

October 2017 Issue 52

# Automation

**ASIA PACIFIC  
INDIA**

# TODAY

**Inside**

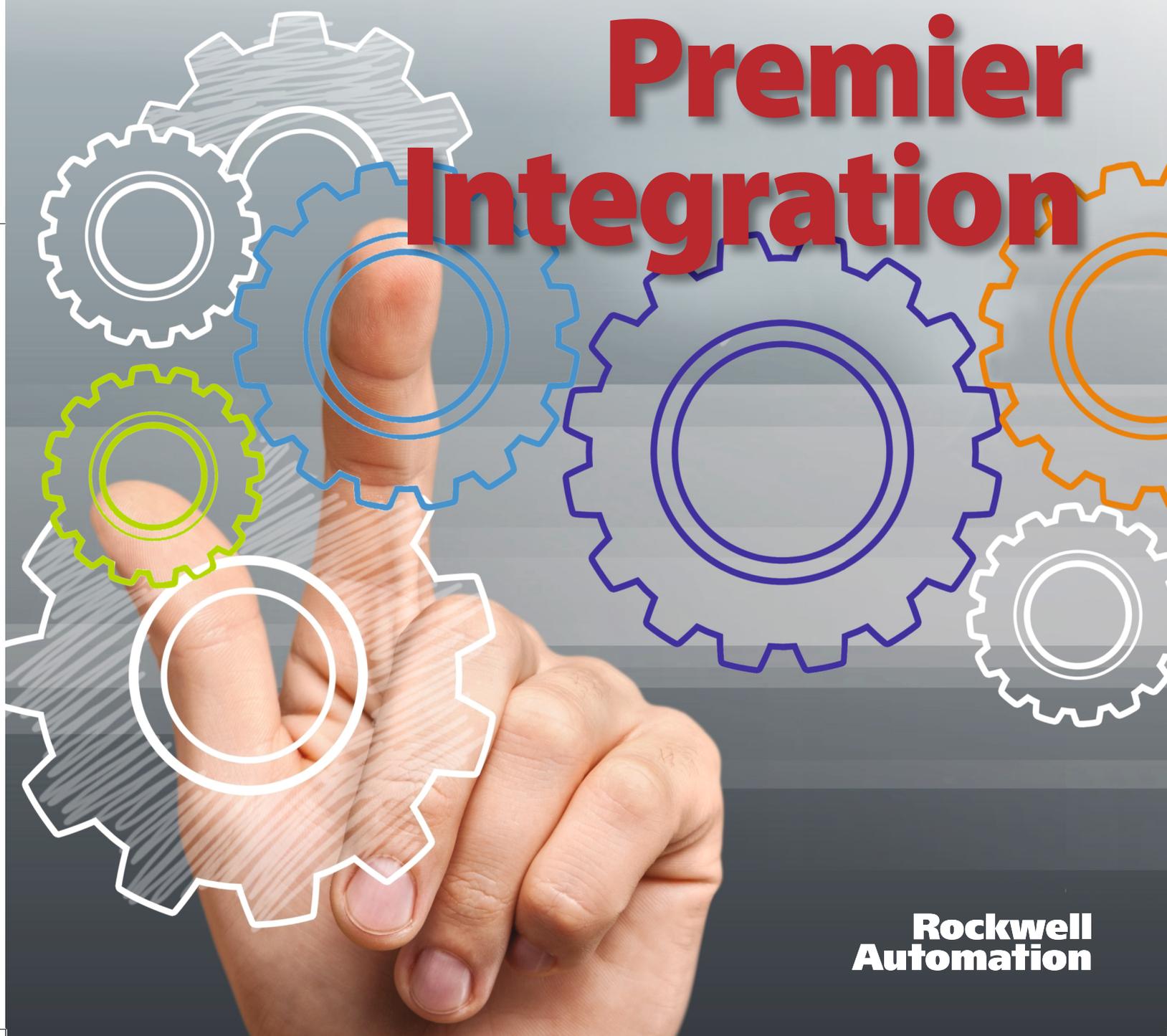
**Migrate for  
Seamless  
Integration**

**Optimal Solutions  
for Motor Control:  
Drives Success**

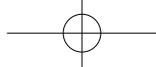
**Optimize Asset Performance  
throughout Oil & Gas  
Production Lifecycle**

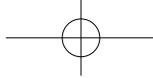
## Less is More:

# Premier Integration



**Rockwell  
Automation**





# Contents

- 04 News & Events**  
Highlights on the journey toward  
The Connected Enterprise
- 06 Cover Story –  
Less is More:  
Premier Integration**  
Learn how Integration evolves and  
empowers users to have more capability  
with less complexity
- 10 Case Study**  
Migrate for Seamless Integration
- 12 Technology Watch**  
Optimal Solutions for Motor Control:  
Drives Success
- 14 Application Profile**  
Optimize Asset Performance throughout  
Oil & Gas Production Lifecycle
- 16 Product & Solution  
Focus**  
Solution offerings for experiencing the  
power of Premier Integration

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# Rockwell Automation

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## EXECUTIVE MESSAGE

# Ready to Leverage All the Key Aspects of Premier Integration?



●●● System integration is driving today's manufacturing industry and can be a key catalyst for its growth. The time and effort needed to design, configure and maintain assets are coming under greater scrutiny, especially as systems become more connected and complex. If systems are not integrated, there will be significant increases in cost and resource consumption, which are the least wanted outcomes for all manufacturers.

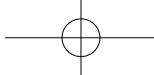
Therefore, today's best-in-class organizations are seeking ways to comprehensively integrate different platforms, as well as components, to bridge the gap between multiple business functions, from the plant floor to top floor.

Rockwell Automation has an extensive product portfolio, as well as services and support capabilities that are designed to improve our original equipment manufacturers' (OEMs) processes through every stage of the manufacturing cycle. And we are working at our best to advance our strategies for creating seamless "Integration". For instance, we have introduced The Premier Integration – a better integration between the automation controller and system devices - to provide new time and cost saving opportunities and give end-users greater access to production intelligence. Now you can expect to use a single control platform with a common control engine and development environment designed to simplify system designs, cut development time and costs, and support faster deployments while delivering industry leading capabilities for any automation discipline.

Early this year, we were honored with a number of "Best-in-Control by Process Automation Discipline" wins, voted by global end-user readers of the Control magazine. Also in late July, Rockwell Automation Southeast Asia was named the 'Best Internet of Things (IoT) Provider' in Asia, by Contineo Media, the organizer of the Asian Manufacturing Awards 2017. Not only do these recognitions reinforce the value of our process automation systems, but also encourage us to continue dedicating new advanced solutions to our OEMs, providing control, automation, and information technologies for integrated manufacturing and industrial processes.

