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Simplify Systems with Premier Integration

As systems become more connected and complex, the time and effort needed to design, configure and maintain machinery and equipment are coming under greater scrutiny. Fortunately, better integration between the automation controller and system devices is providing new time and cost-saving opportunities.

Whether you are a machine and equipment builder, system integrator or end user, this consolidation can simplify system designs, cut development time and costs, and support faster deployments. It also gives end users better access to production intelligence.

In fact, a recent survey by TechValidate found that 64 percent of industrial manufacturers said this integrated programming experience helped them reduce engineering time, and 63 percent said it helped them achieve improved diagnostics.

This issue of Automation Today focuses on **Premier Integration** and **Modern DCS** and how simplifying systems can improve productivity and profitability. It reveals the latest industry knowledge and technologies and explores: The Premier Integration Experience; how Digital Twin Technology delivers greater Manufacturing Efficiency; and looks at how TotalFORCE Technology Drives Smart Motor Control.

Achieving faster time to market is key to get ahead and stay in the lead of the competition. The Premier Integration experience enables users to seamlessly design, commission, maintain protect and report on the automation assets in The Connected Enterprise.

The race is on to achieve faster time to market, together with increased productivity and profitability. As you read this issue of Automation Today, you are sure to identify ways that simplifying systems can help reduce engineering time and improve your productivity. It's time to rethink what to expect from your automation systems.

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Joseph Sousa, President
Asia Pacific Region, Rockwell Automation

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Rockwell Automation Earns Top Marks in 2019 Corporate Equality Index for Seventh Consecutive Year

Rockwell Automation Earns 100 percent on Human Rights Campaign Foundation's 17th Annual Scorecard on LGBTQ Workplace Equality

Rockwell Automation, the global technology leader committed to making the world more productive and sustainable, proudly announced that it received a perfect score of 100 percent on the 2019 Corporate Equality Index (CEI), a national benchmarking survey and report on corporate policies and practices related to lesbian, gay, bisexual, transgender and queer (LGBTQ) workplace equality, administered by the Human Rights Campaign Foundation. Rockwell Automation joins the ranks of 560 major U.S. businesses which also earned top marks this year.

"Rockwell Automation is proud of our inclusive culture that celebrates our global employees," stated Blake Moret, Rockwell Automation Chairman and CEO. "It is important that our employees are comfortable being who they are in the workplace and are committed to strengthening our environment where each employee can and wants to do their best work."

"The top-scoring companies on this year's CEI are not only establishing policies that affirm and include employees here in the United States, they are applying these policies to their global operations and impacting millions of people beyond our shores," said HRC President Chad Griffin.

"Many of these companies have also become vocal advocates for equality in the public square, including the dozens that have signed on to amicus briefs in vital Supreme Court cases and the more than 170 that have joined HRC's Business Coalition for the Equality Act.

Time and again, leading American businesses have shown that protecting their employees and customers from discrimination isn't just the right thing to do -- it's also good for business."

Rockwell Automation TechEd is back!

Join thousands of other tech savvy professionals at Rockwell Automation TechEd, happening in the Asia Pacific Region during 6-7 August 2019 in **Mumbai, India** and 3-5 September 2019 in **Gold Coast, Australia**. These events give you the opportunity to learn from industry leaders on how to achieve operational excellence, take your skills to the next level and develop plans to help drive increased productivity and profitability.

Rockwell Automation TechEd is one of the most renowned and iconic events in the manufacturing arena, boasting industry's only multi-day event focusing on the latest technologies and cutting-edge solutions.

These events provide a unique opportunity to learn how to: select and adopt the newest technologies, shortening design and start-up cycles; get to know our powerful range of products and solutions; and, learn how to progress in your digital transformation journey.

A key focus of Rockwell Automation TechED is to help our customers embark on their journey towards **Smart Manufacturing** through digital transformation and achieve enhanced productivity, competitiveness and sustainability.

Featuring interactive, future forward sessions and labs, Rockwell Automation TechED will focus on the latest technology and solutions in the following areas: Control, Digital Engineering, Information and Analytics, Networks, Process, Safety and Security, System, Technology and Services and, Visualization and Collaboration. These events are set to deliver the insight and training to move your operation to the next level.

Stay tuned to Rockwell Automation Facebook and LinkedIn pages for the registration details.

RAOTM Season wraps up in Asia Pacific

Rockwell Automation on the Move (RAOTM) – our annual event for customers and prospects – was held last month in Tianjin, China. The gathering was the last of four RAOTM events that took place this year across Asia Pacific. The previous three were held in Bangalore, India (January 22), Bangkok, Thailand (March 5) and Jakarta, Indonesia (April 30). Combined, the four RAOTM events allowed us to connect with almost 10,000 guests!

RAOTM is an annual initiative that includes products exhibition, seminars, hands-on-labs and technical sessions. First introduced in Asia Pacific in 2003, it has since become a key part of our global commitment to sharing comprehensive automation expertise as well as smart, safe and sustainable practices with industry professionals.

RAOTM has been held in Asia Pacific for more than 15 years, so what is the secret to its success?

John Watts, marketing director Asia Pacific, explains that "RATOM is not a typical trade show. It contains technical education sessions, customer meetings, forums and networking opportunities for our participants. At the event, attendees can visualize our capabilities and experience our Connected Enterprise.

For our keynote sessions we invite government representatives, industry experts and customers to speak – this always draws good attendance and engagement. The face-to-face meetings with customers at RAOTM are an essential part of building relationships, which is such an important element of doing business in Asia Pacific. The event also provides a great opportunity to close business deals in the pipeline," said Watts.

As a cornerstone corporate event in the Asia Pacific region, RAOTM presents an excellent media platform to get our message to the market. In recent years we have also used live video feed technology to extend the experience virtually to those who can't make it to the event.

There are elements of RAOTM that remain key to the event, such as the face-to-face customer interactions and latest technology experiences but each year RAOTM continues to evolve to provide an engaging customer experience.

RAOTM now focuses much more on showcasing our solutions and how we can bring The Connected Enterprise to life. It also has more of an industry focus, with increased emphasis on demonstrating our capabilities with industry-based forums. In addition, we also modified the format to include scheduled domain-focused presentations and demonstrations. All of these changes represent our go-to-market strategy to better support the company's strategic goals.

As we conclude our 2019 RAOTM events, we have now set our sights to next year's events, which will no doubt continue to the build on the event's success.

AP Customer Events Calendar

Event	City/Country	Date
Oil & Gas Asia 2019	Kuala Lumper, Malaysia	18-20 June
AMTS 2019	Shanghai, China	3-6 July
Industry of World Things Asia	Singapore	10-12 July
TechED India	Mumbai, India	6-7 August
TechED Australia	Gold Coast, Australia	3-5 September
RubberTech China	Shanghai, China	18-20 September

* Each event is subject to change
For more details, visit :
www.rockwellautomation.com/global/events/events.page

The Premier Integration Experience

Achieving faster time to market is key to get ahead and stay in the lead of the competition

When time means money, deploying new or replacing dated equipment can be a complex and time consuming process. Added to this are challenges around workforce changeover where experienced staff are retiring and taking their knowledge with them; and keeping up with advancing and evolving technologies.

Throughout the supply chain, from manufacturers to end users, all are striving to boost efficiency and effectiveness. In order to optimize performance, both the architecture and each component within must be designed appropriately, and the resource allocation must be efficiently performed. A simpler, holistic integration can help machine builders consolidate high levels of complexity and connectivity while having development time and costs on the watch.

Simplifying Machine Design and Configuration

As industrial automated production and information systems continue to grow in complexity, productivity is becoming increasingly important in all aspects of manufacturing operations – including the machine design and configuration stages.

