the journal

from Rockwell Automation and our PartnerNetwork™

OCTOBER 2021

HOW AI CAN BENEFIT OIL & GAS OPERATIONS

CONSEQUENCES OF USING THE WRONG VFD CABLE

2021 AUTOMATION FAIR DIRECTORY ISSUE

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In times of change, from recipe updates to COVID-19 and more, modular automation allows flexibility to pivot production quickly to meet new needs.

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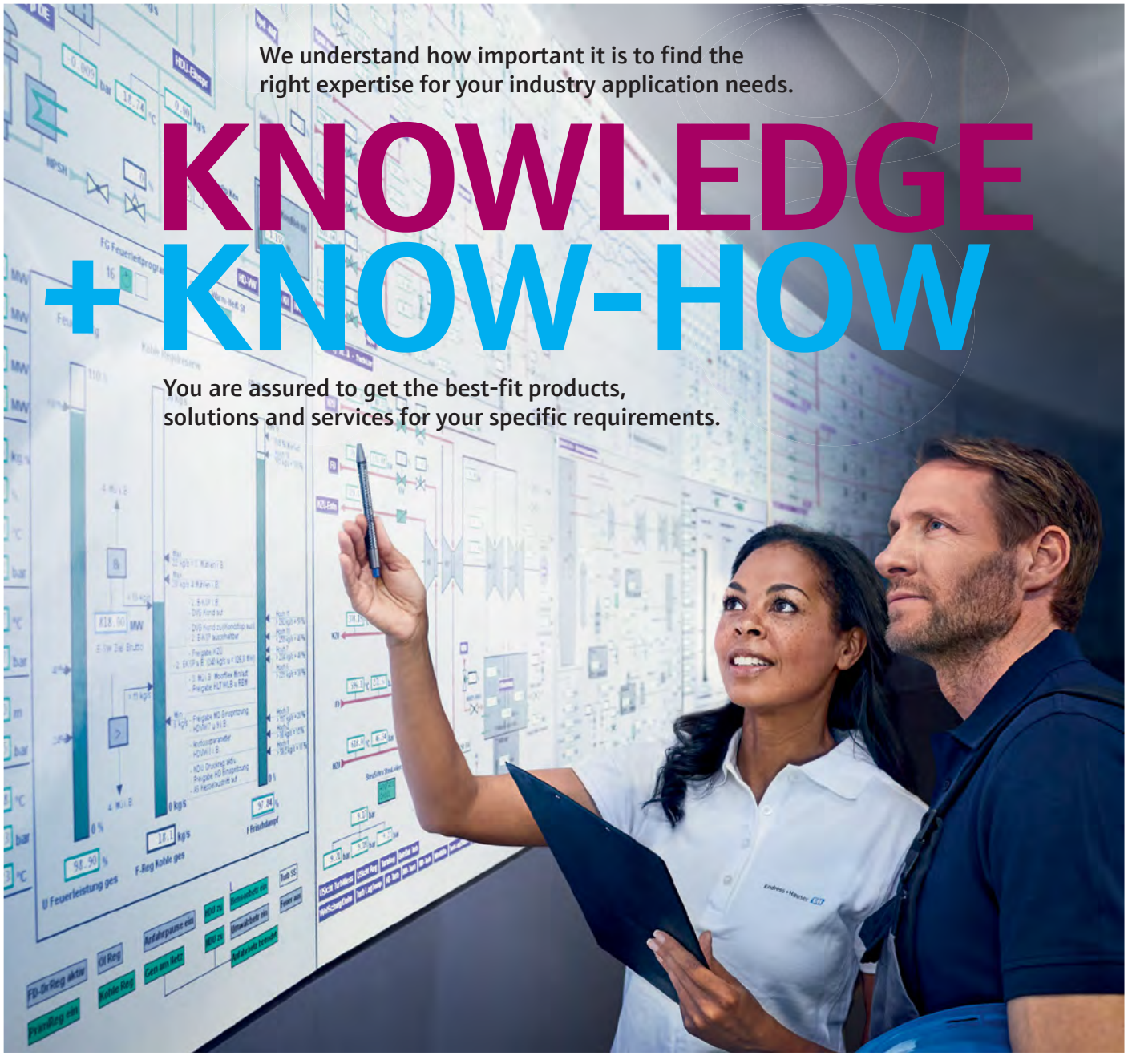

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Flexibility is Everything

In times of change, from COVID-19 to recipe updates, modular automation can help pivot process production to quickly adapt to meet new needs.

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https://bit.ly/tjeh2021ip

EBOOK

2021 Industrial Automation Trends & Automation Fair Directory

Download the eBook to learn how edge computing, simplified infrastructure, digitized devices, advanced analytics, AR and AI are just a few trends advancing manufacturing performance & supply chain stability.
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FEATURES

the journal
from Rockwell Automation and our PartnerNetwork™

OCTOBER 2021, VOLUME 28, NO. 5

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Adaptability is Always a Key Word

2021 will be better, they said. It has to be better than 2020, they said.

Then came The Great Resignation contributing to a nation-wide worker shortage, the COVID-19 resurgence, a surge in e-commerce and global supply chain instability.

But manufacturers are resilient, and are taking steps to deal with these issues. Two of the biggest are maximizing automation and creating more flexible production processes so they can quickly adapt to changing demands. In this issue, you'll learn how modular automation can help pivot process production to quickly meet new needs, whether for recipe changes, packaging updates, or even switching to manufacture masks, ventilators and other medical supplies to help with the pandemic.

Adaptability has been a key word for the past couple of years. In that vein, some exciting news is that this year, you can attend the 2021 Automation Fair® event in person in Houston or join online. Learn more about it starting on page 24.

Also, I'm happy to announce our new 2021 Industrial Automation Trends & Automation Fair Directory eBook is available to download at https://bit.ly/tj21trends. You'll learn about 7 top digital automation trends propelling manufacturing performance and supply chain stability, including smart devices, simplified infrastructure, edge computing, advanced analytics, augmented reality, AI and more.

And have you listened to my interviews with industry pros on our "Automation Chat" podcast? They're informative, fun, and you'll even get a silly Joke of the Day. You can listen on your favorite podcast app or online at https://rokthejournal.podbean.com, or watch our conversations on our YouTube channel at http://bit.ly/autochatpod.

Until next time ...

Theresa Houck

EXECUTIVE EDITOR

News Noteworthy

Rockwell Automation Announces Several Partnerships

The Rockwell Automation PartnerNetwork program includes a new Digital Partner and two platinum partners in the OEM Partner program.

Rockwell Automation, Inc. announced several new additions to its PartnerNetwork™ Program with Kezzler AS joining as a Digital Partner and BID Group and Stolle Machinery joining as platinum level OEM Partners.

Kezzler AS, a cloud-based product digitization and traceability platform, helps manufacturers capture the journey of their products from raw material sources to point-of-sale or beyond using cloud-based supply chain solutions that focus on product traceability.

The platform is ideal for life sciences, food and beverage, and consumer packaged goods industries where manufacturers strive to comply with regulatory requirements and meet consumer expectations in areas like product quality, safety and sustainability.

The Digital Partner Program helps connect businesses on their digital transformation journey to an ecosystem of partners with solutions designed to streamline the implementation and enhance the quality of digital initiatives.

In addition, two original equipment manufacturers (OEMs), BID Group and Stolle Machinery have joined the newly evolved global OEM Partner Program as platinum partners.

BID Group develops wood processing equipment, managing every step of a project to its completion with a range of products and services to accommodate the entire asset life cycle.

Stolle Machinery is a global manufacturer of machinery for the production of beverage cans and easy-open ends.

In late 2020, Rockwell Automation evolved its OEM Partner Program globally, establishing levels of participation based on need and output. As platinum OEM Partners, BID and Stolle take advantage of a true partnership approach with Rockwell Automation with executive-level engagements and alignment with strategic growth opportunities. Additional connection points include utilization of newly acquired Fiix, along with various services for digital transformation.

The enhanced offering provides increased market access opportunities, simplification, and standardized product alignment for manufacturers. The company expects more platinum level partners, as well as a number of gold, silver and bronze, to join the program.