This time, we are focusing on integration and highlighting our fleet of intelligent solutions for process control and power control. I invite you to review this issue of Automation Today Asia Pacific to discover the true value of integration. Most importantly, we will show you how you can satisfy your end-users and stay ahead of the competition with an experience of Premier Integration, helping to make your investment, time and effort pay off.

**Joseph Sousa, President**  
Asia Pacific Region, Rockwell Automation



LISTEN.  
THINK.  
SOLVE.®



## Is Your DCS Straining To Provide Information From Your Critical Assets?

Maximize asset availability, harness energy consumption, and protect valuable assets with the PlantPax™ process automation system. It delivers true plant-wide control – including power and motor control – and easily integrates with your devices to deliver superior performance.

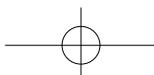
**PlantPax...the modern DCS.**

To see how one company did it, visit:  
[www.rockwellautomation.com/go/plantpax24](http://www.rockwellautomation.com/go/plantpax24)

**Rockwell  
Automation**

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## Partnership with Foxconn Achieves Visions of Smart Manufacturing

●●● Rockwell Automation has confirmed collaboration with Hon Hai Precision Industry Co., Ltd, also known as Foxconn, to implement Connected Enterprise and Industrial Internet of Things (IIoT) concepts for smart manufacturing. The announcement was made in late July 2017 at Foxconn's Consumer Electronics Assembly Operations.

The two companies will collaborate to develop and apply Smart Manufacturing solutions at Foxconn's new United States facilities. Their technological expertise will be combined to deliver a state of the art manufacturing system with unparalleled levels

of operational efficiency. The Chairmen of the global leading companies are confident the collaboration will further demonstrate the power and broad applicability of The Connected Enterprise. They also agree that together they will help increase operational efficiencies in electronics manufacturing to new levels, achieving the vision of Smart Manufacturing and Made in China 2025.

Foxconn is a Taiwanese multinational electronic contract manufacturer and has its corporate headquarters in Taiwan. It has been increasing its employee base in the United States and has committed to take part in programs to upskill military veterans and create a pool of certified talent for in-demand advanced manufacturing roles across the U.S.

The Taiwanese manufacturer shares Rockwell Automation's commitment to expanding the upskilling of the U.S. workforce to provide the necessary talent for advanced manufacturing roles.

### Mutual Growth Opportunity in China

●●● Committed to helping Chinese manufacturers improve productivity and global sustainability, Rockwell Automation held both Technical Education (TechED) and Process Solutions User Group (PSUG) events in Shanghai, China on July 12-13. At the event, Bob Buttermore, Managing Director of Rockwell Automation China, gave an opening speech on the subject of "Made in China 2025" – an initiative to comprehensively upgrade Chinese industry with smart manufacturing technologies.



Besides, as The Connected Enterprise can help manufacturers achieve better innovation through informatization and intelligent technology, and better connect with the supply and demand chains to respond more quickly to market changes, Buttermore stated that Rockwell Automation is able to help boost 4 to 5% of productivity annually by developing and achieving The Connected Enterprise.

There were seminars prepared for participants to learn about upgraded functions of Integrated Architecture® systems, ThinManager® software, FactoryTalk® applications, etc. Moreover, participants had the chance to gain hands-on experience and a full understanding of PlantPax® applications' process control functionalities at the lab-booths.

### Power Up The Connected Enterprise

●●● On June 7, Rockwell Automation held its 2017 Asia Pacific Intelligent Power Summit, with the theme of powering up The Connected Enterprise to help drive the digital transformation of factories. Ian Shih, General Manager of Rockwell Automation Harbin expressed that they are thrilled to host their third annual Intelligent Power Summit in Harbin and bring together over a hundred customers and business allies from around Asia Pacific for impactful sharing sessions, tours and discussions highlighting best practices for The Connected Enterprise.

Modern enterprises have had technology basis for achieving The Connected Enterprise with the development of IT, control theory, computing capability and cyber security. The integrated architecture, intelligent motor control and solution and service core platforms of Rockwell Automation have helped pave the way for industrial enterprises to become connected enterprises through digital transformation. However, although the industry is optimistic about the future of industrial IoT, few manufacturers have actually begun laying out IoT. "There are countries and regions where the manufacturing industry is quite strong and they have all worked out their own Smart Manufacturing strategy, but only 35% of manufacturing enterprises are at the early stage of IoT application development," said John Watts,

Marketing Director, Rockwell Automation Asia Pacific.

At the Power Summit, another Rockwell Automation leader shared his comment on today's connected operations.

"Information is powering smart, safe and sustainable manufacturing through intelligent devices that self-analyze, perform predictive diagnostics and adapt to changes quickly," said Twain Drewett, Business Director, Power Control Business, Rockwell Automation Asia Pacific. "Seamless information sharing that spans people, processes, and technologies across global and remote operations leads to better collaboration, faster problem-solving and increased productivity."



### AP Customer Events Calendar - Upcoming in Aug - Sep 2017

Event	City/Country	Date
PSUG China	Tianjin, China	17, Aug
PowerTechED	Melbourne, Australia	22 - 24, Aug
PSUG Australia	Melbourne, Australia	22 - 24, Aug
ISPE Singapore Affiliate	Shanghai, China	24 - 25, Aug
RubberTech China 2017	Shanghai, China	20 - 21, Sep

\* each event is subject to change

For more details, visit : [www.rockwellautomation.com/global/events/events.page](http://www.rockwellautomation.com/global/events/events.page)

## Winner of Best Internet of Things Provider

●●● Against intense competition in the manufacturing industry, Rockwell Automation Southeast Asia has won the Best Internet of Things (IoT) Provider at the Asian Manufacturing Awards 2017 award ceremony, which was held on July 27 in Singapore.



As an IoT pioneer, Rockwell Automation has been focused for several years on understanding the evolving industrial automation requirements and combining technology innovation and expertise to simplify those factories' business experiences. The award recognizes The Connected Enterprise and the company's work to integrate data from self-aware and system-aware intelligent sensors, convert it into contextualized knowledge, and distribute it seamlessly to decision-makers companywide. As a result, smart manufacturers can help to shorten time to market, lower total cost of ownership, enhance asset utilization, minimize enterprise risks, and advance workforce efficiency.

The Asian Manufacturing Awards 2017 has been recognizing and honoring companies from the industrial automation sector that provide cutting-edge industrial automation technology and value-added solutions to help enable manufacturers to achieve increased performance.

"We are pleased to be recognized for the third time as the Best IoT Provider in Asia," said Tang Poi Toong, Market Access and Marketing Director, Rockwell Automation Southeast Asia. "It is a testament to our strong commitment to continuous innovation – empowering our customers to experience quantifiable operational breakthroughs as they become Connected Enterprises."



## Welcoming New Member to Board of Directors

●●● Rockwell Automation announced that Patricia Watson has been elected to the company's board of directors effective July 1, 2017. Now, Watson starts helping the company assess new technologies, business models, and talent to create meaningful business outcomes for customers with her expertise.

