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ASIA PACIFIC

Inside

Bolster Your Operations with End-to-End Supply Chain Capabilities

Rockwell Automation

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EXECUTIVE MESSAGE

Tap into Technology for Greater Supply Chain Efficiency

While supply chain challenges are not projected to disappear anytime this year, 2022 marks a turning point in how companies are approaching the issue. Increasingly, manufacturers are seeking resiliency, agility, and sustainability in their supply chains and technology can be a differentiating factor between the winners and losers.

From Industrial Internet of Things (IIoT) to analytics, cloud services, augmented reality (AR) and more, companies will be better placed to review and evaluate their operating models, before considering how an optimized digitalized supply chain can meet current and future needs – and in light of other disruptions or challenges that may arise.

In this issue of Automation Today, we delve into the ways the Information Technology (IT) and Operational Technology (OT) convergence in industrial operations can aid in mitigating the consequences from supply chain disruptions.

It features practical tips and information to help manufacturers optimize warehouses end-to-end and improve supply chain visibility with traceability solutions including: **Building a More Agile, Resilient Supply Chain with Digital Technologies; Optimize Your Warehouse to Stay Ahead of Supply Chain Disruptions;** and **Demystifying Product Lifecycle Management.**

This issue also includes the latest information on new products and technology releases, as well as a customer case study that demonstrates how we helped them deliver greater transparency of their supply chain to their consumers.

I hope you enjoy this issue of Automation Today and that it helps you to identify ways in which you can unlock your digital potential to create your next competitive advantage.

Stay safe and stay connected.

Scott Wooldridge
President, Asia Pacific Region
Rockwell Automation

Rockwell Automation Releases 2021 Sustainability Report

Rockwell Automation announced the release of its 2021 Sustainability Report.

"Amid a pandemic that is stretching into a third year, we are making significant progress on our most important goals, including efforts to make our company, customers, and communities more sustainable," wrote Rockwell Automation Chairman and CEO Blake Moret in the report's introductory letter. "In some ways, these efforts were accelerated by world events as we continue to act with urgency to make a difference. We're transforming our company to meet the biggest industrial challenges of today and tomorrow."

With metrics and stories, Rockwell's 2021 Sustainability Report highlights a number of actions, including:

- An expanded corporate sustainability team and function with additional investment and resources to elevate and align Environment, Social and Governance (ESG) efforts companywide
- Enhanced and expanded sustainability solutions with a focus on energy, water, and waste to help Rockwell customers achieve their sustainability goals
- Use of Rockwell technologies and expertise to drive sustainable innovations in vital industries including solar, steel, and packaging
- Numerous projects underway as part of Rockwell's own pursuit of carbon neutrality Scope 1 (direct) and Scope 2 (indirect) emissions by 2030

"A company's value is only the sum of the ongoing, combined efforts of its people," Moret said. "Our top priority is creating a healthy and safe environment where all people can and want to do their very best work. Our workplace is more flexible and diverse than ever before."

The report describes several initiatives launched to support employee well-being and culture, including:

- Appointment of Rockwell's first Chief Diversity, Equity, and Inclusion Officer
- New programs and resources, including Culture Workshops and Managing Across Difference training
- Upgraded employee benefits, including new Caregiver Leave benefit, and expanded Parental Leave for U.S. employees
- A new global volunteer program -- ROK in Action -- that includes paid time off for employees to serve in their communities and Dollars for Doers rewards to support causes important to them

The report also notes how the need for a diverse and future-ready workforce remains a major priority for Rockwell and its manufacturing and technology peers. As such, the company further expanded its support of community, academic, and training programs focused on providing all students and participants with increased access to STEM education and career opportunities.

Read Rockwell's **2021 Sustainability Report** and review its other its other ESG **disclosure reports** at the company's newly redesigned **sustainability section** of its website. The user-friendly section also provides more details about Rockwell's sustainability strategy and the company's latest ESG-related news and milestones.

Rockwell Automation Names Nicole Darden Ford Chief Information Security Officer

Rockwell Automation announced that Nicole Darden Ford has joined the company as vice president and Chief Information Security Officer on March 21. She will report to Chris Nardecchia, senior vice president and Chief Information Officer at Rockwell Automation. Darden Ford succeeds Dawn Cappelli, who retired in February.

Darden Ford joins Rockwell from Carrier, where she was global vice president and Chief Information Security Officer, overseeing global Information Security, Compliance and Product (IoT) Cybersecurity through the company's spin-off from parent company United Technologies Corporation. Prior to Carrier, she was global vice president and Chief Information Security Officer for Baxter International, where she had global responsibility for Information Security, Information Governance and IT Quality Compliance. Darden Ford began her career in the U.S. military and federal government, including for the Joint Chiefs of Staff, handling security, network engineering, and telecommunications.

"I am excited about the energy, perspective and expertise Nicole brings to this critical area and look forward to her contributions in executing our growth, digital transformation, and cybersecurity strategies," said Nardecchia. "With over 20 years in IT leadership, Nicole's extensive knowledge and application experience in forensics, digital transformation, and homeland security practices is a valuable addition to our team."

Darden Ford is also passionate about building and growing teams, fostering culture, and focusing on diversity, equity, and inclusion. She currently serves on the boards of IT-ISAC, South Florida Tech Hub and the Lola Mercedes Parker Foundation.

Rockwell Automation Elects Robert Soderbery to Board of Directors

●●● Rockwell Automation announced that Robert Soderbery was elected to its board of directors effective Feb. 2, 2022. Soderbery is currently executive vice president and general manager, Flash Business Unit, at Western Digital.

Rob brings over 30 years of experience in the tech industry and will be a terrific addition to the Rockwell Automation board of directors," said Blake Moret, chairman and chief executive officer of Rockwell Automation. "His deep technology background, product management expertise, and understanding of global customers will be a great complement to the diverse talents of our strong board."

In his role at Western Digital, Soderbery is responsible for all aspects of the $10 billion flash memory business, serving cloud, client computing, and consumer market segments. Prior to that, he served as president of UpLift, Inc., a fintech company, where he was responsible for building a cloud-based payments and lending platform enabling consumer financing on major merchant platforms.

Soderbery previously served as senior vice president and general manager, Enterprise Products, at Cisco Systems. While at Cisco, he was responsible for IoT software and hardware solutions, the introduction of the CiscoONE software architecture, and acquisition of the Meraki cloud networking platform. Prior to Cisco, Soderbery advanced through a series of leadership roles at Symantec Corporation.

Soderbery holds a Master of Science in computer science from Stanford University and a Bachelor of Science in electrical engineering from Caltech.

Rockwell Automation Wins "Industrial IoT Solution of the Year" Award in 6th Annual IoT Breakthrough Awards Program

●●● ***Prestigious Annual IoT Breakthrough Awards Program Recognizes Standout Internet of Things Companies and Products.***

Rockwell Automation announced that its FactoryTalk Edge Gateway solution has been selected as the winner of the "Industrial IoT Solution of the Year" award in the 6th annual IoT Breakthrough Awards program conducted by IoT Breakthrough, a leading market intelligence organization that recognizes the top companies, technologies, and products in the global Internet of Things (IoT) market today.