Stratus Named 2021 Company of the Year

Frost & Sullivan recognizes Stratus Technologies, a Rockwell Automation Technology Partner, as the 2021 North America Company of the Year for its Edge Computing platforms that simplify, automate and secure data at the edge.

Stratus software supports features such as guest-monitoring, fault tolerance and virtualization in an OT-ready unit, coupled with deployment times of less than 30 minutes. The Stratus ztC Edge computing platform, which stands for "zero-touch computing," is an industrial appliance, with a smaller and more lightweight form factor than standard rack servers.

Each year, Frost & Sullivan presents a Company of the Year award to the organization that demonstrates excellence in growth strategy and implementation in its field. The award recognizes a high degree of innovation with products and technologies and the resulting leadership in customer value and market penetration.

Report Explains Single Pair Ethernet and Standards

Single Pair Ethernet (SPE) creates a plant-wide infrastructure that allows legacy industrial networks to migrate to single Ethernet networks while delivering power, control and information to edge devices. In this new report from Strategic Alliance Partner Panduit, "How to Keep Up with — and Contribute to — Single Pair Ethernet Standards," learn why SPE is one of the most important new developments in edge communication technology because of how it supports data accessibility, security, integrated powering, and seamless reliability.

Learn about recent developments in SPE network infrastructure for new applications and higher capabilities. Also see how easy it is to stay up to date with and take part in improving ever-evolving SPE standards.

Download the report from Panduit at https://bit.ly/tjpandspe21. ●

PANDUIT

Mike Berg

SENIOR BUSINESS DEVELOPMENT MANAGER, INDUSTRIAL

Panduit Enables Reliable Warehouse Automation

Exponential growth of the e-commerce industry, advancements in robotics, and the emergence of the Industrial Internet of Things (IIoT) challenge firms to use new technologies effectively and with scalability. The physical infrastructure is the foundation that supports these technologies, allowing efficiencies for product fulfillment, distribution and warehousing.

Mike Berg, Solutions Marketing Manager - Industrial Automation at Panduit, answers questions about trends putting increased pressures on warehouses and distribution centers. Also learn about the new technologies making warehouses more reliable and better equipped to handle demand, and the network infrastructure required to support them. And discover what manufacturers can learn from warehouse automation.

Q: What are trends bringing pressure to bear on warehouses and distribution centers?

A: Even before COVID-19 happened, there was a strong drive around convenience and allowing people to order products online and get them quickly. To compete, e-commerce suppliers are providing two-day, one-day delivery or even same-day delivery. Retailers must respond to that with their warehouse and distribution strategy so they can provide that same level of service.

Since COVID, there's a lot more emphasis on the supply chain and accelerating growth in e-commerce and online ordering. There is also supply-chain disruption happening globally, and many manufacturers are starting to hold more "safety" or cushion inventory, which is also increasing the warehouse demand, ironically.

So, there's a need for fulfillment center or distribution center upgrades, and a need to carry a little more inventory — and possibly expand the warehouse space.

Q: How can downtime lead to lost revenue and lost customers?

A: With two-day, one-day or same-day delivery, fulfillment centers need technology to provide the kind of efficiency and throughput needed for those delivery demands. And as we see with other manufacturing environments, if you need high throughput and have any unplanned downtime, it's going to be very costly.

In an e-commerce provider's fulfillment center or a distribution center, the cost of downtime can be as high as $220,000 per minute. A lot of packages fly through these facilities, and a lot of online orders are happening all at the same time. So, the automation managers and IT managers who run them are cognizant of downtime and try to ensure there's system redundancy and reliability, just like in manufacturing.

LISTEN TO THE PODCAST

Listen to Mike Berg's insights, "Remarkable Warehouse Automation Digital Transformation & What Manufacturers Can Learn," on *The Journal* magazine's Automation Chat podcast with Executive Editor Theresa Houck. Listen on your favorite podcast app or on the web at **https://bit.ly/tj21ACpanduit**, or watch our chat on YouTube at **https://youtu.be/GvjJD2btcq4**.

Q: The IIoT is key to the new technologies that make warehouses and distribution centers more efficient and better equipped to handle the demand. What does digital transformation look like in warehouse automation?

A: In modern fulfillment or distribution centers, technology is at work in every corner, and a tremendous amount of activity happening. IT, automation, robotics and people are collaborating and working in harmony with goods coming in and leaving.

In the past, these facilities had some islands of automation, but not everything was connected. Now, to provide the desired level of service and be competitive, everything from the website all the way down to the last device and the last package in the facility is connected.

Examples include the conveyor that serves as a highway within the facility; robotics bringing things to people and then ultimately to that conveying system; and sensors and modular devices throughout the conveying system and across the robotic system, which are all Ethernet connected and networked.

There's edge computing, such as scanning, for keeping track of the packages, weighing them, taking pictures of them, knowing where everything goes, coordinating with the sensors on where the off-ramps from the highway are for things that need to be put away, or dropping it down to go to shipping and go out to one of the trucks.

A warehouse management system runs the facility. Industrial network infrastructures connect the controls automation and some of the I/O as well. The wireless network is designed to support high demand from all the mobile robotic devices and people with devices within the facility. And camera networks support personnel security as well as monitor the automation equipment.

There is a pathway of digital transformation that is recognized in this industry. It starts with digital connectivity, goes to controls and automation, then analytics with the warehouse management system, and then ultimately, to factors like artificial intelligence (AI). Being able to optimize that system and have it work like no one else's system provides a huge competitive advantage to the retailer or e-commerce supplier.

Before COVID-19 hit, online ordering was about 15% of retail business; it's predicted to be up to 39% by 2030. This incredible growth trend is driving digital transformation in warehouses and distribution centers.

Q: Describe the physical network infrastructure required to facilitate and support these kinds of new technologies for warehouse automation, and how plant-floor data relates to the warehouse automation.

A: The backbone of the network infrastructure goes in as the warehouse is built. Then the enterprise network and building infrastructure network gets expanded, including AV systems, intelligent building systems and some type of data center. These days, a lot of things are cloud-based, but there could be a local cloud or a Micro Data Center within that facility supporting some of the computing.

The wireless network, camera network and controls network will be within the warehouse connected into the enterprise space and down to the IDF level, which is the switches on the facility floor.

Manufacturing, warehouse and distribution data always will be connected in some way. To coordinate the activities, especially if the facilities are connected, some data connection is necessary.

To meet all these requirements, Panduit draws on our offerings within our data center, enterprise and industrial spaces, and some of the services offerings we have. Each are separate projects that happen in different ways, so we work with retailers and material handling partners on these projects too.

For more information about Panduit Warehouse Automation Solutions, visit ***https://bit.ly/panduit-warehouse****.*

Check out our Panduit Connections blog, "Automation Helps Warehouses Meet Demand," to learn about digital technologies and systems driving warehouse efficiencies and offering competitive advantages for companies that adopt them. ●

ROCKWELL AUTOMATION

Bruce Kane

GLOBAL INDUSTRY TECHNICAL CONSULTANT, LIFE SCIENCES

FLEXIBILITY is Everything

In times of change, from COVID-19 to recipe updates, modular automation can help pivot process production to quickly adapt to meet new needs.

Manufacturers are faced with a new, stark reality that includes supply chain issues, workforce shortages and stringent safety precautions. In early 2020, COVID-19 affected millions of people worldwide, and the virus has changed daily life as we know it. As a result, many manufacturers are inspired and driven to join in the fight against the spread of COVID-19 by producing items that are needed by the medical community and beyond.

Because of this crisis, manufacturers are realizing they need to change the way they think, plan and execute production. Are you and your team wondering how you can scale back or change production to adjust to new needs or market demands?

Whether you want to or need to pivot your plant's production capabilities, modular manufacturing processes can be a fast, easy and cost-effective option for flexible and reactive operations.

Over my nearly 30 years in process automation, I've often been asked about the most efficient ways to update or modify the process automation systems in response to new manufacturing needs. Those questions are more relevant now than ever before, as manufacturers consider additional ways to be flexible and adaptable in their processes.

