This
Changes
Everything

In a world changed by the pandemic, OEMs design machines using digital technology to improve agility and throughput to help keep store shelves stocked.

Process Upgrade Accelerates Biomanufacturing Production

4 Steps a Packaging OEM is Taking to Boost Agility

Automation Fair At Home 2021 Wrap-Up

This Changes Everything

Digital technology and mechatronics help OEMs design machines that improve agility and throughput so customers can keep shelves stocked in the new normal.

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📄 22

ADDITIONAL RESOURCES

VIDEO

Apex Dynamics: High-Performance Helical Planetary Gearheads

Eugene Detke describes Apex Dynamics' AH and AP Series ultra-high-performance rotary flange gearheads, now available in larger frames sizes. Also see the specialty AFX/AFXR series gearboxes.
https://youtu.be/mi2luac_odU

eBOOK

2020 Industrial Automation Trends eBook

This resource from *The Journal* magazine explains 9 leading trends prompting smart manufacturing strategies, including digital twins, network modernization, edge computing, augmented reality, advanced analytics and more. http://bit.ly/trends20tj
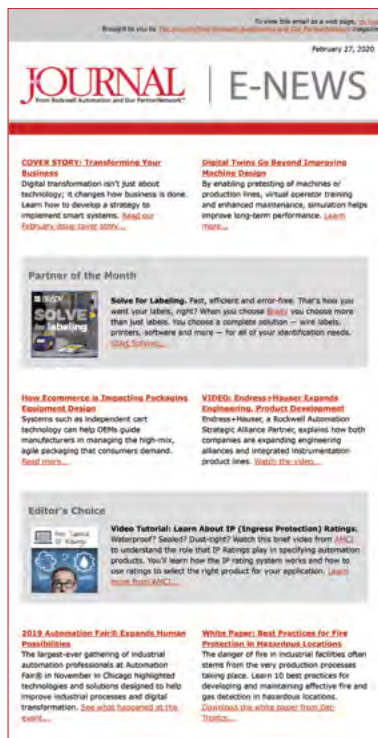
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Rockwell Automation **FactoryTalk** by ROCKWELL AUTOMATION **Allen-Bradley** by ROCKWELL AUTOMATION

New Designs Bring Better Performance

Do you notice anything different?

No, it's not my haircut. I haven't changed my photo on this page for a few "Ahem! Cough." years.

With this February issue, we're revealing *The Journal*'s new design! That's right. The last time our publication got a facelift was 2007, so it's time for an updated look and feel that also keeps your reading experience smooth and fun.

To describe the new look, our designers use terms like typographic considerations for size, weight and color. Use of white space. Spacing and color changes to create a lighter and more open feel on the pages. Tonal variations in the copy for rhythm. Continuity throughout.

What I hope is that you see readability and a hint of sophistication that allows you to keep enjoying your reading experience while learning about the latest trends and technology in our industry.

That includes this issue's cover story that talks about how digital technology and mechatronics are helping OEMs design machines that improve agility and throughput. This helps end users keep shelves stocked in the new normal created by the COVID-19 pandemic.

And check out page 22 for a wrap-up of the game-changing 2020 Automation Fair At Home virtual event. Despite the pandemic's best efforts to stifle the occasion, more than 40,000 registered attendees logged in to see hundreds of new products, 65 virtual booths, and live presentations that spanned five days. On-demand content from the event is available through June 2021 by visiting www.automationfair.com to register or log in to watch the presentations.

Enjoy the issue, and I hope this year is starting off well for you. **Until next time...**

Theresa Houck
Executive Editor

News + Noteworthy

Rockwell Automation Publishes 2020 Sustainability Report

Refreshed online content hub houses latest report focused on sustainability and corporate responsibility.

Rockwell Automation, Inc. has published its 2020 Sustainability Report and launched a refreshed online content hub dedicated to sharing the company's latest sustainability initiatives and outcomes.

The publication, formerly known as the Corporate Responsibility Report, highlights the company's corporate responsibility and sustainability practices. It features powerful stories about how Rockwell Automation supported and strengthened customers, employees and communities. And it demonstrates how the company used automation technology and expertise to fight the coronavirus pandemic and help the world recover in 2020.

"When I look back on 2020, I believe it will be remembered as a time when our company's culture and our big aspirations became especially visible through our actions," Rockwell Automation chairman and CEO Blake Moret wrote in the introduction to the report. "How we make the journey is important, with highly engaged people who all feel they can and want to do their very best work, and who understand how their individual efforts are so crucial to accomplishing big things."

In 2020, the company completed an extensive materiality assessment to update and further inform its sustainability strategy. From that data, the company defined new sustainability priorities under three sustainability pillars — environment, social, and governance (ESG).

Through these pillars, Rockwell Automation aims to drive three outcomes: alllow its customers to achieve their own sustainability goals, making a positive impact on the world; create innovative,

sustainable products and solutions, and foster a culture that empowers employees to operate safely, sustainably and responsibly; and support the communities in which employees live and work, having an impact that extends beyond Rockwell.

To view the report and learn more about the Rockwell Automation sustainability initiatives and outcomes, visit the online content hub at https://rok.auto/sustainability.

Grace Technologies Announces Leadership Changes

Encompass™ Product Partner Grace Technologies of Davenport, Iowa has named Drew Allen president and CEO. After 30 years of leadership, Phil Allen will be stepping down as CEO and assuming the role of founder and chairman of the board.

Drew Allen graduated from the Loyola University Chicago's Next Generation Leadership Program and University of Wisconsin's Transition to Executive Leadership. He is a recipient of the National Association of Manufacturers' 2020 Next-Generation Leadership Award and holds bachelor's degrees in International Business and Marketing from Augustana College, Rock Island, Illinois.

Greg Ervin will assume Allen's former roles and responsibilities of chief growth and product officer. Ervin comes to Grace from Timberline Manufacturing and Rockwell Automation.

Drew Allen is now CEO of Grace Technologies.

⊕ PARTNERNETWORK BRIEF

The Massman Companies Names New CEO. The Massman Companies, a Rockwell Automation OEM Partner and manufacturer of packaging equipment for food, beverage, consumer and industrial products, appointed current CEO and president Jeff Bigger to executive board chair, effective immediately. Jeffrey Hohn has been appointed CEO and president. Hohn brings more than 25 years of experience in corporate growth with tenures as VP general manager and VP of corporate strategy at Smiths Medical, 3M and Veeco Instruments. He holds a master's degree in the Management of Technology from the University of Minnesota and a BS in Chemical Engineering from the University of North Dakota.

Jeffery Hohn joins The Massman Companies as new CEO.

Rockwell Automation Expands Leadership Team

Rockwell Automation, Inc., announced two key additions to its executive leadership team, naming Scott Genereux senior vice president and chief revenue officer and Brian Shepherd senior vice president, Software and Control, effective Feb. 1. Genereux and Shepherd will report to chairman and CEO Blake Moret.

Genereux will have global responsibility for total revenue performance and will oversee the company's global sales and marketing strategy and functions, with specific focus on increasing software sales and annual recurring revenue (ARR).

Shepherd will lead the operating segment that includes control and visualization software and hardware, information software, and network and security infrastructure, which was created as of Oct. 1.

Genereux joins Rockwell Automation with more than two decades of sales and management leadership experience. Most recently, he served as executive vice president for Worldwide Field Operations and chief revenue officer for Veritas Technologies, a provider of cloud data management solutions. Prior to that, he led sales and strategy for Oracle Corporation's cloud infrastructure business. His career also includes senior sales and marketing positions with QLogic, Data Direct Networks, and Hitachi Data Systems.

Shepherd brings extensive experience in leading strategy definition and end-to-end development of software solutions for manufacturing companies. He most recently served as president, Production Software and Smart Factory, for Hexagon AB. Before that, he worked in a variety of senior leadership roles at PTC, including executive vice president and general manager of PTC's Enterprise Software segments. He has technical

expertise in design, simulation, manufacturing planning and execution, as well as process and quality data analytics.

The Software and Control operating segment was created in October and had been led on an interim basis by Chris Nardecchia. He remains at the company in his ongoing role as senior vice president of Information Technology and chief information officer, reporting to Moret.

Brian Shepherd
senior vice president, Software and Control

Scott Genereux
senior vice president and chief revenue officer

⊕ **PARTNERNETWORK BRIEF**

Mersen Launches Heat Sink Calculator. Encompass™ Product Partner Mersen offers the R-TOOLS MAXX heat sink calculator, a no-charge, online simulation software that allows users to model the optimum air-cooled heat sink solution tailored to their project requirements. It is interactive and available online 24/7. The software simulation results help to reduce design time and increase reliability of the finished heat sink design, even before the first prototype is built. Visit **www.r-tools.com** to register for the software.

⊕ **PARTNERNETWORK BRIEF**

ProSoft Technology, Aparian Extend Partnership. Encompass™ Product Partners ProSoft Technology and Aparian have announced the expansion of their joint portfolio of industrial solutions. The partnership pairs ProSoft's global sales and support organization with Aparian's solutions to bring value to customers both pre- and post-sale. In their latest venture, ProSoft will be selling Aparian-labeled gateways that expand modernization offerings, including ControlNet® and DeviceNet™ solutions.

Rockwell Automation Completes Acquisition of Fiix

Rockwell Automation, Inc., has completed the acquisition of Fiix Inc., an AI-enabled computerized maintenance management system (CMMS) company based in Toronto, Ontario, Canada.

Fiix's cloud-native software helps companies schedule, organize and track equipment maintenance. It connects seamlessly to business systems and drives data-driven decisions.