Rockwell Automation is a multiple IoT Breakthrough Award winner having won "Industrial IoT Innovator of the Year" in 2020 and "Industrial IoT Company of the Year" in 2021.

With FactoryTalk® Edge Gateway™, manufacturers can easily access, understand and leverage the data needed to make informed decisions. The solution simplifies and automates collection, contextualization, and organization of industrial equipment data across machines, devices and automation assets at the source itself - enabling high data integrity from the outset. It also provides the right foundation to drive edge-to-cloud IT/OT convergence at the enterprise level resulting in informed decision-making.

FactoryTalk Edge Gateway software unifies data from industrial sources and control or automation systems. It is able to integrate with a variety of cloud, Industrial IoT and big data applications. It also uses OPC-DA, the automation industry's standard for interoperability, to access KEPServer Enterprise data for third-party connectivity. This maximizes operational insights and provides a 360-degree view of a business, simplifying and automating data ingestion in a single integration solution for IT applications.

"Manufacturing processes and machines create tremendous amounts of data that, in the right place, with the right context, and at the right time can unlock new sources of potential value from analytics, machine learning, connected worker experiences, digital twins, and much more," said Brian Shepherd, Vice President of Software & Control at Rockwell Automation. "FactoryTalk Edge Gateway software simplifies the collection, contextualization and organization of OT data in a way that builds a high-integrity digital foundation for decision making. That foundation and ability to uncover new insights is what can help manufacturers achieve their performance goals."

The mission of the IoT Breakthrough Awards program is to recognize the innovators, leaders, and visionaries from around the globe in a range of IoT categories, including Industrial and Enterprise IoT, Smart City technology, Connected Home and Home Automation, Connected Car, and many more. This year's program attracted more than 3,850 nominations from companies all over the world.

"Industrial enterprises struggle to aggregate operational data from heterogeneous sources and add relevant context from the source to the IT layer. This prevents them from uncovering potentially game-changing insights at the enterprise level, " said James Johnson, managing director at IoT Breakthrough. "FactoryTalk Edge Gateway not only enriches OT data with critical context where it matters the most - at the edge - but also delivers it in a flexible common information model to IT applications, so that industrial enterprises can derive critical insights for competitive advantage. That makes it our choice for 'Industrial IoT Solution of the Year.' Congratulations for the third year in a row to Rockwell Automation."

Additionally, FactoryTalk Edge Gateway automatically discovers high-speed, contextualized OT data from controllers and packages it in a logical, common information model control engineers can configure. This common information model accelerates setup for similar assembly lines and can be enriched with third-party data. It can also be mapped to on-prem or cloud applications and easily consumed to accelerate IT/OT convergence.

Sensia acquires Swinton Technology, a market leader in metering supervisory systems for the oil and gas industry

Sensia, the leading automation specialist in oil & gas production, transportation, and processing, announced it has acquired **Swinton Technology**, a market leader in metering supervisory systems and measurement expertise in the oil and gas industry. The acquisition will incorporate Swinton Technology products and solutions into the Sensia portfolio, expanding Sensia's metering opportunities and measurement domain expertise to support accelerating its customers on their digital transformation journey.

Sensia, a joint venture owned by Rockwell Automation and Schlumberger, provides hardware, software, systems and petrotechnical expertise to automate processes and workflows throughout the oil and gas industry. Swinton Technology systems generate measurement data for fiscal and financial transactions throughout the oil and gas supply chain. The acquisition provides Sensia with a market-leading asset it can incorporate into its measurement business, contributed by Schlumberger.

"Measurement is the core of oil and gas automation, and fiscal measurement is our customers' mechanism for revenue, billing and loss management," said Allan Rentcome, Chief Executive Officer, Sensia. "Customers are demanding integrated automation, measurement and digital solutions and Swinton Technology provides us with technology and expertise that will expand Sensia's growth in the metering systems market."

"There is a large customer installed base that needs to upgrade its measurement data systems to improve performance," said Ben Leach, Swinton Technology Managing Director. "There are also metering system providers without supervisory capability. With its global reach and oil and gas expertise, Sensia will now be able to better serve this market. I'm confident that under Sensia's ownership, Swinton Technology products and solutions will improve their market share."

Swinton Technology is a specialist systems integrator of supervisory metering computer systems to the oil and gas industry. Swinton Technology's offerings are high-integrity control and analytics systems for fiscal/financial information from medium to large measurement packages deployed across the oil and gas supply chain. Its software has data integrity, traceability, and compliance with regulatory, contractual and international standards.

Swinton Technology will be known as Swinton Technology, a Sensia company.

Rockwell Automation and Cytiva collaborate to accelerate automation platforms in the biopharmaceutical industry

Companies plan to build an Automation and Digital Transformation Center in Shanghai, China.

Rockwell Automation has begun collaborating with Cytiva, a global life sciences leader, to accelerate the industry's digital transformation. This new collaboration deepens Cytiva's 2019 pledge to invest in China and also strengthens the relationship between Rockwell and Cytiva that has been in place since 2019. Cytiva joined the Rockwell Automation PartnerNetwork Program as an OEM Partner to help drive a best-in-class distributed control system offering.

Rockwell Automation and Cytiva will bring their combined expertise in biomanufacturing and automation to create

an efficient, flexible, and scalable platform. As part of the collaboration, the companies are building an Automation and Digital Transformation Center, located in Shanghai, to co-host demonstrations, trainings, and more.

Ian Shih, regional vice president, Greater China, Rockwell Automation, said: "Scalable and sustainable development is of the utmost importance to our companies and to the industry as a whole. Our combined solutions offer the flexibility to scale up for vaccine production or scale down to produce smaller batches of personalized medicines."

Lihua Yu, General Manager, Greater China, Cytiva says: "As the industry moves toward more automated manufacturing solutions, together we can bring digital-oriented R&D and streamlined production to life not only in China, but throughout the world. Our joint work will accelerate the development and delivery of transformative medicines, reduce costs, and ultimately deliver more medicines to patients in need."

Rockwell Automation and Cytiva will promote Cytiva's Figurate automation platform in China, as well as globally. The suite of offerings by Rockwell will power Cytiva's range of solutions from idea to injection. The collaboration enables stronger integration, data collection, and analysis. This results in a standardized manufacturing platform capable of core data management.

In addition, the two companies have established multiple centers, including the Testa Center in Uppsala, Sweden, to assist customers in their drug development process. They are exploring how to apply the Industrial Internet of Things (IIoT), augmented reality (AR) and other advanced technologies for connectivity across the manufacturing process. With innovative solutions for factory field management in progress, Rockwell Automation and Cytiva are establishing a promising future for digital solutions for biopharmaceutical companies, helping enhance training and efficiency for operators, improving speed of batch review, streamlining equipment management, and intensifying efficiency.

