Delivering on the Promise of Smart Manufacturing

An integrated, intelligent automation system helps meet your demands for greater capacity, efficient data delivery and better network security.

How a Pipeline Company Raised Reliability by 99.5%

Multi-Well Pad Control: RTUs vs. PLCs

2017 Automation Fair® Event Preview
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FREE WEBINAR: Use Production Line Video to Minimize Downtime
Learn how to use EtherNet/IP event video recording to minimize downtime and associated losses by identifying performance problems such as machine malfunctions, raw material problems, safety problems, process mistiming and operator error, as well as eliminating line stoppages and troubleshooting line/equipment integration.

FREE WHITE PAPER: Which Temperature Control Device Should You Use?
In this white paper, get in-depth information comparing electromechanical contactors and solid-state relays to SCR power controllers operating in a similar on-off manner.
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A few days ago, I was working in a content management system (CMS), as editors do, and wondered to myself in a loud inner voice that startled me, “Why can’t CMS software be connected to the image management software, the text repository and the video library?” Having all these systems on one platform and integrated would make my job much easier and publication production more efficient. But I also know that this kind of connectivity just isn’t possible in today’s world, because Microsoft Word and video libraries and CMSs, etc., use completely disparate — well, everything.

Fortunately, that’s not the case with industrial automation. Large and small companies alike that want to benefit from the potential of smart manufacturing are deploying a Connected Enterprise, which provides the technological foundation for a more connected and information-driven operation. This has created an inpouring of connected devices that introduces more complexity for programming, connectivity and security requirements. Estimates put more than 20 billion industrial smart devices on the plant floor by 2020.

This growth of connected and information-rich automation systems already is creating new opportunities for companies to encourage workflow adherence, and to expand on their ability to pull, analyze, contextualize and share data.

Our cover story examines these trends and how smart manufacturing creates new opportunities. The right automation system can help prepare you so you can take advantage of new control, information and security technologies as they come to market. Until next time …

Theresa Houck, Executive Editor
Rockwell Automation and ManpowerGroup are partnering to upskill 1,000 veterans per year by 2018, investing in the future workforce and creating a pool of certified talent for in-demand advanced manufacturing roles across the United States.

The U.S. manufacturing sector is estimated to produce up to 3.5 million new jobs over the next decade. But with close to 2.5 million manufacturing workers set to retire by 2025 and ongoing skill shortages, up to 2 million of those new jobs could go unfilled. The United States needs to rapidly upskill its manufacturing workforce, and the thousands of veterans exiting the military every year represent a talented, skilled and underutilized source to fill these emerging roles.

“By bringing together the expertise and experience of the world’s largest company devoted exclusively to industrial productivity with the world leader in innovative workforce solutions, we’ve been able to develop a truly groundbreaking program that will help solve a challenge critical to fueling the future growth of the manufacturing sector,” said Blake Moret, CEO of Rockwell Automation. “Military veterans possess a unique combination of technical savvy and core work skills that makes them well-positioned for careers in today’s advanced manufacturing environments.”

A recent global survey by ManpowerGroup found that most U.S. employers think automation will increase, not decrease, headcount in manufacturing, but at a higher skill level. This new and innovative technical retraining program will address this need, rapidly upskilling and placing veterans in high-demand roles in as little as four months. Through the program, veterans will learn advanced manufacturing processes, acquiring skills that will significantly increase their earning potential and set them up for sustainable jobs at the forefront of advanced manufacturing.

“The program expands the Rockwell Automation long-standing Engineer-in-Training (EIT) program, which combines classroom learning with hands-on laboratory experience, producing hundreds of graduates annually. It is also part of ManpowerGroup’s MyPath program focused on closing the skills gap by building the talent and skills that clients need while providing people with the guidance and access to jobs that enhance their employability. The program leverages the deep domain knowledge of Rockwell Automation in advanced manufacturing, together with ManpowerGroup’s global insight into changing skills needs and workforce solutions to power the future of manufacturing in the United States.”

ACCI Introduces New Branding. Automated Control Concepts, Inc. (ACC), a participating Rockwell Automation Solution Partner, has launched a new logo and website. ACC says the new logo conveys the company’s focus on simple solutions to meet customer business goals, and bringing together the optimal elements for the desired outcome — what ACC calls “Smart Solutions.”

ACC
www.rockwellautomation.com/go/p-acc

ManpowerGroup
www.manpowergroup.com
Rockwell Automation
www.rockwellautomation.com
ENDRESS+HAUSER EXPANDS TESTING CAPABILITIES

Rockwell Automation Strategic Alliance Partner Endress+Hauser invested nearly $1 million in a high-pressure test rig at its U.S. headquarters in Greenwood, Indiana. The rig allows it to test complete instrument assemblies to customer specifications, and provides a 100% test indicating a specific instrument can withstand the design process pressure, up to 15,000 psi.

Previously, Endress+Hauser performed such tests at its production plant in Maulburg, Germany. With the new test rig located in Greenwood, instruments can be tested and certified quickly, for faster delivery to customers in the U.S. and the Americas. The location also makes it easier for customers in North America to schedule and witness the test.

The test rig, located in an underground concrete pit for safety reasons, can generate pressure up to 15,000 psi (1,000 bar) to test devices up to 16-ft (4-m) long and with up to a 2-in. diameter. Each test is automated to execute customer-specific test and ramp up times. The rig is designed to test Endress+Hauser’s LevelFlex guided wave radar level instruments, capacitance probes, Liquiphant tuning forks, Micropilot free space radar level instruments, and high pressure thermowell assemblies, but also can test other instruments.

The test rig can produce relevant certification and documentation required by engineering firms, end users or insurance companies.

Endress+Hauser
www.rockwellautomation.com/go/p-eh

>> SPOTLIGHT

DENSO SUPPORTS 22 INSTITUTIONS

Rockwell Automation Encompass™ Product Partner DENSO has provided nearly $1 million in grant funding for 22 institutions and educational programs across North America.

The DENSO North America Foundation (DNAF), the company’s philanthropic arm, funds programs across the continent each year providing hands-on learning opportunities in areas from robotics and thermodynamics to design and materials development. The 22 institutions, near DENSO communities, will help prepare students to join the manufacturing industry’s growing skilled trade workforce.

The proposal process for these education grants is invite only, and all proposals are evaluated based on technical merit, student experience, and alignment with industry needs.

This year’s grant recipients include:

- Arkansas Northeastern College
- Arkansas State University
- California State University Long Beach
- Cleveland State Community College
- CONALEP Technical College
- Conestoga College
- East Tennessee State University
- FIME – Mechanical and Electrical Engineer College
- Kettering University
- Lawrence Technological University
- Michigan State University
- Michigan Technological University
- North Carolina State University
- Northeast State Community College
- Oakland University
- Tennessee Technological University
- Trine University
- University of Guelph
- University of Kentucky
- University of Tennessee – Chattanooga
- University of Tennessee – Knoxville
- Western Michigan University

DENSO Robotics
www.rockwellautomation.com/go/p-denso
METSO PARTNERS WITH ROCKWELL AUTOMATION
Metso Corp. has selected Rockwell Automation to deliver a global Industrial Internet of Things (IoT) platform that connects, monitors and performs analytics for Metso’s equipment and services, resulting in improved efficiency and profitability for its mining and aggregates customers.

The digital solution will securely collect and store data from Metso’s equipment around the globe, including new equipment and machines already in operation. The solution will provide predictive analytics and preventive maintenance, and facilitate remote asset monitoring by Metso and its customers.