The addition of Fiix advances the Rockwell Automation software strategy and enhances capabilities in the company's Lifecycle Services business, which provides a range of industrial automation services to help end users maximize the value of their production assets, systems, plants and processes. In addition, through a CMMS, businesses can operate more efficiently and sustainably by reducing waste and energy use.

Fiix will be reported as part of the Rockwell Automation Software & Control operating segment.

Rockwell Automation announced its intent to acquire Fiix in November 2020 and the transaction closed in December 2020.

Rockwell Automation Enhances OEM Partner Program

Rockwell Automation, Inc. has enhanced its global Original Equipment Manufacturer (OEM) Partner Program. The program now provides increased market access opportunities, simplification and standardized product alignment for manufacturers, allowing participants to fully access Rockwell Automation technology.

Enhancements to the program include co-marketing and information sharing, and an elevated level of support.

The co-marketing platform allows for OEM customers to use information, industry case studies, and successes with products to benefit the community at large. Training and key industry plays have been added to increase the value of the co-marketing between OEM Partners and their customers, further formalizing business alignment.

Increased technical resources, supply chain alignment, discounts and rebates also help support OEM Partners to create differentiation and overcome business challenges.

Rockwell Automation works with OEMs — also referred to as machine and equipment builders — across the globe to design, develop, and deliver innovative equipment with Rockwell Automation solutions. Those OEMs that show a commitment to use Rockwell Automation offerings across their portfolio, and then effectively partner to create innovative solutions for their customers are recognized as OEM Partners. The OEM Partner Program

is designed to better align customers to partners and foster increased innovation through Rockwell Automation's technology and domain expertise.

First established in 2010, the OEM Partner Program now includes almost 3,300 manufacturers worldwide. The latest evolution of the program builds on the technical-driven relationship between Rockwell Automation and its member companies, and now incorporates even greater alignment to better position OEMs as delivery partners of Rockwell Automation products.

The enhanced OEM Partner Program is now open for enrollment in North America, Asia, Europe, the Middle East, and Africa. Enrollment for the Latin America region will be available in the first quarter of 2021. For more information visit, https://rok.auto/oem.

⊕ PARTNERNETWORK BRIEF

Teledyne to Acquire FLIR Systems. Teledyne Technologies of Thousand Oaks, California, the parent company of Encompass™ Product Partner Teledyne DALSA, a provider of machine vision solutions, will acquire FLIR Systems, Inc., Arlington, Virginia. The transaction is expected to be completed by the middle of 2021. FLIR Systems, also a participating Encompass™ Product Partner in the Rockwell Automation PartnerNetwork™ program, manufactures thermal imaging infrared cameras for industrial applications.

Rockwell Automation Expands Cybersecurity Support

Companies continue to need help securing their industrial operations as they connect production and IT systems and contend with cyberthreats targeting industrial control systems. To meet this need, Rockwell Automation continues expanding its cybersecurity certifications and incorporating advanced security capabilities into more of its products.

The company recently received certification to the IEC 62443-3-3 cybersecurity standard. The certification, performed by third party TÜV Rheinland, means Rockwell Automation has demonstrated the ability to install and configure production systems to meet security requirements to level 1 as defined in the world's leading global standard.

Rockwell Automation offers reference architectures for implementing a certified production system, such as PlantPAx® 5.0 DCS for plantwide process control. The architectures were developed to help customers certify production systems while minimizing the need to buy new technologies as part of the process. To date,

Rockwell Automation has received several certifications for the IEC 62443 series of standards.

The company also recently received certification for the ISO 27001 standard, confirming that the company's information security management system used to protect data meets the standard's requirements. This means Rockwell Automation is using best practices to protect their intellectual property, such as when customers use services such as remote support and monitoring.

In addition to earning the new certifications, Rockwell Automation also released new products with CIP Security™ to help companies secure their communications. These products include the Allen-Bradley® PowerFlex® 755T AC drives and Kinetix® 5300 servo drives. Other Rockwell Automation products that already support CIP Security

⊕ PARTNERNETWORK BRIEF

Zebra Technologies Named a Top 2020 Workplace. Encompass™ Product Partner Zebra Technologies Corp., has been named a 2020 Long Island, New York, Top Workplace by Newsday for the third consecutive year. Awarded employers are based solely on employee feedback gathered by Energage, LLC. Its anonymous survey measures multiple aspects of workplace culture, including alignment, execution, and connection This year, Zebra was also awarded a special accolade for communication. Surveyed employees said open and transparent communication from management keeps them well informed and lets them to plan work and family life.

include ControlLogix® 5580 controllers, Kinetix 5700 servo drives and the 1756-EN4TR communication module.

To help protect devices in use today that don't support CIP Security, Rockwell Automation is also introducing the new CIP Security Proxy device.

Curtiss-Wright Launches Motor Support Program

Encompass™ Product Partner Curtiss-Wright's Actuation Division announced the release of its new ASSIGN motor program for Exlar FTX and FTP Series actuators. These high-force/duty cycle, electric, rod-style actuators now support the mounting of almost any motor.

The new ASSIGN (any servo, stepper, integrated, geared, or NEMA) configuration capability simplifies selection of a range of motors, allowing end users to choose in-line or parallel mount configurations that accommodate a larger variety of motor dimensions. The program increases the number of motor/actuator combinations available when using Exlar FTX and FTP Series actuators, giving end users the ability to use the best motor for their application.

The Exlar FTX series actuators offer continuous load force ratings to 178 kN (40,000 lbf.), speeds to 1500 mm/sec. (59 in./sec.), and stroke lengths from 150 mm (6 in.) to 900 mm (36 in.). The Exlar FTP series actuators offer continuous load force ratings to 356 kN (80,000 lbf.) and speeds to 401 mm/sec. (15.8 in./sec), and stroke lengths from 150 mm (6 in.) to 900 mm (36 in.).

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Digital technology and mechatronics help OEMs design machines that improve agility and throughput so customers can keep shelves stocked in the new normal.

ROCKWELL AUTOMATION

Justin Garski
OEM Segment Lead

I t's no secret manufacturers are under significant pressure to deliver consumer packaged goods (CPGs) faster — especially those goods consistently being swept off the shelves. No time in recent history have CPG companies needed this much agility to deal with the shortage of goods that occurred at the beginning of the COVID-19 pandemic. Panic buying as well as changing consumer habits, such as eating in instead of going out, accounted for initial shortages.

Now that those initial shortages have passed, original equipment manufacturers (OEMs) still are under pressure to keep shelves stocked to avoid more shortages, so these machine builders must deliver equipment that can meet demands for flexible manufacturing.

The Right Balance

For years, consumer goods machine builders have focused on improving the changeover time — and flexibility of their equipment. While the result has enabled an unprecedented increase in the number of SKUs produced, flexibility and throughput aren't evenly matched across a typical plant floor.

In other words, a case packer loads pouches at 300 per minute, but the pouch filler can't match that speed. An entire packaging line can change over in minutes, but the high-speed processing equipment that feeds it isn't as agile.

Under normal circumstances, manufacturers can sacrifice throughput on some equipment — and still maintain flexible production and adequate supply. But when the pandemic struck, the surge in demand quickly tipped the scales in favor of maximizing plant throughput. And flexibility suffered.

Recent events have highlighted the next significant challenge for all of us that serve the industry: How do we build smarter, highly flexible machines — that don't compromise on throughput?

DOWNLOAD THE eBOOK

Reimagining smart machines and equipment

Yesterday's "smart machines" delivered data. With new technologies, today's offerings deliver differentiated value. As a machine builder, how do you keep up with marketplace challenges? With information-enabled, smart machines that use advanced technology — and are built on a foundation that securely and safely connects to the production environment and beyond. Connected digital technologies open new ways to differentiate your equipment — and deliver results that matter most to your customers.

In this eBook from Rockwell Automation, "Reimagining smart machines and equipment," learn more about how to build smarter machines and equipment that improve flexibility without compromising throughput.

See how new realities such as just-in-time production, multiple SKUs, shorter product life cycles and skills shortages have changed the equation — and ushered in new expectations for machines that are highly productive, and more flexible too. Machines that support easier ways to collaborate and work smarter.

Download the ebook at **http://rok.auto/smartmachines-ebook**.

Technologies That Remove Boundaries

Thanks to advances in mechatronics, the road to more flexible equipment often is the path to better throughput. Particularly in packaging and assembly applications, these two technologies are leading the way:

1. **Robotics.** Intrinsically flexible, robots use vision-guided line tracking — not mechanical rerouting — to address infinitely variable product shapes and sizes. Robots can change their recipe on the fly and still meet production rate demands.
2. Independent cart technology (ICT). Conventional conveyance systems move product on a preconfigured path at a fixed speed. ICT boosts flexibility and throughput by intelligently moving carts based on where other carts are in the system.

More OEMs are using unified machine control strategies to integrate these technologies into their equipment — and plant architectures.

Open for Business

Machine builders must also reimagine what flexibility means in the e-commerce space. Over the past decade, the virtual marketplace has grown exponentially. And the COVID pandemic ramped up demand by making the convenience of online retail a necessity.

In addition, more manufacturers are moving away from wholesale and retail distribution altogether — and increasing their profit margins by selling directly to consumers online.

What's next? Tighter integration between the supply chain, e-commerce portals and MES systems to enable a faster, more flexible manufacturing response better aligned to demand.

This means OEMS can share the digital foundation of machines with customers early in the process. And design equipment that's not only easily integrated in the production space — but also connects directly to applications across the enterprise and beyond.

Smarter Way to Work

Even the most agile machine can't maximize throughput if it's not performing optimally. And in the past year, we all learned to take a more flexible approach to solving equipment challenges.

