and experience respectively.

Jody Braud (Automation, Electrical and Instrument Manager at Louisiana Sugar Refinery) talked about “Making Real Sugar Virtually”. Justification for his project included a significant version upgrade, virtualization of physical computers where multiple operating systems run on a single computer, availability of life cycle services products, reduced service time, energy savings, administrative and other support cost savings, restricted access for better security, increased availability and increased flexibility. As a result, the entire plant runs on only two computers and the data center runs 11°F cooler. Negatives include more complexity and increased risk of a single point of failure that is mitigated in part by fault tolerant components.

Richard Anderson (Director at Solid State Automation) gave some pointers as to “How to be Successful with Your Siemens Solution Partner”. Richard started his presentation suggesting that sour projects are usually due to poor communication that is often the result of a natural tendency to over-simplify complex things. Therefore good communications should be fostered using documentation --- Scope of Work (overview, deliverables, scope, schedule and project management), input/output lists, instrument lists, proper quotes, proper purchase orders, network diagrams, process flow maps, P&ID drawings, sequence of operations, cause and effect matrices, example screens, system drawings, program printouts, screen shots, factory acceptance test check lists and commissioning sign off sheets.

Edmund Knutson (Siemens) suggested that using condition-based maintenance is more economical than preventative and reactive maintenance. Knowing when equipment will fail allows time to prepare for the repair while still operating the process. This approach can apply to electrical equipment, instrumentation, rotating equipment, valves and the process. Edmund demonstrated remote access to equipment parameters (temperature, loading, run time...) during a live demonstration that accessed an offshore oil well in Norway.

Bob Vavra (Editor, Plant Engineering, CFE Media) moderated a roundtable discussion on “Sustainability in the Era of Digitalization” with Rick Beane (Head, Industry Services Business Unit at Siemens), Jagannath Rao (Vice President, Data Services Business Unit at Siemens), Keith Jones (President at Prism Systems) and Jeff Tunkel (Manager, IT Plant Computing at Air Products & Chemicals).

Barriers to digitalization include skillset gaps, understaffed plants, customers not knowing how or where to start and the need for leadership from top to bottom. Urgency is coming from management, staff, media awareness drives and the competition. Companies realize that digitalization is a step change (not incremental) and that it is natural for newer younger employees. Human machine interfaces (HMI) will not be fixed and will provide more information (not just data) with a balance of portability and security.

Production must become more flexible to enable the production of smaller sizes and lots. Customers are also buying different products such as motor torque instead of the motor (horsepower) and gas instead of the compressor (capacity). This arrangement often necessitates changes in the entire supply chain that is typically tied together digitally.

System integrators are changing to address these changes as systems become more complex and more difficult to diagnose and fix. The skills needed 10 years ago were to design and install PLCs, drives and HMIs. Problem diagnosis entailed approximately 90 percent of the effort with the remaining 10 percent was consumed to fix it. This is now flipping towards 10 and 90 percent respectively which caused system integrators' skills to include using new tools to diagnose networks where the data itself can cause problems.

Security is also a concern where old operating systems are vulnerable and not supported. Even new operating systems must be patched and updated to incorporate new vulnerabilities. Connections with cloud systems present a new set of vulnerabilities and the terms and conditions of cloud service can be “scary”.

A different mindset is needed to acquire and manage talent that needs to be well-rounded in IT with problem-solving skills working in a hands-on environment. Rotating people to work in different functions is helpful. Hiring and training young people has been necessary because recruiters cannot find experienced people with the proper skillset and because people in the existing workforce have tended to not move into the new world quickly.

James Simmons (Process Control Engineer at DuPont) spoke about the “Digitalization of Electrical Infrastructure” at the Nevada, Ohio plant where information not normally brought into the distributed control system is aggregated. This includes the incoming power system, 3 medium voltage switchgear motor control centers, 9 high voltage switchgear motor

The INSIDER's June 2017 Roundup (continued)

control centers and 15 heat tracing controllers. Alarms sent directly to maintenance technicians (and not to the operators) include temperature, fault, setpoint, current, power factor... Benefits include distributed control system functionality where conditions can be directed to a historian and/or displayed for the operator or maintenance personnel.

Craig Nelson (Product Marketing Manager at Siemens) focused on variable speed drives in his presentation of "Effective Energy Saving Technologies for Industrial Motors and Drives". The key drivers to applying this technology are government regulations, environmental responsibility, rising energy costs and sustainability. Barriers include reluctance to change, long payback, shortage of capital, incorrect definition of system efficiency, lack of motivation and lack of time.

Motors, drives, pumps and fans are constantly evolving to become more efficient but these pieces of equipment comprise only one part of the entire system. That said, there is an increasing trend to apply synchronous motors due to improved efficiency.

