

THE LONG TERM EFFECTS OF REMOTE ACCESS

As the virtual world creates new end user expectations, OEMs and technology suppliers are required to partner in new ways.



The Long Term Effects of Remote Access

The virtual world is creating new end user expectations around how products are delivered and serviced, requiring OEMs and technology suppliers to partner in new ways.

By Stephanie Neil

From the way manufacturers work to who they hire, the need for remote access due to the pandemic has altered more than just how information is gathered. To that end, moving forward, manufacturers will put more emphasis on partnerships with machine builders and technology suppliers as a new set of issues arise that relate to the added automation now in place.

That was one message that came out of Rockwell Automation's Automation Fair At Home—the company's virtual version of its annual event featuring technical discussions, interactive labs, and segment-specific forums for automotive, chemical, food and beverage, life sciences, oil and gas, and more.

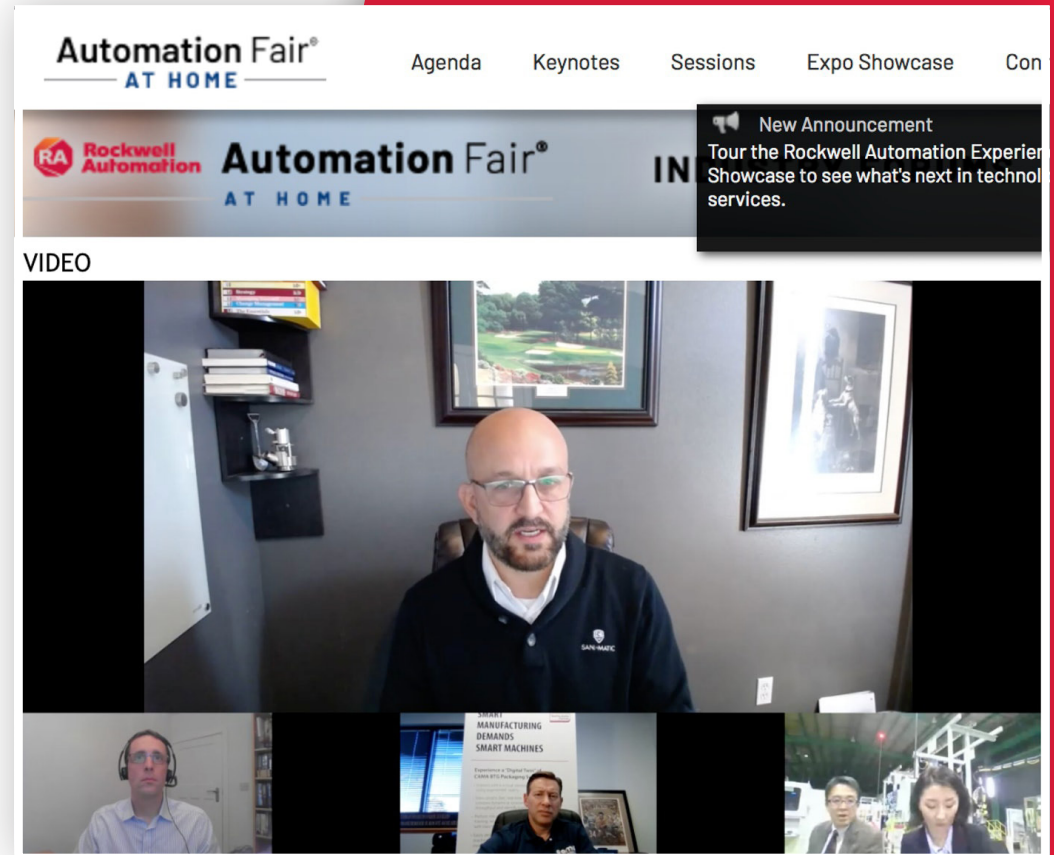
One track focused on OEMs, and one session titled "Ready or Not, the Remote OEM Future is Here," caught my attention, as it took a

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closer look at how COVID-19 has been a catalyst for industry change across the board. Specifically, manufacturers have been forced into “digital acceleration,” which has required OEMs to pivot and adapt to new ways of selling, designing, commissioning, and servicing equipment.