The traditional labor intensive approach of manually integrating and configuring devices and systems is doubtlessly time-consuming, costly and counter-intuitive to the needs of today's manufacturers.

Achieving faster time-to-market is key to get ahead and stay in the lead of the competition. There is no time to build a system from scratch, nor deal with the compatibility risks that come with off-the-shelf components.

When companies are using devices from multiple vendors, they often encounter difficulties in getting the devices to communicate and operate in tandem with each other. Such problematic issues can result in extended engineering time and increased costs. Besides, an array of devices in the control system can create maintenance challenges in the future.

To perform efficient engineering as well as greater synchronization in operations, a better integration between controller and devices is particularly essential for designing and building products.

Experience Premier Integration

Rockwell Automation has introduced the Premier Integration experience to represent the next level of controller and device integration. More than just connecting process, power, information and safety into one control architecture, Premier Integration performs a seamless integration that simplifies and streamlines system design, maintenance and operation for any networked automation systems, thus addressing common yet vital operational challenges.

With a foundation constructed by a Logix-based control architecture and intelligent Allen-Bradley devices, Premier Integration is unique to a wide range of specific control-system elements from Rockwell Automation, such as controllers, devices,

motor control centers (MCC) and soft starters.

Executing controllers programming, devices configuration and maintenance management processes all within one single software environment can be said as another defining characteristic of Premier Integration.

With these capabilities, manufacturers and engineers can ease integration, cut development time, improve information visibility and productivity in manufacturing operations since all they need now is a centralized intelligent platform for leveraging many different devices.

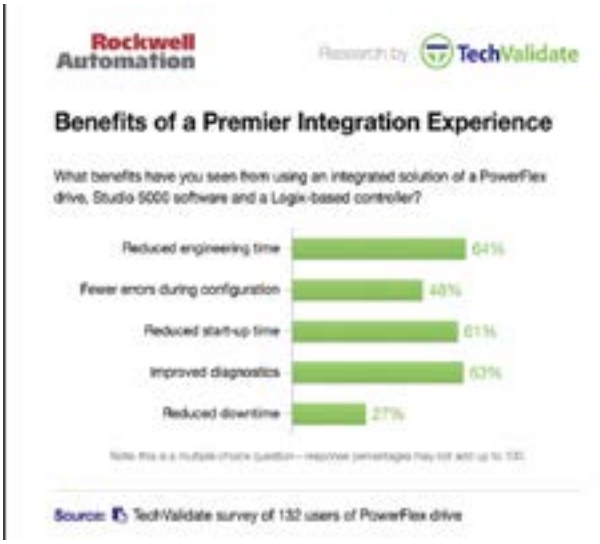
To meet challenges in this world of smart manufacturing and to establish **The Connected Enterprise**, flexibility and responsiveness are as important as effectiveness.

Acquiring a fleet of Smart tools and software, Rockwell Automation brings OEMs the opportunity to gain a Premier Integration experience and the ability to respond more quickly to changing market and business needs, while helping to reduce total costs of ownership, including maintenance and training.

Survey: Benefits of a Premier Integration Experience

In a recent survey by TechValidate, industrial manufacturers were asked about the benefits of using an integrated solution of a PowerFlex drive, Studio 5000 software and a Logix-based controller.

64 percent of respondents have reduced engineering time with an integrated programming experience from Rockwell Automation, and 63 percent successfully achieve improved diagnostics. The results can be seen in the graph below.



Advances in Integration Technologies

Integration of technologies continues to evolve and advance at a rapid rate. Since industrial automation devices have become more dependent on digital communication, the success of a project will depend highly on how easily devices and components are configured to exchange data across digital networks.

In today's world of smart manufacturing, Premier Integration can offer OEMs a business-enhancing alternative to the traditional integration approach. As the integration of technologies evolves over time, it is becoming increasingly important for machine builders to adopt modernized and advanced integration technologies.

Configuring and programming on a common platform can help save time and money. With the intuitive and user-friendly Studio 5000 software, you can integrate Variable Frequency Drives (VFDs), motion, safety and process into one infrastructure by using one control engine and one network technology across applications, operations and environments plant-wide.

'64% of respondents to a Premier Integration Survey have seen a reduction in engineering time with an integrated programming experience from Rockwell Automation; 63% successfully achieve improved diagnostics'

It provides a standardized way to share data, tags and alarms across multiple design applications so that engineers are allowed to configure information once and use it across the entire automation system. Likewise, they can configure all elements of the automation system in one place, rather than using multiple tools for control and visualization.

When a system is operational, operators and maintenance technicians can view all system components from a central location so that they can easily reconfigure devices, troubleshoot and access information. Common Industrial Protocol (CIP) is an application-layer protocol that delivers plantwide communication for control, device configuration and data collection. Based on the CIP, EtherNet/IP enables real-time, deterministic control for both drives and servo drives.

Multiple motors can be accurately coordinated through the combination of synchronization capabilities in Logix-based controllers. These exclusive application resources are available for AC and servo drives that present the specific, device independent profile supporting synchronization over the network. Works for engineers can be done more easily since they will not need to do programming nor make changes every time over again.

Besides reducing integration complexity, Premier Integration is capable of shortening engineering time and associated costs in numerous ways:

Device Mapping and Configuration
The Logix-based controller can recognize specific Allen-Bradley components and automatically import their device profiles. When integrating an Allen-Bradley PowerFlex AC drive, the engineer can simply select the specific module and the Studio 5000 software will then automatically pull in all drive parameters.

Mapping devices will become easier since the engineer no longer has to manually associate parameter numbers with descriptions or enter the drive's details, such as power and voltage. Also, using a single software environment and configuring the controller and drive network connections from a single location can reduce costly development errors and eliminate input/output (I/O) mismatch inaccuracies.

Duplicating Devices
The copy-and-paste capabilities within the Studio 5000 software can help reduce the time needed to integrate additional, similar devices once they are configured. If duplicate devices are needed for the same project, the engineer could simply copy the original to create additional device nodes. The Studio 5000 software automatically transfers the descriptive tag names and configuration settings used in the original drive to the new drives through the copy-and-paste process.

Tag-Aliasing
Within a Logix-based architecture, engineers can write an entire program with meaningful tag names before the physical hardware is ready, and assign the physical module and terminal information at a later time. Such tag-aliasing capability is commonly used to develop programs before wiring diagrams are available. It allows concurrent development and programmers need not wait for the design-engineering group to complete its electrical layout; thus it shortens the time for product designs to get to market.

Library Management
As an essential element of Premier Integration, library management enables engineers to store, manage and reuse code from their programs efficiently. It saves development time while also building on the outcomes of successful projects. Project code can be exported to the code library for use again in future projects or even to establish a new company standard for similar applications. Engineers can simply drag and drop the code from the library into

the new project whenever they wish to reuse the content.

Self and System Aware Smart Devices

Advancements in smart devices that can be easily integrated into your automation control system and network provide a more simplified way for you to design your machines. This integration provides visibility to your operations allowing you to be more efficient. You can take this information to make better decisions that can improve systems or processes, and monitor the performance of devices and your machines allowing you to maintain your productivity.

In addition to being self-aware and system-aware, the devices need to be seamlessly integrated and provide the right data. Self-aware and system-aware smart assets when enhanced with contemporary technologies such as scalable computing, analytics and mobility, create the foundation for our high performance architecture.

While each of these technologies can add value to industrial processes, the transformational value is only realized when they are integrated together into an architecture. It is all about seamless connectivity. The transformational value of the architecture comes from the implementation of an automation system that is intuitive, self-adaptive and secure. With Premier Integration we leverage the common Ethernet/IP backbone to work with our analytic platforms while providing a common and consistent experience for all Rockwell Automation Devices (from a controller to a VFD to a servo drive).