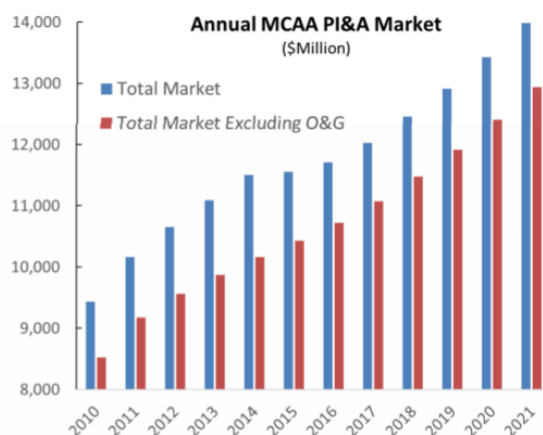
Of particular interest is the shift to considering the overall system efficiency when evaluating the energy saving aspects of applying variable speed drives. This makes technical sense because the proper measure of energy savings and efficiency should consider the relationship between the process requirement (pressure, flow, movement...) and the incoming energy necessary for all equipment in the system to achieve that output. European standards outlining this approach will likely migrate to North America in the near future.

MCAA Values U. S. PIA Market At \$11.7 Billion

The 2016 Process Instrumentation and Automation market in the United States, valued at \$11.7 Billion, is projected to grow 3.6 percent by 2021 to a total of \$14 Billion.

The Measurement, Control & Automation Association (MCAA) has published its Annual Market Forecast for 2017.

The report, pre-



pared by the analysts at Global Automation Research, focuses on the Process Instrumentation and Automation (PI&A) markets in both the United States and Canada.

Twelve industry segments and product categories are examined in-depth, with a forecast timeline extending to the year 2021.

Growth will be concentrated in five industries: Chemicals, electric utilities, oil refining, food & beverage, and pharmaceuticals.

The cumulative market gain will be \$2,282 Million over the forecast period.

The chemicals industry market gain will be the largest at about \$850 Million.

The next four fast growing industries will add over \$1 Billion in market gain. The market gain of the remaining slow-growing industries will equal about \$340 Million.

Oil & Gas spending is expected to be essentially flat in 2017, then increasing through the end of the forecast period.

The 5- Year CAGR is forecast to be 1.4 percent.

The 2016 Canadian PI&A Market value was \$1,211 Million, versus \$1,202 Million in 2015. Gains in non-oil & gas industries were negated by the continuing drop in oil & gas spending through 2016.

The market is forecast to grow at 3.8% CAGR over the 5-year forecast period, reaching \$1,458 Million in 2021.

Six industries—chemicals, F&B, electric utilities, oil refining, W&WW and pharmaceuticals—as a group, will grow at a 4.8 percent 5-year CAGR.

Economic forecasts suggest that the Canadian GDP will remain above 2 percent over the forecast period, creating a strong base for continued growth in PI&A spending.

GE Grows Predix Applications While Tossing Immelt Over Low Stock Prices

Jeff Immelt, who over his 16 years as chief executive of General Electric produced the worst stock performance of any Dow 30 component will step down from leading the company on Aug. 1. John Flannery, a 30-year veteran of the \$250 billion conglomerate, will take over the top spot. Flannery, who led the restructuring group, signaled no major changes at GE.

Investors quickly added more than \$8 billion in value to the company, with shares up 3.6 percent, to \$28.94 immediately on the announcement. The question that immediately comes to mind is this: Immelt very publicly bet the company on Industry 4.0, Big Data, and the Internet of Things—does this mean

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the bet is not working out well?

Yet, while Flannery, who, like Immelt before him, had done very well at GE Healthcare, was taking the reins, GE Digital unveiled an integrated solution to deliver the industrial service model of the future that combines the power of ServiceMax, its cloud-based field service management (FSM) solution, with its intelligent Asset Performance

Management portfolio. Available in late 2017, the combination of ServiceMax + APM will enable industrial companies to transform how they predict, manage and service the entire asset lifecycle.

Apparently, even with Immelt taking it in the neck, GE is committed to Big Data and Predix.

Rockwell Calls It the Connected Enterprise

Rockwell Automation holds a software conference every year. It is called TechEd, and is usually the most underreported major conference of the year. This year, new Rockwell CEO Blake Moret highlighted his intended transformation of Rockwell from a hardware company to a software and services company that just happens to make a whole bunch of hardware.

He calls it “the Connected Enterprise” and that’s the same basic idea as Siemens’ Digital Factory, or GE’s Industry 4.0. It is full of Big Data, big data analytics, and like everybody else, it is the concept of digital transformation of the enterprise. Moret pointed out, however, that in order to make this nifty stuff work, you have to provide “specific opportunities to save time and money.” In other words, you have to make it real.

Rockwell’s really very wide software offerings are finally coming into their own here. From digital HMI to PlantPax, to sophisticated visualization software, Rockwell makes a pretty good case for them to be considered in the same league as the bigger companies in the automation space, Siemens and ABB in the factory; Honeywell and Emerson in the process plant.