The IIoT solution is built on the FactoryTalk® Cloud platform from Rockwell Automation, powered by Microsoft Azure. Rockwell Automation and Microsoft have long collaborated on solutions required for industrial digital transformation. The Metso solution is a direct result of these efforts.

Metso Corp.
www.metso.com

DENSO AWARDS STUDENT SCHOLARSHIPS
Rockwell Automation Encompass™ Product Partner DENSO Robotics has renewed its commitment to support and provide educational opportunities for the communities it serves in West Michigan. DENSO Manufacturing Michigan (DMMI) in Battle Creek has awarded scholarships to four students through partnerships with the Battle Creek Community Foundation (BCCF) and the Battle Creek Area Math and Science Center (BCAMSC).

Scholarship resources come from the DMMI Scholarship Fund, which DENSO established in 1997 to assist children of employees with the rising cost of higher education.
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The 2017 BCCF scholarship recipients are Jayson Butler and Calder Lachance of Lakeview High School and Ian Mullis of Saint Philip Catholic Central High School. Butler plans to attend Michigan State University and major in chemistry this fall. Lachance will study political science at the University of Michigan and Mullis will begin engineering studies at Kellogg Community College. A selection committee from the BCCF chooses winners based on student activities and work experience.

The BCAMSC scholarship promotes math and science education and excellence, recognizing outstanding graduates with financial assistance for college expenses. Staff at the BCAMSC selects two students for the scholarship each year. Lachance and Ana Singh, also of Lakeview High School, received this year’s scholarships. Singh will attend Calvin College to study biology and Spanish.

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- Western Integrated Systems Ltd.
- Zeppelin-USA

For more information, go to: www.rockwellautomation.com/go/tjsi
Delivering on the Promise of Smart Manufacturing

Demands for greater capacity, efficient data delivery, and better network security require automation systems that can support smart manufacturing.

By Dan DeYoung, market development director, Integrated Architecture, Rockwell Automation
Companies eager to capitalize on the promise of smart manufacturing are moving to a Connected Enterprise. However, an influx of connected devices into the industrial zone introduces greater complexity for programming, connectivity and security requirements.

This added complexity, if not properly managed, can limit the potential of smart manufacturing and introduce risk. For example, greater capacity or bandwidth is needed to capitalize fully on smart devices or new technologies. Machine and process data also must be delivered to workers in a way that helps them make better decisions. In addition, greater industrial security is needed to help protect intellectual property, physical assets and workers.

Implementing a smart manufacturing approach requires an automation system that can keep up with these demands — a system that integrates all smart devices on a single network with one control platform. When designed and configured in one software environment, the latest automation and control technologies can help manufacturers design, operate and maintain a high-performing system more efficiently.

Consider some of the key capabilities and benefits that an integrated, intelligent automation system brings to manufacturing.

**Increased Capacity and Bandwidth**

A smart operation introduces more devices, more connection points and increased information sharing. Your automation system should have the necessary application capacity and communications bandwidth to handle these requirements.

The latest controllers, for example, support faster system performance and the growing adoption of smart devices. They offer up to 45% more application capacity and 1-gigabit Ethernet bandwidth to support high-speed communications, I/O and applications with many axes of motion. Also, new distributed I/O systems with dual 1-gigabit Ethernet ports can scan up to 10 times faster than existing I/O systems.
in larger sizes than ever, with higher resolution displays and widescreen formats to help operators see and react to more complex and information-rich dashboards. Plant managers and executives also can use mobile HMI software to monitor and manage operations whether they’re in the office, at home or on the road.

Improved Productivity
The traditional approach to designing machines and systems requires using multiple design tools. This forces designers to jump between the tools and to learn the different programming languages, menus and commands for each tool. A lack of interoperability between the tools also can result in redundant programming, which is unproductive and can increase the likelihood of coding and data-entry errors.

These problems are only compounded when designing smart systems that are more complex and require the support of multiple teams. Larger projects in particular often require the support of multiple design engineers and system integrators, who may be located across countries and time zones. Integrated development software can get rid of the need for separate tools by bringing multiple design functionalities together in one environment. This creates a simpler, more seamless development experience that can help improve design productivity.

The integrated environment also helps improve productivity after a smart system is operational. It creates a central location from which operators and maintenance technicians can reconfigure devices, troubleshoot issues and access system information.

Reduced Complexity
More devices and data naturally are going to create more complexity. Hardware that supports these demands can help contain or reduce this complexity.

The controllers offering 45% more application capacity, for example, can cut the amount of control and communications hardware required in a system. This in turn can reduce overall system complexity and panel-space requirements.

New servo drives also combine servo and vector motor control into a single platform to help minimize complexity, while reducing cabinet-space requirements by up to 70%. They also allow motor-power, brake and feedback wires to be packaged into a single cable, which can help reduce motion wiring requirements by as much as 60%.

Streamlined Troubleshooting and Maintenance
The emergence of self-aware and system-aware devices offers significant maintenance benefits. Self-aware servo
Any budget, Any application.

AMCI’s SMD Series integrated stepper motors take the drive and controller out of the cabinet and put them right on the motor, reducing wiring and system costs. Integration couldn’t be easier over EtherNet/IP.

The PLC-Based Advantage

All programming is done using Rockwell Automation Studio 5000® or RSLogix™ 500 software, letting you take advantage of our EDS files, AOI's, and in-house application support. Machine Builders, OEMs, and Systems Integrators can accelerate installation and programming time while improving overall effectiveness using SMD Series integrated motion solutions.

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drives use self-diagnostics to detect resonant frequency and then can make tuning adjustments on their own automatically. This can help optimize machine performance over time and reduce the need for regular tuning maintenance.

Mobile HMI software also can help simplify maintenance. The software can give technicians access to real-time and historical information right on their smartphones if a problem arises.

Robust Security
A smart manufacturing operation is not without risks. More connection points create more vulnerability for security threats, both malicious and unintentional.

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The 1756-RMS-SC module helps ControlLogix® users maximize their bottom line by monitoring electricity consumption, load sizes, demand peaks and other utility concerns. With up to eight highly isolated channels, a user can monitor voltage and current from multiple phases throughout the facility.

- Eight isolated input channel pairs; one current and one voltage.
- Easily configured using RSLinx software.
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- Supports non-typical AC waveforms.
- 16-bit resolution, fully linearized data & over/under range indication.
Network infrastructure plays an important role in any industrial security program. For example, an infrastructure using industrial firewalls and managed switches can help bridge IT and OT more securely.

However, the control system also plays a crucial role. Controllers, drives and other devices used in a smart operation should have security built into their design. The latest controllers, for instance, include advanced security and software features, such as digitally signed and encrypted firmware, change detection and audit logging. Development software also incorporates more built-in security, such as user authentication and access control.

Built for the Future

A modern, intelligent automation system can help you meet today’s smart manufacturing goals, while also preparing you to take advantage of greater connectivity in the coming years.

More connected devices will continue to create more opportunities, but also put new demands on your operations. In addition, the security threats targeting industrial control systems will grow in parallel with the connection points themselves.

The right automation system can help future-proof your operations and prepare you for these changes, allowing you to expand more easily and take advantage of new control, information and security technologies as they come to market.

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Automation solutions require accurate feedback of continuous position regardless of the application environment. Analog position sensing devices can have shortcomings in automation applications, including limited features, resolution and cable lengths. That’s why the ReadyLink Linear Displacement Transducer is a far better solution. Feature for feature, it lets you do—and measure—so much more.