Watson joined Total System Services (TSYS) with 17 years of financial services industry experience, serving in a variety

## Sharing Insights on Safety and Operational Data

●●● Held on June 19-22 in Denver, U.S., the American Society of Safety Engineers (ASSE) Safety conference drew thousands of safety professionals to discuss best technologies and practices that can help improve worker safety and operations.

Rockwell Automation held a technical session on the third day of the event, which was led by Pat Barry, Rockwell Automation Safety Regional Manager. Titled as 'Harnessing the Power of Safety Data to Improve Compliance and Performance', the presentation outlined how the data available within a Connected Enterprise can help safety professionals better understand risks, enhance their safety efforts, reduce safety-related downtime and streamline compliance.

Participants learned about how contemporary technologies that combine machinery and safety control into one platform can help to identify the root causes of downtime and stoppage, and thereby enable increased efficiencies, improved product quality and more responsive operations.

## Interactive Technical Education for Academia Professionals

●●● Rockwell Automation hosted over 600 customers and professionals from colleges and universities at its Rockwell Automation® on the Move™ (RAOTM) technical education event on July 19-20 in Toronto, U.S. This year, the two-day event provided valuable information and training sections to the attendees on how to modernize and streamline operations, as well as practical experience working with products, services and solutions through technical sessions, hands-on labs, and technology exhibits from Rockwell Automation and members of its PartnerNetwork™ program.

There were also keynote presentations from Rockwell Automation leaders, sharing information about the company strategy and commitment to technology, including its focus on growing a healthy talent pipeline and strengthening ties between industry and academia.

of technology-related roles. These positions include vice president and global chief information officer for The Brinks Company, and senior technology executive for Bank of America's treasury, payments and credit functions. She currently serves as a board director for Texas Capital Bancshares.

"Patty is a leader in her industry, with proven business and technical skills, and we're pleased to welcome her to our board of directors," said Keith Nosbusch, chairman of Rockwell Automation.



# Less is More:

# Premier Integrati

●●● 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 counterintuitive to the needs of today's manufacturers.

Achieving faster time-to-market is a key to get ahead and stay ahead 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 concert with each other efficiently. 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.

## Next Level Integration

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



# ion

*An effective level of integration mitigates redundant programming while establishing functional connectivity within the controller-device network.*

watch. 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 starter.

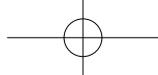
Executing controllers programming, devices configuration and maintenance management processes all within one single software environment can be said as another defining characteristic of Premier Integration. With these capabilities, manufacturers and engineers can ease integration, cut development time, improve information visibility and productivity in manufacturing operations since all they need now is a centralized intelligent platform for leveraging many different devices.

Rockwell Automation understands that, 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.

## **A One-stop Solution**

Specifically designed to deliver an intuitive and user-friendly experience for designing and configuring systems and devices, The Rockwell Software® Studio 5000® attains Premier Integration by combining engineering and design elements into one standard framework that enables optimized productivity and reduced





## COVER STORY

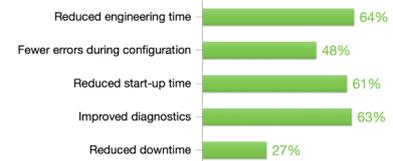
***“There is 64 percent of surveyed industrial manufacturers have reduced engineering time with Rockwell Automation’s integrated programming experience; 63 percent successfully achieve improved diagnostics.”***

**Rockwell Automation**

Research by **TechValidate**

### Benefits of a Premier Integration Experience

What benefits have you seen from using an integrated solution of a PowerFlex drive, Studio 5000 software and a Logix-based controller?



Note: this is a multiple-choice question – response percentages may not add up to 100.

Source: TechValidate survey of 132 users of PowerFlex drive

commissioning time. 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.

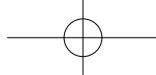
Beyond reducing integration complexity, industrial manufacturers will find Premier Integration is capable of shortening their engineering time and associated costs in numerous ways, including the following:



### 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.

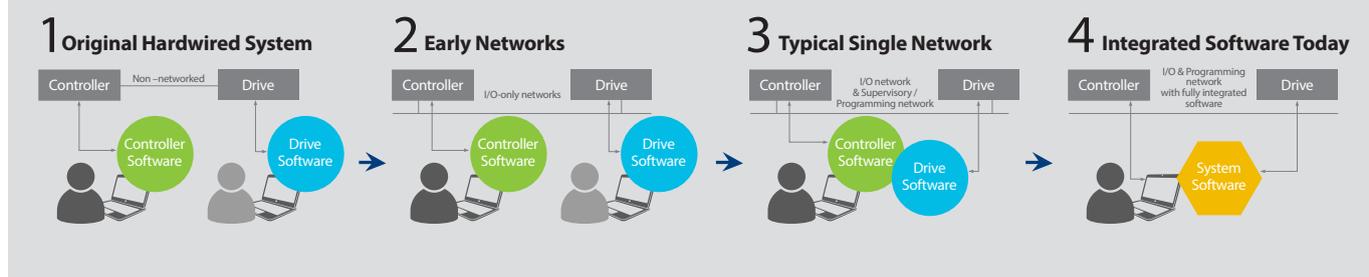
Also, using a single software environment and configuring the controller and drive network connections from a single location



## The Evolution of Integration

Since industrial automation devices have become more dependent on digital communication, the success of a project will highly depend on how easily devices and components are configured to exchange data across digital networks. Perhaps OEMs have already noticed that such advancement needs have accelerated the development of more comprehensive and flexible integration solutions for enterprises.

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



can reduce costly development errors and eliminate input/output (I/O) mismatch errors.

### 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 then 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 speeds 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.

### Enhancing Smart Manufacturing

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. 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. **AI**



## CASE STUDY

# Migrate for Seamless Integration

Asia's top hygiene product manufacturer enjoyed beneficial outcomes from a successful conversion of a legacy control system to modern DCS

●●● Perhaps it is more economical to keep legacy control systems running than to upgrade to new ones. However, finding replacement parts and getting support for maintaining its useful life were certainly some tough challenges. Even some professionals claimed that it was almost impossible to obtain the updated functions needed to improve efficiency.

But if the Distributed Control System (DCS) reaches the end of its useful life, or more commonly, hits the bottleneck of productivity, system migration will be necessary. Apparently, system migration will need to be completed quickly yet safely and securely, with no downtime or risk to meeting production targets. These are the inevitable challenges, but resolvable if the right tool is used.

### Time to Migrate: From Legacy to Modern

One of Rockwell Automation's clients, Asia's top leader in the Home and Personal Care Industry – Yuhan-Kimberly, a joint

venture between Yuhan-YangHang and American company Kimberly-Clark, has successfully overcome such challenges. They have proved to worldwide manufacturers that their decision of migrating outdated DCS to an integrated modern one is far more cost-efficient.