And, like everybody else, this is allowing Rockwell to change their business model—Infrastructure as a Service is the new



New GE CEO John Flannery

watchword. The problem for every automation company is that the industry’s business model has been project work. That means feast or famine for the vendors. On top of that, the asset owner companies have been very tight with capital purchases since 2008—which is a long time now in “automation company years.” So, like every other major automation company, Rockwell is trying to get asset owners to move to an OPEX model instead of a CAPEX one. Enter (insert catchphrase) as a service. Service is OPEX, you see. We are told by every automation company, and Rockwell is no exception, that asset owners want to move to an OPEX model. The *INSIDER* isn’t sure about that...what happens when the corporate auditors figure out that OPEX budgets have been ballooning because that’s where the capital budgets of yesteryear have been hiding.

But that’s the play, and that’s why Rockwell’s TechEd is becoming much more important every year.

Nunc Dimittis Domine—Emerson Produces Dual-Mode Wireless Gateway

After a decade of insisting that it would never support the ISA100 wireless standard, Emerson has announced a new dual-mode wireless gateway which supports both IEC 62951 WirelessHART and ISA100.11a industrial wireless communications standards. This latest addition expands Emerson’s wireless portfolio and provides customers an easy way to take advantage of WirelessHART technologies from many suppliers. It also allows customers who are using ISA100 systems a chance to continue to use them. It also gives Emerson a means to be not packaged out by other vendors who have standardized on the ISA100 system.

It should be remembered that the wide usage of both WirelessHART and ISA100 was delayed for nearly a decade because none of the vendors would agree to a dual-mode gateway design, proposed by Walt Boyes and Dick Caro to the ISA100 committee. It is nice to see that common sense appears to be prevailing.

A future release of Emerson’s dual-mode wireless gateway will be integrated into the Cisco 1552WU, a combined WirelessHART and WiFi solution for industrial hardened wireless, and will seamlessly integrate into Emerson’s industry-leading security and network management tools, including Emerson’s Plantweb Insight applications for Industrial IoT which help industrial facilities improve operations and maintenance by simplifying asset monitoring.

HIMA appoints Stefan Basenach as head of the new Process business unit

HIMA Paul Hildebrandt has appointed Stefan Basenach as head of the new Process business unit, effective 1 May 2017.



Rockwell's Blake Moret

The INSIDER's June 2017 Roundup (continued)

With the creation of a separate business unit for the process industry, safety expert HIMA aims to focus their business strategy on stronger global growth and closer customer contact. An international project team will facilitate access to new markets and intensify cooperation with new and existing customers.



Stefan Basenach

Stefan Basenach studied Engineering Cybernetics at the University of Stuttgart. After receiving his engineering degree, he worked at the Swiss automation corporation ABB for 24 years. He started there as an engineer for power plant control systems

and subsequently worked in various local and global management positions. His last position at ABB was EPC Business Manager, with responsibility for substations in the EMEA region.

"I am pleased to help HIMA in advancing its role as a leading independent manufacturer of smart safety solutions in the process industry. With a strong and enthusiastic team, we intend to maintain our global growth course", says Basenach.

The newly created position bundles worldwide responsibility for one of HIMA's most important business areas with a single point of contact. Prior to this, a similar structure was created with the appointment of Sedat Sezgin as head of the Rail business unit, where he acts as the main contact person and leads an international team. Stefan Basenach also reports directly to Sankar Ramakrishnan, CEO of the HIMA Group.

"With his wealth of international experience and outstanding professional and management skills, we are pleased to have Stefan Basenach on board as the head of our important Process business unit", comments Ramakrishnan. "The new position is part of our business strategy to forge strong customer contacts and effectively



Sedat Sezgin of HIMA



Sankar Ramakrishnan HIMA CEO

open up new markets, and to position HIMA as the first choice for safety technology. At the global level, Stefan Basenach will play a decisive role in the development of our company and the expansion of our activities in the process industry."

Bedrock Becomes Only ICS to Achieve Unique Mil-Spec EMP Certification

Tests Emulate EMP from Atmospheric Nuclear Detonation

Bedrock Automation's secure power supply (SPS.500) and lithium uninterruptible power supply (UPS.500) have achieved compliance with Military Standard 461 (MIL-STD-461E) and International Electrical Commission 61000 (IEC 61000) for electromagnetic pulse (EMP) resistance. This unique certification, which Bedrock Automation has also achieved on its flagship Bedrock control system, means Bedrock users now have maximal assurance of process continuity during an EMP event.

"Bedrock is the first – and still the only – industrial control system to have received mil-spec level certification and we are now proud to announce that we have reached this unique milestone for our power supply and battery backup system as well. As the threat of an EMP event becomes increasingly understood, our users can have greater confidence that their operations will not be interrupted. This is the kind of comprehensive cyber protection that is essential for both performance and safety as global industry becomes increasingly digitized," said Bedrock founder and CEO Albert Rooyakkers.