For OEMs faced with travel restrictions, remote connectivity to installed assets was the only way to service machinery. On the bright side, OEMs report that even customers who were previously resistant to remote assistance are grateful for the technology.

The pandemic also has accelerated the adoption of other digital technologies that optimize machine performance and support more flexible work paradigms.

In particular, augmented reality (AR) platforms have made a significant impact. For example, collaborative remote assistance tools use AR to permit workers to share real-time instructions and guidance without being physically on site.

Clean Slate for Machine Design

The latest advances in mechatronics and digital technologies could improve machine flexibility or throughput on machines by 50% or more. So as a machine builder, what steps can you take?

One tip for you: This isn't a retrofit project.

To achieve the dramatic gains new technologies promise, you'll likely need a "clean slate" approach to machine design. And have a vision of where your digital journey will ultimately lead — aligned with customer needs. In my experience, collaborative projects that take advantage of the natural "push and pull" between OEMs and their end users result in the most transformative, cost-effective machines. ●

Process Upgrade Accelerates Biomanufacturing Production

See how a life sciences supplier migrated to a modern DCS and turned data insights into both upstream and downstream efficiency gains for pharma firms.

The pharmaceutical industry wastes about $50 billion per year in inefficient manufacturing. It takes time and money to develop and produce life-saving biopharmaceutical medications, so anything that can make production systems more flexible, scalable and quicker to implement can save these valuable resources.

Bioprocessing applications include large- and small-molecule processes. So, while traditional medicines are compounded from molecules with less than 60 atoms, biopharmaceuticals such as insulin have molecules with hundreds of atoms; flu vaccines have more than 100,000. This complexity makes development and upstream and downstream production biopharmaceuticals increasingly complex and costly.

The small window before each new product's patent expires further adds to the challenge of developing new pharmaceutical and medical products. It can take five to seven years to build a new facility and begin full-scale production. If a drug maker can implement a single-use bioprocess

> ## "Now more than ever as an industry, we must get smaller, faster and more cost-effective in the way we manufacture drugs, vaccines and therapeutics."

Kevin Seaver, Executive General Manager, Automation and Digital at Cytiva

facility in 12 to 18 months, that can save money and time and ultimately get life-saving medicines to market faster.

Streamlining the deployment of systems, reducing islands of automation, and decreasing the time spent on gathering and cleaning data all can help biomanufacturing players accelerate their time to market.

This is where Cytiva, a Marlborough, Massachusetts-based global provider of technologies and services for the life sciences industry, comes in. Cytiva's job is to supply the tools and services pharmaceutical manufacturers need to work better, faster and safer. The firm has more than 7,000 employees across 40 sites.

Enabling the Helpers

"Now more than ever as an industry, we must get smaller, faster and more cost-effective in the way we manufacture drugs, vaccines and therapeutics," says Kevin Seaver, executive general manager, automation and digital at Cytiva. "Our aim is to help companies go from seven years down to three or four by doing much of the engineering and automation work upfront," he adds.

As part of its Industry 4.0 initiative, the firm's leaders wanted to create a connected digital enterprise to help improve internal operations and decrease time-to-market for end users.

Furthermore, because biopharmaceuticals often start small with one type of process control, but over time might scale to much larger, complex production runs, the company needed a better, more consistent way to scale up.

This is why Cytiva has been collaborating with Rockwell Automation to streamline the process

controls and automation of its bioreactors, production lines, and modular biomanufacturing units it operates worldwide.

More Flexible, Scalable Systems

The firm's strategy for addressing these multiple challenges in its biopharmaceutical application includes taking advantage of automation, flexibility and efficiency that will:

- Optimize uptime due to system redundancy.
- Reduce maintenance and training by using a common framework.
- Enhance yield with centralized data trending and alarming.
- Decrease regulatory exposure with GAMP-proven and CFR-compliant designs.

WATCH THE VIDEO
Learn More About Cytiva's Digital Transformation

In this video, Kevin Seaver explains how his team delivers Figurate automation to Cytiva's FlexFactory biomanufacturing platform — the solution that offers faster deployment, multi-product processing, and accelerated production with flexible, scalable processes. Watch the video at **http://rok.auto/Cytiva**.

The firm's work with Rockwell Automation has provided a flexible scalable platform that supports this growth.

Cytiva's FlexFactory line includes Figurate bioreactors, media and buffer preparation, cell culture production, harvesting, purification, viral clearance, sterile filtration and bulk formulation processes. All of these can be combined in modular prefabricated KUBio cleanroom shipping containers and delivered to biomanufacturing firms, essentially ready to go.

"Our KUBio systems are effectively shipping container-based production units that allow us to build an entire factory in less than 18 months," says Seaver.

Enhancing Data Insights

The Cytiva Figurate automation platform includes control and communication capabilities that turn data insights into productive outcomes for both upstream and downstream process efficiency gains.

To develop and put its Figurate platform in place, Cytiva adopted the PlantPAx® distributed control system from Rockwell Automation and used its own Unicorn software to automate its bioprocess equipment. It integrates with manufacturing execution system (MES) applications, electronic batch records (EBR), scheduling and more.

Within The Connected Enterprise®, end users have all the documentation they need electronically and can release it to manufacturing immediately. Additionally, Figurate can connect with cloud-computer services where it can be combined with additional operational data. Using advanced analytics, these insights can help improve operations and optimize processes.

Faster, Quality Work

Cytiva's testing environment allows the company to prove everything out before it goes to end users. If manufacturers have questions or problems, they can bring them in and test them, creating a collaborative environment.

The customizable platform is designed to streamline deployment of systems for end users. Standardized digital libraries — such as product code that's been tested, documented and validated — also can create more efficient process development all the way through manufacturing and automation.

The benefits include 10 to 20% increases in production throughput, availability and production employee efficiency, as well as 5 to 30% decreases in energy use, scrap material, batch release time, maintenance and downtime investigations.

"There's cost, time and quality. Usually if you want to gain on any one of those three you have to give up something," Seaver explains. "But we can be faster. We can deliver it more cost-effectively since we've already done all that upfront work. And quality is higher, too, because we've validated the code as well."

Cytiva also is working with Rockwell Automation and its Strategic Alliance Partner PTC to create augmented reality (AR) operator support tools. For example, its operators can use AR image capture to display and manipulate images that show pH, dissolved oxygen, carbon dioxide, control cabinet performance and other crucial parameters more quickly. PTC Vuforia® Chalk software even allows operators and supervisors to mark up images to point out details that need addressed. ●

DOWNLOAD THE eBOOK

The Facility of The Future: Critical considerations for deploying smart, fast and flexible Life Sciences facilities

Biotech and pharma companies are looking to intelligent, connected operations as a way to remain competitive and better serve those who rely on their products. In this eBook, learn about the many challenges facing the industry and how to create a smart, secure, connected, flexible and compliant facility that maximizes ROI and achieves greater time to market. Download the eBook at **http://rok.auto/lifescience-ebook**.

4 Steps a Packaging OEM is Taking to Boost Agility

Learn from this machine maker's digital transformation strategy that uses the IIoT and AR to expand what's possible for both it and its end users.

For Harpak-ULMA, digital transformation's value is in its ability to help end users better adapt to market changes. So, the packaging OEM set up a four-step digital transformation strategy that's about expanding what's possible not only in its own operations but in those of its end users.

This maker of end-to-end packaging line automation solutions began its digital transformation journey in October 2018. The goal of the multiphase, years-long initiative is to support revenue growth and create new business lines for the company.

"Digital transformation has legs for a reason," says Kevin Roach, president, Harpak-ULMA. "It helps us do more and go faster, by leveraging data to make the traditional barriers to change — that is time, cost and risk — easier to manipulate."

The firm's leaders also want to support customers in the food, medical and industrial markets by providing them with smart, connected packaging machines.

Improving Agility

The company launched its digital transformation initiative with a technology roadmap that included four phases.

Reimagining Smart Machines and Equipment

As an OEM, how do you keep up with marketplace challenges? This eBook from Rockwell Automation explains that the answer is: with information-enabled, smart machines and equipment that use advanced technology — and are built on a foundation that securely and safely connects to the production environment and beyond. Download the eBook at **http://rok.auto/smartmachines-ebook**.

The first phase was to establish a smart, connected foundation for end users by migrating to a single, standardized control platform. Harpak-ULMA chose to standardize on Rockwell Automation controls and components, providing an open-architecture foundation for smart, connected machines.

In addition, Rockwell Automation Strategic Alliance Partner PTC provides pre-integrated compatibility with control solutions from Rockwell Automation. PTC's Industrial Internet of Things (IIoT) software applications — Vuforia® augmented reality (AR) and Thingworx® industrial connectivity — help reimagine how people operate and maintain production assets.

The second phase involved implementing AR workflows to help drive productivity.

"From a customer-impact standpoint, the ability to deliver instantly understandable visual training or guidance, or to collaborate with an expert resource, it's a game changer," believes Roach.

With on-demand expertise and visual guidance delivered through AR technology, Harpak-ULMA can support end users from anywhere and introduce new capabilities like virtual factory acceptance tests. Meanwhile, end users can use the technology to reduce operator learning curves and on-boarding times.

Creating New Insights

Harpak-ULMA has made significant progress on phase two, and is now underway on **phase three, which involves incorporating more IIoT touchpoints.** This essentially combines packaging machines with their digital twins to offer enhanced operating experiences and information integration.

"Expanding the breadth and depth of embedded IIoT lets us to integrate with advanced IIoT applications that expose detailed machine operations in real time to production staff," Roach explains.

For end users, more data means more real-time, contextualized production information is available to both staff and onboard diagnostics.