Yuhan-Kimberly has been engaging in manufacturing and distribution of sanitary products for many years, and their personal care products have now become an important part of everyday life in South Korea.

Realized that importing raw materials from the U.S. for processing and packaging household supplies was no longer efficient or effective, Yuhan-Kimberly had decided to move their machine in the U.S. facility to Kimcheon, their hygiene paper manufacturing plant in South Korea, to handle a rapidly increased demand for paper towels.

They began working toward replacing

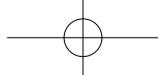
the legacy control system, Honeywell's PlantScape®, and modernizing the architecture, once they recognized the old system that they were running in the plant could not answer the challenges brought up by the new manufacturing plan nor fulfill their new targets on productivity and safety.

### A Unified Process Solution

Yuhan-Kimberly was determined to convert their legacy system, which includes controller, human-machine interface (HMI) and machine safety. They adopted PlantPax®, a modern process DCS based on the Rockwell Automation Integrated Architecture® system, to provide full production line and recipe capabilities, solving quality and consistency issues.

The new process control system centers on the Allen-Bradley® ControlLogix® programmable automation controller (PAC). One of the differentiating capabilities of the ControlLogix PACs is that they build the tools, protocol, and architecture into





The PlantPax platform based on the Rockwell Automation Integrated Architecture system in Kimcheon Factory floor-delivering a unified process and discrete solution

one fully integrated, scalable control platform that can be used throughout the manufacturer's plant.

PlantPax provides a broad range of architecture options for increased flexibility. The same platform can be utilized for single stations or large distributed architectures. For the project, the modern DCS consolidates control technology, offering scalable system capabilities – HMI, batch management and data collection that do not require a server or workstation, which is perfect for process skid equipment and rapid integration. Based on open communication standards leveraging EtherNet/IP™ as its backbone, PlantPax makes real-time information readily available throughout the enterprise for better business or operational decisions.

Moreover, PlantPax Library of Process Objects contributed to accelerating the migration process, maintaining consistency and reducing installation time. As system operators and engineers were able to minimize system deployment and test time, production efficiency and time-to-market were improved.

### Significant Optimization Improvements

"It was not an easy project. We thought we would need various network interfaces with many products from different makers,"Jong-Kyu Lee, Project Leader, Yuhan-Kimberly Project Leader expressed. "But we were able to deploy PlantPax DCS and GuardLogix Safety on a single hardware/ software through Rockwell Automation Integrated Architecture products and solutions, which allowed us to implement a reliable, robust system."

PlantPax Library of Process Objects saved two months from the total implementation time; the stable and successful conversion from PlantScape legacy DCS to PlantPax process automation system was completed ahead of scheduled time. Because the Library is simple and convenient to use, the overall migration procedures have become easier. Unlike that with the legacy system, operators can skip checking the Logic programs one-by-one; instead, they check and make changes to the operating condition of the machine and view the interlock status via a single faceplate.

Other than supporting on hardware and software, the domain

expertise of the Rockwell Automation Global Process Technical Consultant (GPTC) team provided technical supports and coaching sections to Chumdan FA, Rockwell Automation Process Solution Integrators (SI) engineers and the Korean manufacturer's operators. The engineers and operators received training on acclimating to the new system and leveraging the features. The GPTC led Yuhan-Kimberly through its well-defined and strategic technology migration path.

### Great Savings

"We could also conduct an independent test and a simulation test effectively before the Site Acceptance Test, which allowed us reliable and fast system startup," said Se-Yong Jang, Project Lead, SI partner Chumdan FA.

Yuhan-Kimberly partners with Rockwell Automation for ongoing support and training, reducing their operational costs. With the smooth migration completed on an integrated platform, they have improved knowledge transfer and minimized the cost for the spare parts and training remarkably with the one common plant-wide platform. Additionally, PlantPax has reduced their Total Cost of Ownership (TCO) while satisfying the customer's request for improved machine safety. **At**

**SPECTRUM CONTROLS**

## POWER MONITORING with ControlLogix®

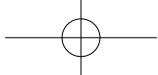
- Eight Input Channels
- Extends the life of your critical components
- Meet Energy Mandates

**Improve your Ecological Impact today!**

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www.spectrumcontrols.com | spectrum@spectrumcontrols.com

Rockwell Automation  
Encompass Product Partner



# Optimal Solutions for Motor Control: Drives Success

Achieve operational excellence and application flexibility with the latest control technologies

●●● Motors cannot alter their speed, even for fixed speed systems, it is certainly difficult to find a motor that rotates at the right speed for its designated application. Therefore, variable speed drives are required to provide solutions that effectively manipulate voltage and frequency, with a wide range of power ratings for a diversity of applications.

Aiming to offer the best-in-class power and process control solutions, Rockwell Automation has introduced the latest and upgraded suite of drive solutions - Allen-Bradley® PowerFlex® 755T drives. The new additions to the PowerFlex family help users reduce energy costs and increase machine uptime for assets running in high-demand applications. All compliant to the IEEE 519 specification, and built with the patented TotalFORCE™ technology, the expanded drive portfolio includes the PowerFlex 755TL low-harmonic drive, PowerFlex 755TR regenerative drive, and PowerFlex 755TM

common DC bus drive system:

**PowerFlex 755TL Drive:** Provides low AC input harmonics and power factor correction through the use of active front-end technology and an internal harmonic filter to reduce harmonic distortion. *The drive is available from 250 to 1,800 Hp (160 to 1250 kW).*

**PowerFlex 755TR Drive:** Provides an energy efficient solution that uses regenerative active front end technology to deliver energy back to the incoming supply. It also provides low AC input harmonics and power factor correction. *This drive delivers power from 250 to 3,000 Hp (160 to 2,000 kW).*

**PowerFlex 755TM Drive System:** Allows engineers to build the system that best fits their needs for regeneration and coordination of multiple motors in common bus configurations, so that energy consumption remains strictly matched

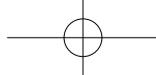
with the requirement of the application. Predesigned modules are available with a power range from 250 to 3,000 Hp (160 to 2,000 kW).

The highly differentiated control technology in the PowerFlex 755T products keeps equipment running through most power quality disturbances with active front end ride-through control that regulates the DC bus voltage independently of the incoming AC voltage.

The high bandwidth motor control has a significant disturbance rejection and low tracking error while the excellent torque accuracy is responsive to torque disturbances and can function smoothly throughout operating range.

Besides, operators can estimate and gain knowledge of the remaining life span of drive components, such as fans, blower, relay contacts and power semiconductors;





parameters like temperature and runtime of the motors and drives can be monitored to allow for preventive action if necessary.