Just as increasing self-aware and system-aware devices are integrated with automation systems, the importance of analytics continues to grow. These devices acquire and process data to report on information such as self-diagnostics and energy use. Premier Integration enables users to easily integrate into FactoryTalk Analytics for Devices where operators can see and make sense of data, without being overwhelmed.

Mobility and Visualization

Leading industrial producers are using visualization to enhance decision-making and operational efficiency – providing insights to critical production, process information and enterprise data. Industrial software now allows you to create, modify, personalize and access your own displays of business and process information, in the office, at the machine, at home or on any mobile device.
The software's dashboard on your device can be personalized to contain the specific information you need. You can access historical and real-time data reports from anywhere, anytime.

A Whole New Integrated World

Improvements in controller-device integration help OEMs move one step closer to smart manufacturing and design smart machines and automation systems by achieving effective connectivity. An effective level of integration mitigates redundant programming while establishing functional connectivity within the controller-device network.

In addition, Premier Integration gives engineers an exclusive integration and configuration experience and assures operators and technicians that they will have the secure and accurate information needed to keep machines running more productively and profitably. Therefore, every piece of information can then be used to make better decisions from the machine up to the enterprise level.

The race is on to achieve faster time to market, together with increased productivity and profitability. To achieve this, industrial producers are leveraging the benefits that new technologies provide to deliver connected, information-enabled enterprises. The Premier Integration experience enables users to seamlessly design, commission, maintain protect and report on the automation assets in a Connected Enterprise. AT

City of Lima Wastewater Treatment Plant's Operations Flow Smoothly After DCS Migration

PlantPAx DCS helps city increase wastewater capacity, streamline control and training, minimize overtime

Whether it be storm sewer runoff or drainage from home or business use, once water leaves the drain, it enters a complex network of underground pipes. And once processed at a wastewater facility, that water typically completes its journey by emptying into a lake or river.

Efficient water/wastewater treatment facilities are essential to keep surrounding rivers and lakes safe and clean of chemicals and other disease-causing pathogens often residing in municipal wastewater.

Lima, Ohio releases its treated wastewater into the Ottawa River. Constructed in 1930, the city wastewater treatment plant services more than 40,000 people within city limits and surrounding communities. Since conception, the city has evolved and so have its needs, including processes for screening and grit removal, sludge digestion and more.

Overflows and Overtime

In 2014, the Federal Environmental Protection Agency (EPA) changed guidance around overflows into natural water sources. The change meant Lima needed to limit river overflows to five times per year, instead of the former multiple times a month, depending on rain events. Exceeding that allotment would cost the city steep fines. To sustain five discharges per year, it was necessary to increase the treatment plant's water capacity from about 53 to 70 million gallons per day (MGD). Since capacity increase was required, the city decided a complete, plant-wide upgrade was necessary, as well.

Lima's wastewater treatment plant was running on an outdated control system. "We were using equipment from the early 90s, systems that were nearly 30 years old," explained Matt Fiedler, process control specialist for the City of Lima wastewater treatment plant. "We needed a full system upgrade with better data insights and reporting capabilities to help us increase capacity, ease maintenance and meet the EPA requirements."

Another complication: the aging system had been customized, and system knowledge left with a former employee once he retired. The lack of standardization was a stumbling block for training

new employees and the lack of in-house expertise led to frequent maintenance calls and costly downtime.

With no remote access capabilities, all troubleshooting and maintenance had to be performed on site. This meant many overnight calls for Fiedler and staff, who had to travel up to an hour roundtrip to make an adjustment that would only take five minutes. The absence of remote maintenance also complicated the process of combined sewer overflows (CSOs). For example, if there were overflows in the river, extra plant staff would have to be onsite to monitor them and gather samples. Additionally, having no control access to the underground gate structures and lift stations caused additional problems, as operators couldn't restrict flow to the plant, causing overflows during rain events.

Opening the Flood Gates

To streamline the treatment process and data sharing across the plant, the City of Lima worked with **Commerce Controls, Inc**., a Solution Partner in the Rockwell Automation **PartnerNetwork**, to migrate to a **PlantPAx distributed control system (DCS)** from Rockwell Automation.

The modern DCS provides a single, plantwide solution to increase productivity of all processes and operations at the facility. And leveraging EtherNet/IP, the PlantPAx system is based on open communication standards to streamline control and information flow across the plant. The network upgrade also included new **Stratix 5400 and 5700 industrial managed switches** for better data collection and network monitoring. The switches help monitor panel temperatures across the various buildings and provide a quick view into the health of the network.

The new DCS uses a standardized design, pre-defined code and faceplates with an intuitive interface, providing the same look and feel across the entire plant and various processes. This eliminated the custom coding of the old system, allowing quicker programming and easier scalability for future expansions. It also eased onboarding and training of new operators.

Integrated historian and production intelligence software provides operators a window into system performance data. The historian collects and archives years of valuable process data on all equipment and instrumentation. The system now provides automated reporting and direct visualization of historical and real-time process trends, such as overflow counts, pumping metrics, dissolved oxygen numbers and more. "In the past, extracting historian data was a nightmare. And once extracted, it needed to be reformatted to make it usable by administration," said Fiedler.

The new DCS also has remote access capabilities for system troubleshooting and maintenance. "Commerce Controls can now remote into the system and address issues offsite, saving hours of travel time each month and minimizing system downtime," said Fiedler.

In addition, the city implemented **Stratus** servers to help maintain uptime and production. The servers added a new level of redundancy to make sure the facility stays up and running during any unplanned event.

Flowing Smoothly

The PlantPAx DCS has impacted Lima in many positive ways: making the control system consistent plant-wide, easing training, simplifying maintenance through remote capabilities, improving overall plant performance and assisting in EPA approval.

Having a standardized solution has simplified coding across facility systems. "The PlantPAx DCS helped us solve inconsistencies in our processes and streamline control, offering operators a better understanding and similar look and feel across plant facilities for a consistent and more streamlined training process," explained Fiedler.

The plant has also realized significant decreases in downtime since the system upgrade. The city saved approximately 50 hours of overtime with an average cost savings of $2,000 in the first three months of operation. "Troubleshooting is much improved with our remote access capabilities. I no longer need to travel between home and the plant after working hours due to faulting PLCs or radio failures," said Fiedler.

The production intelligence software improved performance management and process optimization. The software provides the city with pumping metrics and allows plant operators to set up templates that can calculate overflows. And historian software provides historical trending in real-time, whereas the plant previously only had trend analysis once per day.

"The PlantPAx DCS helped meet all of our goals and more," said Fiedler. "We not only met our production increase from 53 to 70 MGD and minimized river discharges but also gained important data visibility and eased flexibility for future plant expansions. This is our new control standard across the city and look forward to implementing into every new water/wastewater project in the future." AT

The results mentioned above are specific to the City of Lima's use of Rockwell Automation products and services in conjunction with other products. Specific results may vary for other customers.

How Cargill Achieves Sustainable Process Optimization

Agricultural firm boosts efficiencies, throughput and yield with global rollout of control loop performance-monitoring and advanced diagnostics solution.

Cargill aims high: it strives to be the global leader in nourishing people. With 155,000 employees across 70 countries and fully integrated supply chains — from the farm to retail stores and restaurants — the agricultural conglomerate is well on its way.

Food processing is a major part of its business, from smaller-footprint oilseed crush plants, corn oil refineries, starch refineries and salt production plants, to the more-complex ethanol distillation and corn fermentation facilities.