National Technical Systems, an independent military and industrial testing firm, conducted test RS105 for radiated susceptibility to a transient electromagnetic field. The power supplies were tested separately, each receiving repeated 50,000 V/m nanosecond EMP strikes that emulate the energy of a High Altitude Electromagnetic Pulse (HEMP), as would be created by an atmospheric nuclear detonation. The Bedrock power supplies performed without error and without consequential damage during and after the test.

The SPS.500 Secure Power Supply provides characteristic Bedrock deep trust cyber security authentication and onboard intelligence for diagnostics and secure Ethernet communications, making it the ideal power component for IIoT applications. Encased in a NEMA 4X sealed aluminum enclosure, it provides single or redundant power, using 90-264 V AC main voltage 50/60 Hz input. Its output of up to 500 watts is software configurable, between 21 to 28 volts. Users of any PLC, SCADA RTU, PAC or DCS can retrofit to the new



Albert Rooyakkers

The INSIDER's June 2017 Roundup (continued)

SPS.500 inside or outside enclosures, anywhere in a plant and in harsh environments

The UPS.500 uninterruptible power supply is designed to be the battery backup for the Bedrock OSA, but can be used to supply 24 V DC 12Ah of power to any industrial control system. An onboard secure microcontroller controls the Li-Ion polymer battery cell-by-cell, augmenting the high density, rapid charging, extreme temperature tolerance and extended life that characterizes Li-Ion technology. It is also protected by a sealed aluminum enclosure rated for IP66/67.



SPS500—“Nuke Proof” Power Supply

Combined with Bedrock revolutionary intrinsic cyber security, advanced anti-tamper housing and high environmental resistance standards compliance, the Bedrock control system is the most rugged, secure and dependable control system available for deployment in industrial control applications.

PAS is Number One!

Even though PAS Global, LLC, just received a big chunk of investment aimed at its Cyber Security offering, it is clear that they intend to continue to “dance with who brung ‘em,” as they say in Texas.

The Texas-based company was named the number one platform-independent alarm management software and services provider in ARC's Alarm Management Market Analysis Report BY 2016. This report is a comprehensive global market study of alarm management suppliers for industrial process industries. “PAS is a leading alarm management solution supplier offering software and services that mitigate operational risk through improved operator situational awareness, decision support, and operator effectiveness,” says Larry O'Brien, vice president of research at ARC Advisory Group. “PAS is the largest independent alarm management software and services supplier. The company's flagship Alarm Management offering – built on its PlantState Suite platform – is one of the more comprehensive alarm management

solution offerings in the marketplace, and can enable end users to achieve compliance with the ISA 18.2 and IEC 62682 standards.”



Larry O'Brien

With PSS, companies gain improved situation awareness and operator effectiveness, greater speed and accuracy in detection and response to abnormal situations, reduced severity of process upsets, and safer, more profitable plant operations, according to the company.

In July, PAS will release PSS 8.3, which will include Alarm Mechanic, a database-driven recommendation engine that makes solving nuisance alarm problems easier. PSS 8.3 will also improve alarm reports and dashboards focused on reducing operational risk.

Additional advances are slated for other PAS operations management products including Control Loop Performance, Boundary Management, and Independent Protection Layer Assurance.

According to Eddie Habibi, founder and CEO of PAS Global, LLC, PAS technology is used by 13 of the top 15 chemical companies, 10 of the top 15 refining companies, and five of the top 15 power companies in the world. PAS authored the definitive book on alarm management best practices, The Alarm Management Handbook.

“We are proud that ARC has validated are leadership position in a market that we started over twenty years ago,” Habibi says. “Although alarm management best practices are well established today, industrial process companies have farther to go before they realize all of the available gains. We look forward to continuing innovation in this space and working with companies to improve operator and process performance.”



Eddie Habibi—PAS Founder

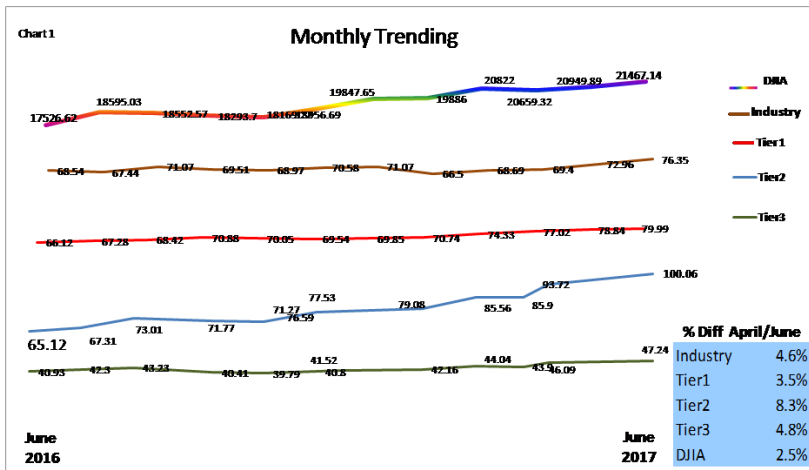
PlantState Suite™ (PSS) makes power and process plant operators more effective at identifying, evaluating, and managing alarms.