Build a More Agile, Resilient Supply Chain with Digital Technologies

Today's environment has created an extraordinary set of challenges for supply chains globally. What can manufacturers do to turn these challenges into opportunities, and prepare for a more resilient future?

Manufacturing companies are experiencing disruptions to their supply chain and manufacturing operations, including accordion effects with both suppliers and consumers for products and services. In a global environment, factories and ports will be at various levels of shutdown and recovery for the foreseeable future, so companies can expect continued impacts on supply lead times. For those companies that have a high dependency on a few key suppliers and/or commodities, the risk may be even more pronounced.

And no matter what products and services companies produce, the new normal has a high likelihood of impacting those products and services, potentially even making them obsolete. Companies should expect that current changes to consumer behavior patterns will continue. Restrictions (social distancing, mandatory use of personal protective equipment, etc.) and new learned behaviors (remote learning and working, self-quarantining, online shopping, etc.) are having a long-term effect on consumer demand. Moving forward, companies that can assess and adapt quickly to changing market demand will be best positioned for success.

Tactics to Reduce Your Risk

A BUSINESS' END-TO-END SUPPLY CHAIN PRACTICES MUST BE AGILE ENOUGH TO MAKE FASTER CHANGES, AND RESILIENT ENOUGH TO RECOVER FROM A LACK OF RAW MATERIALS, PRODUCT, OR CAPACITY.

Agility will ensure the right cost, service and quality given external market factors. Resilience will mitigate the impact of disruption where there's potential points of failure.

There must be balance between the two because:

- Agility is offense. This is how customers are supported when there is unplanned demand and unforeseen constraints.
- Resilience is defense, that is, protecting supply and capacity. One of the methods can be manufacturing redundancy. This plays a major role as most organizations think about localization or reshoring initiatives for faster response times.

Here are some actions that companies should consider to counteract the instability caused by supply chain uncertainty:

Conduct an evaluation of suppliers and distributors across the value chain

Identify alternative sources and locations that may be less impacted by disruptions now and in the future. Be sure to include available inventory of raw materials, WIP and finished products as part of the evaluation to assess your immediate needs. Companies that expand and diversify supply chain options will be best positioned to meet a volatile market demand.

Use a strategic foresight approach

The pandemic has pushed manufacturers into a new realm of supply chain scenario planning. By considering various situations, companies can take a fresh look at existing products and service portfolios and consider cutting those that are underperforming or redesigning those that are susceptible to supply disruptions. Businesses can also use scenarios to evaluate what kind of investments will be best and what can be better optimized.

Reevaluate operating models for the future state

Manufacturers that can add flexibility to manufacturing operations and become less susceptible to supply risks will be able to adapt quickly to changing constraints and fluctuations in demand in the future. This should include optimizing production capacity for sudden changes in commodity supply or customer demand and assessing the company's ability to change inventory management and distribution models.

Leaders across the manufacturing industry should take the opportunity to rethink the way they do business and evolve to become a more resilient company. Many of the changes happening today will influence the way organizations operate in the long-term. When thinking about the new normal, there are two areas that companies can focus on to be better prepared for the future.

An Optimized Digitally Transformed Supply Chain

From an agility perspective, the convergence of Information Technology (IT) and Operational Technology (OT) fits into an overall digital manufacturing strategy. A digitally transformed organization is faster to the right decision and can more easily achieve the right balance of agility and resilience in the supply chain.

With our strategy to bring the **Connected Enterprise®** to life, Rockwell Automation helps organizations solve daily manufacturing challenges. As a manufacturer with our own integrated supply chain, we understand the evolving industry challenges confronting global manufacturers.

A solid digital transformation strategy and technology deployments will allow manufacturers to meet commitments and even create a competitive advantage through their supply chain.

Supply chain professionals will need to contend with these disruptions and the complexity of vast amounts of data and insights; and use the latest processes and technology solutions to balance agility with speed, efficiency, and capacity.

Often, manufacturers are plagued by a lack of visibility throughout their supply chains, leaving them with little insight to anticipate any issues or opportunities. This is where advanced digital enablers can help businesses boost visibility, reduce risks, and improve efficiency via technologies such as the Internet of Things (IoT), advanced analytics, and moving to **Software-as-a-Service (SaaS) in the cloud**.

Recently, Rockwell Automation acquired **AVATA**, a leading services provider for supply chain management, enterprise resource planning, and enterprise performance management solutions to significantly improve end-to-end supply chain visibility and management for customers. AVATA will be integrated into **Kalypso**, which is a part of our Lifecycle Services business.

AVATA is a consultant and systems integrator for Oracle cloud software applications and can help customers solve critical problems and deliver operational excellence across the supply chain via digital transformation initiatives.

Equally important is inventory forecasting and optimization. Manufacturers can tap on supply chain planning and management digital tools to dynamically plan in near real-time, optimize, and better sync with suppliers to ensure that the right inventory is available at the right time to meet customer demands.

For instance, **Plex®**, a SaaS cloud-based smart manufacturing platform, offers applications in supply chain planning, advanced manufacturing execution, and quality management across discrete, hybrid, and process industries to improve visibility into end-to-end production systems. Via the cloud, process can be easily integrated across teams, giving companies a better overview of their supply chain operations so they can proactively address any issues.

Case Study

As consumers are increasingly exposed to more options, they too, are seeking greater visibility in terms of product traceability, particularly in the Food and Beverage (F&B) sector. Concerned whether the food they are ingesting is safe to consume, F&B companies are increasingly pressured to delivery full transparency of their production chain. They are recognizing the need for automated infrastructures that can enable traceability and accountability for each product. Learn how Dutch dairy company **FrieslandCampina** utilized digital traceability solutions to give customers the peace of mind they deserve.

Ultimately, leveraging digital technologies will help companies optimize their asset utilization and increase the quality and delivery of products throughout their value chain. But it's not just about implementing new technology. Becoming more digital is best achieved with a digital strategy and roadmap in place that includes the application of emerging technology areas, disruptive business models and new markets, and building digital skills and culture to raise the competitiveness of the company.

Diversifying Products and Operations

After staying home and working remotely for months, people will have either used products and services in unexpected ways that they will want to continue, or they will have identified new needs that will have to be met. Organizations should monitor these behaviors and expand their offerings to leverage new or existing sales avenues. Manufacturers should implement a product portfolio diversification strategy to quickly meet these expectations and bring in new revenue or, at the very least, help compensate for revenue loss from other products.

Larger manufacturing companies that are geographically concentrated should consider expanding their capabilities across their facilities to serve specific regions. By producing goods closer to the markets where they are consumed, manufacturers will create redundant manufacturing capabilities that can be leveraged when or if one of the production sites are impacted. This also limits the effect to just the markets served by the impacted sites. In addition to diversifying supply chain dependencies, organizations should continuously manage sourcing risk by mapping and monitoring their value chain.