"In this stage, we're expanding on AR capabilities to deliver a deeper set of real-time capabilities that will allow staff to have what we call X-ray vision," he says. "Exposing the digital twin of a machine is an interactive way to learn more and diagnose better."

For example, if technicians get alerts about machine problems, they don't need to shut down the machine, go through lockout/tagout procedures and open the control cabinet to investigate the problem. Instead, they can just use an AR headset, smartphone or tablet to look at a digital twin of the machine and identify the fault.

Predictions

The fourth phase is to apply machine learning and artificial intelligence (AI) to the vast amount of data collected during production. This effort, while still in the planning stage, will allow Harpak-ULMA to create new business models by introducing cloud-based predictive maintenance and benchmarking services.

"This final stage represents an evolutionary step for customers in terms of their OEM relationship," Roach notes. "Big data solutions that use machine learning and artificial intelligence will make the holy grail of predictive maintenance analytics in our markets attainable."

For end users, predictive maintenance can help reduce unplanned downtime, and restructure legacy maintenance and cost models. And industry wide benchmarking offers them an opportunity to better understand the effectiveness of their production processes.

Of course, making these concepts a reality in production environments will come with challenges.

"We'll need to resolve data ownership concerns and work through connectivity issues that arise with predictive maintenance monitoring," Roach admits. "But it's not like there's no precedent. If this can be done for aircraft engines, it can be done for a packaging production environment as well." ●

Amanda Joshi
Managing Editor

Record No. of Global Visitors Attend Automation Fair At Home

This interactive virtual event helped industrial automation professionals improve their expertise and skillsets and view the latest control solutions.

The 2020 Automation Fair® At Home virtual experience was held right in the living rooms, kitchens and home offices of more than 40,000 registered global attendees. It offered hundreds of new products, 65 virtual booths and numerous interactive virtual tours. The live presentations spanned five full days, from November 16-20, and on-demand content is still readily available through June 2021.

The experience not only delivered presentations on the newest technology and solutions, but also success stories embracing the ongoing cultural changes and technology disruptions — especially amid a trying year for everyone around the globe. Hosted by Rockwell Automation, the event delivered best practices that help IT/OT professionals and automation engineers tackle production challenges, improve skillsets and enhance operations.

HOW TO WATCH ON DEMAND

Visit www.automationfair.com and follow the prompts to sign in or register to watch the on-demand presentations.

Feedback from Rockwell Automation partners and distributors about the lingering global pandemic and its impact on businesses prompted the need for the virtual event. The virtual format provided the opportunity to interact safely with technology experts and executives; participate in engaging hands-on labs, training sessions, industry-focused forums and keynote presentations; and network with leading professionals in the field.

Haven't signed up yet? Missed some keynotes? Visit www.automationfair.com and follow the prompts to sign in or register to watch the on-demand presentations through June. In the meantime, let's look at some event highlights.

What's Next

The first three days of Automation Fair At Home began with Perspectives keynote presentations from Rockwell Automation executive leadership, industry experts and Rockwell Automation partner companies. The Perspectives presentation, exclusively for media in years past, was available to every registered attendee this year.

Blake Moret, CEO of Rockwell Automation, kicked off the event with a Perspectives keynote address focusing on "Your Next" as the theme for the digital event. Despite a year of challenges, "it's also been a year of opportunities to increase resilience, agility and sustainability," he said.

He then shared what's next for Rockwell Automation and added, "we hope what we've learned can help you as you create your own 'next.'"

For example, he shared how pharmaceutical company Roche needed to transform three facilities to manufacture COVID test kits. Using PharmaSuite® manufacturing execution system (MES), Rockwell Automation engineering professionals worked with Roche "to help

Blake Moret, chairman and CEO, Rockwell Automation, kicked off this year's Automation Fair At Home in a Perspectives keynote presentation.

the world recover" from test-kit shortages, Moret said. Rockwell Automation also helped Johnson & Johnson enforce social distancing by using mobile robots to orchestrate a plant floor with safe spaces.

A key part of any next innovation is developing solid technology, partnerships and acquisitions. During Automation Fair At Home, Rockwell Automation introduced numerous new products and services designed to bring the next advancements in industrial automation, including the new PlantPax® 5.0 distributed control system (DCS) and enhancements to the FactoryTalk® suite of tools.

Moret also announced enhancements to existing collaborations with Strategic Alliance Partners PTC and Microsoft that will further drive new product development.

Microsoft will focus on cloud-native solutions to increase the ability to take data and raise productivity through information and insights. In the five-year expansion of their collaboration, the goal is to create a unified data environment that also allows IT and OT teams to not only securely access and share data models across the organization, but also with their ecosystem of partners.

"We also extended and deepened our PTC partnership with increased orders and new technology," Moret said. The pandemic and the need for remote work has seen desire to accelerate digital transformation rise across all industries, explained Moret.

Rounding out a busy year, Moret drew attention to the company's acquisition of software developer Kalypso, to accelerate digital transformation; and Italy-based ASEM, a provider of industrial PCs and software for machine builders in Europe.

After Moret's address, other Rockwell Automation experts spoke on topics ranging from the connected supply chain to innovations in software and control, intelligent devices and the new LifecyleIQ™ services (see pg 40 for more on LifecycleIQ).

Renowned inventor, Dean Kamen, founder of the Advanced Regenerative Manufacturing Institute (ARMI), spoke on Perspectives Day 2 about his next innovation and how automation is the key to bringing organ manufacturing to scale.

"Regenerative medicine, it's the future. Well, it's been the future for decades, and the problem is it will continue to be the future until the world of engineering becomes a very visible piece of the equation," Kamen said.

The following Perspectives sessions were presented by leaders from other organizations including Cisco, Georgia-Pacific, Stanley Black & Decker, PTC and by futurist philosopher Jason Silva.

Explore the Digital Experience

The virtual event included three unique Rockwell Automation "experiences" featuring the Digital Engineering Hall, the Digital Thread Experience and the Products & Technology Showcase. These gave attendees a close-up look at the company's Milwaukee headquarters, starting with the company's lobby and extending to several other floors, with re-imagined exhibits in a virtual format,

BOLD CONVERSATIONS START SOMEWHERE

The cultural and social events of 2020 showed more than ever inclusivity is needed in workplaces. This includes having difficult conversations when divisive and often polarizing current events or topics have made it even more challenging.

"We know that to be successful, we need to work effectively in a culturally diverse environment and that starts by encouraging listening, learning and respect," said Michele Matthai, director of culture of inclusion and diversity at Rockwell Automation, during the opening of the Bold Conversations panel discussion she led on "Inclusive Workplaces in a Divisive World."

She was joined by Rockwell Automation colleagues Gary Ballesteros, chief compliance officer; John Lohmann, regional OEM sales director, central region; and Olivia Leak, account manager. They discussed what they've learned in navigating difficult conversations, breaking down barriers and building a more inclusive environment for everyone.

The panelists first addressed what had changed for them on this topic during 2020, in the midst of a pandemic, social unrest and an election year.

Olivia Leak from Rockwell Automation believes difficult conversations on divisive topics can build mutual trust when approached with authenticity from both sides.

"I find myself right at the intersection of three of our most polarizing biases. I'm young, I'm black and I'm also a woman," Leak said. "What we saw this summer wasn't unique to 2020; it really was an ongoing problem, something that we've seen consistently." She wanted to respond to colleagues offering support, but didn't know what to ask of them.

After some reflection, she was able to better articulate her thoughts to the teams that supported her. She identified key obstacles she had experienced because of her diverse background and asked for more support in specific areas. "That really helped me navigate this new environment that's now influenced my culture," Leak said.

Are there topics or discussions that aren't suited for the workplace? The panelists resoundingly said no. "We spend an awful lot of time at work," Ballesteros said. "We put a lot of time and energy and effort into it, and it doesn't feel right to me that we would divorce major societal impacts from our work lives. Life is just not that nicely siloed. I sincerely believe and I've seen many instances of it, where diversity of thought leads to better decision-making."

You can watch this presentation and others in the Bold Conversations track on demand at **www.automationfair.com.**

providing a safe, informative and engaging experience.

On the Digital Engineering Hall tour, attendees learned about tools to help advance design, operation and maintenance in digital environments. The tour included six stops, focusing on an end-to-end demo of a digital engineering project; a look at the next generation design environment; and a digital engineering ecosystem where you can learn how Rockwell Automation collaborates with its partners to help you deliver better business outcomes.

Other stops showcase how digital technologies such as independent cart technology, digital twins, design software and training simulation can work together; a demonstration of the VersaView® industrial computers; and how augmented reality services for remote support can help troubleshoot and resolve issues quickly.

In the Digital Thread Experience, you can tour an end-to-end Connected Enterprise system and see firsthand how the Rockwell Automation PartnerNetwork™ ecosystem can help you find the solutions to your production challenges.

In seven tour stops, you'll see these real-world solutions in action and discover how to accelerate your digital transformation. Each stop lets you explore how to decrease time to market, improve line speeds, minimize bottlenecks and increase output. You can also learn more about smart sensing and safety, scalable control systems, the new LifecycleIQ services, and more.

On the Product and Technology Showcase tour, attendees experience 14 tour stops highlighting several new innovations that demonstrate how The Connected Enterprise connects smart devices to smart systems to deliver smarter operations.

Each stop offers exciting new offerings in digital operations, scalable control system environments,

A PSUG session shared how Plummer Forest Products rebounded from a major fire with help from its employees, two system integrators and PlantPAx® DCS. The particle board manufacturing plant was rebuilt and shipping product again in just three months.

intelligent packaged power solutions, life cycle services, modern human-machine interface (HMI) systems, networks and security infrastructure technologies, smart devices and safety solutions, and more.