The panel discussion featured speakers from Cama North America, a one-stop source for integrated robotic, cartoning, case packing, and sleeving machines; Sani-Matic Inc., a maker of sanitary process cleaning systems for the food and beverage and pharma industries; and Hirata Corp., an OEM and system integrator in the automotive, semiconductor, and home appliance sectors. And, while all three agree that customer needs are the same today as they were before the pandemic, the digital transformation has been fast-tracked because problems can't be solved by putting more people on the job. Now,



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there's more automation involved to solve a problem—which causes its own set of problems.

“If you have automation, how do you use it, how do you maintain it, and how will the OEM provide access,” said Bryan Downer, Sani-Matic’s vice president of sales and marketing. “Everything is changing drastically, and a lot of people are just trying to figure out how to do this.”

Similarly, machine builders are using new augmented reality and virtual reality (AR/VR) tools that require a new skillset. That means OEMs might need to hire people with expertise in these areas, but more likely it will require training. “This is where [partners] like Rockwell can provide that leadership,” Downer said. “If they can provide a platform and template for a centralized way of interaction for all of the different tools and software, I think that would be an opportunity for us as move into the future.”

Interestingly, the barriers to adoption that were prevalent in the past—namely cybersecurity concerns—have faded away under the current circumstances. “The initial barriers are starting to be perceived as gone, and now we can start moving forward in full force,” said Billy Goodman, managing director at Cama USA. “The pandemic has pushed us forward light-years in very short amount of time.”

It has also introduced new obstacles to overcome. “The playing field has change,” Goodman said, referring to servicing equipment. “It used to be we’d get someone out there in 24 hours, now there’s an immediate expectation of the OEM who has had to step up to ensure customers

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are running efficiently during the pandemic. Those expectations will carry over after the pandemic, which puts greater stress on us.”

Yet, that stress also gets OEMs thinking outside of the box to deliver new kinds of products and services. Downer said that the Sani-Matic recently mapped out the customer journey to identify different touchpoints and how it impacts virtual engagement through the machine’s lifecycle. “There is more we can do now as we have connectivity to the system, like providing OEE monitoring to help them understand where to optimize the system, or on-demand training with virtual tech support. I see a vast amount of opportunity for both the OEM and the customer once we embrace and understand what [the technology] can do for us.” That connectivity helped launch the company’s SaniTrend

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product, a cloud-based Software-as-a-Service (SaaS) that provides automated, secure data acquisition and reporting of critical cleaning cycle information for any automated cleaning system.

Cama's Goodman said the digital twin, too, is an area of opportunity for OEMs. Using simulation to show how a machine will function helps with machine design, end user education, as well as overall risk assessment, using simulations to test speeds and cycles that ensure the machine is set up for long term success.

New OEM products and services, however, will require close partnerships—as much of the technology required to deliver all of this is outside of the OEM wheelhouse. “We will have to seek more innovative ways to make a better proposal for customers, and that happens in collaboration with Rockwell,” said Mika Ide, chief of sales engineering at Hirata Corp.

OEM Digitally Transforms Its Business for Remote Support

BID Group, a sawmill equipment manufacturer, adopts PTC's ThingWorx IIoT platform and Vuforia augmented reality technologies to reduce customer downtime and eliminate asset component failures.

By Jeanne Schweder

Guiding your business through a digital transformation is no walk in the park, as many companies have learned the hard way. The BID Group, a North American supplier of forest products equipment, had tried a do-it-yourself approach to the Industrial Internet of Things (IIoT) for several years before managers acknowledged it was time for a reset.

The first technology company BID worked with on its digital transformation was still in the process of building an IIoT platform, leaving BID managers dissatisfied with the lack of progress. So BID chose to restart the process, this time working with PTC. PTC was able to augment the initial development work done for BID by using PTC's ThingWorx Industrial IIoT Platform. With this addition in place, BID was able to make significant strides in just a few months using IIoT connectivity to improve productivity and profitability for its customers.