## How it Works

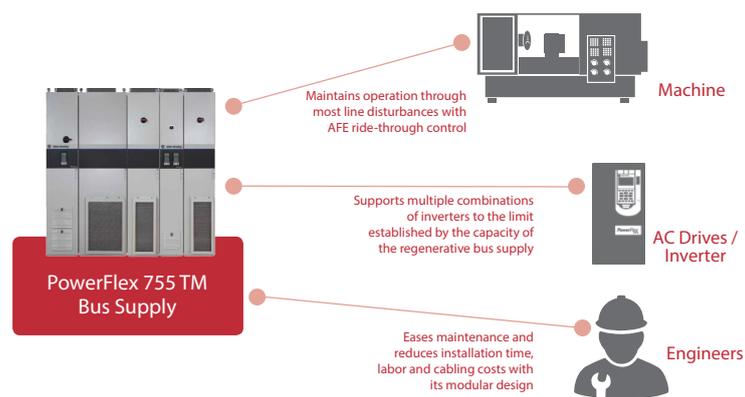
With the next generation of Force™ Technology - TotalFORCE technology, PowerFlex 755T drives deliver superior electric motor control through precise adaptive control of velocity, torque and position. The drives respond to production demands by comparing current performance to application settings, and making any necessary adjustments automatically. They communicate their performance data through the control to operation in real-time.

PowerFlex 755T drives continuously monitor their internal components and own activities. During operation, the load observer and the adaptive tuning are responsible for monitoring the variables that can change over time, they will then automatically make adjustments to compensate for the mechanical changes as they occur, keeping the system performing as efficiently as possible. Most importantly, the drives notify operators immediately about issues that might compromise drive or motor health. This level of self-awareness helps to significantly reduce unplanned downtime.

## Premier Integration and Installation

The new PowerFlex drives are able to achieve an exceptional level of integration when the drives are used on an EtherNet/IP™ network. Configuring PowerFlex 755T drives with dynamic Human Interface Module (HIM), Studio 5000 Logix Designer® application or Connected Components Workbench™ software allows users consolidate controller programming and drive system configuration, operation, and maintenance into a single software environment, reducing programming time, simplifying startup and streamlining diagnostics. In addition, their expanded uses of motion instruction within Studio 5000 environment allow device I/O capabilities to be assessed through the Logix controller. Such availability of general-purpose analog and digital I/O helps to reduce complexity and save engineering time.

Designed and built using a modular



Example of a start-up project to upgrade power drives on machine

approach, the PowerFlex 755T drives offer the added advantage of fast and easy installation and maintenance with simplified management of spare parts. The new drives' design allows complete removal of a module from the cabinet, creating ample space for wire installation and allowing the

while improving productivity.

Likewise, for the drives, there is a Safe Speed Monitor option is certified at SIL 3, PLe, Cat 4. This option allows access to parts of the application while there is limited motion. In another words, operators can perform process or maintenance work without stopping the machine.

**Without shutting the machine down to make adjustments, users will experience reduced commissioning and downtime.**

power wiring to stay connected while the module is rolled out. Hence installation and maintenance are further simplified with an accessory cart that allows one person to easily insert or remove a module without the need for a ramp or hoist.

## Safety Options Available

The Safe Torque Off option of the PowerFlex 755T drives, certified at SIL 3, PLe, Cat 3, removes rotational power to the motor without removing power from the drive for faster start-up after a demand on the safety system. It makes integration of safety functions over EtherNet/IP possible. Such ability provides opportunities to reduce hardware and installation costs

## Powerful Performance. Flexible Control

Ask any heavy industry manufacturer about the top challenges they face, more than likely the answer will be reducing energy consumption, minimizing downtime and optimizing productivity. And they need to resolve these challenges while increasing profitability and protecting their investment.

"AC drive technology is an important investment for our customers, and they want their application up and running every possible minute," said Brad Arenz, product manager, Rockwell Automation. "The PowerFlex 755T drives have been designed to provide savings from installation, through operation and maintenance with advanced features that allow you to optimize use of your assets."

The PowerFlex 755T drive solutions are developed to provide the benefits that matter most to the manufacturers. The powerful new additions offer motor control along with cost-effective solutions for regeneration, low harmonics and common bus system configurations. **AE**

Find PowerFlex 755T Drives product details in **Product & Solution Focus**

# Optimize Asset Performance throughout Oil & Gas Production Lifecycle

Intelligence and integrated solution enhance visibility, scalability and reliability of information for energy production operators

●●● World energy demand is set to grow by 48 percent by 2040 according to the International Energy Agency's World Economic Outlook 2016. Although nowadays energy companies are implementing process instrumentation systems to increase uptime and optimize production, the energy industry has historically lagged behind other industries in the area of asset performance, often referred to in manufacturing as operational equipment effectiveness (OEE).

The traditional approach of designing, building and upgrading oil and gas plants was making it too time-consuming and expensive to meet global demand. It also put a burden on workers to learn how to operate a wide variety of equipment. Multiple vendor relationships, complex interfaces between systems and limited access to data for real-time control are blocking oil and gas processing from accelerating. Besides, energy usage is one of the most difficult costs to manage in a production environment. On the plant floor, motors typically consume over 60 percent of the energy in any industrial facility; lack of control of the devices will only result in lower energy efficiency and higher total cost of ownership.

## The Right Optimization Method

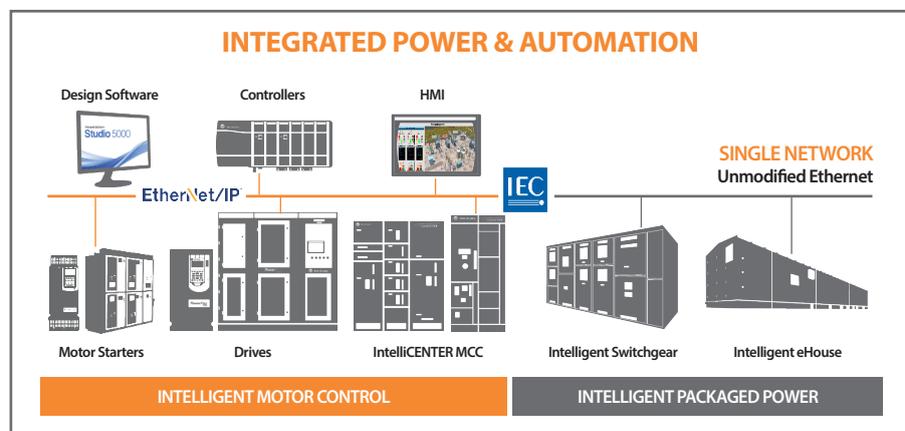
Coping with the demands, oil and gas producers take steps toward connected production to break down geographical barriers and improve business value, including production throughput, process quality, asset health, and energy efficiency. However, before they can capitalize on significant opportunities, they need to understand that the key component in successfully fostering a culture of optimization is Premier Integration.