Some notable mentions include enhanced FactoryTalk® Asset-Centre software, new capabilities in FactoryTalk InnovationSuite, improved MCC integration with Modbus TCP networks, and the expansion of Kinetix integrated motion drives.

Learning from Others

Designed to help users improve their processes and create new revenue streams, the Process Solutions User Group (PSUG) sessions showcased real results using the process solutions available from Rockwell Automation. PSUG addresses the production challenges you face every day, including control strategies, optimization, process safety, batch automation and more.

Sessions available on demand include two keynote addresses, product and technology demonstrations, and an abundance of customer application sessions showcasing outcomes to processing challenges. The enlightening case studies can help process control engineers, plant managers, operators, manufacturing IT professionals, integrators and EPC consultants gain greater insight into the latest new process automation technologies and best practices.

For example, in "U.S. Naval Base Kitsap Steam Plant DCS Migration," the U.S. Navy is migrating from Westinghouse WDPF to the PlantPAx® distributed control system (DCS). Rockwell Automation and its Solution Partner Systems Interface, Inc., Mukilteo, Washington, collaborated to design and deliver a modern DCS, burner management and combustion control systems. Learn how they are executing during ongoing operations with extensive up-front migration and acceptance test planning for all hardware, software and control strategies.

Another PSUG session, "Ivy League School Upgrades Legacy System for Improved Reliability, Optimization, and Scalability,"

shared how Rockwell Automation and Solution Partner Thermo Systems of East Windsor, New Jersey, worked to migrate a legacy Modicon PLC control system to an Allen-Bradley® system for an Ivy League university in the Northeast United States. This control system provides balance of plant functions for a critical 13,000-ton chilled water facility that helps cool the university's critical research labs.

Grant Selking, engineering manager at Thermo Systems described overcoming the aggressive project schedule and limited physical space to deliver improved reliability while enabling future scalability and optimization of the control system.

In another story, Plummer Forest Products (PFP), a particle board manufacturer in Post Falls, Idaho, suffered an extensive fire (see photo on p. 26) that consumed part of the building and destroyed much of the control systems. The owner chose to rebuild the plant and replace the decimated proprietary control system with the PlantPAx® distributed control system (DCS) from Rockwell Automation. Watch the presentation on demand and learn how several players came together to complete the project in just under four months.

Other case studies include tissue maker Kimberly-Clark's machine implementation in the middle of COVID-19, a beer brewer's adaptation of batch management software, the digital transformation of the largest independent liquid petroleum pipeline operator, and more. You can watch these presentations, as well as other PSUG technical demonstrations and best practices for improved process control on demand.

Partner Showcase

Members of the Rockwell Automation PartnerNetwork program helped visitors learn more about many connectivity and industrial automation solutions in their Partner Showcase virtual booths,

and in the New Products and Solutions Showcase (https://rok.auto/ProductTechnology) launched in conjunction with Automation Fair At Home. Here is information on a few innovative technologies you can find while perusing the Partner Showcase.

Encompass™ Product Partner **Grace Technologies** showcased the new ControlGate, part of the GraceSense predictive maintenance system line of smart devices. ControlGate acts as the gateway into the control system from the wireless IIoT system. It allows industrial users to house all of their data in one place, including SCADA, DCSs, and other control systems. The gateway provides support to wireless nodes within a 30 m radius. These nodes can be dedicated to specific applications, such as vibration and temperature, and can accept a variety of sensor inputs, such as current, pressure, flow, fluid level, humidity and more.

Toronto-based **Nymi**, a new Rockwell Automation Encompass™ Partner, introduced its workplace wearable smart wristband that provides active workers an alert system for COVID-19 social distancing and contact tracing, effortless digital signatures, and physical danger warnings. The device enables industries to incorporate Nymi's password-less technology with applications that support the health, safety, and security of connected workers.

Encompass™ Product Partner **LLumin** now offers its READYAsset software that transforms the way organizations manage maintenance operations and achieve higher production output. The software minimizes machine, production and operations downtime by integrating with control systems and IOT-enabled assets to monitor each machine's specific state in real-time. When conditions or other rules predicting a potential fault are recognized, a special set of actions and sequences automatically trigger the best response.

Empowering Digital Operations

Recognizing the need to inspire digital pioneers and OT/IT professionals, Rockwell Automation developed a new

LESSONS FROM THE PANDEMIC

COVID-19 prompted the need for social distancing and new ways of working. As a result, Rockwell Automation and its partner companies recognized the valuable insights their technology, solutions, and real-world experiences could bring to the table in helping automation professionals adapt to these new challenges. So, the Industry Forums, Process Solutions, Product & Technologies and Bold Conversations tracks each carry at least one presentation dedicated to best practices for navigating these difficult times. Here's a sampling of a few you can watch on demand:

INDUSTRY FORUM

Adapting to the New Normal by Digitalizing Your Chemical Operations: The global pandemic exacerbated demand destruction, supply chain disruptions and human capital challenges in the chemical industry. However, it's accelerating adoption of digital technologies to safely and efficiently run operations. While the industry can't digitalize overnight, it also can't afford to wait years to reap the benefits of a digital thread. A variety of industry experts discuss how digitalization can be rapidly achieved with the right technology, smart assets and planning to provide lasting business value.

PROCESS SOLUTIONS

Delivering a New Tissue Machine in a COVID-19 World: Global tissue maker Kimberly-Clark was replacing an old tissue machine with a brand new one that included a control system that provides a unified view and control of components from multiple OEM vendors. Then the COVID-19 pandemic hit. Gabriel Pacheco, electrical engineer and project lead, examined the control system, lessons learned, and the collaborative effort and the out-of-the-box thinking required to get the machine into production during the pandemic.

PRODUCTS & TECHNOLOGIES

Navigate Change with Modern Remote Support Options: More employees than ever before are working remotely, and new pressures face those remaining on the plant floor or in the field. Rockwell Automation has services available that will make remote monitoring and application support your first line of defense; augmented reality a valuable troubleshooting tool; and e-learning a way to improve workforce skills. Find out how modern support services can help your organization through these challenging times and beyond.

Digitizing the Active Worker: Get back to work in a safe, secure and simple environment. Learn how standards-based Workplace Wearables help support safety during a global pandemic, provide efficient manufacturing and worker satisfaction. Chris Sullivan, CEO of Rockwell Automation participating Encompass™ Product Partner Nymi, presents.

BOLD CONVERSATIONS

Inclusive Leadership During the Time of the Pandemic: The transition to a new way of working — in the context of a global pandemic — presents both challenges and opportunities for promoting diversity and fostering inclusion. It's more important than ever for organizations and individuals to practice inclusive leadership. In this session, panelists will discuss current challenges engaging remote teams, overcoming bias, balancing work and personal commitments, and leading with empathy.

track called Digital Strategists (DX). The sessions bring together experts and innovations to help you overcome industrial digital transformation challenges.

The information locked in data streams pouring into your factory can transform how you manage operations, solve issues and adapt to change. But managing the implementation of a digital transformation can be challenging. Attendees to DX sessions can learn how to simplify OT/IT integration for critical OT data sources. They also can learn how to drive measurable business outcomes by hearing from industry leaders in interactive discussions.

For instance, Prith Banerjee, chief technology officer at Ansys, discussed the challenges and opportunities of the expanding digital twins market. The use of digital twins supports the design, analysis, build, manufacturing and operations phases of asset-intensive industries. Digital Twins have a physical asset, a virtual asset (a simulation model of the asset), and a two-way information flow between the physical and virtual worlds using an IoT platform. Most recently, companies are using Hybrid approaches combining data-based analytics and physics-based approaches to build very accurate digital twins that require less training data.
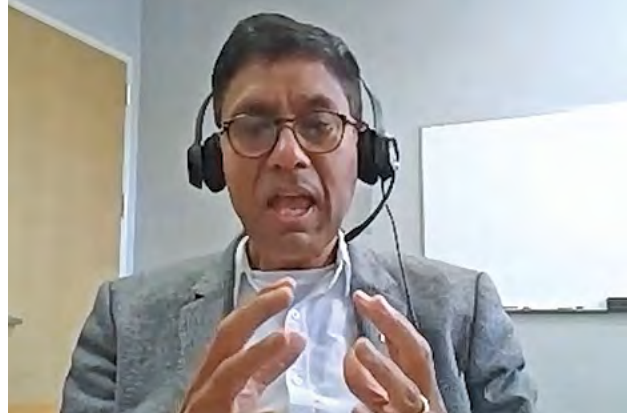
Prith Banerjee of Ansys explained the evolving technologies that will push further adoption of digital twins.

Banjeree also pointed out the success of applications can depend on partnerships with other companies. Building digital twins in different phases in many different industries is not something Ansys can do alone, he explained, noting many of the company's important partners involved in open ecosystem solutions. Ansys has partnered with many organizations such as Rockwell Automation, PTC, SAP, Microsoft Azure and more to bring combined solutions to end users.

Other sessions focused on how to leverage smart manufacturing to drive productivity and growth, how to manage your data and improve your competitive edge with artificial intelligence, how to get the most out of machine learning to boost industrial performance, how to leverage a manufacturing execution system in your digital transformation and more.

"Users can get some quick wins with digitalization, and use them as a foundation for transitioning to a new world." ExxonMobil's Dave Hedge argues that the oil and gas industry must adopt digital tools to attract the new generation of technical professionals that will bring the industry forward.

Forum Panelists Highlight Industry Challenges

Automation Fair At Home still offered much of what previous on-site Automation Fair events showcased including the industry forums. In ten forums dedicated to specific industries, attendees heard panel presentations from industry and automation professionals sharing how digitization and automation technology experiences and applications are helping meet challenges in their respective industries.