PSS comprises multiple software products that optimize alarm management systems within the context of a plant's state, processes, and operational boundaries.

Suddenly, Some Winning Numbers!

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Health Watch



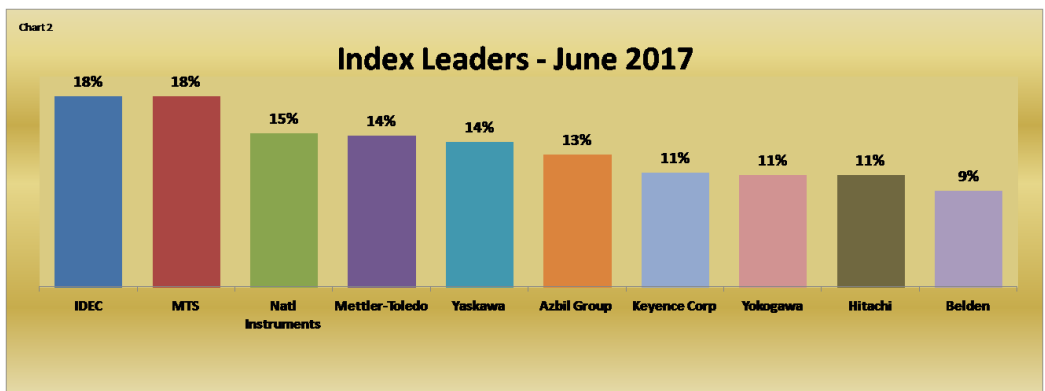
bil's increase in share price. We will see how the plan's performance goes over the next two years.

to a growth wagon. Yokogawa's subsidiary, Yokogawa China, has just signed a partnership agreement with Sinopec Engineering, the design and construction part of Sinopec Group, which is one of the largest oil refining and petrochemical enterprises.

Based on this agreement, which will remain in effect for three years, Yokogawa will provide on a priority basis its production control systems, safety instrumented systems, field devices such as transmitters and analyzers, Scada software, advanced

The Leaders

The industry did well since last reporting, increasing an average of 4.6%, a gain of 2% over the Dow. The group that showed the highest gain is the Tier 2 group, with an increase that beat the Dow by a whopping 5.8%. Some of the members of this group, which includes National Instruments, Azbil, and Mettler-Toledo, were strong contributors to the phenomenal increase.



National Instruments has recently had its stock rating increased to "buy" by most analysts. National Instruments has finally found the Industrial Internet of Things, and is talking about how its products connect.

Mettler-Toledo's rating by Zach's was also raised to "buy."

Azbil's Chairman and CEO, Hirozumi Sone, announced in May a new medium-term plan for growth between FY2017 and FY2019. This plan has impressed analysts, and accounts for much of Az-

The leading companies include, as Fig. 2 shows, IDEC (which, in April acquired the European HMI company, APEM, MTS— which is seeing a turnaround— they were on the April losers' list; NATI, Mettler-Toledo, Yaskawa— which also has been on the losers' list, Azbil, Keyence, Hitachi and Belden.

It is important to note that Yokogawa had an excellent 11% growth since the April report.. Even though the price of oil is gyrating like a jumping bean, Yokogawa has managed to harness up some horses

process control packages, and other solutions for SEG's oil refining and petrochemical projects.

This appears to mean that Yokogawa will get first look at Sinopec projects, and preferential bidding for the next three years. The agreement does not say that Yokogawa will be Sinopec's only supplier.

Suddenly Some Winning Numbers!

(continued)

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Those Not So Fortunate

As you can see from Figure 3, some of the companies in the index really didn't do well in April and May.

Considering Gefran's numbers have returned to the positive column, although only barely, it is difficult to figure out why the company has had such a bad time over the past few months.

The same is true for Fuji Electric, whose performance is dreadful this month. Based on the analysts' evaluations, we may see a turnaround in Fuji's situation in the next quarter.