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Now the company is moving forward with the next stage in its transformation, deploying a number of PTC's Vuforia augmented reality (AR) products to boost frontline worker efficiency, safety and agility, and improve remote customer assistance and troubleshooting.

"As part of our digital transformation initiatives, we have prioritized the use of IIoT and AR to help create smarter, more connected products and services," says Chris Wells, BID senior vice president of aftermarket service and reliability. "By incorporating PTC's AR offerings, we expect to unlock new opportunities to service our clients in a more efficient and interactive manner. The COVID-19 pandemic has made it abundantly clear that these technologies are essential to business continuity."

BID saw a 9.4% increase in call volume for remote support through its 24/7 service center in the 25-weeks ending December 1, 2020, compared to the same period in 2019. "We attribute this to the COVID-19 situation driving more clients to look for alternate methods of support to the traditional onsite technician. This trend is increasing, and we do not foresee this changing," adds Wells. "It's why we're implementing new technology-based approaches around remote support, remote monitoring, and remote work instructions that leverage IIoT and AR."

Remote service has been a growing trend among OEMs. With travel restricted by the pandemic and customers wanting to keep visitors out of their plants, many machine builders are beginning to rethink their reliance on field-deployed service teams. "AR is an ideal tool for providing

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remote assistance,” explains PTC’s Ken Rawlings, vice president, solution management for connected products. “You can digitally mark-up a shared view, identify problems with a component or in a process, and virtually walk a technician step-by-step through the corrective procedure so they can fix it right the first time.”

AR also allows OEMs like BID to capture digital references of equipment or procedures, which can be used for training or by their technicians or a customer’s maintenance team when they’re troubleshooting a problem. “With an aging workforce, you’re often relying on younger, less experienced workers

**Panoramic view
of sawmill line**



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to identify and fix problems,” says Jon Kadane, PTC’s product marketing director for connected products. “AR provides on-demand access to visualizations of critical information and allows technicians to interact with the system in context, using visual cues to guide them through tasks more proficiently.”

Driven by analytics

As an OEM, BID’s priority since its founding has been to make the highest quality sawmill equipment. But it is unique in that, over the past five years, the company has shifted its business model to providing customers with turnkey sawmills. BID has been involved in 18 installations in less than two years, according to Wells, most of them new facilities and many of them in the southeastern U.S.

By shifting from making sawmill equipment to delivering a complete facility, the company’s focus has invariably widened to optimizing mill performance. Adopting IIoT technologies has been critical to BID’s successful business transformation and its ability to meet customer demand for maximum productivity and profitability.

A sawmill has a very complex manufacturing process, combining a raw material stream of great variability with the multiple steps required to turn a log into lumber. Faced with commodity pricing that varies minute to minute, it’s critical for sawmill owners to achieve optimum productivity if they are to be profitable. New mill owners are now requiring the real-time operational view that IIoT technology can deliver when they place an order with BID.

OEM Digitally Transforms Its Business for Remote Support

“One of the most valuable features of PTC’s software is that it enables us to properly orchestrate the data our machines generate, so that everyone has a single place to look for real-time information from the manufacturing process,” explains Sefton Jubenvill, BID vice president for digital transformation. “We were able to quickly prove the concept at one of our sites, then use the platform to meet several commercial commitments within two or three months.”

The ability to deliver quick time-to-value returns for their digital investment is attracting many new customers to BID, whether it’s for a greenfield facility or an existing one that involves multiple suppliers’ equipment. “We’ve seen up to a 30% increase in machine center throughput where our IIoT insights are used to drive operator behavior, as well as up to a 10% increase in factory efficiency when our digital system, which we call OPER8, is implemented across the entire factory floor,” says Wells.