For example, the oil and gas industry has experienced extreme volatility in the last few years: from oversupply and low prices to limited financial resources and more recently the challenges of managing operations in person to reduce the spread of COVID-19.

Pal Roach, industry consultant, Oil & Gas with Rockwell Automation, noted, "The present situation with COVID-19 is similar to past downturns. Much of the initial 30% dip in demand has been recovered, but we're still down 5-7%, and most estimates are that it will be slow to come back because so many more people are working at home.

"At the same time, even though demand for aviation fuel has collapsed, diesel fuel is up because there are so many Amazon and other trucks driving through neighborhoods," he continued. "Some estimates are that demand will remain down 5-6% for 20 years, and some refineries will have to close. Others indicate the refining industry may grow 20% by 2040, but this will still be only a 1% increase per year."

Digital technologies are transforming the way the industry operates and acts sustainably and profitably. Many forms of technology in the IIOT space are providing opportunities for end users to optimize their assets and reduce their costs while managing the rapidly changing workforce dynamic.

In the Oil and Gas Industry Forum, five industry experts explored in the industry's needs and the capabilities of its suppliers to deploy digital technologies and deliver advanced automation to achieve better operational efficiencies.

There is "an overwhelming surge of digital technologies by process industry users, which are being adopted after being risk-tested in other industries," said Fred Wasden, Shell veteran and managing member at OptilytiX, a consultancy focused on accelerating asset value realization through data analytics and technology implementation for the energy industry. "We're also facing a big challenge in recruiting and retaining staff. It's an exciting time, but it's a lot of change all at once."

Because so many potentially useful technologies are emerging so quickly, Andy Weatherhead, chief technology officer at Sensia, reported that many of these technologies and their architectures are converging.

"For example, cybersecurity capabilities are getting baked into many products, which is making them pervasive," he said. "Many applications are becoming increasingly virtualized at the same time that they're participating in open-source software communities like the Open Process Automation Forum (OPAF), or beginning to use fit-for-purpose sensors or self-organizing wireless components."

Chetan Desai, vice president of digital technologies at oilfield equipment and services supplier Schlumberger, added that one way to organize today's ever-shifting technology deluge is to ask "to what end?" and concentrate only on those that can solve specific problems.

"The real problems are change management and adoption, and how to package and deliver solutions to users," noted Desai. "Digitalization can affect all the pieces in the full, cradle-to-grave life cycle of many hydrocarbon assets, so we have to focus on the ones that can uplift performance across those life cycles."

Dave Hedge, solution architect at ExxonMobil Information Technology, reported there are three main phases of digital transformation — initial data collection, taking and learning, and applying it back in the field — and that COVID-19 has accelerated all of these initiatives. "It's amazing what digital transformation can do, but the question suddenly became 'how can we get everyone onboard?' So, we need to get back to deciding on a common vision about what we need digitalization to do based on extracting value from our processes."

To hear more from these panelists and visit other industry forums, go to www.automationfair.com and register or log in to watch the presentations. ●

DON'T FORGET!
PROFESSIONAL DEVELOPMENT HOUR CREDITS

All technical sessions presented by Rockwell Automation are eligible for Professional Development Hour credits, including any accessed "on-demand" from November 2020 through June 2021.

Theresa Houck
Executive Editor

Q&A: How One Company Navigates the DX Path

A petroleum firm leader talks with *The Journal* about prioritizing digital transformation initiatives and employees working from home during the pandemic.

Industrial firms of all sizes and performing different operations are at varying points on their digital transformation (DX) path. Some are just starting, some are partially where they want to be, some see the light at the end of the tunnel, and some don't know where to start. So, it's helpful to hear from companies implementing DX technologies to hear how it worked for them.

To that end, I talked with Angel Matos, senior manager of Terminal Applications at Buckeye Partners, to learn about its DX journey. Buckeye is one of the largest independent liquid petroleum products pipeline operators in the United States, and has a global network of integrated assets providing midstream logistic solutions for the transportation, storage, processing and marketing of liquid petroleum products.

The firm worked with Rockwell Automation Technology Partner Stratus Technologies to implement its edge computing platform for Buckeye's facilities and global terminal network. Angel gave me some insight into how they approached DX and edge computing.

Theresa: How did COVID-19 affect your customers' needs? And what actions did you take to address these needs?

Angel: Interestingly, there was nearly no impact to my customers. My position is primarily to serve internal customers, which are domestic pipes and terminals and global marine terminals. They, in turn, serve the external customers.

The IT and operations technology (OT) disciplines were allowed to bring home all the equipment and peripherals to establish a good working setup from home. Having the ability to remotely monitor, access, support and modify the system,

the IT and OT departments have been successful in serving their organizations. We've received many complements and recognition for maintaining such a high level of service.

This has continued to allow our Field Operations team to provide the same level of service, while enforcing and maintaining a safe working environment for our employees during this challenging time.

Now, we couldn't work remotely in every scenario. For projects that call for office visits, travel to sites, user acceptance tests (UATs), factory acceptance tests (FATs) and commissioning, we brainstormed and became creative.

We were able to successfully complete UATs and FATs by staging the steps and resources required to be physically present, but completed quite a few with many of the remote software tools available such as WebEx, Microsoft® Teams, Cisco® Jabber and Remote Desktop. We've been able to successfully complete our projects, with the only change being the need to include additional time to project timelines.

Theresa: How should customers prioritize their DX initiatives when budgets are top of mind?

Angel: DX can become a bit overwhelming for many, especially when you discuss the financial investment and time it could take. But like anything, you have to take a crawl, walk and run approach. Identify key areas you feel digital technologies can help create new or modify existing business processes, culture and customer experiences to meet the changing business and market requirements.

Start by identifying and selecting a few small opportunities you determine would yield the best results, conduct proof of concepts and pilot sites or projects. Then ramp up as you fine-tune the process, the experience and confidence in the technology.

Theresa: Is emerging technology, like machine learning or digital twins, being prioritized given the budget-focused mindset?

Angel: Yes, today, our organization is taking on digital twins as well as remote process automation (RPA). We are looking at ways to become more efficient, automate repetitive tasks and data entry with RPA and minimize errors while trying to maintain and improve a competitive advantage in our industry.

Theresa: In today's environment, how has edge computing become more of a priority for DX initiatives?

Angel: From a Terminal Automation standpoint, it was important for us to begin with identifying a good edge computing device, which is why we engaged with Stratus. Our main objective is to maintain and track uptime. ●

STRATUS TECHNOLOGIES based in Maynard, Massachusetts, is a participating Technology Partner in the Rockwell Automation PartnerNetwork™. The company provides high availability and fault tolerant solutions to keep applications up and running.

BUCKEYE PARTNERS has about 6,000 miles of pipeline. It operates and maintains third-party pipelines and performs engineering and construction services. Its global terminal network comprises more than 115 liquid petroleum products terminals with aggregate tank capacity of more than 118 million barrels across its pipelines, inland terminals and marine terminals.

🎙 **LISTEN TO THE PODCAST**
What is Edge Computing, and Is It for You?

In *The Journal* magazine's latest Automation Chat podcast episode, "What is Edge Computing, and Is It for You?" Executive Editor Theresa Houck talks with Jason Andersen, Vice President of Strategy and Product Management at Stratus Technologies. We answer the question many people ask: What is edge computing, and how is it different from the cloud? You'll learn how to know if it will help you; what's involved in implementing it; and get examples of it at work in real companies.

Jason also describes how OEMs are using edge computing to provide new capabilities for customers.

Listen on your favorite podcast app, on the web at **https://bit.ly/tj20stratuspod**, or watch our chat on YouTube at **https://youtu.be/SVEzPU5TVGU**.

How Remote Alarms Can Help Food Processers Avoid Downtime

Remote alarm notification is a predictive maintenance tool to help food and beverage firms deal with the COVID-19 pandemic and maintenance worker shortage.

WIN-911

Greg Jackson
Chief Executive Officer

Millions of dollars are invested each year in capital improvements for facilities and equipment to increase product safety, protect employees and reduce costs. This is important, because equipment in a typical food processing plant might run 16 to 20 hours a day, every day.

Equipment failure often is the most common cause for downtime. The longer it takes plant personnel to respond and repair equipment, the more damaging the interruption. What's more, systems that aren't at full speed create a domino effect that can cause missed deadlines, lost revenue and unhappy customers.

Unplanned downtime can cost a food processing facility an astounding $30,000 per hour. According to analyst firm Aberdeen Research, 82% of companies have experienced unplanned downtime over the past three years, and a Deloitte industry report cited recent studies that show unplanned downtime costs industrial manufacturers about $50 billion annually.

However, downtime can cost a company more than just money: It can be a logistical nightmare. The expenses and ramifications are simply too high to risk equipment failures, particularly now.

As the world grapples with the effects of COVID-19, the food processing industry is under more pressure than ever to maintain

Remote Alarm Notification

One strategy to help resolve this is for food processing plant leaders to invest in technology for areas with worker shortages — technology such as sensors that monitor whether a machine is working properly instead of having someone crawl under equipment to check out a problem.

Another way is by using remote alarm notification software, which allows fewer people to monitor more assets using devices they already have, such as smartphones and tablets. Uninterrupted remote availability is needed so systems can be monitored continuously, even without staff onsite or with fewer people working at the facility.

Hardware and software are available that can monitor equipment constantly and, by applying machine learning to historical data, warn when a breakdown or other problem is imminent. These predictive maintenance tools are customizable and are bolstered by wireless technology and the Industrial Internet of Things (IIoT).

ongoing operations. In the United States, these facilities have been deemed essential, and state and federal authorities are working to keep supply lines intact.