In pursuit of plant-wide process optimization, a structured, global continuous improvement (CI) initiative is in progress at Cargill.

Naturally, process control is a high priority, because it affects throughput, yield, energy consumption and production quality. "As part of our CI program, process control studies are performed, and then control strategies are standardized and deployed across plants with similar processes to improve efficiencies," says Chris Christie, refinery process control lead in Cargill's Corporate Engineering & Data Sciences team.

The results are encouraging to a point. "Because we've been on this journey, we've implemented control loops and seen the value they provide," explains Christie. "However, we quickly realized that the results were not sustainable for various structural and skill set reasons."

To better maintain the gains from Cargill's process optimization initiatives, a control loop performance-monitoring and advanced diagnostics solution was needed. Christie and his team led an evaluation, selection and pilot proof of concept for options, and now are rolling out PlantESP from Rockwell Automation Encompass Product Partner **Control Station** to more than 70 of Cargill's manufacturing sites worldwide.

Progress Had Its Limits

A typical Cargill manufacturing facility — depending on the size uses tens, hundreds, if not thousands of PID controllers to regulate production. Though a policy was established to have all controllers operate in automatic mode, when process control engineers got a plant running in automatic, they would later find some controllers returned to manual. As a result, gains from the optimization effort were lost.

At the time, there was no way to track mode status, and accountability at the plant level was lacking, so performance analysis and actions such as PID tuning were triggered only after issues were found. "For our simpler processes such as oilseed crush and refining, there was no process control person, so we never looked at those things in a concerted way," explains Christie.

Investigations were complex and time-consuming, and typically involved looking at trended data for patterns and manually comparing multiple trends side-by-side to identify which of the controllers was causing the problem. "Such a manual approach to analysis must also take signal noise into consideration as it makes the patterns more challenging to identify," says Bob Rice, vice president of engineering at Control Station.

To better maintain performance consistency across its fleet of production facilities, Cargill needed a control loop monitoring tool to increase visibility of loop performance, detect impending problems, provide diagnostics for troubleshooting and recommend fixes.

Search for a Solution Begins

In mid-2015, Christie initiated a feasibility study comparing nine different solutions. Two of them met Cargill's functional and user interface requirements and had the desired technical metrics, so those were then evaluated for compatibility with Cargill's existing OSIsoft PI data historian from Rockwell Automation Encompass™ Product Partner **OSIsoft, LLC**.

Ultimately, Cargill chose Control Station's PlantESP for its ease of deployment, configuration and use; direct connection to Cargill's data historian via the OSIsoft PI-SDK; and its centralized server, which supports connections to multiple plants.

Additionally, PlantESP's capabilities complement Rockwell Automation solutions. Cargill primarily uses Allen-Bradley ControlLogix control systems to run its oilseeds plants and some PLCs dating back to PLC-5. It also uses Rockwell Automation processors, drives and human-machine interface (HMI) software.

The software provides advanced diagnostics and plant-wide process optimization using key performance indicators (KPIs) to identify, isolate and characterize control loop performance issues. It would help Cargill centralize raw process data from numerous local plant historians and transform it into actionable information accessible from a dashboard.

It analyzes PID controller performance characteristics, identifying changes caused by mechanical, PID tuning or process interaction issues. It provides advanced forensic utilities to simplify root cause analysis, and provides Cargill management with tools for assessing the relative performance of plants across its fleet.

"Ease of use is an important aspect of the technology because it essentially eliminates the 'fear-factor' that's often associated with introducing advanced analytical tools," says Dennis Nash, president and CEO of Control Station.

Pilot Serves as Proof Point

The pilot began in late 2015 with critical loops at three Cargill plants: The pilot began in late 2015 with critical loops at three Cargill plants:

- An oilseed crush plan in Kansas City, Missouri, with 104 loops
- A corn oil refinery plant in Blair, Nebraska, with 250 loops
- A unit operation at a starch refinery in the Netherlands with 23 loops.

Two activities occurred simultaneously including:

1. Developing a central architecture that would serve as a blueprint for accommodating more than 70 plants globally.
2. Pulling data from each site's local data historian into the central server, and configuring the plants from within the central server for analysis.

By early 2016, all three facilities were successfully running live in a single instance on a centralized server.

A typical Cargill manufacturing facility uses tens, hundreds, if not thousands of PID controllers to regulate production.

Consequently, Cargill launched a rollout that is expected to conclude in 2020. To date, PlantESP has been deployed across more than 60 plants, including oilseeds crush, refining and salt manufacturing facilities. At each site, the entire plant team is trained on where the data comes from and what to do with the results.

Consistent Process Optimization Realized

At facilities using PlantESP, Cargill now can hold PID controller performance to a standard. When the standard of sustained loop closure is not maintained, automatically generated reports allow local staff to take appropriate action before the controller is placed in manual mode.

"This has enabled Cargill to keep controllers in their 'normal' mode for more than 95% of the time, which in turn has reinforced the value of their investments in automation," says Rice.

"We have better visibility of the performance of our control loops and therefore the processes, so we are better able to sustain the value from our control strategies," Christie observes. "From this, we have seen improvements in yield and efficiencies as well as increased process throughput."

Simple metrics such as Percent Time in Normal and Overall Loop Health now are available to different people in the local plant operations teams and reported up the chain of command. Advanced metrics such as Oscillation Likelihood and Stiction Likelihood are available for higher-level troubleshooting.

Daily and weekly plant production meetings incorporate the metrics along with Cargill's guidelines for what to do when issues are found.

Use of local and central control resources is improved. Tuning on certain loops is reduced because the software proactively alerts when mismatches are identified, and it provides a tuning assessment along with recommendations for new parameters.

Because the software automatically captures and models everyday output changes, the engineering team no longer needs to perform bump tests. Instead of 3 to 4 months of manual analysis, the tool's forensic capabilities help to streamline the company's plant-wide optimization efforts.

To date, PlantESP has been deployed across more than 60 plants, including oilseeds crush, refining and salt manufacturing facilities.

In addition, programming anomalies now are detectable. In stripper-deck level valves with very similar controllers and control loops, PlantESP flagged that plant operators were changing one deck's levels more frequently than the others. It was determined that one was programmed differently, and fixing the program solved the problem.

Also, issues are now detected that might have gone unnoticed. When plant operators resolved a big process upset overnight, errors appeared in the metrics the next day. An investigation revealed the root cause to be a mix of human errors and training lapses, which were promptly addressed.

For manufacturers seeking similar outcomes, Christie recommends having stakeholders who understand the value of process control, confirming the site team is accountable for the metrics, and starting with the high-value control loops before adding others. At

The control loop monitoring tool provides advanced diagnostics and plant-wide process optimization to help Cargill centralize data from various local plant historians and transform it into actionable information accessible from one dashboard in the plant control room

Sleeman Breweries Increases Production Capacity

Process automation system from Rockwell Automation provides internal process and recipe control

From entrepreneurial newcomers to large-scale producers, brewers in Canada are cashing in on the thirst for craft beer. This explosion in craft beer popularity had one company – **Sleeman Breweries** – bursting at its production seams. The third-largest brewer in Canada, Sleemans operates three brewing production facilities located in Ontario, Quebec and British Columbia.

Modernizing Craft Brewing

At Sleeman's Okanagan Spring Brewery (OSB) in Vernon, British Columbia, the company was struggling to meet market demand for its OSB beers. The management team was looking for ways to increase output beyond the maximum of eight brews per day.

The existing infrastructure was based on an antiquated, semi-automated control system. Changes to the brewing process – including adding new recipes – needed to be made manually, which increased the risk of human error or inconsistencies.