Rockwell Automation **Integrated Power and Automation** integrates Intelligent Packaged Power (IPP) and Intelligent Motor Control (IMC) to achieve Premier Integration and putting digital technology to work to simplify the supply chain and unify systems.

It all starts with a control tower - a modern Distributed Control System (DCS). For instance, Rockwell Automation PlantPAx® uses scalable, multi-disciplined control technology to provide a common automation platform for seamless integration between plant processes and power systems, establishing a new workflow. Because of its plant-wide control capabilities, the modern DCS can easily

protective measures. As one of the benefits of Premier Integration, plant owners and operators that are coupled to IMC can exploit operational data from motors and motor-driven equipment to assess parameters such as energy consumption, speed, torque, and temperature while measuring vital signals relating to bearing failures or winding efficiencies. Such open, networked architecture enhances motor protection, shares diagnostic information and speeds troubleshooting for a more productive, intelligent process.

Cost plays a huge role; with motors typically consuming ten times their initial purchase price and from an operational

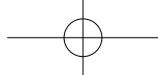


integrate with motor control devices. Moreover, the level of integration achieved between a modern DCS and the motor control devices results in information that drive improved plant availability by reducing unplanned downtime as it can trigger manual or automatic intervention before an occurrence — predictive and preventative measures.

## Make Smart Energy and Production Decisions

In fact, 75 percent of motor failures can be prevented by deploying appropriate

perspective, simply reducing the speed of a motor by 20 percent saves 50 percent in running costs. Allen-Bradley® E300™ Electronic Overload Relay – one of the most capable relays in terms of intelligence and connectivity, sits at the heart of any IMC fixed-speed application. Important operational information of integrated software and hardware can be extracted from a variety of production equipment and applications; operating parameters can also be recorded, such as voltage, current and energy, trip/warning histories, percentage thermal capacity utilization,



time to trip/reset, operational hours and number of starts. Its flexible design, simplified wiring, and seamless Logix integration enable the transformation of actionable information from real-time diagnostics; these capabilities allow engineers to conduct preventive measures for protecting assets and maximizing oil and gas production uptime.

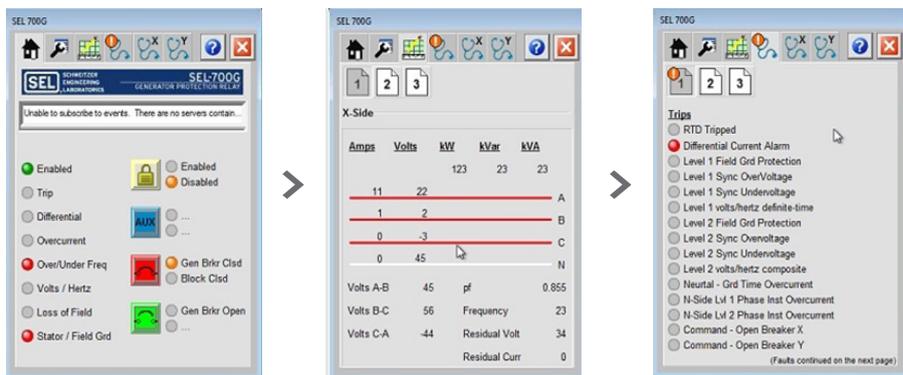
As part of an IMC architecture, low-voltage PowerFlex® drives enjoy Premier Integration within the Studio 5000® environment and automatic device configuration when integrated into a Logix-based control system. Productivity is enhanced thanks to Safe Torque-Off and Safe Speed Monitoring capabilities and their ability to share safety information and signals over EtherNet/IP™.

For oil and gas production process, all motor control needs can be addressed by a high performance packaged solution - Low Voltage and Medium Voltage Motor Control Centers (MCCs). Designs of IntelliCENTER® are factory validated and pre-configured to integrate seamlessly into the site control system for faster start-ups and higher visibility of device operations. The MCCs also illustrate Premier Integration approach to equipment and personnel protection, by allowing operators to remotely monitor their equipment. Without physically coming into contact with the electrical equipment, they can still stay abreast of machine performance while keeping themselves out of harm's way.

### Optimize Resource Management and System Resiliency

In a conventional design approach of power distribution, manufacturing plants maintain substation automation systems with intelligent electrical devices (IEDs) operating on a variety of networks. The electrical supervisory control and data acquisition (eSCADA) system has limited visibility to the process control system. But now, integrating the power distribution system and process control system within the same infrastructure allows a new level of intelligence and information awareness across the oil and gas facility.

The packaged power solution replaces



Integrated Power & Automation solution provides the unified visualization experience: All IED information is presented in pre-built faceplates.

independent eSCADA and process control systems with a unified, fully digital system based on unmodified Ethernet. In the open automation architecture, substation data is mapped directly to the control environment to enable seamless communication between the IEDs and the control platform. Time-stamped, sequential data generated by the IEDs can be easily accessed and used within the production process. This ability to correlate power distribution events to motor and power control events can significantly speed troubleshooting for any power-related issue.

Furthermore, the correlated information provides operators a more comprehensive picture of the asset performance across the oil and gas life cycle, allowing them to better anticipate power-related process conditions in real-time – and make better energy and production decisions.

An e-house solution is another turnkey offering from Integrated Power and Automation that provides project management, integration engineering, and documentation control. Intelligent eHouse supplies tested and certified equipment for the complete system, hence can simplify installation and commission while providing a streamlined process control and power management system for the industrial projects.

### Another Important Aspect

Safety is just as important to customers as asset performance. Each device and component of the Integrated Power and Automation meets safety and reliability expectation. The solutions provide improved safety features as a standard

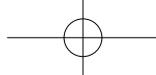
offering to enhance safety and emissions monitoring by limiting exposure with remote control and anticipating air gap breakdown.

In addition, Rockwell Automation has a comprehensive portfolio of solutions, products, tools and support services that tightly integrate safety functionality and features to help oil and gas producers deploy safety across their facilities. Process safety solutions including Emergency Shut Down systems (ESD) and Safety Instrumented Systems (SIS) at all Safety Integrity Levels (SIL) meet stringent design requirements. These reliable controller based products increase safety and productivity while reducing downtime, nuisance trips and lifecycle costs.

### Manufacturing Intelligence for Success

It is estimated that the industry needs to invest over a trillion a year in oil and gas development by the 2030s for meeting the forecast demand. On top of that, companies will have to brace for the impact of low oil price.