Worker Shortage and Plant Downtime

In addition, maintenance worker shortages existed even before the pandemic. U.S. manufacturing is in the thick of an expected shortage of two million workers from 2015 to 2025, according to a report from Deloitte and the Manufacturing Institute.

And a 2017 industry study sponsored by Advanced Technology Services found that the leading cause of unscheduled downtime within respondents' facilities was aging equipment (42%), followed by operator error (19%) and lack of time needed to perform necessary maintenance (13%).

Of all the core disciplines that the shortage of trained personnel affects, machine maintenance might be the most troublesome for food and beverage producers. Currently, 35% of U.S. manufacturers are seeking maintenance technicians, and an even higher percentage are shifting at least some maintenance responsibilities to operating personnel — a risky tactic at a time when equipment is becoming increasingly automated and complex.

Push notifications are designed to streamline decision-making by allowing users to see quickly what's wrong, send an acknowledgment and monitor alarm condition changes in real time. Photo courtesy of WIN-911.

REMOTE MONITORING IN ACTION AT TYSON FOODS

Tyson Foods is one of the largest food processors in the world. The company's New London, Wisconsin, plant upgraded an aging PC-based human-machine interface (HMI) system to a new Rockwell Automation platform with alarm notification software. The system monitors the cutting, chilling, cooking and packaging equipment of several production lines.

The old process involved operators visually monitoring controls, and then physically calling a maintenance technician if an issue occurred. With the new system, software automatically alerts maintenance and engineering staff when level, temperature or pressure systems trigger alarms, resulting in better response times, increased food safety and improved staff productivity.

The old monitoring system also was running obsolete programs — some from as far back as the 1990s — and crashed weekly. While food production lines rolled on, IT and operations staff would troubleshoot the crash.

Meanwhile, plant supervisors would have no visibility into production, and data would be frequently lost. What's worse, it put compliance with U.S. Department of Agriculture (USDA) reporting regulations at risk. Once the system was back online, staff would then need to recheck all production and utility systems, and reboot applications. The entire process took several hours.

"The fact that the system was crashing every week was a sure sign that we needed to upgrade," says Jonathan Riechert, senior engineer-innovation, Corporate Engineering Group, Tyson Foods.

"Beyond the USDA reporting issue, we knew we couldn't keep taking hours out of employees' days to troubleshoot. A new operating system would be both a food safety and maintenance improvement," he adds.

The software company, and its SCADA partners, helped Tyson Foods automate a time-consuming, error-prone equipment alarm monitoring process. Frequent system crashes have been completely averted, resulting in increased worker productivity, greater food safety and lower maintenance costs.

"In addition to helping ease compliance, the capabilities have allowed the facility to save $100,000 in wastewater chemicals," Riechert says. "The added visibility allowed us to see where inefficiencies were happening so we could adjust and refine our process."

Remote monitoring and notification software systems are designed to provide:

• **Streamlined decision-making.** Push notifications (see illustration) let you see quickly what is wrong, send an acknowledgment and monitor alarm condition changes in real time, right from a smartphone.
• **Team problem-solving.** A chat function allows a work team to converse, brainstorm and share solutions on the fly, from wherever they are — whether in the plant, at home or on the road.
• **More efficient work.** A team visibility function displays who has seen an alarm and who has acknowledged it, reducing guesswork and redundant responses.
• **Multiple communication channel support.** The work team can gain resiliency through voice notification and SMS messaging in the event of Internet connectivity issues.

Essential Providers

Food processors play an essential worldwide role in helping to guarantee short- and long-term food security, especially during these unprecedented times. Remote alarm notification software is an option to help these firms move from a reactive to a more controlled, predictive maintenance approach. ●

SOFTING, INC.

What's the Best Way to Connect Your PLC to IIoT Business Apps for Analytics?

tManager is the only CompactLogix™ PLC module that connects the PLC directly to your enterprise SQL database, favorite analytics package, dashboard projects, track and trace, recipe download, high-speed sorting, and quality monitoring app. Eliminate the connectivity server in the middle and custom coding and use tManager, the built-for-purpose PLC in-chassis connectivity module, for bidirectional data movement between IT and OT. Here's the "how to" video series: **https://bit.ly/3aVJURk.**

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HMS NETWORKS

Unlock New Services with Your Machine Data

The Ewon Flexy 205 is an advanced internet data gateway from HMS Networks that allows monitoring and collection of data for analysis and predictive maintenance. With data logging, alarming, built-in web interface, scripting and enhanced internet connectivity, it is a versatile internet gateway for your IoT deployment.

www.ewon.biz/products/ewon-flexy/flexy-205

SYTECH INC.

XLReporter from SyTech

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ENHANCED ASSET MANAGEMENT SOFTWARE

The updated **FactoryTalk® AssetCentre software** from Rockwell Automation helps workers more easily manage device firmware and expands disaster-recovery support to several new devices.

Keeping up with device firmware updates is an important yet time-consuming process. With the software's updated asset firmware reporting, workers can quickly access in one place the most current firmware releases for their assets. They also can see product safety advisories, release notes and product notices from a centralized location.

These add to the software's existing abilities to report device firmware, product life-cycle states, discontinuation dates and availability of replacement products. This can save workers considerable time by not having to physically connect to control cabinets and manually record firmware information for production assets.

The updated version now also provides disaster-recovery support to more Rockwell Automation devices. These include the Allen-Bradley® Stratix® 5800 managed switches, E300™ electronic overload relays and PowerFlex® 755T drives, as well as new CompactLogix™ and ControlLogix® process controllers.

Asset Management Software

Encompass™ Product Partner **LLumin**'s READYAsset for Machines software solution runs on any Windows-based industrial computer or controller, such as CompactLogix™ 5480, and gives machine builders a full suite of proactive maintenance functionality that can be set up in advance using a rules-based engine.

During machine use, the system will automatically create and trigger any predictive work or calibrations needed, and trigger proactive communications to any number of contacts or suppliers required. This includes instruction notifications, parts or supplies requisitions, and document transmissions. Escalation rules can also be set up to notify other parties or groups, based on elapsed time response or service level thresholds.
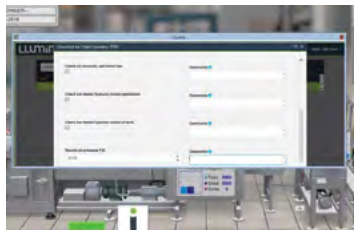
In addition, the software lets OEMs easily monitor the health and status of their machines while in production. They can remotely access their READYAsset instance and update procedures, parts or document records, and even communicate to the operator when needed.

Corrosion-Resistant Gearbox

Encompass™ Product Partner **WITTENSTEIN, Inc.** has launched a new corrosion-resistant gearbox. The new NPL-W, part of the alpha Value Line family, is designed to withstand processing, overspray and cleaning environments.

The gearbox features a painted, corrosion-resistant housing with no gaps, depressions, undercuts, dead spaces or visible screw heads that could provide a breeding ground for bacteria and microorganisms. Its two-component paint resists cleaning agents, and is fully painted from output flange through the adapter plate with 2K lacquer.

The smooth, rounded edges and the lack of horizontal surfaces help any liquids drain off completely. The sealing concept achieves IP65 (splash-proof) protection while the lubricant is NSF registered food grade certification. Corrosion resistant couplings and shrink discs made of stainless steel complete the hygienic drive train.

Kinetix Integrated Motion Drives

The new Allen-Bradley® **Kinetix® 5300 servo drive** from Rockwell Automation is a fully integrated, CIP Motion™ solution designed for global machine builders looking to increase performance and use a single-design environment for control and motion.

The servo drives suit diverse machine applications such as electronics assembly, packaging and converting, printing and web (CPW). The new drives also feature capabilities that can help simplify machine design and optimize performance throughout the machine life cycle.

Like other Kinetix integrated motion drives, the 5300 uses Studio 5000® as a single design environment. Using a single family of servo drives allows machine builders to program all their drives in this one design environment and reuse code across drives, streamlining the design and commissioning process.

Native integration with Logix control allows smart tuning capabilities that adjust for changes in inertia and resonances automatically, helping to optimize machine performance and simplify machine maintenance over time.

Predictive Maintenance System Gateway

The ControlGate is part of the GraceSense predictive maintenance system IIoT line of smart devices from Encompass™ Product Partner **Grace Technologies, Inc.** ControlGate acts as the gateway into the control system from the rest of a facility's wireless IIoT system. This capability allows industrial users to keep their data in one place, including their SCADA, DCS and control systems.

The system has a variety of communication options, including WiFi, LTE and Zigbee, and control integration options, including EtherNet/IP™ and Modbus TCP/IP, based on the preselected configuration.

It supports wireless nodes within a 30 m radius. These nodes can be dedicated to application-specific nodes like Grace's Field Mount Vibration and Temperature Node. They can also be configurable Panel Mount Nodes that can accept a variety of sensor inputs, such as current, temperature, pressure, flow, fluid level, humidity and more.

SMART WRISTBAND

Encompass™ Product Partner **Nymi**, Inc.'s Version 3.0 workplace wearable wristband incorporates password-less technology with applications that verify the health, safety and security of connected workers. The Nymi Band's zero-trust security principles and access control using fingerprint and heartbeat biometrics allow a range of use cases that includes COVID-19 social distancing and contact tracing among others.

The wristband secures an individual's identity by using their fingerprint and heart rhythm to bind the user to the band. It uses On-Body Detection (OBD) and presence to confirm the band is always on the intended user, and the user is actually there. Because the biometrics never leave the band, this provides a high level of security and privacy.