Better Control Means Better Brews

The Sleeman team worked with **McRae Integration**, a Rockwell Automation Recognized System Integrator, to design and implement an integrated process automation system to increase capacity, reduce risk and provide access to real-time production data.

The Sleeman team was hoping to standardize on one solution across its facilities.

"A single platform would give us insights across the line and between facilities, so we could build on successes and meet our goals for continuous improvement while continuing to make great beer," said Stefan Tobler, brewmaster at OSB. "We had already standardized on Rockwell Automation equipment at our other facilities, and knew McRae could help us meet our goals with a single platform based on the Rockwell Automation technology."

McRae implemented a phased approach based on the PlantPAx distributed control system (DCS) from Rockwell Automation and McRae's own Meridian BrewSoft and BrewSight software, now **FactoryTalk Brew**.

The system includes reporting and historian software that collects, tracks and records key process data to pinpoint brew cycle trends, allowing operators to proactively make changes to brews as needed. The Rockwell Automation library of process objects provides predefined controller code and faceplates, and the new system helps Sleeman operators more quickly configure new batches and build recipes.

Allen-Bradley **PowerFlex 525 and PowerFlex 755 drives** from Rockwell Automation deliver flexible motor control in the brewing process and help communicate device diagnostics to the control system.

To complete the implementation, McRae worked with Sleeman's IT team to install VMware virtualized servers. These servers provided automatic redundancy for production data with enhanced data recovery and expanded data storage. One virtualized server can replace up to four physical backup servers, which greatly decreases the equipment hardware costs.

It also provides the Sleeman team with the ability to create copies of the virtualized servers to run simulations offline and test production changes before they are made.

Ready for More Beer

Within two weeks of the implementation, Sleeman increased production by 50 percent at its Vernon facility going from eight brews to 12 brews per day.

"Craft brewing involves a lot of small changes in recipes – based on water, incoming malt and other variables – plus adding new recipes," said Tobler. "The PlantPAx system with FactoryTalk Brew software allows us to maintain brew quality, while also providing the flexibility we need to quickly respond to changing consumer tastes and market trends."

The software upgrades have kept the brew quality high while increasing production speed. The Vernon facility now has an industry-leading, two-hour brew cycle, with improved consistency in flavor and quality.

The Sleeman team is not done – they plan to implement the PlantPAx platform throughout the rest of the Vernon facility, including the tank farm and packaging lines. As the standardization across all areas of Sleeman's facilities expands, corporate visibility will improve, allowing the company to more effectively make decisions that will grow their business. At

The results mentioned above are specific to Sleeman Breweries' use of Rockwell Automation products and services in conjunction with other products. Specific results may vary for other customers.

Get in the game with Edge Computing

In today's highly competitive and digitally connected business environment, there's very little room for operational error. And in the industrial industries, including mining and manufacturing, the effects of not having access to real-time data, coupled with any form of downtime, negatively impacts productivity and financial performance, and brand reputation.

In our digitally-connected, global business landscape, data that requires real-time processing for improved productivity and operating efficiencies now needs to reside closer to the "edge" of the network, where the work is taking place. Edge devices are typically deployed outside of the controlled environments of data centers to provide real-time processing and to deliver results faster.

According to a recent Gartner report, by 2025, 75 per cent of data will be created and processed at the edge, outside the data centre or cloud – up from less than 20 per cent today.

In other research by ARC Advisory Group, more than 90 per cent of those surveyed indicated that as edge computing grows, organisations will need a simplified edge infrastructure that can be remotely managed.

As technology leaders with our eye on the ball, that is why we have created an edge computing future vision that includes ztC Edge™ - a zero-touch, fully virtualized and self-protecting computing technology platform, set to help the industrial automation industry get ready for computing at the edge.

ztC Edge is a versatile, yet secure, industrial computing platform that helps understaffed manufacturers increase efficiency, reduce IT burden, and lower risk. A redundant pair of rugged nodes, with built-in virtualization, automated recovery, and cloud-based system health management services, ztC Edge delivers virtualized industrial IoT and control applications quickly, easily, and reliably.

Stratus' Vice President of Asia Pacific Sales and Services, Edward Chow, said, "We have officially entered the era of edge computing, which is part of a bigger digital transformation movement. ztC Edge redefines edge computing as it stands. It allows companies to get more accurate visibility of their operations and get closer to their customers in a real-time, highly secure and most importantly in always available manner without any downtime."

Since it's a highly reliable and highly automated computing platform, Stratus ztC Edge systems is beneficial for a range of professionals – from end users to systems integrators to OEMs.

For control systems engineers that need to simplify the uptime of their business-critical industrial control systems and IoT applications, ztC Edge increases resource utilization and operator efficiency, reduces IT dependency, and minimizes downtime risk. And for systems integrators that need to effectively design, implement, and manage their customer's business-critical industrial control systems and IoT applications, ztC Edge helps to expands sales opportunities, accelerates time to value, and enables higher margins.

And then there are the OEMs that need to incorporate reliable computing infrastructure into their industrial systems and manufacturing process skids quickly and easily. In this case ztC Edge is simple to use, protected straight out of the box, and highly automated leading to improved quality, and reduced field maintenance costs.

Put simply, ztC Edge is a streamlined, simple to use, ready and fully automated platform that is changing the game of the sector.

Rather than get left behind, get in the game and get ahead with zTC Edge.

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TotalFORCE Technology Drives Smart Motor Control

Smart Motor Control enables Smart Machines for use in The Connected Enterprise

Over the past decade, enabling technologies, including **EtherNet/IP and the Internet of Things** (IoT), has helped OEMs reduce complexity and deliver truly information-enabled machines. Today, smart manufacturing and industrial operations embrace a new way forward. This new direction is highly connected so devices and processes can be continually monitored and optimized.

Smart production is driving new opportunities for end-users as they look to optimise their production and supply chains by bringing together islands of information. Advances in technologies such as the IoT, are enabling devices to get smarter and meet end-users' networking, integration, diagnostics and intelligence demands.

Electric motors are a major source of energy consumption in industrial applications, consuming about one-fourth of the world's electrical energy. In an attempt to reduce this significant production cost, more industrial producers are installing variable-frequency drives (VFDs) to control everything from appliances to compressors.

VFDs offer value in every industrial sector. Because low-voltage VFDs can adjust motor speed to demand, they are valuable in high-demand industries or applications, including drives that use hydraulic or pneumatic drilling systems. Some of the greatest energy-saving benefits accrue in high-demand or energy-intensive applications and machinery used in metals and mining, wastewater treatment plants, cranes and hoists, centrifuges, tire and rubber, and oil and gas. In these applications, low-voltage AC drives control motor speed and torque, mitigating mechanical stress damage to machinery.

Self-awareness Reduces Downtime

As a result of advances in network and communication technology, motors and drives are gaining improved integration and connectivity. Today, drives with built-in predictive analytics can prevent significant unplanned downtime. For example, drives have built-in cooling fans to keep them from overheating. If one of those cooling fans stops working, the drive will overheat and fault, which causes unplanned downtime.

TotalFORCE technology is one way of solving this problem by modeling the fan's predicted life. This analytical model is more than a simple counter – it takes into account measured ambient temperature (sensors are built into drive modules) and measured fan speed. Decreasing fan speed is an indicator that the fan's bearings are failing.

The predictive maintenance model gives a notification over EtherNet/IP to the control system once the fan has reached a certain percentage of its predicted life – 80 percent by default.

A connected system can give the maintenance team a notification to replace the fan during the next scheduled outage, thereby avoiding the unscheduled downtime scenario. Furthermore, a connected system can be used to automatically check inventory of replacement parts and order if necessary.