The OPER8 system collects and analyzes data in four key areas: production health, such as key performance indicators and real-time, minute-to-minute changes in operator behaviors; throughput health, which deals with the performance and productivity of equipment and operators; asset health, which monitors leading process indicators such as vibration or temperatures and detects imbalances in a process; and quality health, where improperly functioning equipment could cause product defects.

“We’ve achieved downtime avoidance of up to four hours per incident,” explains Wells, “eliminating targeted and specific asset component

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failures through the application of asset health real-time condition monitoring and analytics. This is made possible through additional sensors and instrumentation.”

Monetizing data capture

Data capture and contextualization have now become an integral part of BID’s equipment package. As a result, software suppliers like PTC are key to delivering on BID’s promise of performance. “We’ve become an OEM supplier, just like companies that provide pumps or motors,” says Rawlings. “Our IIoT technologies are another sub-component built into the system. By providing an enterprise-wide view and putting streams of data into context, our software is able to provide the right insights to the appropriate person or function. It’s a way for OEMs to monetize data capture and provide a higher level of service.”

Adds Kadane, “ThingWorx tools allow OEMs to configure rather than code, enabling easier integration of equipment and systems for greater scale and impact. And since data is fully contextualized for both machine builder and customer, decisions can be made in real time, rather than at the end of a shift, to better control processes. Being able to visualize operations makes for faster and repeatable troubleshooting, with less downtime and greater throughput.”

Automation Trends in Food Processing and Packaging: Remote Access

Remote access and augmented reality are two technologies that have seen increased usage in the food industry – particularly since the start of COVID-19.

By David Greenfield

David Greenfield:

Another technology area that's seen a lot of increased attention because of COVID is remote access. And here we're talking about the ability to remotely access plant floor equipment, or specific devices and systems, either by in-house engineers, or operators, or even third parties such as OEMs and system integrators. And like cobots, this technology has been developing very quickly over the past several years now, but it's really seen an accelerated level of interest due to COVID in the past year.

Glen Long:

It's near and dear to me because I come from that side of the business. And the technology to add remote access to equipment has been around for

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years. But the willingness on the two sides to allow that to happen has not really been there. So, all of a sudden enter COVID, and very quickly it becomes a necessity versus, say, whether the capability existed, or whether it was wanted or not. So, tremendous adoption in different types of remote access. And I think when you talk about remote access, you think about three different areas. Certainly, there's a service aspect of it, and I believe that's where a lot of the companies were first thinking to be able to access a machine remotely for the purpose of fault diagnostics, or program fault diagnostics, and so forth. But the other two elements that we see a lot now are training. We went with the OpX Leadership Network and our Industry Relations Committee on sort of a field trip to Emerson last year, and that was certainly something that they were a proponent of. And it's possible now to conduct training in a way that we've never been able to do it before through augmented

Remote access has seen an accelerated level of interest due to COVID in the past year.

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reality and virtual reality. There are training elements that can be conducted with staff remotely that just were never possible before. So, I think that's a second element of remote access.

And I think the third one is predictive maintenance, and the ability now to get into a piece of equipment remotely to see what's happening with motors, and drives, and temperatures, and loads, and things like that, is just a tremendous leap forward. It's been around in other industries for some time, and there's a trickle-down effect. Certainly, the cost of the equipment has a lot to do with the ability, or the viability, of that kind of predictive technology. But remote access now has become a needed technology, and there are a couple of really interesting things that are going on. First of all, the OpX Leadership Network published a document on best practices for allowing that connectivity between the CPG and the OEM supplier. That's always been a roadblock. Again, that's coming down, but there a number of different ways that you can look to see how that can be done safely. And it's really up to a collaboration between the OEM and the CPG as to how they go about that.

The CPG can turn that on and turn that off as needed, but that's a big element of making it happen. We've also seen instances in the service realm where we're now, out of necessity, there are trained professionals on one side being able to walk less skilled employees of CPGs through very complex tasks. So, that not only saves money in terms of that service element, but there's that training element involved as well. And for the CPG in the time of need, as we've seen over the last nine months or so, that up time. Being able to keep

that equipment up and running as necessary. So, there's tremendous benefit that we've seen in the short-term. There's been more progress in the last year with this kind of thing than there has been in the 10 years prior to this point. So, you're seeing an accelerated adoption, and tremendous benefit on both sides. It's beneficial to the OEM to be able to conserve that limited resource, and not spend so much time traveling back and forth between places.