The band has a long battery life, cannot be breached from the Internet, and is cleanable for use in secure environments, clean rooms and in operational environments where it must work flawlessly for long periods of time.

The workplace wearable works underneath uniforms or PPE. Connected workers get access to buildings, computers or factory equipment with a hands-free, proximity-based tap or gesture. Workers also can efficiently and seamlessly sign hundreds of digital documents per day without the need to re-authenticate themselves prior to completing each task.

EXPANDED PROFESSIONAL SUPPORT SERVICES

To help companies innovate faster and more sustainably, Rockwell Automation has evolved its service and solutions capabilities and launched **LifecycleIQ™ Services**. Combining digital technologies with expansive human know-how, the support services help companies work faster, smarter and with greater agility at every point in their business cycle.

Industrial companies can use the services to achieve outcomes such as capturing more value from digital transformation initiatives; reducing risk with comprehensive cybersecurity support; and improving workforce support.

Digital transformation support can begin with defining strategic objectives, identifying use cases and quantifying business value. Rockwell Automation can then continue to support customers through implementation, ongoing maintenance and continuous innovation.

LifecycleIQ Services can help companies adopt a proactive cybersecurity approach and address the entire attack continuum — before, during and after an event. Also, as more companies connect their plants to remote workers and partners such as OEMs, Rockwell Automation can help protect those connections with secure remote access and security posture assessment services.

Single Pair Ethernet

Strategic Alliance Partner **Panduit** introduces a new line of Single Pair Ethernet (SPE) connectivity. SPE is a newly standardized communication technology that extends 2- and 4-pair Ethernet to devices for both industrial control and building automation.

It provides an evolution in device connectivity by standardizing how devices can integrate into existing software platforms without gateways. This connectivity extends Ethernet security tools to OT edge systems and delivers the capability to integrate power and data into the same connectivity.

The SPE solution includes connectivity for IP20 as well as IP67 applications, with a cable solution that delivers the full 1000-meter reach promised by the IEEE 802.3cg standard. The SPE offering is focused on industrial reliability and simple field termination. This will ensure fast deployment, testability and simple reconfigurations while minimizing risk of polarity errors and physical layer debug issues.

SCR Power Controllers

The Thyro-A+ series is Encompass™ Product Partner **Advanced Energy**'s latest addition to its Thyro- family of digital SCR power controllers. Providing improved SCR accuracy and load monitoring for precision industrial and semiconductor heating applications, the controller has a performance range with rated currents from 16A up to 280A and rated voltages from 23V up to 500V.

A control engine delivers a 16x increase to the measurement sampling rate over the Thyro-A. This helps improve process uniformity and repeatability, reduces energy consumption and increases process throughput in precision heating applications. The design offers a compact SCR footprint and quick installation and replacement.

"Copy-paste" configuration profiles easily transfer system parameters between multiple SCR power controllers.

Updated ThinManager Software

To simplify management of industrial applications and devices, Rockwell Automation has updated its **ThinManager® software**, including a new web browser display client that doesn't rely on remote desktop services, and greater flexibility for delivering content.

The update also supports the Allen-Bradley® VersaView® 6300 thin clients and industrial PCs. The thin clients are ThinManager-ready right out of the box. The industrial PCs are ThinManager compatible. They can be used as a PC, a thin client or both at the same time to help improve the reliability of visualization applications.

Expanded compatibility and strategic licensing options for FactoryTalk® View Site Edition (SE) software also are available in the release.

To support a wider range of users globally, the software now allows for all strings and on-terminal commands and prompts to be displayed in a user's local language.

Measuring Device and pH Sensor

Rockwell Automation Strategic Alliance Partner **Endress+Hauser** launches its Liquiline Mobile CML18 handheld device and Memosens CPL51E lab pH sensor. The multi-parameter handheld device promotes easy and reliable monitoring of a variety of critical measured values. The device and the sensor can be paired together for lab applications or for grab sample analysis in the field.

When analyzing a sample, the use of different measuring technologies often can result in deviations between the lab measurement and the measurement recorded in the process. With the CML18 device, the same Memosens sensors are used in the process and in the lab. This helps achieve complete consistency of data between lab and process measurements.

The CPL51E uses the same Memosens technology as the process sensors, but it is optimized for a fast response time in sample analysis and laboratory applications that do not require a high degree of temperature- and pressure-resistance.

LTE HANDHELD DEVICE

Rockwell Automation participating Encompass™ Product Partner **Motorola** offers Evolve, a ruggedized LTE handheld device that uses the speed and reliability of broadband over the Citizens Broadband Radio Service (CBRS) spectrum. Part of the company's Nitro ecosystem, this end-to-end private LTE solution supports the transmission of data and instant voice communications. With Evolve is design to provide less downtime, a predictable cost of ownership over consumer smartphones and comprehensive device fleet management.

For manufacturers, the device provides clear, real-time voice communications, even in a high-noise environment, up-to-the-minute inventory updates and visibility into all stages of production through its data capabilities. Featuring a large and durable touchscreen, the handheld's Android operating system provides access to any app in the Google Play Store, including G-suite apps, productivity apps or custom Android apps.

It is intrinsically safe for hazardous environments and easily withstands repeated drops, dust and exposure to water. With dedicated push-to-talk and emergency buttons, it provides seamless communications over CBRS and Wi-Fi, as well as interoperability with MOTOTRBO radios via Motorola Solutions' WAVE PTX technology.

Optimized 5-Axis Post Processor

Strategic Alliance Partner **FANUC** introduces a new Mastercam post processor designed to optimize the capabilities in the 5-axis Milling Standard Package in FANUC CNCs. It allows advanced machine tool operators to reduce cycle times while boosting part accuracy, particularly for CAD/CAM generated 5-axis simultaneous contouring part processes.

With the new post processor, machine tools will be able to produce parts modeled in the CAD system more precisely. CNC software makes it easy for programmers to create optimal tool paths using the advanced algorithms available in the Milling Standard Package for FANUC's 30i-B and 30i-B Plus Series controls.

Key functions in the package include Tool Center Point (TCP), Workpiece Setting, Error Compensation (WSEC), Easy Setting Function to support multiple acceleration and process profiles, and advanced lookahead algorithms AICC II with Smooth Tolerance Control+.

FDA-Compliant Cable Entry Plates

Encompass™ Product Partner **icotek** presents its new FDA-compliant cable entry plates KEL-DPZ-HD. The smooth surface features no recesses on the visible side for dirt to collect. The outer contour radius of 6 mm, instead of the required 3 mm, exceeds EHEDG specifications. Free of halogen and silicone, the product material is in accordance with food approval 1935/2004/EG and (EU) 10/2011. A clear visual color recognition is given with the signal color blue.

Cables and hoses with a diameter range of 3.2 mm to 22.2 mm are routed and sealed with IP65/66/67/68. Depending on the version, up to 35 cables can be routed. The plates are initially available with a metric thread in sizes M32, M40, M50 and M63. It features greater packing density, and fixing the cable entry plate with a lock nut is fairly simple.

Detectable cable ties KB-HDD and cable tie holders KBH-HDD complete the hygienic design. icotek also offers plugs to seal any pierced cable entry membranes no longer in use.

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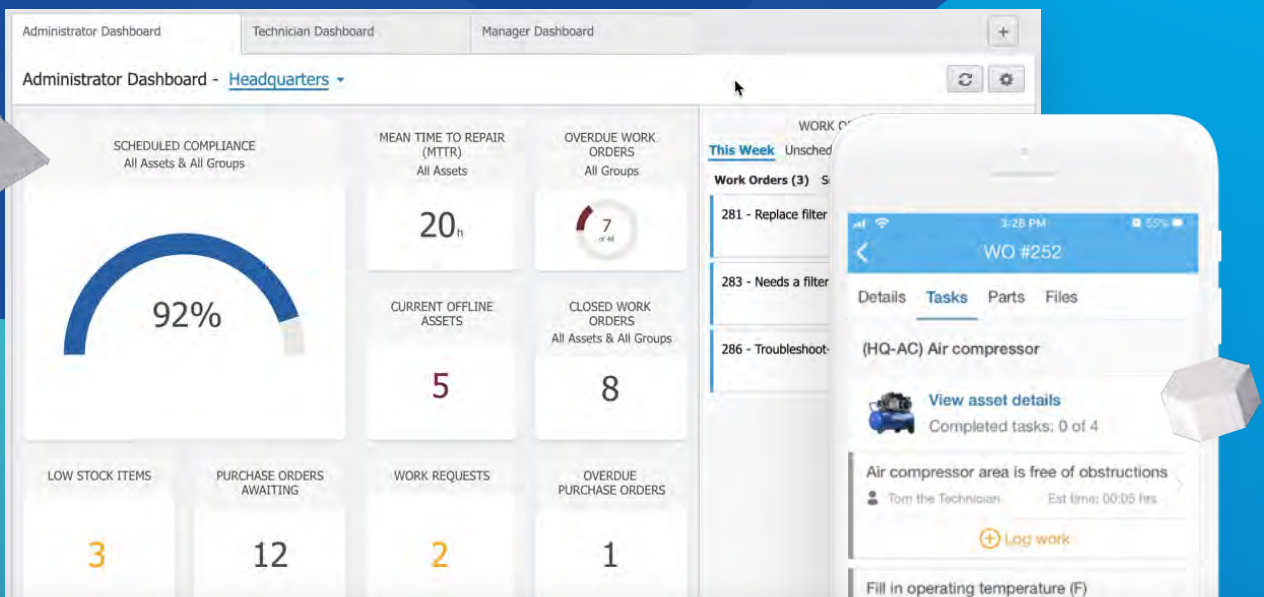
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