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Columbia Pipeline Group’s (CPG’s) odyssey from being a low-cost supplier that might not deliver to a valued part of TransCanada began January 2, 2010, with the failure of a $50 part. “It cost us millions because we didn’t fulfill our contracted purchase orders,” says Brian Sloan, manager of automation and electrical engineering, TransCanada. “Let’s just say we were challenged to get to where we could predict that sort of failure before it occurred.”

TransCanada owns 31,000 miles of pipe with 6 million installed horsepower and 550 billion cubic feet (BCF) of storage. It delivers one-fourth of all the natural gas moved in the United States. Over the past few years, gas production and consumption have been rising. Industrial facilities rely on gas deliveries to make production, and commercial and residential deliveries also are critical, especially during the cold winter months. “So we need to be reliable to deliver on our contractual obligations,” Sloan says.

HOW A PIPELINE COMPANY RAISED RELIABILITY BY 99.5%

Replacing legacy local systems with an enterprise-wide DCS running on EtherNet/IP also improved data integrity and visibility.
In 2010, the group’s 100 pipeline compressor stations used multiple control systems, with controllers and HMIs from an array of suppliers. These disparate control systems were difficult to support because of the range of required expertise. They also were expensive to maintain, with multiple support contracts and many components, and difficult to upgrade to modern security levels.

“Lack of reliability was a major risk factor for ongoing operations,” Sloan notes. “Our control system was outdated — we were buying components off of eBay. We needed a platform everyone could troubleshoot — to be able to train them on one platform, not multiple platforms with multiple support contracts.”

The company also wanted to rationalize data. “We had multiple control systems with multiple tag systems and databases and multiple hands touching them,” Sloan says. “We needed data integrity.”

Solution: The Connected Enterprise

The search for a solution led the CPG engineering team to standardize on a virtualized PlantPAx® distributed control system (DCS) from Rockwell Automation. The high-availability, scalable, modern DCS would share more information across facilities and up to the executive level, permit remote access and improve security.

“We configured the systems with visualization, historian, domain controller and asset management,” Sloan says. At first, the company used separate Dell servers, but the cabinets were filling up, and it became concerned about long-term IT support. CPG decided to implement virtualized industrial servers.

High-availability, virtualized servers from Rockwell Automation Encompass™ Product Partner Stratus Technologies reduced the physical space of the hardware, removed the need to procure hardware for each new application and reduced the likelihood of downtime resulting from hardware errors.

Each virtualized server runs multiple Rockwell Software FactoryTalk® applications (www.rockwellsoftware.com), including Historian, View Machine Edition, View Site Edition, AssetCentre and ViewPoint. ViewPoint allows operators to access the HMI applications from any location through a Web browser, so they can make real-time decisions.

Combined with historian software, the system’s visualization capabilities permit monitoring, reporting and data recording for immediate and future access. The historian platform integrates with the corporate-level OSIsoft PI data
warehouse system. OSIsoft is a Rockwell Automation Encompass Product Partner.

“Virtualization allows for hardware independence, improves longevity, increases flexibility and scalability and increases uptime,” Sloan explains.

The information-enabled system runs on EtherNet/IP™, allowing data to flow easily from engines to the main control panel, the motor control centers (MCC), to the programmable automation controllers (PACs), one compressor station to another, and from stations up to executive offices.

Allen-Bradley® Stratix® industrial Ethernet switches (www.rockwellautomation.com/global/go/stratixdistribution) manage the secure, real-time information sharing. “It gives us one solution for data from the PLCs to the historian,” Sloan says. “We worked with the instrument group to name the tags and lock them down, and now the tag in the process is the tag in PI.”

Instead of multiple networks, “Everything’s EtherNet/IP,” Sloan says. “At first, our network was flat, and, as we added capabilities, speeds dropped. Rockwell Automation evaluated it and advised us to split it out into separate segments for the HMIs and OIs, for reliability and for emergency shutdown.”

Rollout and Results

With the new system installed, “We upgraded 82 stations in 16 weeks using virtual machines (VMs) that we built offsite and installed very quickly. We can flip the old one off and the new one on, and, if it works, great. If it doesn’t, we flip it back while we figure it out,” Sloan explains.

“Now the IT guy’s job is simple because all the stations are the same. He doesn’t have to pay attention to which one he’s working on or updating.”

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Teledyne DALSA Industrial Products is committed to helping manufacturers improve product quality, lower costs and increase production with easy-to-deploy, cost-effective machine vision solutions for factory floor deployment.

“Our BOA products offer customers a compact industrial solution with diverse applicability across all manufacturing segments. We designed these products for quick set-up and easy integration to existing lines, such as attaching to the end of a robot arm,” says Steve Geraghty, vice president, Industrial Vision Solutions at Teledyne DALSA.

Headquartered in Billerica, Massachusetts, Teledyne DALSA Industrial Products is a participating Rockwell Automation Encompass™ Product Partner and manufacturer of highly integrated vision systems, simple and affordable vision sensors and innovative machine vision software for industrial applications. Products are used across industries including automotive, food and beverage, electronics, health and beauty, medical devices, packaging, pharmaceutical and semiconductor manufacturing.

A participating Encompass Partner since 2007, Teledyne DALSA’s vision solutions are designed to integrate seamlessly with Rockwell Automation devices. In the Encompass program, the company offers BOA products, highly integrated vision systems specifically designed for industrial use.

“Teledyne DALSA is committed to providing Rockwell Automation customers with best-in-industry product solutions, application expertise and global support,” notes Geraghty.

BOA vision systems are packaged as an industrial smart camera in a small, rugged enclosure that fits easily into existing production lines. Unlike traditional smart cameras, BOA incorporates multiple processing technologies — DSP, CPU and FPGA — for algorithm, communication and control optimization. BOA products are available in a range of resolution for monochrome and color applications and are configured through a web browser via a standard Ethernet interface.

They’re EtherNet/IP™ conformance tested and include protocols for interfacing with Rockwell Automation PLCs and HMIs. Physical interfaces include Gigabit Ethernet, RS-232 serial, and opto-isolated inputs and outputs, all of which can be connected using standard M12 factory cables. A DIN-mountable breakout module simplifies control-panel wiring.

“We continue to develop products to satisfy the broad variety of customer requirements. These include single 640 x 480 standard camera configurations to high performance multi-camera models with 4,096 x 3,072 color resolution. Our BOA products are offered in small, rugged enclosures making them easy to integrate into tight-fitting applications or harsh factory environments knowing the heat, vibration or moisture will not affect performance.” Geraghty concludes.

Teledyne DALSA supplies digital imaging components for the machine vision market. Its image sensors, cameras, smart cameras, vision systems, frame grabbers, and software are used in automated inspection systems across many industries and applications.

For more information, visit www.rockwellautomation.com/go/p-teledyne-dalsa.
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Industrial Identification Vision Sensor

**BOA™ SPOT ID**
BOA Spot ID combines 1D/2D code reading with OCR and verification tools to satisfy a range of manufacturing and logistics applications. Complete with integrated lighting, choice of sensor resolution and software, **BOA Spot ID** offers more capabilities than comparable vision based code readers...for less!

Get more details on BOA Spot ID
www.teledynedalsa.com/boa-spot
The world’s annual energy consumption of oil and gas is projected to increase steadily from less than 200 quadrillion BTU in 2015 to nearly 250 quadrillion BTU by 2040, according to projections from the U.S. Energy Information Administration.

With demand continuing to grow, oil and gas producers will need to find new and better ways to capture energy resources. And they must do so while managing financial factors, such as dynamic pricing and production costs.

The most successful upstream producers likely will be those that embrace new technologies.