Challenged with market volatility and a variety of other issues, oil and gas producers are constantly looking for ways to improve competitiveness by containing costs that help lead to bigger bottom lines. But thanks to the new level of manufacturing intelligence and integration, plant owners and operators can now leverage Integrated Power & Automation to reap the benefits of digital technology and Ethernet connectivity – extend information transparency, integrated user experience and the value of investments across process, power control, and electrical systems. **IAI**



## PRODUCT & SOLUTION FOCUS

### PowerFlex 755TL Drive for Mitigate Harmonics

- The **PowerFlex® 755TL drive** provides a complete solution that includes a line side converter, harmonic filter, and inverter to help reduce the adverse effects of harmonic distortion on adjacent electrical equipment and control system instrumentation.
- Mitigates harmonics with active front end technology combined with active converter and LCL filter
- Combination of lower harmonics and power factor correction reduces the need to oversize electrical power equipment
- Eliminates the need for external multi-phase transformers or filters along with the associated wiring, labor, installation and maintenance costs.
- Maintains power factor near 1.0

Power Ratings:  
 400 / 480V: 160 to 1250 kW / 250 to 1800 Hp  
 600 / 690V: 250 to 1500 Hp / 200 to 1400 kW



### PowerFlex 755TR Drive for Regeneration



- With built-in regeneration, the **PowerFlex 755TR drive** provides regenerative and low harmonic capability to help reduce energy consumption by delivering energy back to the incoming supply rather than wasting it as heat. The line regeneration reduces the need for braking resistors and associated cooling equipment and helps avoid wasteful dissipation of energy.
- Minimizes the need for braking resistors and cooling equipment along with associated wiring, labor, installation and maintenance costs
- Recovers dissipated energy and re-use that energy for other applications, creating energy savings that increase the return on investment made in the drive
- Active front end technology with regeneration and lower harmonics provides means for regeneration

Power Ratings:  
 400 / 480V: 160 to 2000 kW / 250 to 3000 Hp  
 600 / 690V: 250 to 2500 Hp / 200 to 2300 kW

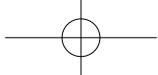
### PowerFlex 755TM Drive System for Flexible Configurations

- The **PowerFlex 755TM drive system** is a world-class coordinated multi-motor common bus system with best-in-class system footprint, usability and motor control performance. It is designed to enable coordination of multiple motors based on two main building blocks: regenerative common bus supplies and common bus inverters. The common DC bus optimizes the sizing of the bus supply so that energy consumption remains strictly matched with the requirement of the application.
- Flexibility to combine inverter and bus supplier into different arrangements and ratings to create a high power dense system with a small footprint
- Integrated control bus in each unit for efficient distribution of auxiliary 24V, 240V, and an optional 120V throughout a cabinet line up
- Optimizes floor space, installation, and hardware with drives connected via common bus
- Reduces costs associated with additional hardware, wiring, installation when using common bus system
- Uses one interface to configure and program the converter and inverter



Power Ratings:  
 (Common Bus Inverters)  
 400 / 480V: 160 to 2000 kW / 250 to 3000 Hp  
 600 / 690V: 250 to 2500 Hp / 200 to 2300 kW  
 (Regenerative Bus Suppliers)  
 400 / 480V: 188 to 2204 kW / 216 to 2436 Hp  
 600 / 690V: 217 to 2164 Hp / 221 to 2379 kW

The PowerFlex 755T Drive uses a modular design with roll-in units. The units only need to be wired once; power wiring stays connected while units are rolled out. The drives are highly serviceable with easy access to service areas and simplified removal of parts. To meet environmental requirements, the enclosure types include IP21 (UL Type 1) and IP54 (UL Type 12). There are common spares between the drives which help reduce spare part inventory. They are all designed to meet the IEEE 519 standard, and their safety options help protect user's personnel and assets while enabling increase machine uptime.



## PRODUCT & SOLUTION FOCUS

### Comprehensive Solution for Measuring Temperature

●●● As part of the Solid-State Condition Sensors portfolio, **Allen-Bradley® 837T Temperature Sensor** is built with high-accuracy and new technology, providing users with a comprehensive solution for measuring temperatures in liquids, gases, and vapors.

The flexible 837T display model is embedded with IO-Link 1.1 communications protocol, which allows sensors to integrate into The Connected Enterprise, delivering data from the sensor directly into a control system in a very cost-efficient and easy-to-use manner via an IO-Link master and EtherNet/IP™.

It has temperature ranges from -20 to 80°C (-4 to 178°F) and features a compact, rotatable house (320°) and head (330°) to accommodate any complicated applications. These sensors have 2 x PNP and 1 PNP + 4 to 20 mA analog output configurations, probe lengths from 25 to 350 mm and an IP67 enclosure rating.

Other options available from 837T Temperature Sensors:

#### 837T Non-Display

- Temperature range: -50 to 250°C (-58 to 482°F)
- Analog Outputs: 4 to 20 mA (25 to 400 mm probe lengths)
- Enclosure Rating: IP67

#### 837RTD (Resistance Temperature Detector)

- Temperature range: -50 to 200°C (-58 to 392°F)
- Enclosure Rating: IP67
- Pt1000 measuring element

837T Solid-State Temperature Sensors are accessible in various process connections to fit user's application needs. For easy-on-machine programming, the temperature sensors can be configured manually; or users can experience Premier Integration by completing the settings through the Studio 5000 Logix Designer® software.



### An Enhanced Sensing Solution for Packaging Industry

●●● The **Allen-Bradley 42JT VisiSight™** family offers a broad range of sensing modes, and a teach push button that simplifies sensitivity adjustment and provides light versus dark operate output selection. It comes in a small rectangular package with class 1 "Eye Safe" red laser and visible red LED beam for ease of alignment and industry standard mounting hole spacing of 25.4 mm.



The unique "Auto PNP/NPN" output continuously monitors how the load is connected and automatically configures the output for proper operation. When connected to an IO-Link master, the 42JT can take advantage of advanced functionality including real-time diagnostics, automatic device configuration (ADC) and multiple job-specific profiles. These features make the 42JT VisiSight easy to apply in challenging packaging and assembly applications; hence optimizing the supply chain by reducing the number of models to be stocked by 50%.

Embedded with IO-Link functionality which helps minimize downtime and increase productivity, the 42JT VisiSight photoelectric sensors can be integrated into The Connected Enterprise easily.

### Ethernet Switches for Rugged Environment

●●● The series B of **Allen-Bradley Stratix® 2000 Industrial Unmanaged Switches** with compact design maximize user's cabinet space. An industrial-grade enclosure with IP20 to IP30 rating provides upgraded environmental protection that's ideal for small control networks requiring reliable network connectivity and extended temperature range (-40 to 75 °C). Users can enjoy:

- 100 MB or 1 Gb speeds for increased network flexibility and performance
- Broadcast storm protection against unwanted network traffic
- Dual power inputs to help maximize uptime in harsh environments

In addition to these benefits, users can enjoy easier installation and integration with the "Plug-and-Play" operation.



## Out-of-box Integration Tools Ease Entry to Smart Manufacturing

●●● Rockwell Automation has expanded its scalable manufacturing execution system (MES) to allow operations to configure their environment without programming, add more applications, increase DCS process system integration, and expand deployment options. Comparing to traditional MES, the new modular MES applications can be easily deployed and used, with instructive and more graphical configuration.