Regardless of which scenario occurs, adopting digital and diversifying products and operations are safe bets to help prepare for any outcome.

The silver lining of any crisis is the opportunity for companies to learn about and adapt to uncertainty. And as manufacturers recover and seek to build resiliency and adaptability across the organization, they should also solidify the foundation of their digital transformation and product diversification efforts.

Manufacturers who can be flexible and can make changes quickly to their supplier base, partnerships, and operations will be best positioned to meet the demands of the new normal, whatever that turns out to be.

Farmer to consumer traceability services for FrieslandCampina

Learn how traceability solutions helped one of the world's largest dairy companies give parents visibility from raw material to consumption for their infant formula products.

Consumers require access to clear, reliable information to make food choices to address rising complexity of food safety. This rising trend among consumers to trace food source and demand more transparency in food production is also seen in the infant formula industry.

According to a FRISO-commissioned survey conducted by Nielsen, 93% of mothers in China and Hong Kong find information on product packaging insufficient, and they often need to search for more information from other different channels. Mothers are especially eager to trace more details around quality check during production (71%) and food source (63%), production environment (65%) and how the product is made (63%). Respondents claim that this information helps to reassure product quality (94%) and allow them to be confident they are making the best choice (77%) for their child.

Dutch dairy company **FrieslandCampina** is on a mission to deliver full transparency of their dairy chain, from "grass to glass". Together with Rockwell Automation's supply chain capabilities and **Kezzler AS**, a cloud-based product digitization and traceability platform, they developed an app enabling parents to experience the journey of FRISO's formula milk at their fingertips, starting from Dutch farms.

Making tracking easy for consumers

FrieslandCampina's infant nutrition brand FRISO launched an app FRISO **TrackEasy**, a smart packaging innovation in which consumers can scan FRISO products using their phone and experience the grass-to-glass journey of the exact product in hand. They can check authenticity, learn more about the product and its source.

First launched in Hong Kong in 2019, the app is now being rolled out across the rest of the world. In China, TrackEasy is integrated with the WeChat platform, allowing consumers to scan directly within the app. A unique QR Code is printed on the bottom of the can for tracking and traceability purposes.

The project involves the application of unique, secure, and traceable identities to every product. By tracking the products from farmer to consumer, the solution helps to mitigate concerns regarding fraudulent products in-market and enables Friso to directly engage with consumers.

In the first phase of the project, Rockwell Automation and Kezzler serialized the complete annual production of formula intended for China. The two organizations formalized a partnership last July

to help manufacturers capture the journey of their products from raw material sources to point-of-sale or beyond using cloud-based supply chain solutions focusing on product traceability.

One unique QR Code on the bottom of the can is used for tracking and tracing through the supply chain. FrieslandCampina can trace a unit all the way from manufacturing to the end consumer. Stakeholders throughout the supply chain are able to validate the product in real time and access the relevant information by scanning the external code, delivering end-to-end traceability.

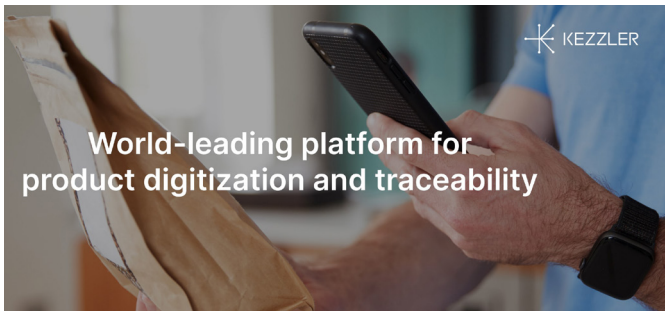
Manufacturing

Unique IDs, generated by Kezzler's encryption-based serialization technology, are printed, paired, and activated on the FrieslandCampina production line. Upstream information related to the milk (farm and milking date) is associated with the cans to give the user full traceability from grass to glass. The solution also registers product and manufacturing data like GTIN (Global Trade Item Number), manufacturing date and expiry date. Furthermore, the packaging hierarchies, unit box-pallet, are built and registered at the end of the manufacturing line.

Warehouses and distribution

Before shipment, quality approval information and the government clearance certificate for export are registered. Top level packaging hierarchies (pallet–container) are registered, and also relevant shipping information.

The aggregation allows for explicit hierarchy details to be visible from can through to box, pallet, and container level. The movement of the products from distributors to retailers is tracked all the way out to the intended retail store. Every supply chain tracking event is shared using the EPCIS (Electronic Product Code Information Services) standard.



Multi-tier aggregation

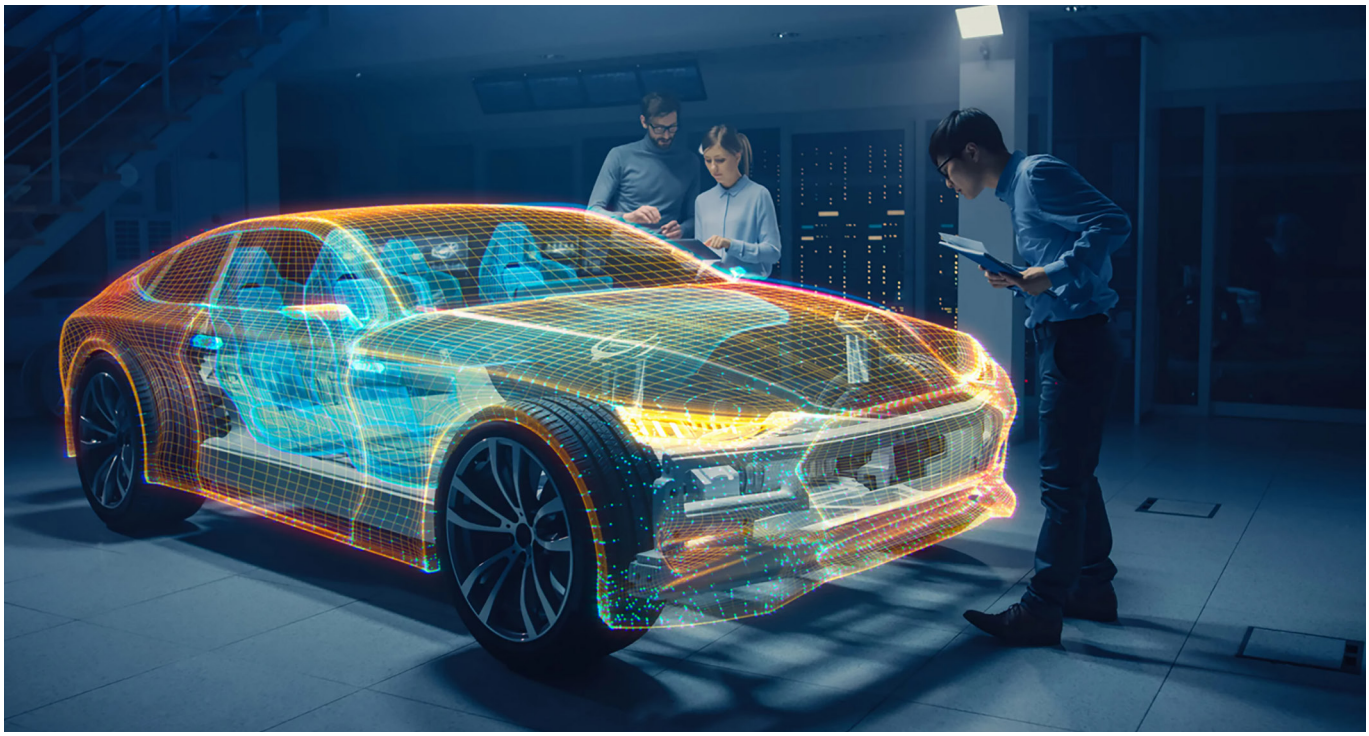
The solution enables a multi-tier aggregation process, which in the case of the FrieslandCampina project consisted of three levels: lid to can, can to box, and box to pallet. Each respective level is serialized using Kezzler codes and any subsequent rework or reaggregation throughout distribution is tracked, with every supply chain tracking event shared using the EPCIS standard.