Whether you're dealing with a new product or raw material, supply chain disturbance, capability expansion or another modification to your existing control system, consider these two questions:

- **How can you tell if your system can be quickly changed and adapted as your manufacturing needs change?**
- **How do you minimize the effort needed to make and test changes to your process automation system?**

Batch Control Standards

One of the key features that determines the flexibility and modularity of a process is whether it followed the International Society of Automation's (ISA) standard on Batch Control, ANSI/ISA-88 (also known as S88), when it was first installed.

The S88 standard, released in 1995 and updated in 2010, sets a terminology and process for segregating the physical

One of the key features that determines the flexibility and modularity of a process is whether it followed the ISA standard on Batch Control, S88.

LISTEN TO THE PODCAST

Electrical Engineers Rethink Workflows, Automation and COVID-19 Impact

In this episode of *The Journal* magazine's Automation Chat podcast, Executive Editor Theresa Houck talks with Jeff Kilburn and Thomas Michels from EPLAN Software & Service about how the COVID-19 pandemic has created a stronger need for electrical engineers to have remote capabilities; ways engineers are rethinking their work and workflows; and how to adapt to producing at a faster pace required by PPE needs and consumer product demands the pandemic has created.

Also learn what to do when engineers are hesitant to work in the cloud for electrical design, and what to do if you don't think you're ready for a full set of automated processes.

Listen on your favorite podcast app, on the web at **https://bit.ly/38lMv8I**, or watch the interview on YouTube at **https://youtu.be/DO9rTNyvkbs**.

capabilities from the usage or direction of your machinery and equipment. It draws a distinction between what you can do — what you can measure, what the equipment's capabilities are, etc. — versus how you're going to do it — the procedural execution, the processing steps, etc.

Separation of physical and procedural aspects allows systems to be easily modified and adapted to various scenarios, from new processing equipment and new functions of existing equipment to new orders of operation or new products. It all depends on the needs of the processing system.

Common Scenarios

Modularity is not a new concept in automation. I have long used the analogy of a subroutine in BASIC to represent this concept. A piece of code that's written once can be used repeatedly in many ways by altering the settings you use to run the code. That's the beauty and strength of modularity.

To showcase the value of modularity, let's look at two simple change scenarios that are common for manufacturers, and how those changes could be facilitated by modular programming that follows S88.

1. **Addition of a new raw material to the process.** This could also represent a change to an existing raw material. Given a straightforward three-raw-material additive mixing process, we want to add a new chemical, such as a virucide, to our process, and change our 10 existing recipes to now add this new raw material. What is the most efficient way to do this?

» *Nonmodular solution:* In a typical plant that doesn't follow modular programming principles, each recipe needs to be modified to add the functionality for the new virucide. Because this is done with no concept of modularity, all the functionality for the new raw material must be replicated in each recipe.

» *Modular solution:* In a modular implementation, the new raw materials functionality is implemented as an object. This object fully represents, from an automation perspective, the complete functionality of that raw material delivery system. It's written for the capabilities of the system. The recipes are written to execute or call these automation objects. All the functionality is, therefore, written once in the object, and then called by recipes as they execute.

Because we only need to create the functionality once, instead of in every recipe, we could conceivably save as much as 90% of the implementation effort, which is a significant cost- and time-saving benefit.

2. **New product recipe.** Imagine you want to add a new recipe to an existing system. This example demonstrates the benefits of being able to combine these functional objects in new unique combinations and orders easily.

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- *Nonmodular solution:* The new recipe includes all the code to perform every action required, every raw material addition, every agitation, every cooling and every transfer.
- *Modular solution:* The new recipe uses links or pointers to the objects for raw material additions, agitation, cooling and transfer.

The savings in recipe implementation depends on complexity of the recipe. The more complicated the recipe, the greater the possible savings. The effort to implement a new recipe in a modular plant versus a nonmodular plant for a simple 10-step recipe is less than 20%.

DOWNLOAD THE EBOOK

2021 Industrial Automation Trends & Automation Fair Directory

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Download this free resource from *The Journal From Rockwell Automation and Our PartnerNetwork™* magazine by visiting **https://bit.ly/tj21trends.**

In both examples, additional benefits will be realized from the modular implementation, including reduced cost to manage configuration, reduced testing expenses and expedited change process.

Modularity and Flexibility

As these examples illustrate, the segregation provided by S88 allows control functionality modularity so that functionality is contained in small reusable objects. These small reusable objects represent the functionality of the physical world of the process.

And these objects of equipment functionality can be updated and modified, added or removed from the system without affecting other objects, reducing effort when making changes. After all, who hasn't tried to jump around and make changes to monolithic programs jokingly referred to as "spaghetti code?"

Additionally, as seen in the second example, because these objects are separate and modular, they can be combined in many different and unique ways as needed for new products or recipes. While the concepts and ideas in S88 were written with a batch manufacturing process as the core, they can be applied to a variety of processes.

You might be thinking that simplistic, abstract examples are nice, but how are these concepts helping us to do something important, like battle COVID-19? Right now, many manufacturers are adapting to supply chain challenges and embracing the flexibility of modular manufacturing processes.

Some are going above and beyond to make new products that they've never made before to help with public health efforts addressing the pandemic. For example:

- **A healthcare company was able to scale up production in just weeks to produce ventilators.**
- **A multinational healthcare group has pivoted production to make COVID-19 tests.**
- **Brewers and distillers are quickly adapting to produce higher ethanol recipes to meet critical demand for hand sanitizers.**

How Do You Know?

The simplest way to determine if your processes and automation systems are modular is to ask yourself if all your recipes must change every time there's a physical process change to your equipment. If you must modify multiple recipes in response to a physical process change, then you may not have a modular system.

Some good resources on modular automation are the latest ANSI/ISA standards S88 and S95, which deal with modular hierarchies in manufacturing automation and are both current and good manufacturing practices.

What can you do to move toward a more modular automation framework? Take these three steps:

1. **Set Goals.** Document what a flexible manufacturing strategy looks like for your production area. Identify what you hope to achieve and the associated benefits.
2. **Make a Plan.** Assess your current equipment and workflows, and review it with an automation consultant familiar with S88 concepts. Identify how your current implementation supports your goals and where there is room for improvement.
3. **Take Action.** Prioritize investments and implement change based on which projects achieve your goals. ●

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How AI Can Benefit Oil & Gas Operations

Achieving intelligent, autonomous operations in upstream production can improve efficiencies, reduce asset downtime and protect critical knowledge.

SENSIA

Jonathan Chong

ADVANCED TECHNOLOGY R&D MANAGER

Imagine if every production asset across your well sites had a dedicated surveillance engineer continuously monitoring and managing its performance. You could keep all your assets performing optimally, and significantly reduce the risk of failures and shutdowns.

Such an allocation of resources may seem infeasible in current operations, where just a handful of engineers watch over and respond to alarms from hundreds of wells.

But now technologies such as artificial intelligence (AI) and machine learning (ML) are changing what's possible in upstream production. These technologies allow you to scale and deploy previously inaccessible intelligence, so no asset is left unattended.

This shift to more intelligent and autonomous operations can help reduce downtime risks and improve production efficiency.

Overcoming Upstream Challenges

Upstream oil and gas production always has presented challenges toward implementing widespread automated operations.

Well sites are remote and sprawling, and sometimes difficult to access. Practical constraints such as cost can limit the level of instrumentation, control and intervention. Evolving conditions over time also require adaptive methods that can make automated processes simply too costly or difficult to implement.

Another challenge in upstream oil and gas production is engineers often get overwhelmed by too many alarms for too many production assets. That's because the alarms they monitor operate on tighter bounds and track if an asset is operating in an optimal region — hence requiring regular adjustments as things evolve.

Not surprisingly, because they face a flood of alarms, operators or production engineers can and do miss important events that lead to asset and production downtime through equipment damage or unintended trips due to event escalation. They also typically only learn about events after they happen, meaning they're more likely to address problems reactively instead of proactively.