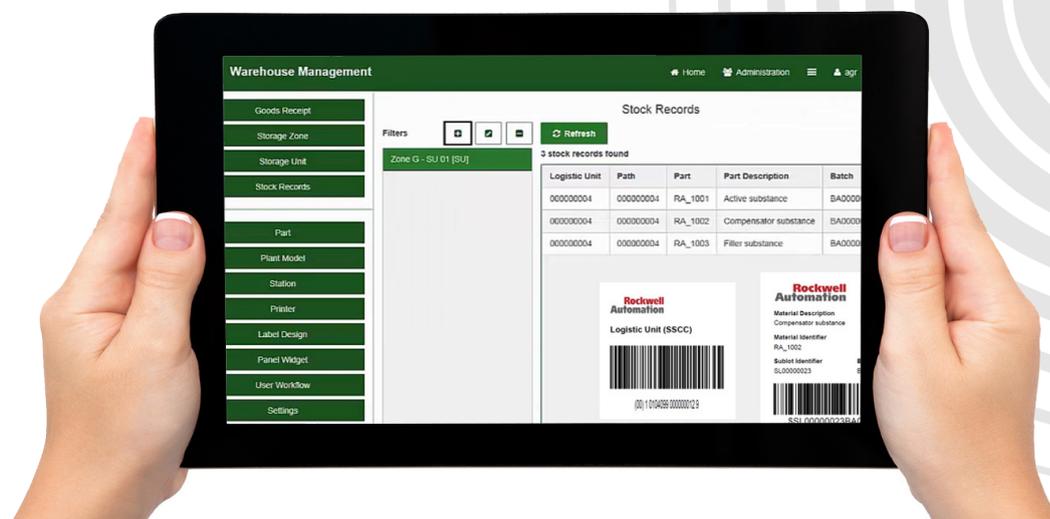
A new suite of capabilities improves functionality across its portfolio of scalable MES applications based on the FactoryTalk® ProductionCentre® R10 platform. With the increased integration of process applications, manufacturers can address specific manufacturing challenges, like quality, machine performance, track/trace, and genealogy. Solutions can start at the machine or work-area level with a single application and with minimal infrastructure requirements, and scale to an integrated MES solution as ROI is realized.

Process manufacturers can seamlessly connect FactoryTalk MES applications, including their DCS, LIMS, QMS, PLM or CMMS systems and other databases by using Enterprise Integration Hub (EIHub) – An application that streamlines data translation across The Connected Enterprise. Through this vendor-agnostic integration, operators can transport batch-reporting parameters, GMP critical alarms for ‘review by exception,’ and consumption, production and order-completion data. There are pre-configured value packs in EIHub software that offer increased productivity for the discrete, automotive and pharmaceutical industries.

In addition to the introduction of FactoryTalk Warehouse, there are recent updates to FactoryTalk Production, FactoryTalk Performance, and FactoryTalk Quality applications which provide a simplified, visual drag-and-drop tool to build out new workflows with no coding needed. Therefore product changeovers can happen more quickly and more flexibility is allowed for new product introductions.

### **New** FactoryTalk Warehouse Application

Plant-floor operations are tasked with fast and accurate tracking of material movement and stock information. The latest MES application, FactoryTalk Warehouse, streamlines warehouse logistics to allow fast, precise inventory management and tracking capabilities from goods receipt through stock records and goods issuing. Improved insight and control benefit manufacturers looking to better manage raw-material lots, palette load tracking and work-in-progress (WIP) inventory while accessing subplot-level details – all synchronized with the company ERP system. With this information at their fingertips, personnel can manage material levels in near real time, including forward and backward product genealogy. The FactoryTalk Warehouse application is scalable to fit individual deployment needs.



## FactoryTalk Production Application



Manufacturers are challenged to optimize production processes, lower structured costs, improve productivity and achieve a near zero-inventory system. The FactoryTalk Production application is a scalable MES solution that addresses the challenges associated with enforcing processes in manufacturing. This application integrates with ERP and tracks the order and recipe parameters necessary for production. The Production application supports end-to-end production management within a facility, offering a vital platform for continuous improvement.

- Synchronizes production activities
- Improves work-instruction delivery to personnel
- Better manages material flow from warehouses and suppliers
- Sustains continuous improvement with manufacturing context for operational procedures
- Integrates genealogy reporting

## FactoryTalk Quality Application



Facilities relying on disparate systems and antiquated paper processes cannot guarantee consistent production quality. The newly expanded Quality application allows manufacturers to effectively model and enforce their plant's in-process quality regimens at a scalable rate. The application supports a facility's efforts to deliver a timely, quality product and react quickly to quality issues. Manufacturers can use the Quality application on a project basis and scale up when value is proven. The application can be expanded to include other functionality within the FactoryTalk ProductionCentre MES system or run as a standalone. Including user-friendly intuitive widgets, 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 based on choices that manufacturers made in setup.

- Reduces cost of compliance (trading partner & regulatory)
- Eliminates plant floor quality paperwork
- Increases first time yield and first time through
- Dynamically changes quality testing regimens based on test results
- Reduces IT infrastructure costs

## FactoryTalk Performance Application

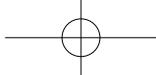


Manufacturing companies today lack visibility into real-time production performance and productivity data. Performance is a modular application that assists manufacturing companies with factory efficiency and production improvement. By providing visibility into the operations performance, this application allows for lean and continuous improvement, preventive manufacturing, improved asset utilization and operational intelligence.

- Increases capacity with higher production from existing equipment and deferred capital expenditures
- Decreases manufacturing costs with lower overtime and reduced labor costs
- Lowers material costs through improved quality and reduced scrap
- Reduces overhead costs by saving time collecting data and preparing reports and real-time availability of efficiency information

Each expanded MES application is implemented on thin clients for a modern user experience and reduced, IT infrastructure cost. Users can add on each application to their current framework, helping protect their current investments while realizing these additional benefits. Moreover, the scalable MES applications are cloud-enabled, supporting centralized deployments in private, public and hybrid configurations.

Today, Rockwell Automation provides infrastructure-as-a-service offerings via pre-configured and managed industrial data centers. Yet, investment in new delivery options never stops. Manufacturers will soon be able to purchase and enjoy Software as a Service (SaaS) offerings and cloud-based versions of the FactoryTalk MES applications.



LISTEN.  
THINK.  
SOLVE.®

Flexible I/O

Pre-Programmed

Configurable

Cost-Effective

## Solve Your Small SIS Needs With One Package

OptiSIS™ packaged safety solution fits your small application of 100 I/O or less. This cost-effective safety instrumented system is user-configured utilizing a graphical cause and effect panel and can reduce your lead times by 30 percent for faster installation.

Need help gauging your current safety? Find out if your existing safety instrumented system up to current standards.

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