One area in which this success already is occurring is in the upstream segment of the oil and gas industry. Operators are shifting from simplistic, vertically drilled, single-well pad fields to laterally drilled, multi-well pads. These multi-well pads typically consist of anywhere from four to 12 wells, although some operators are reaching as many as 32 and even 52 wells on just one pad.

These advancements have increased efficiency in upstream production, particularly in unconventional areas.

But they also place greater demands on well pad control systems. As a result, oil and gas operators, as well as their equipment suppliers, must reconsider their control-system approach for multi-well pad operations.

Control Options
For decades, the remote terminal unit (RTU) was the best control technology that could be implemented in upstream oil and gas production. Rugged and power-conservative, it could handle the lower-bandwidth communication networks between the supervisory control and data acquisition (SCADA) system and the production site.

However, oil and gas producers increasingly have demanded more from their RTUs. In addition, the modern multi-well pad, with dozens of wells per site, has pushed the limits of RTU technology to its capacity. Producers now are seeking a better solution to help them be more efficient and reduce costs.

An alternative to the RTU is the programmable logic controller (PLC). These controllers are modular and...
scalable and can handle a variety of communications and application support.

PLCs traditionally have not been built for inhospitable and harsh environments. They also are not a low-power-consumption device. However, modern well pads have environmentally controlled buildings and utility or generator power. This creates an ideal environment for PLCs.

Demands Exceeding Capabilities
The greater control and data-acquisition demands required in current multi-well pads now are exceeding RTUs’ capabilities. As a result, multiple RTUs often are required on these well sites to control and optimize asset performance.

Upstream producers have had success with multiple-RTU implementations, but they also have encountered challenges. For instance, multiple RTUs require oil and gas producers to maintain multiple application configurations and programs, and they must manage the communications of many RTUs on one site.

Oil and gas production workers also must have the required training and expertise to support numerous vendors’ hardware in multiple-RTU implementations. While some producers are fully staffed with the trained personnel needed to handle system maintenance, many aren’t. These producers must rely on either manufacturer support or contract-engineering support to maintain their control systems, resulting in additional maintenance overhead.

Another key challenge is “black box” RTUs. These systems are designed with specific inputs to control specific outputs. This limits flexibility for changing or upgrading systems. As a result, an oil and gas producer needs to either work with a vendor to make a change or simply keep the system as is, settling for the fact that it will not meet requirements.

Modular and Scalable
A modular and scalable PLC control architecture can address the challenges experienced with RTUs.
A modular system design means that PLCs can be configured in many different ways. This permits oil and gas operators to monitor and control a variety of field instruments. A modular PLC also supports communications for many different network types.

From a scalability standpoint, PLCs offer libraries of predeveloped and documented code that can be added quickly as well as predeveloped upstream oil and gas libraries that can be configured on-site. This minimizes the need for a technician with specialized expertise to write new code when hardware is added. Instead, operators need only set up and configure the required data from the HMI to commission the equipment.

Remote I/O functionality is another key component of a PLC's scalability. PLCs that offer native remote I/O functionality can save on installation costs compared to RTUs. Additionally, equipment skids can come with pre-mounted and wired I/O and instruments, making start-up as simple as plugging an Ethernet cable into a switch and configuring the I/O in the controller.

Programming in the PLC environment allows program changes and the addition of I/O without needing to shut down the process. Such online editing capabilities are not available in traditional RTUs. Instead, RTUs must be taken offline to accept the changes. Such downtime is unacceptable in a modern, multi-well pad environment because it results in lost production.

In addition, PLCs can include hot-swappable hardware modules. For example, if an I/O module fails or if technicians need to add a module to a remote I/O rack, they can plug the module in and configure the I/O for control.

Attractive Alternative

Multi-well pads have made data and application requirements in upstream operations greater than ever. RTUs remain a feasible option, but their memory limitations, added maintenance requirements and overall higher production costs provide a strong incentive for operators to consider a better alternative.

Modular and scalable PLCs can handle the scalable architectures required by modern well pads. They also are more efficient and can help reduce installation, operating and maintenance costs.
Join us at the 2017 Automation Fair® event!
November 15-16 • Houston, Texas

Tap into a wealth of in-depth industry knowledge and learn how The Connected Enterprise can help make you more globally competitive and productive.

• See the latest technologies and solutions in action at over 150 exhibits
• Learn from more than 110 technical sessions, hands-on labs and forums while earning PDH credits
• Network with industry experts and peers

Learn more about the Automation Fair® event
www.automationfair.com

The Automation Fair® event is a registered trademark of Rockwell Automation, Inc. Copyright © 2017 Rockwell Automation, Inc. All Rights Reserved.
If you’ve been searching for a Texas-sized smorgasbord of automation technology and industrial automation professionals all in one place, then head to Houston November 15-16 for the 2017 Automation Fair® event hosted by Rockwell Automation. At the George R. Brown Convention Center, industry professionals from around the world will gather and learn from the event’s technology exhibits and educational opportunities.

At the event, you’ll have the opportunity to discover how The Connected Enterprise can help achieve faster time to market, optimize assets, lower total cost of ownership and mitigate risk. In addition, you’ll see the latest control system network infrastructure based on standard, unmodified EtherNet/IP™, safety, power and information technologies that support The Connected Enterprise.

With more than 95 sessions, including forums, technical sessions and hands-on labs offered for free, Rockwell Automation specialists, partners, customers and other industry professionals will share insights on industrial solutions that provide working data capital for better collaboration and more profitable decisions across enterprises and supply chains.

You also can discover the latest automation technology at the event’s exposition and more than 100 of its partners. Learn how Rockwell Automation and mem-
ber companies in its PartnerNetwork™ are integrating technologies, including the Industrial Internet of Things (IIoT) and industrial mobility, with automation control, power and information software and solutions.

**Process Solutions User Group (PSUG) Annual Meeting**
The popular Process Solutions User Group (PSUG) also will be featured that week on Nov. 13-14 at the George R. Brown Convention Center just prior to the Automation Fair® event. This annual event brings together more than 800 professionals from diverse
process industries worldwide to learn about new technologies, process solutions and best practices. Process control engineers, plant managers, operators, manufacturing IT professionals, integrators and EPC consultants all participate in the interactive atmosphere.

PSUG is a great place to learn from people who are improving their processes and creating new revenue streams. This year’s event offers eight hands-on labs, 30 technical sessions, and more than 25 customer application sessions showcasing real results using the process solutions available from Rockwell Automation.

The participation fee for the two-day event is US$649 per person, and it covers event sessions, meals, refreshments and the Monday night hospitality event at Minute Maid Park. Learn more at www.psug.rockwellautomation.com.

**Don’t Miss Partner Exhibits**

Houston also will be packed with the latest top industrial technologies and services. This is a great opportunity to talk to suppliers, examine new technologies and product demonstrations, and learn how these solutions can help you — all in one place.

More than 150 exhibits from Rockwell Automation and its Part-
nerNetwork™ program members (www.rockwellautomation.com/partners) — including Encompass™ Product Partners, OEM Partners and Strategic Alliance Partners — will showcase the newest and most advanced power, control and information solutions at the Automation Fair® event.

Visit www.automationfair.com to see who will be exhibiting, and be sure to visit these companies at the event.

Hands-on Labs, Technical Sessions & Forums
The Automation Fair® event offers 19 hands-on labs, 95 technical sessions and 9 forums that give you opportunities to learn best practices for your operations. After you register for the event, you can sign up for forums, hands-on labs and technical sessions in advance to help plan your day before you get onsite.