Consider how the tracking and prioritizing of events occurs in most operations. This activity is still largely manual, from detection of what is going on, to closing the loop on actions.

Figure 1 illustrates an incident on an electrical submersible pump (ESP) well where a real-time AI-based detection engine was tested. The ESP fed the engine real-time signals, such as pump discharge and intake pressures, motor speed, current and temperature, and wellhead pressure. The system is designed to accommodate different combinations of available measurements, and account for data quality issues such as missing, frozen and faulty sensor data.

In this incident, the system raised an issue during restart just as early if not earlier than experienced operators. However, because it's a largely manual process, there were still 23 minutes from point of detection to shutdown. Taking it a step further, could the system be intelligent enough to diagnose the situation, recover on its own and actually prevent a costly shutdown?

By helping operators resolve critical well events earlier, such solutions also help extend the life of the pump and maximize production output. During the course of normal operation, ESPs are subject to multiple stressful events and normal wear and tear, all of which can contribute to eventual pump failure. The longer the duration of the critical events, the larger the stresses on the pump.

Figure 2 highlights this on the top timeline as a red operating zone. The quicker you are able to detect the event and resolve it, avoiding the red zone, the less stress the pump will experience. And that increases the probability of running the pump longer. Over the life of the pump, this results in less intervention costs and increased production time.

Intelligent Automation at the Edge

One other challenge facing the oil and gas industry is mounting retirements. As skilled, seasoned employees leave the workforce, they're taking with them

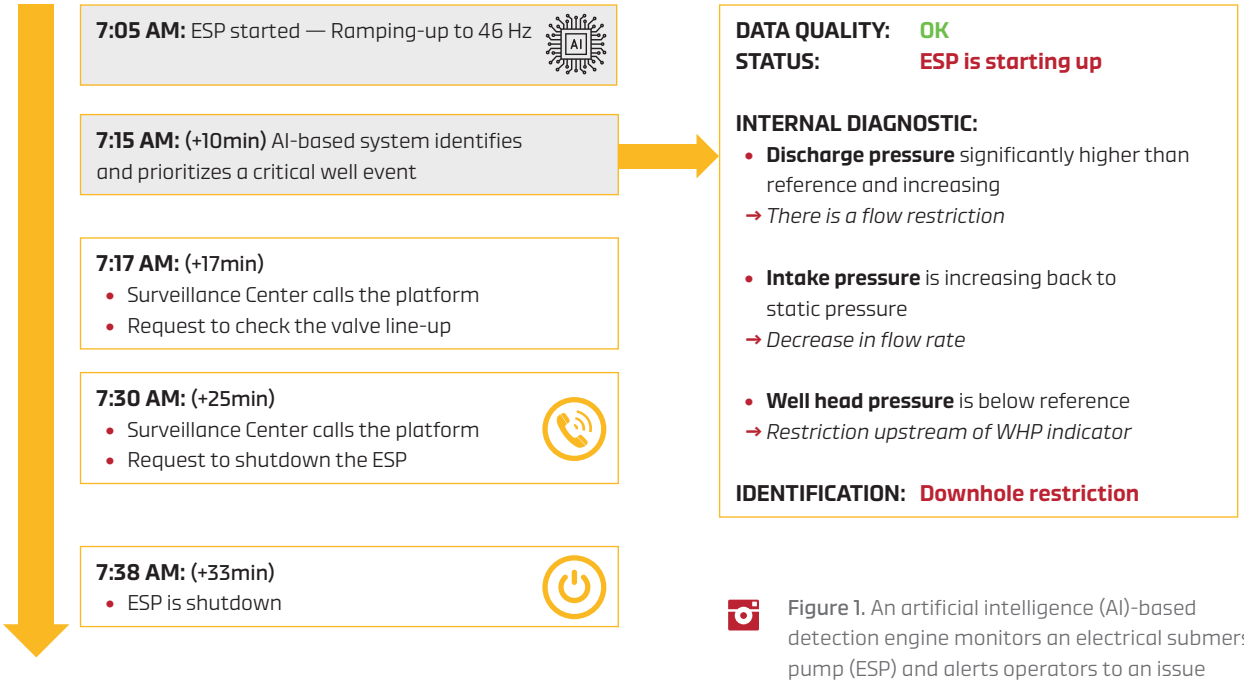

Figure 1. An artificial intelligence (AI)-based detection engine monitors an electrical submersible pump (ESP) and alerts operators to an issue during restart.

decades of critical knowledge about production assets and processes.

Deploying more intelligent production capabilities where appropriate can help overcome this challenge by capturing crucial process knowledge and supporting higher levels of automation within the control system at the edge.

So, how can a system not only identify events like experienced operators, but also resolve the events more quickly, reliably and optimally? AI-based solutions for artificial lift systems can recognize and address high-risk situations in real-time when deployed in the control system.

The solution seeks to find the optimal balance between domain knowledge and ML. And it can slide right into a production asset's Internet of Things (IoT)-enabled control panel rack and remote terminal unit (RTU).

By deploying this intelligence at the edge, you can get the required response times needed for closed-loop automation and optimization. Embedding the intelligence at the edge also means advanced automation can be done reliably, without potential wireless communications disruptions and bandwidth limitations.

Once deployed, the probability and severity of issues like low-flow events, can be detected and acted upon immediately.

Because ESPs are located downhole, they require adequate flow for cooling the motor and pump. In this situation, a significant amount of energy potentially can be released around the ESP, requiring immediate attention to resolve. The solution can act by adjusting equipment operations such as ESP speed or other valve manipulations based on the specific type of low-flow event it detects, constantly monitoring the impact of the adjustments based on multiple criteria.

This kind of intelligent decision-making mimics a "super operator" who can prevent situations from escalating to a point where they cause equipment to fail or trip protection limits, and result in costly downtime. Also, because the system can proactively make control adjustments in the early moments before conditions worsen, it can protect production assets and extend their useful operating life.

Today, with limited resources, operators must prioritize which wells they pay attention to based on metrics like production rates, while leaving lower-tier wells to trip and lead to prolonged shutdowns. However, in an era where every bit of efficiency needs harnessed, scalable AI-based solutions could prevent operators from making these drastic trade-offs.

Another Level of Knowledge

AI-based solutions can also improve the management of production assets by providing a higher level of decision support to operations personnel. This allows you to immediately begin

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capturing, prioritizing, resolving and classifying events.

By encouraging this culture in well-designed workflows, a treasure trove of knowledge can be accumulated over time to help continuously improve operations. In the ESP case, as more events are validated and properly catalogued, supervised learning techniques can be deployed to retrain engines to enhance performance metrics.

In addition, instead of losing valuable "tribal" knowledge as workers retire, you collect, retain and share knowledge across your workforce — including potentially newer, less experienced workers — to drive better decisions.

This approach can also transform how production personnel do their jobs. How? The embedded solution in the control system can monitor and respond where appropriate. This allows operators to better focus on mid- to long-term value-added activities, such as planning of maintenance operations and production optimization strategies.

And as more intelligence is made accessible, the gap between production engineers and operations will narrow over time. This will allow greater collaboration between the teams and help harvest previously untapped efficiencies.

Additionally, the AI-based solution can continuously learn about each well and its events. With this mechanism, the system will adapt and eventually improve its ability to better solve problems based on each well's unique history. This allows each well to be controlled as if a dedicated surveillance engineer had been continuously monitoring and supporting it for years.