TotalFORCE technology combines high performance motor control, advanced self-monitoring capabilities and a contemporary digital platform to deliver faster, more precise and responsive AC drives.

Adaptive Control Capabilities

Enhancements to the patented **TotalFORCE** technology for **Allen-Bradley PowerFlex 755T AC drives** include more powerful adaptive control capabilities, which allow the drives to monitor machine characteristics that can change over time and automatically compensate for the changes that occur. An adaptive tuning feature uses up to four automatic tracking notch filters to block resonance and vibration that can impact quality, waste energy and prematurely wear out a machine.

In addition, predictive maintenance features provide real-time information about the health of the drive. By monitoring operational characteristics such as temperature, voltage and current, the drive is able to calculate the remaining life of critical components and notify users. This allows users to act so unplanned downtime can be prevented.

TotalFORCE technology helps PowerFlex 755T drives deliver superior electric motor control through precise, adaptive control of velocity, torque and position. The drives respond to production demands by comparing current performance to application setting and making any necessary adjustments automatically. They also communicate their performance data through the control system to operations in real time and continuously monitor their own health.

PowerFlex 755T drives notify operators immediately about issues that might compromise drive or motor health such as: blown fuse indication and feedback; measuring and monitoring the run time hours; thermal manager; and predicting remaining life span of components. This kind of self-awareness helps to significantly reduce

unplanned downtime. PowerFlex drives help to optimise operations, minimise downtime and keep your operations running smoothly.

"TotalFORCE technology enables PowerFlex 755T drive users to take a proactive approach in improving machine uptime. The drives can deliver information about the status of an application to the control system, which can be critical for reducing downtime and increasing productivity," said Brad Arenz, product manager, Rockwell Automation. "The drives' ability to be self-aware also enhances reliability and simplifies service."

Active Front End Drives Empower Energy Savings

Top challenges faced by heavy industry manufacturers include reducing energy consumption, minimizing downtime and optimizing productivity. They need to resolve these challenges while still increasing profitability and protecting their investment.

In recent years, various technical advances – in power electronics technology, topologies and control hardware and software – have greatly improved the performance and precision of low-voltage VFDs. VFDs with embedded Active Front End (AFE) technology, also called regenerative drives, make the most of new technology by offering industrial energy regeneration capabilities and input current harmonic mitigation.

Today's industrial users often install AFEs as a replacement for 12-pulse rectifiers. Most AFE drive systems consist of a dedicated AC drive with an active front-end controller. Drive systems also provide EMC filtering, providing lower input current harmonic distortion than is possible through traditional rectifiers.

Twelve-pulse rectifiers typically reduce total harmonic distortion to 10 percent, compared to about three percent for AFE drives. However, the values can vary depending on the source voltage distortion, imbalance and impedance. The reason: traditional rectifiers address harmonics passively, filtering them out after the fact. In contrast, AFE drives actively help prevent harmonic distortions detected inside the drive from entering and affecting the broader electrical network. By continuously counteracting harmonics created by non-linear current generated within the drive, active filtration brings harmonics within required range – despite input voltage fluctuations.

Smart Drives for Smarter Production

Today, worldwide industrial energy use is at an all-time high and industrial producers are challenged to increase profitability while facing increasing energy costs. Efficient motors drive performance and the impact of motor failure can be significant. With smart motor control devices, you can improve productivity and help avoid motor failures with an integrated, data-driven approach.

Smart motor control provides a continuous flow of valuable process and diagnostic data to your design environment, visualization system, information software and controllers – facilitating The Connected Enterprise and helping to increase productivity and minimize downtime while reducing total cost of ownership. How can smart motor control help you increase profitability? At

Digital Twins Deliver Greater Manufacturing Efficiency

Imagine a world where you could simulate the design of a new product or process before investing the resources required to design, commission and optimize production. Digital twins – virtual, 'living' replicas of physical assets – make this vision a reality.

A digital twin as a concept does not reflect one universal definition. For instance, we have identified at least 11 different types of digital twins typically applied in primarily three distinct phases — design, operation and maintenance. That equals more than 30 possible use cases — and that is just in the manufacturing space. There are even more use cases if you also consider the installation/commissioning and decommissioning phases.

For example, some users rely on a digital twin to optimize the design of a **product or manufacturing process**, while others use it to optimize product production or production line maintenance. Whether you are looking at the design, optimization or maintenance phase, a key feature of digital twins are that they are living replicas – learning and changing in response to simulated environmental stimuli.

Countless Scenarios

A digital twin provides great opportunity for use in numerous manufacturing applications. The three phases in which digital twins are typically applied are: design, operation and maintenance. Adding to the complexity of those options are the reality that digital twins can deliver countless scenarios. For example, you can have a digital twin of a device (such as drive or motor), process, manufacturing cell or machine, entire production line, plant or a series of plants (enterprise), people and customer behavior. Plus, no two are exactly the same.

To tap the potential of a digital twin, first make sure you and users agree on the goal. Value comes from talking about the problem and agreeing on how to use the digital twin to solve that problem. For example:

Could the digital twin you developed to **design a product** be used to predict when maintenance will be required?

Could the digital twin of a device be used in a digital twin of the **operation** of a machine or production line?

If you are using a digital twin now, you are surely already realizing the benefits. However, there is more if you expand your usage and find ways to leverage the digital twin between phases.

Digital twins can create greater opportunity for **manufacturing efficiency** and the foundation for predictive maintenance so you can maximize productivity.

Real-World Relevance

The digital twin virtually mimics a company's machines, controls, processes, workflows and systems. Through experiments and improvements on the digital twin, manufacturers gain insights into potential real-world behaviors of assets by:

- Experimenting with new equipment configurations to optimize quality, reliability and speed — well before machines are prototyped or built
- Trialing line startups and production scheduling/sequencing to optimize product mixes and volumes from a plant or plant portfolio
- Allowing production employees — managers, frontline operators, and maintenance technicians — to virtually operate and maintain new equipment and lines, minimizing costly startup problems (poor quality, safety, machine stoppages) in the real world
- Diagnosing and solving equipment and process problems before they occur, and experimenting virtually with rapid changeover techniques to boost uptime and productivity. Later, as equipment operates — continuous-improvement teams monitor data streams from embedded smart devices to further improve workflows, changeover times, and overall operations.

Rockwell Automation has helped numerous organizations apply and leverage digital twins.

For example, a food manufacturer tested and validated a facility upgrade prior to implementation, helping it achieve 80 percent less

downtime and a throughput increase of more than 10 percent.

Another large multinational virtually tested production scenarios (e.g., increasing output for a product promotion, changing to less costly production materials) saving millions of dollars with the same equipment.

Technology to Develop Digital Twins

Rockwell Automation Encompass Product Partner, Maplesoft, recently showcased their MapleSim software at Automation Fair in Philadelphia. MapleSim software is an advanced multidomain modeling and simulation tool for developing digital twins of production machines, for conceptual design, for virtual commissioning and for component "right-sizing."

MapleSim software integration with Studio5000 Simulation Interface can create a digital twin representation of a machine to run models in real time. This provides the capability to test the system in real time and helps companies reduce development risk and bring high-quality products to market faster.

Like any industry that faces fierce competition, the world of **machine design** is growing its ability to create advanced machines that perform without fail.

As new products push the limits of current engineering practices, **new tools are required** to assist engineers when their intuitions and current skillsets are being strained.

A digital twin is one of these new tools, and as their adoption continues, we can expect to see new products that push the limits of what is possible in the automation industry.