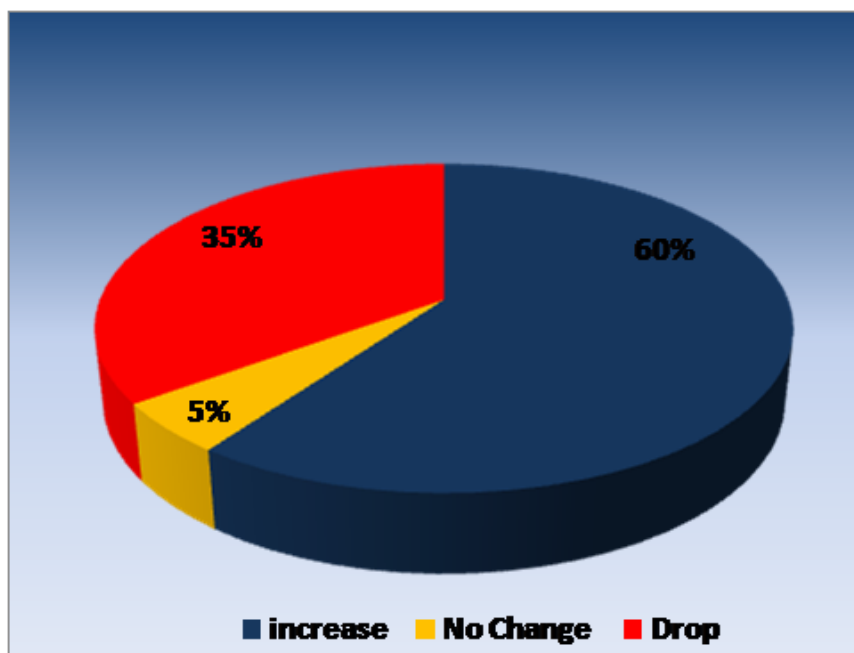
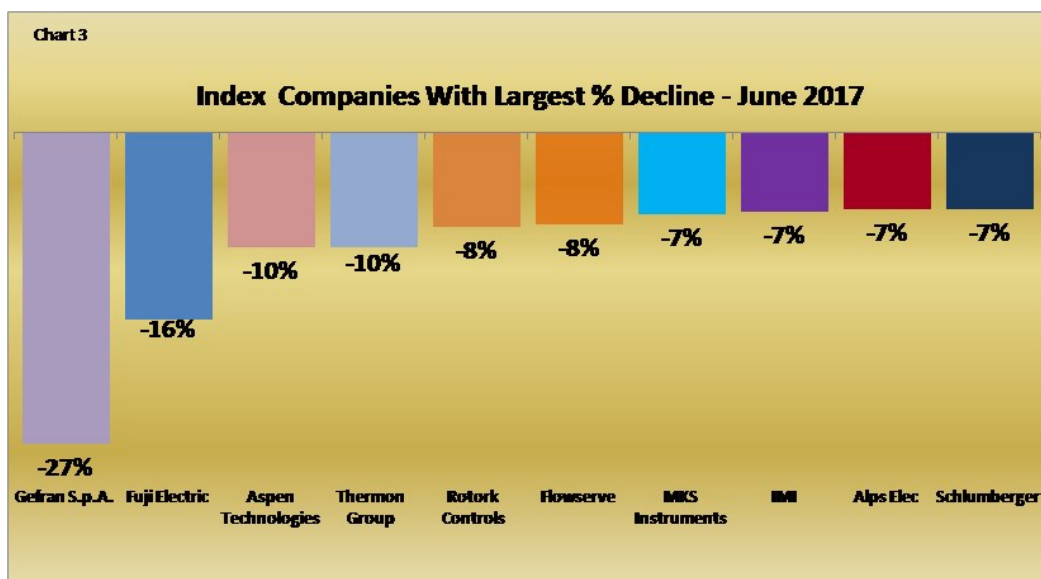
Aspen Technologies' acquisition of rights to the operator training simulator framework software from Inprocess Technology and Consulting Group may eventually overcome the lackluster \$0.50-ish a share results.

Rotork, Flowserve, and Schlumberger are all apparently tied to the bouncing price of crude oil more so than other companies.

Thermon Group is showing about a 7% decrease in revenue year over year, and that explains its declining stock price.

Industry Stock Price Changes

Sixty percent of the companies in our Index showed an increase in stock price since April, 35% showed a decrease, and 5% had no change.





THE WAY I SEE IT

Editorial

The Problem with Big Data Is the Data!

Over and over, we have been assured, for the past four or so years, that Big Data is the future, and the vastly increased number of sensors that are needed to feed the Big Data beast will open up new vistas of understanding and the ability to control processes to new tolerances never before achieved. All you need is sensors, a Big Data pipe and Big Data analytics.

Hooey, phooie, and patooie!

And now I'll tell you how I really feel!

You can have all the data in the world, and the best data scientists that ever lived, and unless you understand what the data means, and what data relationships are important, you get facile analysis and simplistic data models. At HUG, I spoke to Jason Urso, Honeywell Process Solutions' Chief Technical Officer, about this seemingly obvious fact. He told me that the Honeywell Aerospace division did a test of Big Data, and data analytics. They gave the data scientists huge volumes of data about aircraft landings. The data scientists ground through the data, and determined that

instead of a stepped glide path, a simpler, sloped glide path should be used. It would save time and fuel, they said.

That's, as they say, "a duh."

The problem was that the data scientists had

In order to make sense of any amount of data, Big or normal, you have to have a pretty good idea of what the data means, and how it relates to the process at hand.

no way of knowing what results were obvious and which were new information.