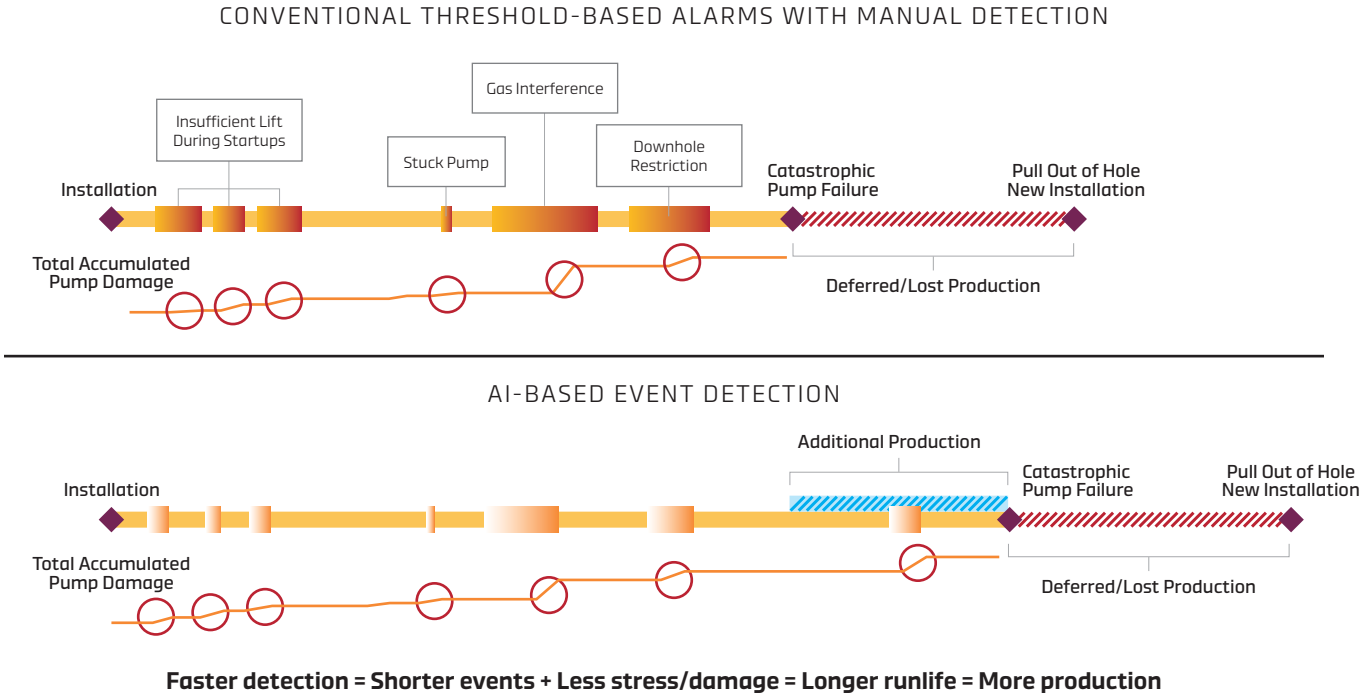
Reimagining Well Sites

Real-time, AI-based solutions at the cloud and edge are already being tested, helping drive better decision making at upstream production sites.

Ongoing field trials continue to yield positive results, with AI-based solutions being used in the cloud to detect and prioritize events, and at the edge to autonomously resolve critical events and improve performance over time.

Soon, intelligent solutions like these will be a competitive necessity for producers that want to not only improve their performance and profitability, but also retain critical operations knowledge before it walks out the door. ●

Figure 2. AI-based event detection can more quickly detect and resolve upset events, thus avoiding the red zone of pump failure and lost production.



Faster detection = Shorter events + Less stress/damage = Longer runlife = More production

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Get Ready for Houston

Learn about the latest automation technologies while engaging with peers and industry professionals at this unique in-person and online event.

In just a few short weeks, thousands of automation industry professionals will descend on Houston or join online to attend the 2021 Automation Fair® event, a can't-miss event for learning about the latest automation and IT/OT technologies to improve operations.

Taking place November 9-11, beginning with Perspectives and Process Solutions User Group events, the hybrid Automation Fair® event will also be available online until February 2022 to attendees.

This unique event will feature engaging keynote presentations, interactive hands-on labs and technical sessions, industry-centric panel discussions, and the latest innovations and solutions from Rockwell Automation and members of its PartnerNetwork™ program. These numerous platforms are designed to help you learn how the digital thread and other technologies can get your products and services to market faster, reduce costs, use power and plant-floor assets more efficiently, and minimize risks in your manufacturing environment.

The Automation Fair® event includes opportunities for anyone involved in industrial automation, from implementors such as automation and controls engineers to executives and strategic management leaders in operations, IT and engineering.

More importantly, the event gives automation and IT/OT professionals the opportunity to participate in in-person networking activities with peers. It offers everyone the opportunity to interact with one another safely, whether they are attending in-person or participating online via the hybrid experience.

Discover the Newest Technologies

The Automation Fair® event show floor features a new interactive and curated experience, an exhibit that brings one customer's manufacturing story to life, and the newest products, technologies and solutions from Rockwell Automation.

The immersive exhibits will provide hands-on demos and activities, and subject matter experts will be available to discuss how you can implement these solutions.

At the Digital Transformation Solutions exhibit, explore how smart systems and technologies can enhance efficiency, accelerate innovation, achieve business objectives and empower your workers. You can also see how Rockwell Automation connected its own operations with a digital thread in the Innovations Booth.

Visit the Industry Pavilion to learn how practical solutions have cultivated success in industries like mining, oil and gas, life sciences, consumer packaged goods, chemical, automotive, battery and tire.

If you're looking to minimize risk with the latest cybersecurity capabilities; empower your workforce with technical expertise and AR/VR technology; and fuel your digital transformation via modernization and predictive, intelligent lifecycle services, then check out the LifecycleIQ™ Services exhibit.

No matter where you are in your smart manufacturing journey, be sure to stop by the Rockwell Automation Product and Technology Showcase to learn about the latest technologies driving automation today.

AT A GLANCE

Automation Fair 2021

November 9-11

Houston, Texas and online at
www.automationfair.com

And that's not all. Join Rockwell Automation at the Customer Experience Showcase featuring health and beauty company Amway and witness their journey to success firsthand. Take a step inside their virtual facility and see how they transitioned a brownfield site into a world-class production facility, creating a seamless digital thread.

In addition to these Rockwell Automation exhibits, more than 100 PartnerNetwork program members will be showcasing their newest innovations on the show floor. Check out the Exhibitor Directory on page **30** and stop by partner booths to learn more about how they can support your smart manufacturing journey.

JOIN US VIA SOCIAL MEDIA!

Stay connected with the Automation Fair® event through social media

- The Journal: @thejournal_ROK
- Automation Fair: @automationfair
- Facebook: www.facebook.com/ROKAutomation
- Facebook: The Journal: http://bit.ly/9NGXI
- LinkedIn: http://goo.gl/J5t9t
- YouTube: www.youtube.com/ROKAutomation
- YouTube: http://bit.ly/tjrayoutube
- Instagram: www.instagram.com/rokautomation

A Culture of Inspiration

Rockwell Automation also provides thought leadership and inspiration exhibits to help you navigate the ever-changing workforce.

Diversity and inclusion are good for business, but how do you create a sustainable culture change to maximize employees' potential and your bottom line? In the Bold Conversations on Diversity, Equity & Inclusion exhibit, attendees are encouraged to bring their curiosity and create a space for listening, learning and dialogue. The sessions will feature a variety of thought leaders discussing how a focus on innovation and talent attraction and retention can impact your business.

In addition, ROK Studios will be onsite broadcasting never-before-heard thought-leadership content, solution-based use cases and deep product knowledge from Rockwell Automation executives, members of its PartnerNetwork, and customers. Follow ROK Studios on social media during the event.

Get Ready to Learn

The Automation Fair® event offers hands-on training sessions and thought-provoking presentations designed to help inspire your IT/OT digital transformation and smart manufacturing operations. So come ready to learn as Rockwell Automation, PartnerNetwork members and other forward-thinking professionals share their knowledge to help improve your expertise and skillset.

For example, with 10 industry forums available, you can dive deep into industry-specific challenges and participate in panel discussions with leading industry experts about how they conquered these issues.

These forums include:

- Automotive and Tire.
- Chemical.
- Decarbonization and Emerging Energies.
- Power and Energy.
- Food and Beverage.
- Life Sciences.
- Metals, Mining and Cement.
- OEM.
- Oil and Gas.
- Water Wastewater.

Visit https://rok.auto/industryforum for more information on each of the 10 industry forums available.