With TrackEasy, parents are able to find out when their tin of FRISO product is produced, from when the milk is collected from farms to the quality assurance checks. Such details are made possible through full chain control, where FRISO owns all steps from the cows in Dutch farms to the final product.

This article was adapted from a case study published by Kezzler, a Rockwell Automation Digital Partner.


Rockwell Automation
We help food and beverage manufacturers become more agile. Together, we build smart manufacturing operations that can adapt to changing consumer tastes.
expanding human possibility™

OEM machine builder Hirata boosts efficiency with emulation software



Hirata reaps rewards of new emulation software with added value in quality and lead time.

Hirata Corporation is an OEM machine builder based in Kumamoto, Japan. Founded in 1951, Hirata has been striving to have a wide range customer base in more than 40 countries by leveraging its own developed modules. It is active in automotive and semiconductor industries, and its strength is an end-to-end machine supply from design, engineering through commissioning. Hirata's philosophy is to "deliver the human-friendly machine and system."

It seemed that everything was on track, yet program debugging and position education have been headaches at OEM machine builder Hirata for a long time. The program itself can be checked even before machines are built, but debugging can be done only after machines are built and running the program. Then, the teaching follows.

Normally teaching is done through human-machine interface (HMI) inputting the position of each axis of robots. It has to be done with a great deal of care and the hours for the very precise position input. Therefore, it was natural for Hirata to think, "What if we can start the debug process without waiting for the machine to be built?"

At the same time, commissioning is another challenge for Hirata. Especially when it comes to overseas projects, people at the site had to wait several weeks – or even months depending on the destination – before machines arrive at a site. They then wondered if there was anything they can do during shipping and freight time.

Hirata then encountered Emulate3D™ software from Rockwell Automation. Hirata and Rockwell Automation have a business relationship in component supply such as programmable logic controllers (PLC) or servo products, especially for machines shipped to the United States.

In January 2019, Rockwell Automation acquired Emulate3D for its expanding digital engineering capabilities and started the sales promotion of the digital tool. At that time, offline teaching through simulation software was becoming popular, but simulation was unable to test the program so debugging could not be done with simulation tools. Emulation allows engineers to run the program on the virtual environment with the 3D computer-aided design (CAD) objects so engineers can start to debug the program without waiting for the machine to be built. Hirata was impressed by the first demo done by technical consultants from Rockwell Automation Japan.

Proof of Concept with Trial and Error

It was June 2019 when the Rockwell Automation Japan team conducted an Emulate3D demo in front of Hirata engineers. Primaries from Hirata were impressed by the presentation and demo but felt the need for technical verification at the same time. Then the collaborative proof-of-concept journey started. Hirata gave some technical information to Rockwell Automation consultants to let them set up a more tailored demo. Rockwell Automation consultants came back to Hirata with a tailored demo and gave Hirata additional inputs for more rounds of setup. After rounds of communication, Hirata engineers grew more confident in the tool and turned to management for budget approval.

Mr Shimizu in #2 Kumamoto Business Division #2 Business Unit, referenced that moment by saying, "We've encountered multiple simulation solutions that resulted in a small-scale deployment. But Emulate3D was different. Once we obtained the demo program developed by Rockwell Automation with our real 3D CAD data, we were impressed by its quality and could feel the huge potential in a variety of use cases."

After the budget was approved, dedicated engineers were assigned in January 2020 and intensive hands-on training by Rockwell Automation technical consultants kicked off. Months of training enabled dedicated engineers to fully utilize the emulation tool and resulted in some great outcomes within some actual projects. This success led to the new "Digital Engineering team" under Mr Kusuguchi, general manager's the division's general manager.

In April 2021, #3 Business Unit, the next business unit to Mr Kusuguchi's organization, established "3D Design Promotion team" which included four engineers. Now, Emulate3D has been expanded with 30% reduction in engineering time and 70% efficiency up in debugging work.

Unexpected "bi-products"

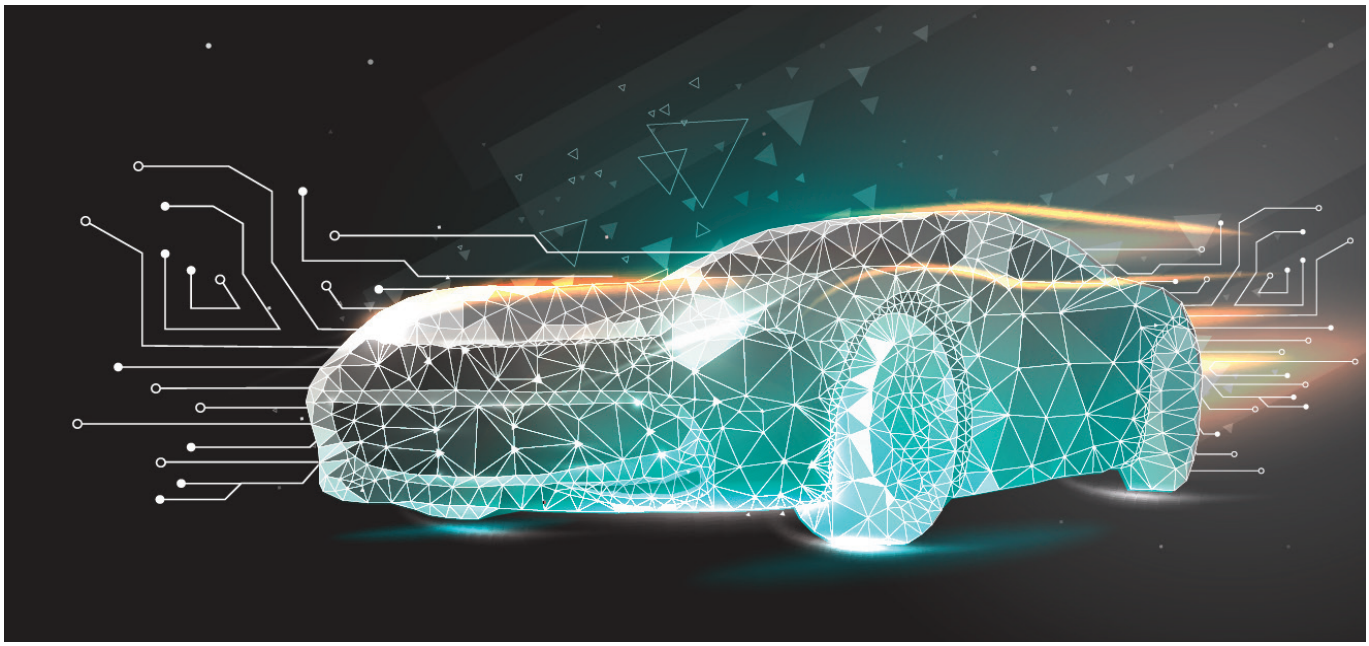
Emulate3D can integrate virtual reality (VR) features so that detailed safety checks or danger predictions can be completed in virtual environments in addition to checking on machines running PLC programs. This can be also utilized for virtual commissioning, which enables Hirata to reduce the needed engineer dispatch and commissioning time.