'When working on a new product in the conceptual phase, digital twins can play a huge role in giving engineers new abilities to work with designs'

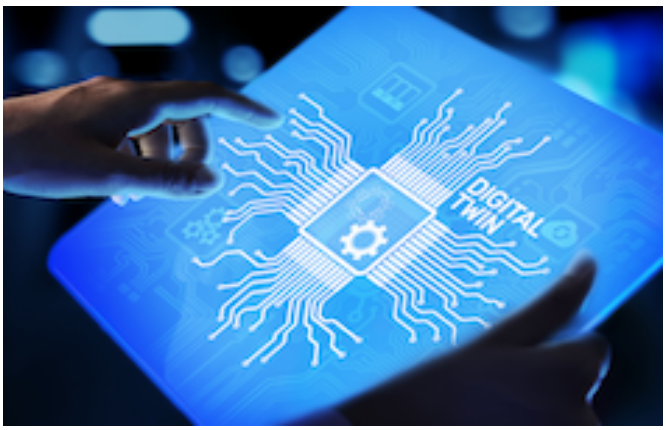
Future of Digital Twins

As global competition continues to challenge industrial producers to increase productivity, leading companies continue to leverage the benefits provided by new and disruptive technologies. Digital twin technology can help manufacturers create smarter products on time and on budget.

'By 2021, Gartner predicts, half of large industrial companies will use digital twins, resulting in those organisations gaining a 10% improvement' in effectiveness.'

A recent survey by **Gartner** revealed that, while only 13 percent of respondents claim to already use digital twins, 62 percent are either in the process of establishing the technology or plan to do so in the next year. This rapid growth in adoption is due to extensive marketing and education by technology vendors. It is also because digital twins are delivering business value and have become part of enterprise IoT and digital strategies.

Now is a good time to find out more about what digital twins are and how they're applied in different scenarios so you can more quickly and uniformly realize the value.



Latest Kinetix 5700 Servo Drive Delivers Energy Savings

The latest addition to the **Kinetix 5700** Servo drive family, the Kinetix 5700 Regenerative Bus Supply leverages EtherNet/IP to enable monitoring of energy usage. As energy prices continue to rise, the Kinetix 5700 Regenerative Bus Supply provides direct energy cost savings by regenerating excess energy back to the AC power source for plant-wide use. It also has capabilities for CIP security and defense in depth security to address different types of physical and electronic threats.

In addition, the bus offers an integrated LC filter to help reduce installation costs. With a smaller overall footprint, users can expect up to a 70 percent reduction in required cabinet space. The bus supply can assure peak machine production output capability by stabilizing the DC bus voltage by riding through AC input voltage dips. This allows global machine manufactures to ship anywhere in the world and still meet machine output specifications.

Designed for machines with large axis counts and higher power requirements, the Kinetix 5700 Servo drive is available in single- and dual-axis servos with integrated and hardwired Safe Torque-Off and integrated advanced safety capability. With Logix as a single control engine, and one design environment – Studio 5000 – machine builders now have more flexibility to scale, design and control to help meet their needs.

The Kinetix 5700 servo drive can help reduce commissioning time and improve machine performance. It offers the simplicity, power and space savings you need to help get your machine up and running faster – making it the ideal choice for machine builders that have high axis count and higher power requirements.

Micro800 Controllers Deliver Flexible and Scalable Solutions

Machine builders are continually challenged to deliver smart machines and equipment that easily integrate into a facility, provide access to information and enable agile reaction to changing market demands. The **Micro800 controller family** provides flexible and customizable micro control solutions for your customers' standalone machines.

Available in different form factors, these micro controllers are optimized to deliver a smart, productive, secure solution throughout all phases of the machine lifecycle: design, develop, deliver and engage, all at a micro application level.

The Micro870 controller is the latest addition to the Micro800 controller family and offers a higher level of scalability, flexibility and customization. With double the memory of the Micro850 controller and supporting up to eight expansion I/O modules – the Micro870 controller brings the benefits of Micro800 controller platform to your larger and more complex standalone applications.

The Connected Components Workbench software provides one software package that supports
configuration, programming, and visualization of the major control components of a standalone machine including safety and controller simulation.
The latest firmware updates with Connected Components Workbench software allows users to do more with; Micro870 expansion I/O optimization supports scan interval for better program cycle times; Support for Spectrum Controls microSD plug-in module on Micro830, Micro850 and Micro870 controllers to enable datalog and recipe management; Improved controller fault handling with the ability to auto-restart without operator intervention.

Smart machines and equipment can help enhance productivity and profitability. Delivering better performance, with faster program build, the Micro800 controllers can be applied to a wide range of applications including; packaging, material handling, process, heavy industry equipment and manufacturing and assembly.

Nano Signal Conditioners for Precise Process Measurement and Control

●●● *Designed to Save Space, Time and Cost while Providing Top Performance*

The new Allen-Bradley **931 Nano Signal Conditioners** provide optimal signal isolation, conversion and amplification.

Critical process measurements such as temperature, pressure, flow, level, weight, speed, frequency, current or voltage in your continuous or batch production process are exposed to noise and harsh environmental conditions that result in erroneous signal. These Signal Conditioners help protect your measurements and provide a more reliable signal so your processes can run efficiently.

These DIN rail-mounted analog signal conditioners are compatible with all types of integrated PLC and DCS I/O systems. They can also be integrated with PlantPAx DCS to leverage a single control platform for batch, drives, motion control, process and safety.

Signal Conditioners are commonly used in food and beverage production, water treatment, chemical processing, energy and power plants, steel production, oil and gas, and pharmaceutical industries.

Life Sciences Facility of the Future

●●● The next industrial transformation is here, set to expand possibilities and improve patient outcomes. Personalized medicine, smaller implants, and faster launches require ingenuity and a community of problem solvers, builders, makers, and innovators who believe our world can work better.

While the opportunities are endless, the challenges are many. Innovation remains critical as patents expire, lifecycles shorten and counterfeits flood the market. Cellular biology advancements have driven complex process changes, creating greater challenges for Life Sciences companies, including:

• A growing demand for more targeted, smaller volume orphan drugs and personalized medicines. This demand is driving operations away from large-scale bulk production to multiproduct facilities that require complicated batching, frequent changeovers and meticulous tracking.

• A shift from large, centralized facilities serving the world, to smaller, locally focused facilities. This shift can bring active pharmaceutical ingredient (API) production to lower-cost locations, and personalized drugs closer to patients.

• Pressures to get drugs to market faster, while maintaining compliance and data integrity. These pressures require greater process management, the convergence of IT and OT and more efficient R&D operations to get approval from regulators.

Leading biotech, pharma, and device manufacturers are leveraging new technologies to make their facility of the future a reality today. Connected, flexible pharmaceutical manufacturing can help you maximize ROI, optimize asset utilization, achieve greater speed to market and maintain quality and compliance throughout.

Imagine a facility that leverages digital technologies to connect systems both horizontally and vertically. One that provides data to improve decision-making, performance and compliance.

A modern DCS can help make this vision a reality. Specifically, a **modern DCS** built on open, unmodified Ethernet can deliver smart docking stations, and seamless, plug and play connectivity of your mobile equipment.

The facility of the future leverages single-use technology, information and connectivity, and modular and mobile design concepts to reimagine production. It can help you realize lower capital costs, faster facility startups, streamlined changeovers and more efficient production. Download this **eBook** to learn how to get better insights from your data with a facility of the future.

Rockwell Automation Strengthens Industrial Control System Security

●●● *Enhanced products – showcased at Hannover Messe 2019 – provide built-in security to help protect system integrity.*

Communications between industrial control devices have minimal protection today. This leaves them vulnerable to threats like malicious tampering and incidental system changes that can stop production or injure workers. New solutions from Rockwell Automation deliver **built-in security** based on globally accepted security standards to protect control-level communications and overall system integrity.