More than 100 Products & Technology sessions will cover how the latest products, technologies, solutions and services

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can help operations meet the manufacturing environment of today, tomorrow and the future. Sessions presented by Rockwell Automaton are eligible for professional development hours.

In addition to these sessions, attendees can get hands-on experience with the latest technology and product enhancements. These hands-on, interactive training labs cover the portfolio of products and solutions from Allen-Bradley®, FactoryTalk® and compatible products offered by PartnerNetwork members.

Don't Forget PSUG

Rockwell Automation also will host the Process Solutions User Group (PSUG) on November 9 in person and online. You can join your peers during this free event to gain greater insight into the latest process automation technologies.

Process control engineers, plant managers, operators, manufacturing IT professionals, integrators and EPC consultants will want to take advantage of the sessions highlighting innovative approaches, outstanding ROI and successes achieved through Rockwell Automation solutions. PSUG addresses the production challenges you face every day, including control strategies, optimization and process safety.

The event also will showcase how Rockwell Automation values feedback from its users to help drive the latest releases of the PlantPAx® distributed control system (DCS), batch and supporting process solutions. The event will include forums, technical and customer sessions, hands-on labs and keynote presentations.

For more information, check out www.automationfair.com.

Your Health and Safety First

Rockwell Automation is excited to reconnect with industry professionals to share new experiences and exchange ideas in a safe and comfortable environment. The company will continue to closely monitor COVID-19 conditions, and implement the appropriate actions to help ensure the upmost safety and comfort per CDC guidance for all attendees. Watch for additional announcements at www.automationfair.com.

The in-person event will take place in accordance with all current CDC recommendations, including:

- Enhanced cleaning and disinfecting processes throughout the venue.
- Upgraded ventilation.
- Complimentary masks.
- Numerous sanitation stations and supplies throughout the venue.
- Individually packaged snacks and beverages.
- Socially distanced seating options in session rooms when possible.

In addition, anyone attending the in-person event should follow these guidelines:

- If you're sick, please refrain from entering the event/facility.
- Masks will be available for your use. We ask that you wear a mask while attending the event.
- Please practice social distancing.

Attendance is Free

The Automation Fair® in-person and online event is free, including PSUG. To register and find more up-to-date event details visit www.automationfair.com. ●


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expanding human possibility®
RockwellAutomation.com

Exhibitor Directory*

*As of 10/8/21

PARTNER NAME	BOOTH #
Advanced Micro Controls Inc. (AMCI)	701
Amatrol	609
Ametek	538
Apex Dynamics Inc.	1731
Applied Control Engineering, Inc.	612
ARMI	413
Automated Control Concepts, Inc.	1638
BCA Systems	1545
Belden	1308
Bihl+Wiedemann GmbH	2554
Block USA Inc.	1644
Bonitron, Inc.	2309
Brady Corporation	1439
Burkert Fluid Control Systems	2119
Bussman by Eaton	2205
Cape Software Inc.	708
Cisco Systems	1533
Claroty	1409
Cogniac Corporation	512
Comau	2219
Control Station, Inc.	439
Cybertrol Engineering	1248
Data-LInc Group	2408
DENSO Robotics	2304
Dialight	2153
Elwood Corp. |	
High Performance Motors Group	2204
Endress+Hauser	417
Energy Control Technologies	1051
EPLAN Software & Service	1931
ESTeem Wireless Modems	1640
exida Consulting, LLC	314
FANUC America Corp.	1149
Festo Corp.	2131
Fluke Corp.	909
FPS - Food Process Solutions	2248
Grace Technologies, Inc.	2206
Hammond Power Solutions | Mesta Electronics	211
Hardy Process Solutions	1631
Harmonic Drive LLC	1049
Helm Instrument Co., Inc.	1717
HMS Networks	217
icotek Corp.	2107
Imperx, Inc.	805
Interstates, Inc.	1538
Itoh Denki USA, Inc.	431
JVL International A/S	342
Kyntronics Inc.	2307
Leviton Manufacturing Co., Inc.	1509
LinMot USA, Inc.	1517
LinTech	1637
Maplesoft	1348
Marathon Motors	341

PARTNER NAME	BOOTH #
Matrix Technologies, Inc.	440
Mersen	509
Mettler-Toledo, Inc.	1004
Motorola Solutions	2212
MTE Corp.	2354
Neles USA Inc.	1306
Nidec-Shimpo	1243
NK Technologies	2252
nVent HOFFMAN	231
Oden	508
Panduit	619
Parker Pneumatic Division	513
Paul Vahle GmbH & Co KG	2204
Pepperl & Fuchs Inc.	544
Planar Motor Incorporated	312
Point Eight Power, Inc.	539
POSITAL FRABA Inc.	2147
Post Glover Resistors	2149

PARTNER NAME	BOOTH #
Premier System Integrators	609
Prime Controls	1448
Prime Technologies, Inc.	2105
ProSoft Technology, Inc.	1109
Putman Media	340
RACO Manufacturing & Engineering Co.	2213
RealWear, Inc.	1349
Regal Rexnord	1351
Rice Lake Weighing Systems	644
Rittal North America, LLC	1931
ROSS Controls	1148
Rovisys	1505
Schweitzer Engineering Laboratories, Inc.	2244
SeQent	2113
Service Wire Company	2246
SMC Corp. of America	1143

PARTNER NAME	BOOTH #
Softing Inc.	2406
Southwire Co.	311
Spectrum Controls Inc.	531
STOBER Drives, Inc.	2231
Stone Technologies/Gray Solutions	1615
Stratus Technologies Inc.	643
SyTech, Inc.	1405
TCI, LLC	809
Teledyne FLIR	1608
The Journal From Rockwell Automaiton and Our PartnerNetwork magazine	241
Tolomatic	1539
UMC Energy Solutions	1008
WIN-911 Software	1249
WITTENSTEIN	2236
Zebra Technologies	2453
Zeppelin Systems USA	1618

Consequences of Using the Wrong VFD Cable

A well-designed cable can help reduce premature motor and drive failure, bearing fluting, controls and communications interference, and other problems.

SOUTHWIRE COMPANY

Steve Wetzel, Sr.

PROJECT ENGINEER

A variable-frequency drive (VFD) cable is a special cable construction for the inverter-to-motor cable that has some or all of the following attributes:

- An overall shield that keeps bad stuff such as electrical magnetic interference (EMI) from escaping.
- A robust insulation system that keeps good stuff such as voltage and current from escaping.
- A symmetrical design that reduces the amount of bad stuff in the cable, such as common mode current electromagnetic interference (EMI).

Not all VFD cables offer each of these attributes, but each attribute helps the cable to reduce problems that occur in installations using VFDs.

And these problems aren't restricted to premature cable failure. They include interference with radios, controls

EDITOR'S NOTE This article is adapted from the white paper, "All About VFD Cables." Download the full paper at https://bit.ly/3so21zq to learn the importance of a VFD cable's function, its overall shield and its robust insulation. Find out about THHN cable limitations, how quality cable is constructed, the importance of surface area, and more.

and communication systems; shock hazards; premature motor failure; bearing fluting; drive trips; drive failures; and even having that precious magic smoke leak out of programmable logic controllers (PLCs), causing them to fail.

All these problems can make it harder to keep a facility up and running, and the wrong inverter-to-motor cable can contribute to any or all of these issues. How can a power cable at one end of a plant affect a PLC at the other end of the plant when it's not even connected to it?

Prevent These Cable Issues

Using the incorrect cable between your inverter and motor can lead to:

- **Premature cable failure due to overvoltage and corona discharge.**
- **Operating issues with nearby equipment due to uncontrolled EMI.**
- **Wasting energy sending it to ground and bypassing the motor, via capacitive coupling.**
- **Unnecessary drive trips due to high cable capacitance.**

A properly designed VFD cable will minimize these issues. However, the wrong cable — or an improperly designed VFD cable — will fail to minimize these issues, and can contribute to the severity of drive-related problems. It can do this by increasing the amount of common mode current (CMC) in the cable itself.

Let's look at what CMC is and why it's important.