The popular hands-on labs, offered up to four times a day, allow you to work directly with Rockwell Automation products. Technical sessions are 60-minute presentations from leading industry and product specialists.

InteGREAT
Good things come in small packages. Itoh Denki’s IB-E04 2 Zone Control Card may be a small package, but it moves big things. REALLY big things.

When paired with our Power Moller 635KT, you have the capability of transporting up to 4000 pounds. This DC powered combination is the answer to your pallet handling applications.

- Controls 2 Power Mollers
- Monitors roller motor life
- Available Add-On-Profile (AOP)
- Device Level Ring (DLR) built in
- Discrete I/O (3 inputs and 5 outputs)
- Onboard logic capability allows for custom ladder programming
- ODVA CONFORMANCE TESTED

Rockwell Automation Exhibits*

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*As of July 10, 2017.
The forums provide real-world examples of how companies have increased their productivity and improved efficiency. Representatives from various companies will share their automation technology experiences and applications in the following forums:

- **Food & Beverage**: Wed., Nov. 15, 9:00 a.m. - 11:00 a.m.
- **Oil & Gas**: Wed., Nov. 15, 9:00 a.m. - 11:00 a.m.
- **Water Wastewater**: Wed., Nov. 15, 9:00 a.m. - 11:00 a.m.
- **Power & Energy**: Wed., Nov. 15, 1:00 p.m. – 3:00 p.m.
- **Engineering Procurement & Construction (EPC)**: Wed. Nov. 15, 1:00 pm – 5:00 pm

Stop by The Connected Enterprise Industries Pavilion and explore demonstrations of highly connected, knowledge-enabled, industrial enterprises where devices and processes are connected, monitored and optimized to enhance productivity, safety, security, sustainability and economic performance.

The Pavilion showcases the capabilities of The Connected Enterprise in several industries, including oil & gas, chemical, and food & beverage, and demonstrates how these capabilities connect smart machines and benefit equipment builders.

At booth #1221, learn more about the benefits of digital transformation:
- Watch interactive demonstrations which highlight the value of connecting, sharing and using data to improve operations.
- Experience interactive displays that offer persona-based use cases and application capabilities across multiple industries.
- Visit Leadership Theaters where Rockwell Automation shares its knowledge in OT/IT technologies and related benefits.

**Southwire Company, LLC**
One Southwire Drive, Carrollton, GA 30119 | 770.832.5917

**www.southwire.com**
Chemical/Specialty Chemical: Wed., Nov. 15, 1:00 p.m. - 3:00 p.m.

Oil & Gas: Thurs., Nov. 16, 9:00 a.m. - 11:00 a.m.

Global Machine & Equipment Builders (OEMs): Thurs., Nov. 16, 9:00 a.m. - 11:00 a.m.

Pulp & Paper: Thurs., Nov. 16, 9:00 a.m. - 11:00 a.m.

Diversity & Inclusion: Thurs., Nov. 16, 1:00 p.m. - 3:00 p.m.

Visit www.automationfair.com for details.

Future Innovators Come Together
At Engineering Our Future (booth #122), engage with students in the FIRST program who will demonstrate their problem-solving skills while having fun with robots.

FIRST® (For Inspiration and Recognition of Science and Technology) is a unique varsity sport of the mind that’s designed to help inspire young people to follow a STEM (science, technology, engineering and math) path to become the innovators of the future.

FIRST® offers a progression of programs from FIRST LEGO® League (FLL) and Junior FLL, to the high school FIRST Robotics Competition (FRC) and FIRST®Tech Challenge.

Go wireless!
Anybus Wireless Bolt gives a machine wireless access

Ideal for BYOD
Bring your own tablet or smartphone to a machine and use it as an HMI.

Visit The Journal From Rockwell Automation and Our PartnerNetwork™ at Booth #1400!
(FTC). Learn more at www.firstinspires.org.

You also can participate with students showcasing our newest STEM Partner, MIND Research Institute, with their activity, ST Math Play. Take time to learn about these STEM programs and how you can start one at your company.

Digital User Experience Team

Once again, the Rockwell Automation Digital User Experience Team will be gathering your feedback on the desktop, web, and mobile tools you use to do your job.

Customers who use Rockwell Automation product selection, configuration and quoting tools — such as Integrated Architecture® Builder (IAB), ProposalWorks™, and Product Compatibility and Download Center (PCDC) — are invited to participate in user research activities in the same booth where they learn about these tools.

Take this opportunity to have a stronger voice in shaping the future of the Rockwell Automation tools that you need to do your job. Collaborate with the Rockwell Automation Digital User Experience Team in the Product Selection, Configuration, and Quoting Booth, #639.

Attendance is Free

The Automation Fair® event is free, including lunch and refreshments.

Coming soon! Look for the new ROKEvents app to plan for the event and use during your time in Houston.

Visit www.automationfair.com for registration information, or contact your local Rockwell Automation representative.
Simply search “ROKJournal” in your iPhone App Store to download it.

Get the product information and educational material quickly and easily whenever, wherever you want it.

With this free iPhone app, you have a convenient way to access product information, videos, websites, feature articles, Rockwell Automation event information and other resources.
How EtherNet/IP Has Changed Linear Position Sensors

Advances in standards and real-time products for industrial Ethernet have facilitated adoption for motion control applications in a variety of protocols.

By Matt Hankinson, global market segment leader, MTS Systems Corp., Sensors Division

Editor's Note: This article is adapted from a comprehensive white paper, “Magnetostrictive, Absolute, Non-contact Linear-Position Sensors: EtherNet/IP and Industrial Ethernet for Factory Automation.” Download the free, complete white paper at https://goo.gl/KrhfhQ that has additional information about how the Ethernet functions in motion control; the types of protocols available for absolute, linear position sensors; the evolution of industrial Ethernet protocols; how magnetostriction works; and a case study about how EtherNet/IP™-controlled positioning sensors helped a company cut costs.

Ethernet technology has been around for more than three decades, so it’s natural to apply it to industrial automation applications. Position feedback devices historically have used analog signals (voltage or current) or dedicated fieldbus networks such as CANbus, PROFIBUS® or DeviceNet™ for communication at the device level with motion controllers.

Meanwhile, control-level networks manage communication between controllers, which might then go through a gateway before reaching the corporate Ethernet network. How do you meet the connectivity demands in the factory while addressing the real-time performance needs for motion control? Can this be achieved with common network architecture?

What Users Need

The challenge for industrial Ethernet networks in automation is achieving the required speed and determinism. Typically, Ethernet packets exchanged on a network don’t come with consistent delivery times at the level required for automation applications.

In addition, the requirements vary with different types of components. Drives and other high-speed devices, for example, may require update times of 1 ms or faster. Other devices, such as controllers or terminals, might only need 10-100 ms updates.

Industrial Ethernet adoption in the plant has grown considerably, because it offers shielding and robustness for harsh manufacturing environments. These solutions follow the IEC 61158-2 for the physical layer and IEC 61784-1,-2 standards for measurement and control profiles, and are open for a variety of devices to adopt.

A Closer Look

To achieve real-time capability, EtherNet/IP divides communication into explicit and implicit message types. The Quality of Service (QoS) feature in EtherNet/IP verifies that implicit messages are allowing that your components already are tested for conformance by the ODVA. The ODVA provides a Declaration of Conformity (DOC) for every product that complies with the requirements for EtherNet/IP and makes them available on its website (www.odva.org); look for the EtherNet/IP Conformance Tested logo.
Users can implement linear or ring topology depending on the fault-tolerance requirements for the application. Linear topology is simpler and conducive to applications with a linear layout, such as conveyors. Ring topology adds fault tolerance capability by rerouting traffic within when a link failure occurs. The Ring Supervisor monitors the response as it beacons, and reconfigures the network within milliseconds if a link is broken.