"As the world's leading company focused on combining industrial automation with digital technology, we're uniquely positioned to help close security gaps in connected operations," said Megan Samford, director of product security, Rockwell Automation. "Our new offerings with built-in security deliver the industry's best available protection of control-level traffic. This can give users confidence that the integrity of their systems and their device-to-device communications are protected from day one."

The Allen-Bradley **ControlLogix EtherNet/IP communication module** is among the first industrial devices to use the CIP Security protocol from ODVA. The protocol helps make sure only authorized devices are connected in industrial operations. It also helps prevent tampering or interference with communications between those devices. CIP Security is the first industrial automation protocol to support transport layer security (TLS), the most proven security standard available.

Also, the newly enhanced Allen-Bradley **ControlLogix 5580 controller** is the world's first controller to be certified compliant with today's most robust control system security standard, IEC 62443-4-2. The standard defines the technical security requirements for industrial automation and control system components. This certification builds on the 2018 certification of the Rockwell Automation Security Development Lifecycle (SDL) to the IEC 62443-4-1 standard.

Stratus ztC Edge Computing System

●●● Stratus ztC Edge is a versatile, fully integrated, self-protecting, Edge Computing system that helps resource constrained operators increase efficiency, reduce IT burden, and lower downtime risk. With a pair of rugged nodes, built-in virtualization, integrated redundancy, automated recovery, and cloud-based system health management services, ztC Edge deploys virtualized industrial IoT and control applications quickly and reliably.

The ztC Edge is the ideal system for endusers who care about uptime and uptime and productivity; operational standardization; secure connectivity; ease of programming; and being more agile and responsive to changes. For machine builders, the ztC helps minimize machine TCO; maximizes machine time to value; increases quality and reduces field maintenance costs; enables greater asset utilization; and improves operator efficiency to changes.

Suitable for a range of industries that are challenged with digital transformation including: Manufacturing, Oil & Gas, Water/Wastewater Utilities, Pharmaceutical & Life Sciences, Transportation and, Building Automation and Security. The Stratus zTC Edge can be deployed on the plant floor, remote locations, control room and also on industrial equipment for machines.

Enhanced Connectivity with new ArmorBlock IO-Link Hub

●●● The **ArmorBlock I/O** family is a hardened I/O product suitable for On-Machine use. Water-resistant and corrosion-proof, it can mount directly on a machine (without a control cabinet) allowing OEMs and end users to reduce installation and operating costs. It can also mount close to sensors and actuators offering shorter cable runs and reduced wiring costs.

The newest additions to the ArmorBlock I/O portfolio, the ArmorBlock EtherNet/IP Modules and IO-Link Hubs enhance connectivity, helping to enable The Connected Enterprise. Targeting harsh applications that require a wide operating temperature and nickel-plated zinc die-cast housing, these hubs offer more options for users to optimize their design for each application.

The latest ArmorBlock I/O hubs also feature three options for users to optimize IO-Link hubs design: 16 digital input, 10 digital input and 6 digital output, and 16 universal digital input and output. In addition, they also allow more field devices to be connected with M12 L-coded power connector for IO-Link Hub and EtherNet/IP modules.

Rockwell Automation Releases AI Module to Improve Industrial Production

●●● *New AI module provides predictive analytics without a data scientist, eases decision-making*

Industrial workers can now more easily use the data from their equipment to predict production issues and improve processes with their existing automation and control skill set. The new **FactoryTalk Analytics LogixAI module**, formerly known as Project Sherlock, uses artificial intelligence (AI) to detect production anomalies and alert workers so they can investigate or intervene, as necessary.

Many existing analytics technologies require deep expertise in both data science and industrial processes. But this add-on module for ControlLogix controllers reduces that burden by doing the job of a data scientist. It fits directly into a control chassis and streams controller data over the backplane to build predictive models. It can continuously monitor a production operation, detecting anomalies against its derived understanding.

"The FactoryTalk Analytics LogixAI module makes predictive analytics more accessible to help more workers make better production decisions," said Jonathan Wise, product manager, Rockwell Automation. "The module learns your ControlLogix application and tells operators and technicians when things are changing in unexpected ways. This can help them get ahead of product quality issues and protect process integrity."

For example, the module can help operators spot performance deviations in equipment like mixers that could affect product quality or lead to downtime. It can also be used as a virtual sensor. Instead of workers taking a reading, like the humidity of a packaged food product, the module can analyze variables from line assets like sprayers, dryers and burners to predict a measurement, virtually.

Workers can then be notified of problems by configuring alarms on a human machine interface (HMI) or dashboard. Future features of the module will go further, helping workers focus their problem-solving or automate the optimization of a process.

The FactoryTalk Analytics LogixAI module is the newest addition to the FactoryTalk Analytics portfolio from Rockwell Automation. The portfolio includes FactoryTalk Analytics for Devices, which learns about an automation system's structure to tell workers about problems with individual devices. The LogixAI module expands on this by learning about an automation system's application and helping identify anomalies with its overall function.

Both products work individually, but each will benefit the other in future iterations. The FactoryTalk Analytics platform aggregates multiple sources of data, so workers can discover new insights. FactoryTalk Analytics for Devices and the LogixAI module will both be data sources for the platform going forward.

Bulletin 800G Hazardous Location Push Buttons

●●● Rockwell Automation has expanded the **Bulletin 800G** portfolio to include a new subset of products for hazardous location applications. The 800G "-EX" product offering has ATEX and IECEx certifications along with other regional certificates for hazardous gas and dust environments around the world.

The enhanced "-EX" product offering is compliant with current EN/IEC 60079 series standards, confirming conformity when designing solutions for Europe, Asia, and other countries. Zone 1, Zone 2, Zone 21, and Zone 22 coverage for hazardous gas and dust environments cover most applications across most industrial verticals.

Hazardous location solutions can be purchased as individual components for field-installation. Ten different operator styles are paired with base mount or panel mount contact blocks and power modules. A new panel mount design allows for quick and easy field-installation of a panel mount cover accessory, providing IP66/IP67 environmental ratings when required.

Additional assembled station configurations are available for our "-EX" product offering. Dual push buttons and key-operated selector switches can be selected when configuring a control station. A locking guard can be added over our Emergency Stop push-pull and a locking cover can be selected for push button and selector switch operators. Up to three 800G enclosures can be "ganged" together, providing a command and indication station with up to nine different operator functions.

Rockwell Automation TechEd - Australia

The ultimate training event

3-5 September 2019

Gold Coast Convention & Exhibition Centre
2684-2690 Gold Coast Highway
Broadbeach QLD

Rockwell Automation TechEd is the best place to learn the latest technology. You can choose from 6 Streams – from beginner level overviews to in-depth, advanced hands-on labs – designed to help you improve machine performance, optimise your plant and empower a Connected Enterprise.

Highlights include:

KEYNOTES
Our lives are getting disrupted every day. Technology is transforming the way we work, live, interact. Change is here and now, but what does the future hold? Thought provoking keynotes will kick-off this years event.

DISCOVER CUTTING-EDGE SOLUTIONS
Industry focussed Augmented Reality (AR) and Virtual Reality (VR) demos using our FactoryTalk InnovationSuite powered by PTC. These demos will highlight connectivity to devices, applications and multiple data sources across your organisation, presenting them in a meaningful way. Using AR and VR allows you to spot trends and interdependencies that may be missed when data lives in silos.

WOMEN IN AUTOMATION – Pathways and Journey
Join a supportive community of women in automation to learn from their journey and explore pathways to achieve personal success in this industry.

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For more Information and to Register, visit:
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