DOWNLOAD THE WHITE PAPER

All About VFD Cables

Visit **https://bit.ly/3so21zq** to download the full white paper, "All About VFD Cables," from Southwire Company. Learn the importance of a VFD cable's function, its overall shield and its robust insulation. Find out about THHN cable limitations, how quality cable is constructed, the importance of surface area, and more.

What is Common Mode Current?

CMC is defined as the total sum of current flowing in the cable. Add up all the current flowing in all the conductors, grounds and shields, and if you get a number close to zero, life is good. In traditional 60-Hz power systems, the CMC flowing in the cable is very close to zero. In today's high-speed drive systems, CMCs of 100A have been measured. That is a very big number.

100A is a problem. Let's see how we can have such a large amount of CMC flowing in the cable in a VFD system. To simplify things, let's just look at the power conductors, where all the current is supposed to be flowing.

In traditional 60-Hz power systems, each phase consists of a nice-looking sine wave that's out of phase by 120° from the other phases. When we add up three equal amplitude sine waves that are 120° out of phase, we get zero — thanks to the wonders of trigonometry.

In the world of VFD pulse width modulated waveforms, things are not so nice. Imagine a simple two-state drive that outputs either +V, or -V on each phase. Any way you look at it, you can't add up the three phases to be anything close to zero. The closest you can come is +V + +V + -V or +V + -V + -V in either case, the amplitude is V, and that's not going to equal zero unless V equals zero. And if V equals zero, this drive that has no output.

Design Matters

A well-designed cable can help reduce premature motor and drive failure, bearing fluting, controls and communications interference, and other problems. Learn much more about this by downloading our white paper, "All About VFD Cables," at https://bit.ly/3so21zq. ●

SOUTHWIRE COMPANY Based in Carrollton, Georgia, Southwire is a Rockwell Automation Technology Partner. The company manufactures electrical wire and cable products.

FROM PANDUIT

Elements of a Micro Data Center and Why It Matters

Learn how MDCs replace larger tower computing systems by using rack/cabinets to combine hardware, software and cabling into an end-to-end networking hub.

The industrial network is the backbone for data collection and transmission to points of use. Industrial network applications range from the ability to trace quality of production lots, improve preventive maintenance schedules, manage and monitor processes, improve safety, and identify constraints to increase productivity. A reliable and secure network supports these applications to keep production flowing and business communication running smoothly where downtime is measured in minutes and in thousands of dollars from missed customer commitments.

EDITOR'S NOTE This article is adapted from the white paper, "Protecting the Critical Structure that Makes up the Industrial Network." Download the full paper at **https://bit.ly/3AsThnG** to see how to maintain robust, integrated and secure networks with a Micro Data Center (MDC). Learn about its components and how to optimize them, including housing, equipment layout, network cabling and cable management. And understand the benefits of deploying an MDC in an industrial automation environment.

The defining characteristic of an MDC is that it houses a complete data center infrastructure in a single space.

Office-grade IT equipment often is deployed in the industrial space, with additional environmental protection required. Automation vendors are integrating Ethernet connectivity at all levels of manufacturing, starting with sensors to PLCs and up to manufacturing servers and switches.

It's crucial to verify that the linkage between these systems is secure, environmentally protected, and optimized to speed diagnostics and problem solving, with the ability to isolate the networks when security threats to production arise.

The centerpiece that brings this all together is a Micro Data Center (MDC). This is a partial, single or multiple rack/cabinet that houses rack-mounted servers, switches, uninterruptible power supplies (UPSs), backup systems, firewalls, and DIN rail-mounted devices (see **photo**). The MDC is designed to provide the link between the corporate and industrial networks to:

- **Maintain network uptime.**
- **Provide the ability to segregate networks.**
- **Manage network security.**
- **Speed changes and troubleshooting.**
- **Provide ease of installation.**

A Micro Data Center is a partial, single or multiple rack/cabinet that houses rack-mounted servers, switches, uninterruptible power supply, backup systems, firewalls, and DIN rail-mounted devices.

Let's examine how MDCs can replace large tower computing systems in a manufacturing environment and provide a myriad of benefits in an industrial environment.

Micro Data Center Defined

An MDC is a versatile combination of hardware, software and cabling that serves as an end-to-end networking hub, similar to a telecommunications or network room but at a much smaller scale than the typical enterprise data center.

The defining characteristic of an MDC is that it houses a complete data center infrastructure in a single space — electronic devices, patch fields, cable management, grounding/bonding, power, and copper/fiber cabling — yet is sized to serve the demands of a manufacturing environment.

The MDC is a new concept, representing the next phase in the transition from tower computing systems in a manufacturing environment to rack and cabinet-based deployments, with the ability to serve a variety of enterprise purposes. For example, the MDC can act as a stand-alone system that runs manufacturing applications such as:

- **Process and event monitoring, process historian, production tracking and OEE reporting.**
- **Control network, outer loop control and recipe download.**

DOWNLOAD THE WHITE PAPER

Protecting the Critical Structure that Makes up the Industrial Network

Download the complete white paper from Panduit at **https://bit.ly/3AsThnG** to see how to maintain robust, integrated and secure networks with a Micro Data Center. Learn about its components and how to optimize them, including housing, equipment layout, network cabling and cable management. And understand the benefits of deploying an MDC in an industrial automation environment.

- **Quality control, material handling, maintenance, lot tracing and asset management.**
- **ERP integration (e.g. scheduling, reporting, material consumption, etc.).**

The MDC also can take the form of a networking hub that has no servers, existing primarily to tie cabling and switches together.

For large manufacturing complexes or remote locations, an MDC can serve as a data collection node that passes manufacturing data up to the enterprise (i.e., Store and Forward).

Finally, an MDC can also house Virtual Machine (VM) systems for high reliability and efficient server utilization.

MDC Design

The starting point to the MDC design is identifying the capabilities and associated equipment required as well as a housing solution that centralizes equipment. A superior MDC design addresses the following key considerations:

- **Housing — racks and cabinets.**
- **Equipment Layout.**
- **Network Cabling — media selection and security.**
- **Cable Management.**

Many Advantages

An MDC can help maintain robust, integrated and secure networks. As networks continue to be deployed in industrial settings, an essential need exists to capture production lot data and transmit machine instructions to equipment. It bridges the gap between the corporate and industrial networks while maintaining flexibility to quickly disconnect the network links in the event of a problem. ●

PANDUIT Based in Tinley Park, Illinois, Panduit is a Strategic Alliance Partner in the Rockwell Automation PartnerNetwork™ program. Together, Rockwell Automation and Panduit are driving integrated solutions that help reduce risk, improve reliability, and implement EtherNet/IP™ solutions and architectures through optimized physical network infrastructure solutions and services. Panduit's portfolio of products, tools and services are designed to simplify the design and deployment of secure, robust and future-proof industrial network infrastructures.

PEPPERL+FUCHS, INC.

Justin Olivier

PRODUCT MANAGER, ECOM PRODUCTS

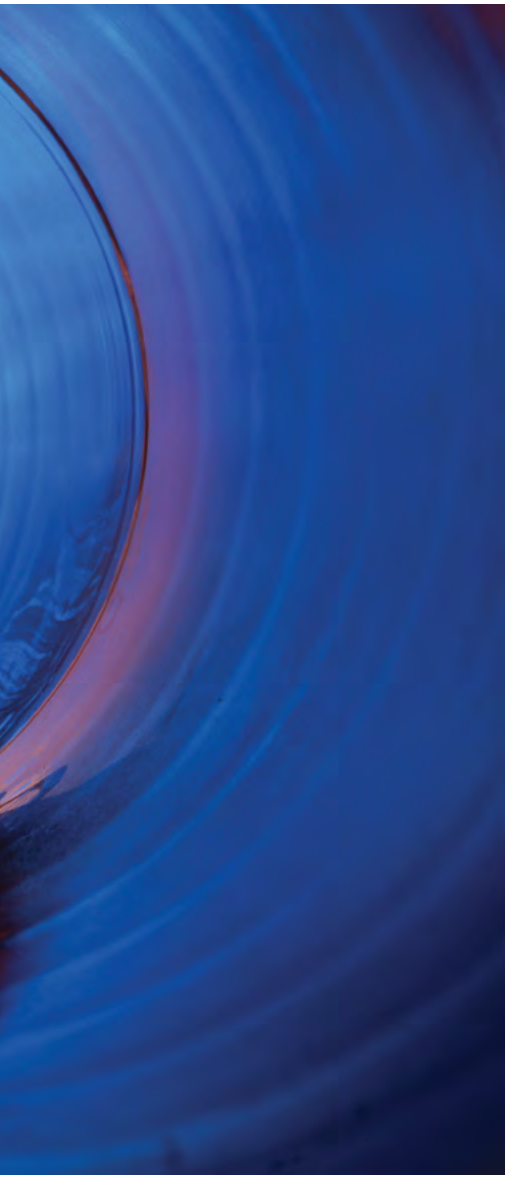
Phones Can Send Alarms for Field-Worker Distress

Learn how smartphones and tablets can automatically summon help and show locations for personnel during accidents or medical emergencies.