And for the CPG, there's cost savings, there's speed involved in fault diagnostics, and remediation. So, just tremendous benefits on both sides. I think all of those things are playing into what you see, and it's, again, trickle-down effect. A lot of the suppliers of this type of equipment are seeing this happen, and they're being pushed to adopt it more rapidly. So, you're seeing not only innovation, but adoption in this technology.

In September of 2020, PMMI's Business Intelligence group published a study on trends in the adoption of remote access. So, that's a great reference document to see some of the different things people are doing, and how it's being deployed because I think it's interesting to see the innovation, and the imagination, in some of the suppliers, and how that technology is being deployed.

Bryan Griffen:

I think beyond just the great applications that Glen mentioned, which really justified the need and the cost for doing these technologies, we also have to look at how we do remote access to make sure that it's safe, it's secure,

that we avoid cybersecurity issues. And OMAC, the Organization for Machine Automation and Control, is just now releasing a new best practice document on how to implement remote access technologies in factories. There are a few key subjects from the guide that merit some comment here. Perhaps the biggest component to a successful remote access solution is not necessarily the technology, but the people that are involved. One of the biggest things that we have seen over the years as we've tried to implement remote access is the conflict between IT and OT. IT is all about cybersecurity, and maintaining control of those networks, and they do a fantastic job of it. But OT is all about 'we need to manufacture right now.' We can't stop for doing a patch, for example, because stopping right now to do that patch means we throw away the batch, which could be hundreds of thousands of dollars of lost product.

So, there needs to be a point where those two factors come together and discuss what are the needs of both sides. Understand what each side of that equation needs in order to successfully implement remote access tools. Then once all of the players are on the right page, and communicating well, then they can turn to the task of developing the remote access solution, which type of remote access they want to use, assessing the current situation within the factory, and what the needs would be from a technology standpoint, and then getting everything to play well together. But it all starts really with that human aspect of the solution, not the technical one.

Tom Egan:

Yeah, and for me I'm going to take off from what Bryan said there for a little bit, still with that OMAC report, which I agree. I thought was very good. Some real success ideas for implementing remote access. I learned a new term there when that IT/OT piece, first time that I saw it in a report anyway, which was CIA and AIC. And Bryan, I hope I have this right. But the CIA element was that the IT group looks at confidentiality, integrity, and then availability, meaning the availability of whatever the resource is. Whereas the OT group looks at availability first. I just thought that that was an easy statement to look at and say, "They're looking at the same problem. They're looking at it through two different facets of the same problem. And so that's why until that

Service, training and predictive maintenance are the three main areas of remote access use.



discussion takes place, sometimes we have the conflict.” So, I think that was a good takeaway on that piece.

The other overarching part for me on the remote access, Dave, is that I just don’t believe that there’s an option. Glen alluded to the point that there’s a benefit for both groups now. There always has been. Perhaps the pandemic has really pushed that to the fore because of the restrictions on travel, for example. But the benefit is that the cost of downtime is just too high. It’s too high for the company that’s trying to make a product to get into the marketplace to sell, and it’s too high for an OEM that’s trying to support the equipment and has to get a human resource to the location. So, if you’re able to at least go in, and take a look at whatever the issue might be on a production line, or even to be monitoring that in the ultimate as a way of accessing, and utilizing beneficially that remote access, it’s that understanding that just downtime is just too, too expensive now. What can we do to reduce that timeframe? Remote access is one approach that will absolutely work.