The problem, for many manufacturing industries, is the same. In order to make sense of any amount of data, Big or normal, you have to have a pretty good idea of what the data means, and how it relates to the process at hand.

What is tripping up the process industries, especially, is that the data scientists aren't process engineers, chemical engineers, process modelers, control system engineers, or

even process operators. That's why new products like SEEQ and others are getting so much popularity. What they do is to allow non-data-scientists who understand the data to use it with the data analytics as transparent as possible.

Does this mean that Big Data isn't worth doing? Does this mean that the huge increase in sensors necessary to have the Industrial Internet of Things work isn't worth doing?

No. You might think so from what I've said, but you'd be wrong. If you turn the issue on its head, it works.

First, you need to know what the data means, and how to see the relative value of the relationships the data analytics can provide. If you know the process, Big Data can give you a deeper fundamental understanding of how the process works, and how to make it the most effective, efficient, and productive process it can be. Then you can build a model that makes sense, and you can then use the mountains of sensor data from the IIoT to be the inputs to the model.

It is *process* → *model* → *data* → *model* → *process*, rather than the reverse.

Once you figure that out, Big Data will work just fine.

Walt Boyes

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

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Rajabahadur V. Arcot: Choices We Make Today Determine Our Future

Donald Trump, the president of the United States, is undoubtedly making all efforts to fulfill the promises he made to the American people at time of his election.

His promises have two components; the end objectives that he has set out to achieve and the specific strategies or the roadmap for pursuing those objectives.

Additionally, while Donald Trump's objectives are understandable and laudable from America's perspectives, they are questionable from the global perspectives, technology trends, and the premises on which the promises were made.

While his promise of making America great again and creating millions of jobs by bringing manufacturing plants back to the US are perfectly



Not necessarily well-thought-out initiatives

understandable, his earlier decision to pull out from the Trans-Pacific Partnership (TPP) and his recent pronouncement to withdraw from the Paris Climatic accord, and such others may not help achieve the goals. They are rather course corrections and are not substitutes for proactive well-thought out initiatives.

Additionally, while Donald Trump's objectives are understandable and laudable from America's perspectives, they are questionable from the global perspectives, technology trends, and the premises on which the promises were made.

Differing perspectives and the need for pro-

active initiatives

Looking from the global perspective, it may be interesting to note that while the American President announced his decision to abandon the Paris Climate Accord guided by his desire

to make *America great again*, President Emmanuel Macron of France declared that "there is no way" that France will negotiate a less ambitious climate deal and reminded that "Wherever we live, whoever we are, we all share the same responsibility: make our planet great again." From the point of view

of technology trends, we are on the verge of entering the era of Industry 4.0, Industrial Internet of Things, artificial intelligence, data analytics, and such others.

The factories of the future will be much smarter in comparison and built to achieve enhanced resource productivity and environmental sustainability with greater reliance on renewable sources of energy.

Renewable energy costs have drastically fallen and there is little justification for dependence on polluting fossil fuels that imperils humanity's future.

The factories of the future and those that are related to futuristic technologies will be extensively automated and will require highly skilled workforce; countries that aim to garner greater share of those jobs need to focus on developing the needed workforce to overcome the anticipated skill shortage.

I believe that a proactive approach in ensuring America's future readiness to embrace the emerging Industry 4.0 era will be more rewarding for the country and for ensuring that it continues to remain great. The Smart Manufacturing Leadership Council (SMLC) of the US, whose mission is to lead the industrial sector transformation, can play a major role in

Rajabahadur V. Arcot: Choices We Make Today Determine Our Future (continued...)

this. Countries such as China, India, and Japan, apart from Germany, which want to be future-ready to face the imminent industrial and technological changes, have taken proactive measures.

“Made in China 2025” initiative aims to make China emerge a leader in industrial sectors such as high-end computerized machinery and robotics, aerospace, and renewable energy.

“Make in India” program is an initiative linked to make its manufacturing industry contribute to 25 percent of the country’s GDP. It encourages global and domestic firms to make products in India and has close linkages with programs, such as skill development, building 100 smart cities, and Digital India.

Japan’s Industrial Value Chain Initiative (IVI) is a forum consisting of industrial and academic members that works for the promotion of smart manufacturing and connected industries.

IVI is set up to promote global and borderless collaboration not only with manufacturing industries, but also with service industries, all over the world. IVI provides a forum for related discussions including Industry 4.0.

Align growth strategies with technological trends

While the world respects the US President’s decisions, many outside the US think that his decision regarding the Paris Climate Accord, agreed upon by 195 countries after many years of protracted negotiations, may not be good not only for the planet that we live on but also for the US in the long run.

The leaders of France, Germany, and Italy, regretting Donald Trump’s decision to withdraw from the Paris climate accord, have issued a joint statement saying, “We deem the momentum generated in Paris in December 2015 irreversible and we firmly believe that the Paris Agreement cannot be renegotiated, since it is a vital instrument for our planet, societies and economies.”