One of the advantages of EtherNet/IP is the ease for adding new devices to the network.

Some devices offer Device Level Ring (DLR) capability to directly connect to the ring rather than to an external switch. The switch is essentially embedded directly into the device. This provides device-level network rerouting and failure point identification to improve reliability and network recovery time.

One of the advantages of EtherNet/IP is the ease for adding new devices to the network. Adding a linear position sensor to a network involves simply setting the IP address, attaching the sensor to the network, and configuring the controller parameters.

MTS Systems Corp., Sensors Division, based in Cary, N.C., is a participating Encompass™ Product Partner in the Rockwell Automation PartnerNetwork™. The company supplies magnetostrictive linear position and liquid level sensors.

MTS Systems Corp., Sensors Division
www.rockwellautomation.com/go/p-mts

Rockwell Automation Encompass Partner Program
www.rockwellautomation.com/go/tjencompass
ADCO MANUFACTURING SIMPLIFIES PACKAGING PROCESS

Wrap-around case packaging machine reduces material costs, saves space and addresses food safety and scalability challenges.

For the consumer products industry, manufacturing efficiency is key to profitability. And the challenge for many is achieving seamless operation from the production process — through packaging, cartoning and case packing at the end of the line.

Industry standards like PackML have helped bring more consistency to packaging machinery. However, there is still a degree of complexity when integrating equipment from multiple vendors.

“Many customers prefer to simplify the process by relying on one supplier,” notes Scott Reed, vice president of sales, marketing and customer service, ADCO Manufacturing. “Our goal is to provide the options they need to create complete, integrated systems.”

Headquartered in Sanger, California, ADCO Manufacturing, a Rockwell Automation OEM Partner, offers a broad line of packaging equipment. Established in 1958, ADCO builds high-performance solutions that are flexible and easy to use. Recently, ADCO expanded their machine portfolio with the introduction of the EnCompass wrap-around case packer (WACP).

While ADCO has offered top-load and end-load case packers for many years, the EnCompass is the company’s first wrap-around case packing solution.

The Case for Wrap-Arounds

For various reasons, more packagers may choose wrap-around case packing over other methods. In some applications, wrap-around cases can use up to 30% less material than regular slotted containers (RSCs) — and the flat case blanks take up less transportation and storage space.

“In addition to the material savings, wrap-around systems tend to result in a tighter, more compact case,” Reed says.

The WACP can be installed separately or configured with any ADCO cartoner for a seamless solution. Capable of handling a range of case sizes, the new machine is built for precision and reliability at speeds up to 20 cases per minute. With its compact footprint, the WACP is suited for demanding and space-conscious production environments.
The ergonomic load height at the case blank magazine and the intuitive interface were designed with operators in mind.

Meeting Standards and Scalability
Like all ADCO machines, the WACP is constructed of stainless steel and is available in both standard and washdown configurations.

“The impact of the Food Safety Modernization Act along with the Global Food Safety Initiative is really being felt further down the production line. It’s moving downstream, from processing into packaging,” Reed explains. “We have extensive expertise in sanitary design and carton handling. And we applied that knowledge when we developed the EnCompass WACP.”

Modularity also is an important consideration for ADCO. The case packer’s modular design maximizes flexibility.

“As our customers’ needs evolve, the EnCompass WACP can relatively easily be fitted with new infeeds or other options,” Reed notes. “This allows customers to use the same base machine for different applications.”

System Components

“We spend considerable effort developing easy-to-use operator interfaces,” Reed says. “Our InterACT HMI (human-machine interface) is offered as an option on most of our equipment, including the EnCompass WACP.”

Built on the PanelView platform, the touch-screen InterACT interface closely mimics the look, feel and simplicity of other more common devices, such as smartphones and tablets.

ADCO has been a Rockwell Automation machine builder partner for many years — and looks forward to continued collaboration in the future.

“Our relationship gives us the highest level of access to Rockwell Automation expertise and it provides us with a significant amount of insight regarding new features and emerging technologies,” Reed said. “Not only does this help ADCO speed the development of machines to meet changing market requirements, but, when needs arise, knowing that ADCO has this kind of access to Rockwell Automation also gives our customers great peace of mind.”

ADCO Manufacturing
www.rockwellautomation.com/go/p-adco

Rockwell Automation OEM Partner Program
www.rockwellautomation.com/go/tjoem

“...The impact of the Food Safety Modernization Act along with the Global Food Safety Initiative is really being felt further down the production line. It’s moving downstream, from processing into packaging.”

— Scott Reed

OEM Partner Program

Rockwell Automation works with many OEMs around the globe to design, develop and deliver equipment for a variety of industries. Some are recognized OEM Partners within the Rockwell Automation PartnerNetwork™ program. These OEMs are committed to providing high-quality, innovative equipment that use Rockwell Automation solutions to help you reduce your total cost of ownership and give you a competitive advantage. Find an OEM Partner at www.rockwellautomation.com/go/tjoem.
Networked Alternative to Motion Modules

AMCI now offers a distributed alternative to PLC modules that plug in through the backplane. AMCI’s ANF1 and ANF2 are fully featured 1- or 2-axis stepper/servo controllers that integrate an EtherNet/IP™ network connection and offer expansion capabilities (up to 12 axes over a single network connection) to provide a modern, versatile motion control solution for any PLC-based system. The ANF1 and ANF2 are compatible with any Rockwell Automation Allen-Bradley® PLC that supports EtherNet/IP, and are programmed using the I/O registers within the host controller. https://goo.gl/KonyzS

Remote Equipment Monitoring

RACO offers three field-proven remote monitoring products that fully integrate with your existing Allen-Bradley® controllers. Both Verbatim Gateway and Catalyst allow for easy, cost-effective integration with PLCs using Allen-Bradley EtherNet/IP™ and other protocols. Plus, AlarmAgent.com allows for low-cost, wireless, web-based alarm detection and notification that easily integrates into your SCADA/HMI system via OPC. All three provide the peace of mind that comes with knowing your systems are secure. For more information, call (800) 722-6999 or visit www.racoman.com/allen-bradley.

System Integration Just Got a Whole Lot Easier

HMS provides a family of network connectivity products based on the Anybus technology, which offers full integration into Rockwell Automation ControlLogix® and CompactLogix™ PLC controllers on EtherNet/IP to seamlessly communicate with Modbus, DF1 and serial devices. www.encompass.hms-networks.com/home

WITTENSTEIN alpha V-Drive Basic Worm Gear

The V-Drive Basic worm gear is designed for price sensitive applications with no high-end requirements for maximum torsional backlash. Available with hollow or solid shaft, and a total of five different reduction ratios. At just 7.4 kg and 12 kg respectively, the lightweight V-Drive helps save energy when the gearhead is used in moving machine axes. www.wittenstein-us.com

You Don’t Want To Use a Gateway for Modbus

New Modbus™ modules give you more choice and freedom from pricing constraints that limit your options to gateways. Integrated backplane solutions provide the best option for Modbus and CompactLogix™ applications, which lead to less programming, easier trouble shooting and less maintenance. SST™ Modbus solutions from Molex give you more than just savings, they give you freedom from the bottlenecks of gateways. https://goo.gl/SeOlsU

ENCOMPASS SHOWCASE
Excel Reports and Forms for Industry

Finally, a reporting solution that gives the information you need, in the form you want, with absolutely no programming. With XLReporter, you use Excel as your “design studio,” complete with our easy-to-follow FastStart wizard. Your reports are ready within minutes in Excel, Web, PDF and email. The product is compatible with RSView®, FactoryTalk®, OPC, OPC-UA, databases and much more. For more information, contact us at (508) 520-9957 or sales@SyTech.com. Download your free evaluation copy from www.SyTech.com.