Additionally, troubleshooting or factory acceptance testing (FAT) can be done with virtual emulating machine operations. In fact, according to Hirata, due to the global pandemic, more and more remote FAT/troubleshooting requests are being received. It is a huge benefit, not only for Hirata, but also for end users to change the business behaviors from real/in-person to remote. Furthermore, the combination of Emulate3D with VR can realize the virtual training environments so that site workers can complete operation training while waiting for oceanic transportation. This virtual training is also applicable for newly hired employees seeking training.

Next Steps

The benefits of emulation tools in manufacturing and engineering industries have been highlighted so far, but Hirata is also looking at more diversified value with this tool. For example, as an OEM vendor, they can conduct machine demonstrations via emulation plus VR without running the booth in the exhibition. Their sales team can also show the quick demo in front of customers, even remotely, on a tablet so that sales cycles can become more efficient.

Mr Kusuguchi, Mr Shimizu's manager says, "We've been delivering added value in quality and lead time, but we will be able to add further value with innovative digital tools such as Emulate3D." Hirata's journey will keep going.



Demystifying Product Lifecycle Management

How product lifecycle management can help manufacturers prepare for what comes next.

For much of the past decade, manufacturing leaders have sought to adopt more digitally oriented processes and build towards an Industry 4.0 vision for their company. While the technology to make this possible has become more widely available, they have typically faced roadblocks about connecting the technologies and integrating across business functions.

The reasons why businesses need a connected approach have scarcely been so apparent. Amid the pandemic, leaders abruptly discovered just how well prepared (or not) their companies were to continue with their operations, based on how easily staff could access enterprise systems and collaborate in an unfamiliar environment of home working and skeleton staffing.

In this new environment, agility must be a foundation of enterprise systems. This shift doesn't typically manifest itself in one or two business functions – it requires a holistic approach that brings people, processes, and technologies together. **Product lifecycle management (PLM)** presents an opportunity to underpin this holistic approach, unified by an end-to-end digital thread.

What is PLM?

PLM relates to how organizations introduce new products to market, manage product data across a lifecycle, collaborate with suppliers, respond to market trends and constraints, plan for manufacture, and much more. In short, it's how people and processes interact within a product development process, supported by technology.

At the foundation of a PLM system is an evolving digital representation of a physical product that will ultimately be brought to market. A managed product structure underpins the digital representation, and acts as a construct to associate all artifacts and assets that typically constitute a design, and ultimately describes the end product. Throughout this lifecycle, the impact of change can continually be assessed and executed, ensuring all stakeholders are incorporated into the product development process.

A PLM system typically exists within an enterprise landscape that includes other technology investments, such as enterprise resource planning (ERP), manufacturing executive systems (MES), and customer relationship management (CRM) systems, and can connect into these data sources across the product's journey. As different production processes evolve and mature at different paces, a PLM system allows you to take account of maturity management by understanding where business objects are on their own and within the overarching lifecycle.

The Connected Enterprise®

The power of these systems converges on the idea of Industry 4.0. Manufacturers have been talking about it for years and have typically been taking steps to enable technologies such as the Internet of Things (IoT), augmented reality (AR), and digital twins across their production environments.

With PLM, we can design and source a digital thread that runs across the product's lifecycle and allows a multitude of different data sources to integrate. But more importantly, PLM data that traditionally would only have been the domain of the engineering department can now be made available to stakeholders across functional boundaries. This creates a means of maximizing the value organizations derive from an entire set of technology investments. These are all powerful information sources in their own right, but when integrated, that's where organizations can really begin to explore the potential to innovate.

Recently, there has been a more pressing need to have accessible and connected systems in place to manage the flow of data across a lifecycle and enterprise. Organizations that don't have PLM and are still reliant on spreadsheets and disconnected toolsets for their engineering activities, will likely struggle to rapidly reorganize to enable continued operations. These organizations will no doubt take account of the challenges presented by COVID-19 and start to reassess the value of an enterprise approach to PLM.

Powering your PLM

If your organization is considering an investment in PLM, here are three key things to consider to help shape an approach.

1. PLM is about business change, not just technology

Technology is clearly a large part of enabling change, but cultural change, people change, and organizational boundary change are just as important. To be effective, PLM cannot be siloed within

the engineering department – it must be an organization-wide endeavor. As stated, PLM is really about people and process, underpinned by technology – the business need and value has to be front and center, which should result in more than just a technology solution.

Naturally, C-level technology leaders will have an important role in the transition towards a more fluid and agile methodology that transcends functions and disciplines. After all, the objectives of a PLM-approach – to save money, de-risk investments, open new revenue streams and increase profitability and margin – align well with their own goals. Getting broad reach and buy-in, therefore, really needs C-level sponsorship to emphasize that this is a business initiative – not simply an engineering endeavor.

2. PLM can support your Industry 4.0 objectives

What the various components of an Industry 4.0-ready environment have in common is data. This data, however, doesn't reside in any single location, team, or function. Multiple functions in an organization can be unified by a coherent digital thread – from the design engineers prototyping designs in CAD, the manufacturing engineers leveraging model-based definitions embedded in the design, through to the sales and marketing teams exposing digital twins derived from digital representations when meeting with their prospects and customers. An enterprise PLM system can manage this coherent digital thread, together with all the associated product development assets and activities, while providing continued access to product development information for all stakeholders and participants, in a secure collaborative environment.