Business leaders, like Elon Musk of Tesla, Jeffrey R. Immelt of General Electric, and Lloyd C. Blankfein of Goldman Sachs, have in fact pointed out that the decision would ultimately harm the US economy by ceding the jobs of the future

in clean energy and technology to overseas competitors.

There is merit in their warnings and they need to be taken seriously.

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Anecdotal, countries, which aligned their growth strategies with the global technological trends, have emerged economically stronger and prospered.

Countries, whose policy makers and captains of the industry have leveraged the emerging trends to the country’s advantage, have immensely benefitted.

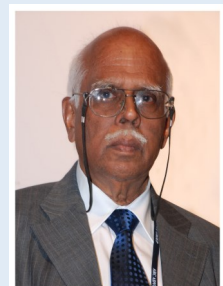
America is itself the best example; in the past, the country was in the forefront in exploiting technological developments such as those relating to internal combustion engines or automobile, aviation and electronics, computer and software, and others.

Increasing awareness among the global community, international policy initiatives, and a genuine need in the market make sustainable manufacturing and renewable energy as the next trigger for technological innovation and job creation.

Adoption of sustainable manufacturing practices and increasing dependence on renewable energy technologies will spur economic activities including new job creation along the entire value chain that includes manufacturing of associated equipment such as solar panels, project management, installation, grid connection, distribution, operation maintenance, and such others.

In the case of solar power manufacturing will include, among others, photovoltaic cells, associated electronics such as invertors,

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Rajabhadur V. Arcot: Choices We Make Today Determine Our Future (continued)

panels, mounting structure, and back up storage systems. It also ties well with the need to improve the country's infrastructure, especially the critical electric power system.

The article "How Global Value Chains Push and Pull U.S. Companies on Climate Action," published by BSR, a global nonprofit organization, which is associated with sustainability initiatives, highlights that between the years 2012 – 2015, while China added 1.8 million jobs in renewables, the US added only 157,700.

For many decades, America led from the front in championing globalization, free trade, and the interdependence of nations to become the world's largest economy and the 20th century certainly belonged to it.

With the US, according to the World Bank figures, accounting for over 24 percent of the world's gross domestic product (GDP) in 2016, the country has benefitted by nurturing those

The joint statement, the first between China and the EU, commits them to cutting back on fossil fuels, developing more green technology and helping raise US\$100 billion a year by 2020 to help poorer countries cut their emissions.

all 28 EU states, committing the European Union and China to full implementation of the 2015 Paris Climate Agreement.

The joint statement, the first between the China and the EU, commits them to cutting back on fossil fuels, developing more green technology and helping raise US\$100 billion a year by 2020 to help poorer countries cut their emissions.

The following fact check about China and India, countries that came in for specific criticism by the US Presi-



China's Xi Jinping Keynotes Davos

values. By walking away from global agreements, America seems to be jeopardizing its global leadership position and ceding the same to China.

Glimpse of the future

China is only happy at the turn of events. The speech by the China's President Xi Jinping at the World Economic Forum in Davos early this year provides a clear indication that China is ready to grasp this 21st century opportunity.

In his speech he called for international cooperation on issues that threaten global prosperity and growth and defended globalization.

Walt Boyes and the other INSIDER staff are available for speaking engagements, webinars, and workshops. Walt is a member of the Association of Professional Futurists, as well as an ISA Life Fellow and an IN-STMC Fellow in the UK. For information, contact Walt at +1 630-639-7090 or waltboyes@spitzerandboyes.com.

According to the BSR's article mentioned above, in 2015, China invested US\$102.9 billion compared to US investment of US\$44.1 billion and consolidated its position as the biggest investor in renewable energy.

A day after President Donald Trump announced America's withdrawal from the Paris Climate Accord, Chinese Premier Li Keqiang and top EU officials issued a joint statement, backed by

dent, may also be relevant.

Climate Action Tracker is an independent science-based assessment, which tracks the emission commitments and actions of countries, and according to its recent report both China and India look set to over-achieve their Paris Agreement climate pledges.

According to its findings, the coal use in China and India is likely to reduce the projected global carbon emissions by roughly two to three billion tons by 2030 compared to year 2016. China's coal consumption has declined in three consecutive years (2013 to 2016), and the outlook is for a continued slow decline.

Regarding the new coal-fired power plants in India it highlights that the country may not need to build them which would result in a significant slowing down in the growth of CO2 emissions over the next decade.

Many countries, while striving to attain higher levels of prosperity for their people, still view America as a beacon. They also believe that it will remain so unless it cedes its position by its own actions. Only history will tell whether we are close to witnessing a historic change. "The truth is that America as an exceptional nation is not a birthright to gloat about, but a legacy to be lived up to ... Just as the foresight of our predecessors had far reaching consequences, so do the choices we make today. We should endeavor to make wise ones," is a quote from Forbes' article.

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