SYTECH INC.

Molex CompactLogix Modules Are Now cULus Listed

Selecting a communication module for any application that connects a CompactLogix™ to either a Modbus or PROFIBUS® networks is now easier. These Molex modules are not only comprised of leading technology and innovative software, but now are also cULus listed, offering the most functional and economical solution on the market today for your CompactLogix system. https://goo.gl/RIUk2F

MOLEX

EtherNet/IP Process Video Recorder

IMPERX’s EtherNet/IP™ Process Video Recorder (EIPVR) is an event-recording system that captures high-speed video when you need it. This product is EtherNet/IP-conformance tested, compatible with IEEE 1588 and uses Power-over-Ethernet cabling for a simple installation. EIPVR records up to 60 seconds of video at 250 fps, automatically saves video to a server and plays video for quick feedback. EIPVR is triggered via EtherNet/IP, is ODVA tested and approved, and is compatible with EtherNet/IP devices. http://imperx.com/rockwell-encompass-partner-program

IMPERX, INC.

Dynamic Checkweigher Family

Hardy Dynamic Checkweighers deliver the benefits of open source (programmable with Studio 5000™), off-the-shelf (made with Allen-Bradley® components) and seamless integration (FactoryTalk® data management). We listened to the needs of manufacturers and used the Rockwell Automation Premier Integration model. This novel approach seamlessly integrates equipment data, control and analytics into plant-level and enterprise networks. www.hardysolutions.com

HARDY PROCESS SOLUTIONS

Process Diagnostic & Optimization Technology

Is your goal to optimize production? PlantESP actively monitors control loop per-formance on a plantwide basis. It utilizes existing process data to uncover mechanical issues, PID tuning opportunities and more. PlantESP identifies issues, isolates root causes and recommends corrective actions. PlantESP’s powerful diagnostics and intuitive design make it easy to improve production throughput and efficiency. Customizable reports and alerts keep you informed of all performance changes. Contact us at (860) 872-2920 ext. 1602 or visit www.controlstation.com/plantesp.

CONTROL STATION, INC.


SIGN UP TODAY!
Isolated operations and IT systems undermine productivity and profitability and can create gaps in your plant’s bottom line. Network and Security Services.

By connecting these systems you can address your network and security risks without sacrificing productivity.

We understand operations and IT networks, and what needs to happen to stop profits leaking from your bottom line. One converged, secure platform streamlines operations and enables enterprise-wide visibility and access to the actionable information you need to make better business decisions.

Learn how to bridge the gaps: [www.rockwellautomation.com/global/go/securityservices](http://www.rockwellautomation.com/global/go/securityservices)
**Expanded Motor Solutions**

Encompass™ Product Partner STOBER Drives has expanded its product offerings for Rockwell Automation Kinetix® 5700 and 6500 drives. The expanded line ranges from hollow bore to ballscrew to geared motors.

STOBER’s hollow bore motor is designed for passing cables and pipes through the motor. It’s available as a direct drive or with gearing ratios of 3, 9, or 27:1. The ballscrew servo motor directly drives a spindle nut. The compact motor is suited for universal mounting to the spindles. These motors can be sized in the design phase with the online Motion Analyzer from Rockwell Automation.

In addition to stand alone motors, STOBER has an extensive offering of geared motors. Eliminate the motor coupling, adapter, coupling housing, and other additional components by direct mounting. This can also help reduce inertia.

STOBER Drives, Inc.
www.rockwellautomation.com/go/p-stoberdrives

**Gateways for Smart Grid Connectivity**

New IXXAT SG-gateways from Encompass™ Product Partner HMS Industrial Networks allow data exchange between infrastructure and energy networks based on IEC61850 or IEC60870-5-104, and common fieldbus and industrial Ethernet systems.

The gateways are designed for users who want to achieve straightforward remote control, efficient electrical system management or easy access to application and power consumption data.

The SG-gateways focus on applications requiring industrial, building and metering standards such as Modbus RTU (master/slave), Modbus-TCP (client/server), EtherNet/IP ™, along with digital I/Os.

The gateways can be used to connect SCADA systems with industrial devices and machines in the field, serve as gateways between individual power producers and energy management software in virtual power plants and demand-response applications, or to connect intelligent electrical devices to PIC systems.

HMS Industrial Networks
www.rockwellautomation.com/go/p-hms

**PRODUCT SPOTLIGHT**

**Light Curtain System**

The Allen-Bradley® GuardShield™ 450L safety light curtain system from Rockwell Automation is a flexible, cost-effective solution that helps improve both safety and productivity through innovative transceiver technology.

The light curtain system features a transceiver design that employs plug-in modules to establish each unit’s function as a transmitter or receiver. Once powered up, the transceiver learns its functionality from the plug-in module.

Five-pin plug-ins are available for basic on/off functionality, while eight-pin plug-ins provide manual and auto restart with external device monitoring (EDM). To further simplify setup, advanced function settings are configured through dual in-line package (DIP) switches located on the plug-in module.

Ideal for hand and finger detection, and offered in a range of protective heights, the light curtain system is also equipped with an active protective field that senses the entire length of the transceiver. This feature reduces the inactive sensing areas that generally appear at the top and bottom of other light curtains.

Unlike traditional systems, the active sensing field and compact design allow customers to install the GuardShield 450L inside a machine frame as opposed to outside or on the machine. Flexible mounting kits and built-in alignment indication allow for quick installation.

GuardShield Safety Light Curtains
www.rockwellautomation.com/global/go/450lguardshield
**PRODUCT SPOTLIGHT**

**Expanded MES Applications**

The Rockwell Automation portfolio of scalable MES applications based on the FactoryTalk® ProductionCentre platform has expanded its suite of capabilities for improved functionality. The portfolio includes FactoryTalk Production, FactoryTalk Performance, FactoryTalk Quality and soon FactoryTalk Warehouse applications.

The latest updates to FactoryTalk Production, Performance and Quality applications provide a simplified, visual drag-and-drop tool to build out new workflows – no coding needed. This means product changeovers can happen more quickly and allows more flexibility for new product introductions.

The Quality application now also includes user-friendly intuitive widgets. Based on choices made in setup, the application recommends pre-configured visual widgets, such as gauges or historical data charts, speeding time-to-value and reducing the cost of quality-management efforts.

FactoryTalk Warehouse streamlines warehouse logistics for fast, precise inventory management and tracking capabilities from goods receipt through stock records and goods issuing. The application is scalable to fit individual deployment needs.

An expanded, autoHBox integration tool in FactoryTalk ProductionCentre MES gives users access to more production data across systems. Enterprise Integration Hub (EIHub) software creates a common connectivity method for enterprise applications and external IT systems.

The application reviews incoming information from one system and transforms it into the proper format and template for the receiving system. It also verifies information receipt or sends alerts for transmission failures to streamline data translation across a Connected Enterprise.