EDITOR'S NOTE This article is adapted from the white paper, "How to Keep Lone Workers Protected – In and Out of Hazardous Locations." Download the full paper at https://bit.ly/pf2110wp to get comprehensive information about mobile device tracking and communication functions; types of sensors available for various field-worker applications; and appropriate use of Basic, Professional System or Professional DGUV Certified mode.

Having proper procedures in place to respond to emergencies is a vital part of any safety plan. Employers don't want their field workers in a situation where they must work alone, but circumstances often don't allow for the buddy system. This can result in life-threating issues if a field worker has an accident or medical emergency and can't call for assistance.

Technology plays a vital role in these cases. Integrating personnel monitoring into devices workers already may be carrying helps to initiate safety procedures as quickly as possible. Lone worker/personnel protection systems also quickly deploy emergency response resources.



In today's connected world, most employees already are carrying some type of smartphone or tablet as part of their daily tool bag. Companies can use the capabilities of those devices to quickly respond to a medical emergency. Having the right technology in place can be especially challenging in hazardous areas where equipment needs to meet special safety requirements. Fortunately, there are options that can help keep workers connected in even the most demanding environments.

Most lone worker protection systems rely on two main device features or apps to help keep workers safe:

1. **Tracking.** Using the GPS capabilities of smart devices, lone worker applications have instant access to positional data that's immediately broadcast to emergency response teams when an alarm is triggered. In some cases, the employee's position can be automatically overlaid onto a map of the facility.

   In indoor areas where GPS isn't a reliable option, Bluetooth beacons, Wi-Fi or even RFID technologies can be incorporated to supplement worker GPS tracking.

2. **Communication.** When an alarm is triggered, a call is automatically placed so response teams can attempt to communicate with the worker and gather details about the emergency. This allows response teams to direct the appropriate resources immediately in cases where the worker can communicate effectively.

Ways Alerts are Triggered

How alerts are triggered is the next major component of a lone worker protection system, and usually occurs in one of three ways:

1. **Device Sensors.** The same sensors that tell a smartphone when to automatically rotate the screen can be used to detect falls, lack of motion, or if an employee is in a horizontal position. Should a worker need to lie down to perform maintenance, a pre-alarm function is also available to prevent a false alarm.
2. **Pre-Defined Timer.** In an especially high-risk situation, a worker should check in every so often. A pre-defined timer can be set, requiring the employee to affirm they are OK with a simple button press.
3. **One-Touch Alarm Button.** Smart devices using these programs often have a dedicated physical alarm key. Field workers can activate an alarm simply by pushing a button that immediately notifies first responders.

Then What Happens?

Lone-worker protection systems can be configured according to the user's needs based on what happens when an alarm is triggered. At the simplest level, text messages, emails and voice calls containing GPS location data are immediately and simultaneously sent to supervisors and emergency responders.

In addition to transferring the coordinates, the site of the accident also can be visualized on a separate map. More advanced systems may offer 24-hour remote monitoring options.

Lone Worker Protection can be applied to applicable smart devices in three different modes: Basic, Professional System, and Professional DGUV Certified. ●

PEPPERL+FUCHS, INC. Based in Twinsburg, Ohio, Pepperl+Fuchs is a Technology Partner in the Rockwell Automation PartnerNetwork™ program. The company develops and manufactures hazardous location protection products and components for electronics used in the global process automation market.

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www.SyTech.com

Photovoltaic Fuses

Gen2 HelioProtection series HP15M solar fuses from Technology Partner **Mersen** are designed and tested to stringent standards. The photovoltaic (PV) fuse meets the severe temperature and current cycling of a PV system.

These 1,500VDC-rated fuses are designed for low minimum breaking capacity capabilities of 1.35x the fuse-rated-current value, which allows for safe circuit interruption under typical low-fault current conditions.

In addition to the standard ferrule terminal, these fuses are also available with Crimp Cap terminals for in-line applications. The wire crimp terminal (CC option) permits solderless wire-to-fuse connection for overmold encapsulation of fuse and wiring.

Precision Magnetic Encoders with BiSS-C Communications Interface

Technology Partner **POSITAL FRABA Inc.**'s IXARC high-precision magnetic absolute rotary encoders are now available with a BiSS-C interface. This interface provides commutation and position feedback on BLDC servo motors and suit motion control applications. They include 17-bit resolution and dynamic response up to 12,000 rpm.

Multiturn variants feature a 32-bit rotation measurement range (over 2 billion revolutions). Its self-powered rotation counter removes the need for backup batteries or gear drive systems. A range of mechanical configurations, housing and flanges, shaft type, and environmental protection are available.

Updated Control Loop Software

Rockwell Automation Technology Partner **Control Station** offers the latest release of its PlantESP process diagnostic and optimization software. It introduces state-based analytics that allow manufacturers to assess various control states found in continuous and batch manufacturing processes.

The system monitors PID control loops on a plant-wide basis, so personnel can proactively identify underperforming regulatory control systems and isolate the root causes that contribute to production inefficiency and unplanned downtime.

An enhanced custom reporting feature makes it easier to use and a streamlined user interface simplifies solution configuration in addition to other common administrative tasks.

PRODUCT SPOTLIGHT

MEDIUM VOLTAGE DRIVES

The **Allen-Bradley® PowerFlex® 6000T medium voltage drives** now include TotalFORCE® technology from Rockwell Automation. The technology provides precise control of speed and torque, diagnostic information for tracking system health and automatic adjustments to keep operations running smoothly.

The drives follow speed or torque commands very closely in both open- and closed-loop vector control modes to deliver the control required for high performance and large loads.

They also continuously monitor operations to track the health of electrical components in the drive and motor, and provide real-time diagnostic information to the control system. Users can better predict maintenance requirements well before component failures and take action to prevent unplanned downtime.

Updated Connected Components Workbench Software

Connected Components Workbench™ software version 13 from Rockwell Automation includes several new and enhanced features. The latest release improves download and build performance to create more efficient, user-friendly design processes.

A new global and local variable data grid delivers capabilities to help engineers develop projects faster. An enhanced Run Mode Change (RMC) capability allows users to make edits without downloading project source code, speeding up the editing process.

Users also have the option to switch to a Logix theme programming experience. This allows them to work in a more familiar environment and use copy-and-paste ladder logic from the Studio 5000® Logix Designer application.

PRODUCT SPOTLIGHT

NONCONTACT VOLTAGE TRUE-RMS C/DC CLAMP

The Fluke 377 FC and 378 FC noncontact voltage True-RMS AC/DC clamp meters from Rockwell Automation Technology Partner **Fluke Corp.** help minimize the risk of electrical shock.

The clamp meters use Field-Sense technology to make testing faster and safer, without touching a live conductor. Clip the black test lead to any electrical ground, put the clamp jaw around the conductor and see reliable, accurate voltage and current values simultaneously on the dual display.

Both clamp meters offer complete 3-phase voltage and current tests in three quick steps. A full set of phase-to-ground and phase-to-phase values are displayed on the meter.

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