The best companies today ensure that product design is bounded by manufacturability – it's pointless developing an elaborate design, only to find that the product itself cannot be manufactured for profit, or at all.

EARLY MANUFACTURING PLANNING ACTIVITIES CAN BE ENABLED WITHIN PLM TO ENSURE THE RICH DATASET MANAGED WITHIN THE SYSTEM IS AVAILABLE DOWNSTREAM AND IS FULLY ALIGNED WITH THE EVOLVING DESIGN ON THE ONE SIDE, BUT ALSO WITH THE MANUFACTURING CAPABILITIES OF AN ORGANIZATION'S PLANTS AND SUPPLY CHAIN ON THE OTHER – ALL UNDER ENTERPRISE CHANGE MANAGEMENT.

3. Digital transformation is never 'done'

Digital transformation is never complete, as innovation must be a continual part of your product strategy. A PLM approach can help reinforce the positive feedback loops that allow you to prototype and test new products based on data-led decision-making as part of an integrated digital thread.

Digital transformation initiatives can and do stutter – but there are some steps to consider to enable greater success, particularly where PLM is at the heart of a digital transformation strategy. Have an ambitious strategy, but a realistic implementation plan, as there are typical stages to move through when implementing PLM. Each stage requires careful design and implementation and must not be rushed.

Lastly, training and adoption cannot be overlooked. PLM, as part of a digital transformation initiative, is nearly always a new way of working and can continue to be as more capability is deployed. Without the people, process and technology alone do not constitute a sound approach to PLM.

This piece is by David Hughes, Business Development Director of PTC, a Rockwell Automation Strategic Alliance Partner.

Optimize Your Warehouse to Stay Ahead of Supply Chain Disruptions

Traditional warehouse infrastructure is not designed to support the rapidly changing demands of consumers. These challenges can be addressed by implementing agile solutions to optimize your warehouse.

In the traditional warehouse, existing infrastructure is unequipped to support the rapidly changing environment and evolving customer demands. The pandemic has spurred the rapid rise of e-commerce compounded with customers expecting faster delivery times, more choices, and greater flexibility in aspects including product returns.

According to the Association for Packaging and Processing Technologies (PMMI), four out of five companies have more than 100 product stock keeping units (SKUs) and over half predict SKUs will continue to increase at a rate of 10% to 50%. The proliferation of SKUs alongside more personalized orders have led to bottlenecks in sortation and inefficiencies in gapping and singulation applications.

As warehouse volumes increases, conventional systems allow limited opportunity for reconfiguration and expandability to respond to new supply chain demands and disruptions. Any modifications will also lead to added costs, operational risks as well as productivity losses.

In a highly competitive market, investing in an optimized warehouse with agile, end-to-end solutions can help organizations and machine builders to respond faster to changing supply chain requirements and evolve to meet future needs.

FactoryTalk® Warehouse can control all warehouse activities required to support production operations, including inbound processing, storage and operation, and outbound processing. Furthermore, it provides the required tools to easily modify or build workflows, as needed.

Benefits of an optimized automated warehouse:

- Shift to high-speed sortation that will enable faster speeds
- Native track and trace of parcels within the system design will offer new levels of system efficiency
- A modular nature that allows for easy modification with minimized costs

- Improved routing and system throughput without extra programming or configuration
- Simulation software enables test scenarios and optimized workflows before costly equipment is installed and commissioned
- Emulation of software enables virtualized testing of mechatronics and automation to reduce errors and commissioning time

End-to-end Warehouse Management Solutions

1. Inbound

Once the materials are received in the warehouse, this is where they are unloaded and placed onto conveyors. Fast speed controllers can aid to drive increased performance, capacity, productivity, and security to help meet growing demands. Additionally, remote I/O devices such as the ArmorBlock® I/O modules provide low-cost, hardened, I/O suitable for on-machine use.

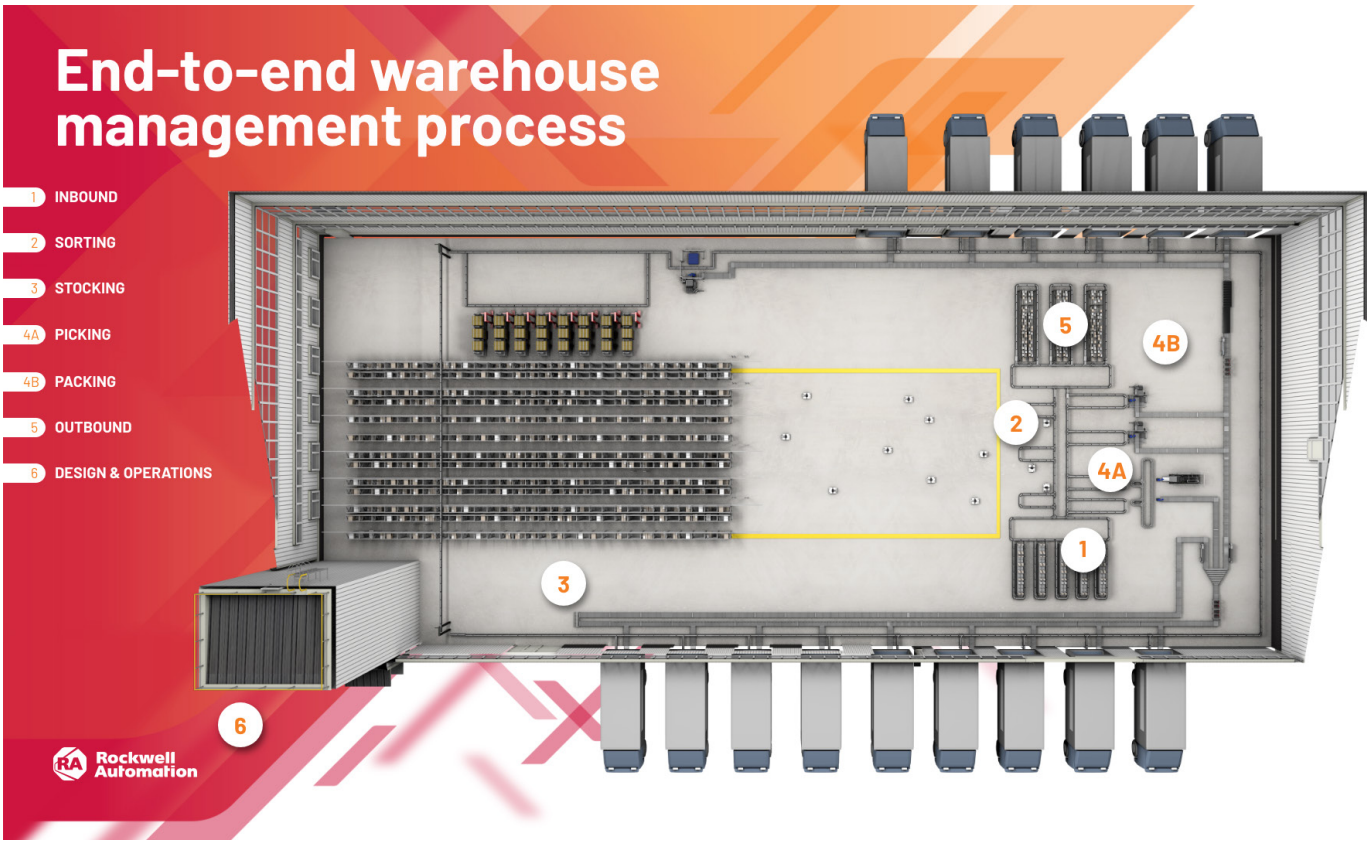


Figure 1 shows what a typical end-to-end warehouse management process looks like. By injecting new warehouse innovations, organizations can virtualize development, optimize design, and achieve flexibility without sacrificing productivity.