**Scalable MES Applications**

www.rockwellautomation.com/global/go/scalable-mes

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**Universal Interface Module**

The CTEU-EP universal interface module from Encompass™ Product Partner Festo makes EtherNet/IP™ connectivity low cost and plug and play for IO-Link devices and Festo valve terminals. The CTEU-EP is ODVA conformant and rated to IP65 and IP67 for maximum flexibility. OEMs can integrate IO-Link devices such as pressure and flow sensors, RFID readers, and light stacks along with a valve terminal with up to 64 solenoid coils. With a splitter, two-valve terminals can be served. Compatible with five different Festo valve families, the module includes fail-safe modes that allow systems to hold the last state in case of network fault, and on-board diagnostics.

The CTEU-EP connects to a range of Festo valve terminals, including VTUG, VTUB, MPA-L, VTOC, and CPV for greater flexibility. In harsh environment applications, CTEU-EP can interface EtherNet/IP to the MPA-C IP69K rated valve terminal.

Festo Corp.

www.rockwellautomation.com/go/p-festo

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**Stepper Motion Control Expanded Size Range**

Encompass™ Product Partner Advanced Micro Controls Inc. (AMCI), has added larger motor sizes to their lineup of PLC-based SMD Series “all-in-one” stepper motor + drive + controllers. The new sizes help satisfy applications with varying torque requirements.

With the addition of NEMA size 34 packages, options now include NEMA size 23, 24, and 34, with torque ranging from 130 oz-in (0.9 N-m) to 850 oz-in (6.0 N-m). With a splitter, two-valve terminals can be served. Compatible with five different Festo valve families, the module includes fail-safe modes that allow systems to hold the last state in case of network fault, and on-board diagnostics.

The CTEU-EP connects to a range of Festo valve terminals, including VTUG, VTUB, MPA-L, VTOC, and CPV for greater flexibility. In harsh environment applications, CTEU-EP can interface EtherNet/IP to the MPA-C IP69K rated valve terminal.

Advanced Micro Controls Inc. (AMCI)

www.rockwellautomation.com/go/p-amci

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**PRODUCT FOCUS**

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**PRODUCT FOCUS**
Heavy-Duty Continuous-Motion Autoload Sleever

Rockwell Automation OEM Partner AFA Systems introduces the heavy-duty continuous-motion autoload sleever (HD-CMS) that can handle high-speed applications. The HD-CMS features a timing screw infeed that accepts jars, tubs or cups from a single lane. This helps keep the product on the proper pitch for the bottom lug conveyor to drive the product through the machine.

A high-speed rotary feeder places the sleeve on top of the product. Finally, a closing system will wraparound the sleeve and seal it via hotmelt adhesive or locking-tabs. The sleever has a compact and robust frame capable of up to 200 ppm.

The HD-CMS comes complete with Allen-Bradley® servo motor and drives and a CompactLogix™ PLC. Quick changeover features are available, such as push button all-servo driven changeover, SKO counters, scales and pointers. The sleever can be constructed using stainless steel or equivalent to run in a wet environment.

AFA Systems
www.rockwellautomation.com/go/p-afa

Linear Actuators with Integrated Ball Screw

Encompass™ Product Partner WITTENSTEIN has launched a cyber dynamic product series of linear actuators with integrated ball screw for use in highly dynamic positioning axes.

The design encloses the servo motor, ball screw, linear guides and encoder system in the actuator housing, to form a highly integrated and ready-to-install unit. This makes the actuators suitable for machines operating in confined spaces.

These motors are suited for positioning, joining, bending, gripping and dispensing applications for semiconductor, packaging and assembly automation industries. All components are stainless steel with IP65 protection for food and beverage applications.

With no coupling device between the motor and ball screw, the actuators achieve a lower mass of inertia. This produces high power density, which can lead to increased throughputs, reduced footprint, and improved energy efficiency.

Offered in four sizes (outside diameter 17 mm, 22 mm, 32 mm or 40 mm), the actuators can achieve positioning accuracy up to 0.05 mm, and repeatability up to 0.01 mm. In addition, the permanent lubrication makes the units maintenance-free.

WITTENSTEIN
www.rockwellautomation.com/go/p-wittenstein

FactoryTalk Analytics for Devices Appliance

FactoryTalk Analytics for Devices is an industrial appliance that helps avoid costly downtime and improve productivity by proactively identifying device health. With just a connection to power and a local control system network, the appliance begins providing analytics within minutes.

After connections are made, the application detects automation devices on the network without disrupting performance. Plant-floor teams then gain access to specific calls-to-action, instant device displays and an advanced machine-learning-based chat bot, which are all available from within the appliance. The appliance learns what is important to users by continuously analyzing the devices on the network and delivering recommendations to help maintenance and engineering teams prevent unplanned downtime and repair systems more quickly.

The appliance can detect and perform a basic analysis on any EtherNet/IP device. It also has detailed analytics for over 2,000 Allen-Bradley® devices. The first year’s subscription is included for each appliance. Subsequent subscriptions are encouraged for customers to progressively receive updated analytics, features and device support, including third-party devices.

FactoryTalk Analytics for Devices Appliance
www.rockwellautomation.com/global/go/ftad
Safety Maturity Index for Machine Builders Tool

Rockwell Automation has released its Safety Maturity Index (SMI) for Machine Builders tool. This tool provides a self-guided assessment for machine builders to measure their performance in the three pillars of industrial safety: culture (behavior), compliance (procedure) and capital (investment in contemporary technology).

The tool measures and reports a machine builder’s performance in each of the three safety pillars on a scale of one to four – SMI 1: minimizing costs, SMI 2: legal compliance, SMI 3: operator safety and SMI 4: customer value. The tool also provides insights into which areas need the most improvement. Machine builders can use the tool to identify inconsistencies between facilities and benchmark themselves against peers.

The tool is applicable to any industry, company size and location. It also aligns with the Safety Maturity Index tool designed for end users, which has been used by manufacturers since its release in 2013. Information shared in the tool is confidential. Each company’s profile is not associated with its response or results.

Safety Maturity Index Tool
www.rockwellautomation.com/global/go/safetymaturity

pH Electrode for Hygienic and Sterile Applications

Encompass™ Product Partner Endress+Hauser introduces Memosens CPS171D pH electrodes that can be sterilized and are autoclavable for use in bioreactors, fermenters, and other hygienic and sterile applications in the biotechnology, pharmaceutical, food & beverage and similar industries. It measures 0-14 pH and works in temperatures from -32.2-84°F (-30-140°C).

The electrode is IECEx and ATEX approved for use in hazardous locations, has IP68 protection and a TÜV certificate; and has FDA, USP and ISO approvals for biocompatibility regarding cytotoxicity and bioreactivity. It is suitable for clean in place (CIP) and sterilize in place (SIP) operations.

The Memosens CPS171D provides process safety and data security because of noncontact, inductive digital signal transmission to its cable for communication to the Liquiline transmitter. The inductive connection addresses problems with measured values being distorted from moisture, and terminals becoming coated or corroded in service.

Memosens technology allows the sensor to store measuring and operating data including serial number, calibration date, number of calibrations, offsets, pH application range, hours of operation under extreme conditions and other information. Recording sensor data in the sensor itself promotes predictive maintenance and makes it easy for asset management software, such as Memobase Plus, to facilitate life cycle management.

Endress+Hauser
www.rockwellautomation.com/go/p-eh
Inclusion Fuels Innovation

We create an environment where our almost **22,000 people** can bring their best work, be heard, and **work together** as partners. It’s about all of us bringing **our best** to transform our company. Our **Culture of Inclusion** fuels innovation for everyone.

We are honored and humbled to win the **2017 Catalyst Award**, which recognizes innovative organizational approaches with proven, measurable results that address the recruitment, development, and advancement of women. Our work continues — **we’re not done yet**.
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