2. Sorting

This area is where items are moved across warehouse facility lines, for example, the movement of ordered products from storage to picking areas and completed orders to the loading area for distribution.

The use of robots can help to overcome top operational challenges, from staying productive amid a workforce skills shortage to improving dynamic package handling capabilities and managing a wider range of products. By integrating them into the architecture and with other equipment, operations can become responsive to demands.

3. Stocking

This is where items are labeled and stocked onto racks. By investing in intelligent conveyor systems such as independent cart technology that uses magnets for precise control motion, it can bring increased line speed and flexibility. Solutions such as the MagneMover® Lite offers different layout options as it is made of a selection of standard building blocks, each of which is a motorized track section. The system manages the speed and direction of each carrier individual and keeps track of its location.

4. Picking and Packing

Picking is the process of finding and extracting products from a warehouse to fulfill customer orders. Subsequently, the packing procedure typically involves choosing the appropriate materials and containers to pack products, weighing the package, and labeling it with the relevant invoice or packing slip. In this section, the use of smart machines and devices can go a long way in boosting uptime while improving safety. For instance, smart motor control solutions can help to prevent motor failures with an integrated, data-driven approach and help to deliver on-machine safety.

5. Outbound

This refers to the shipping out of finished goods to customers from the warehouse or distribution center. It consists of the order fulfillment process that includes picking, packing, shipping, and delivery of a package with a particular focus on goods issue processing and shipping orders**.** The abovementioned automated solutions should be considered here too since there are similar actions in place.

6. Command center

Lastly is the command center, which enables warehouses to function as designed, to perform day-to-day operations, helping businesses to assess what are the optimum resources required to maximize productivity during operations. This is where synchronization between the manufacturing equipment systems and warehouse management system is essential to optimize both data and material flows between logistics and production. At

New Analog Safety I/O Modules from Rockwell Automation Meet Fail-Safe Requirements

●●● *FLEX 5000 safety I/O provides device monitoring and functional safety protection for process applications.*

The new Allen-Bradley **FLEX 5000™** analog safety I/O modules can help process operators meet fail-safe requirements and minimize related downtime risks in a wide range of process applications.

The analog safety I/O modules from Rockwell Automation offer integrated safety with systematic capability up to SC 3. The modules are TÜV certified up to SIL 3, PLe, Cat. 4. They also can be mounted in the same I/O bank with standard FLEX 5000 I/O modules to reduce system costs and complexity.

The FLEX 5000 analog safety I/O modules are ideal for process applications where speed or frequency measurement, temperature, pressure, or flow sensor monitoring are required for functional safety protection. Potential applications include emergency shutdown, burner management, turbine control, compressor control, oil and gas auxiliary boilers, high-pressure protection, lighting, and ventilation management.

With these new module, the FLEX 5000 product family now includes a complete portfolio of discrete and analog fail-safe I/O modules for a wide range of applications. Users can simply choose the I/O that meets their operational needs.

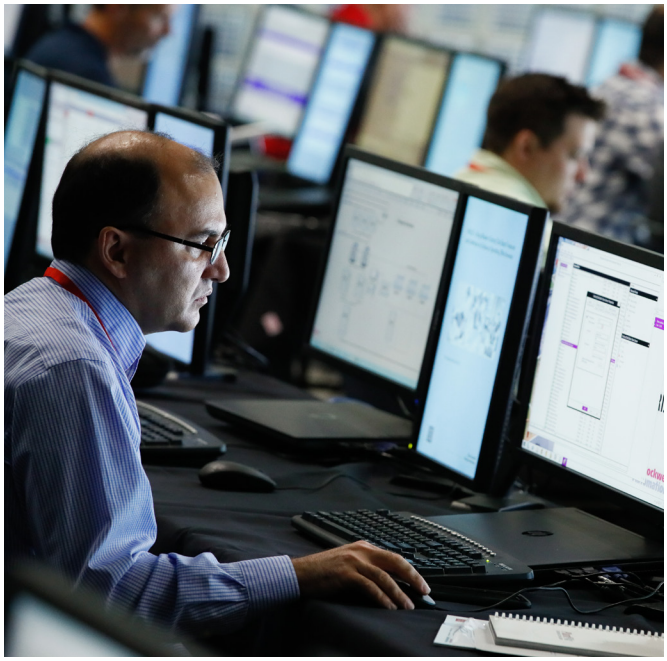
FLEX 5000 I/O can also reduce downtime by providing easier access to additional process diagnostics via highly integrated HART in the Studio 5000 Logix Designer application. They can reduce overall footprint by allowing the direct termination of field signals. And they can save engineering time via tight integration with instruction sets in PlantPAx 5.0 and above systems.

Rockwell Automation Expands Its LifecycleIQ Portfolio by Adding Threat Detection Managed Services

The new offering of **Threat Detection Managed Services** from Rockwell Automation provides application-level, real-time monitoring, and response services to help detect, identify, contain, eradicate, and recover from a cyber incident.

Threat detection is a proactive approach to industrial cybersecurity. Since an overwhelming majority of companies cite workforce as a challenge where it is impacting their ability to deliver security projects within their organizations, Threat Detection Managed Services was launched to monitor network traffic within operational technology (OT) networks to build high fidelity baselines of "known good" traffic patterns within the ICS environment, while also providing real-time contextual alerts on both security threats and high-risk operational changes.

Rockwell Automation is committed to providing unique value to its customers and provides Claroty threat detection software as an option in its Threat Detection portfolio, as well as Cisco Cyber Vision, which provides a unique switch-based architecture for customers with existing Cisco solutions, greenfield networks, or those updating their Cisco network infrastructure.



Whether a customer selects Cisco or Claroty's threat detection software, Rockwell's combined services provide a unique value to customers by:

- Ensuring an easy and consistent deployment
- Providing dependable support across a global enterprise
- Providing global project implementation services and remote monitoring support in the long term

Rockwell Automation

Bringing the Connected Enterprise to life starts with the **connections we make to each other.**