Glen Long:

Dave, I think we’ve always looked at this as the OEM and the CPG being the two sides of the remote access question, and I think for the CPG, in and of themselves, there’s tremendous capability for being able to remotely access equipment in different facilities, or for supervisors that

are in big plants that have the ability to be notified, even outside the plant, to be notified that something in the line is not functioning correctly, or it's not functioning at its optimum efficiency. I've been with CPG employees outside the plants on visits when they're notified via their cell phone that something in the line is dropping below a certain point. And they literally excuse themselves to be able to go, and get ahold of the plant, and address it. So, there's definitely that OEM and CPG connection. And it's that remote access part, but for the plants that have multiple lines and multiple facilities just within their own organizations there's tremendous capability and promise in the development in the machinery world for that data to be gathered and then output. So, remote access, I think, has two connotations. There's the outside connotation where you're talking about the OEM, and the CPG.

But then the inside connotation where it's being used within a big group. So, you're seeing tremendous appreciation for the ability to do it, and finding ways that it can be done safely, and just beginning to realize the benefit because there's a lot of data that's available there. And the question is now how do you gather it, and how do you use it properly?

David Greenfield:

Yeah, I think to both of your points what we've been talking about here in just the past couple of minutes about is those cultural issues, organizational issues, and bottom-line cost issues. And I can remember when I first started writing about remote access technologies several years ago now, that the

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big factor was the cost issues, the bottom-line benefits to end users who adopted this. But that didn't seem to be able to overcome the cultural and organizational issues that existed in these companies - and have for years for obvious reasons. But it's interesting that what's happened in the past year has forced industry's hand to rethink how things have to operate. And so, I think at this point they're starting to see those bottom-line benefits that have been talked about forever. They're being able to see - like not having the amount of downtime, or virtually no downtime, the reduced cost of travel, and having to send someone to these sites all the time, or to go physically check out these various facilities, or pieces of equipment that they don't have to travel there to do now.

I think all of that it that falls to the bottom line, and they see that it's kind of coming full circle back around again now that we've gotten over some of those cultural and organizational issues that have always existed. So, that's been an interesting development for sure.

Augmented reality is on the rise in predictive maintenance and training usage.

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Augmented Reality

David Greenfield:

So, one other technology area associated with remote access that's seen a big boost in this past year has been augmented reality for preventative maintenance. And much of what I had seen in terms of application examples over the past few years had almost always been in the discreet manufacturing industries, but I've been seeing more and more references to it in food and beverage. For example, through Cisco's project with the dairy farmers of America that we covered recently. Are any of you hearing much about the use of augmented reality for preventative maintenance and/or training, as you mentioned Glen, with food and beverage, and CPG producers?

Glen Long:

Yeah. There was an article in this month's ProFood World magazine about using it for training for sanitation, which is a very specialized thing. And through the use of augmented reality, and virtual reality technology, they were able to walk a lesser skilled worker through the very complex process of sanitizing a particular piece of equipment. So, surely that technology is out there. I think it's also very helpful for operators and maintenance people in food plants to be able to deploy that in terms of maintenance and repair, even without the OEM being involved. There's a tremendous amount of information from OEMs on simple things, like

threading film, for example. I've seen it used for that when they have such turnover in the food plants with the operators for the equipment. Even what you would consider relatively simple tasks are difficult because the training isn't there to pass that knowledge from worker to worker. And then with the turnover, this technology allows even a lower skilled worker the ability to walk through a step-by-step process, and get that job, or that task accomplished. So, for sure it's becoming more widely available as the price drops, and the technologies advance.

Tom Egan:

And Dave, the article that you reference about Cisco I was reading for the first time, and I really liked what Cisco was looking at, which is they have a technology, and there is a need. How do they partner with organizations to do that? I thought the use where Cisco said, "We're going to give you, or provide at a very reduced cost, a full suite of tools, so that the workers, the managers, and the corporate can really understand just what's happening with those." Excellent example. It involved all parts of the organization. The individuals that are down on the plant floor are getting information to help them do their job. The managers are then getting information from what the workforce is doing in terms of handling any issues, or doing a solution, as Glen mentioned, about the sanitation work. They're understanding what can improve that particular project from the workforce. And then on a corporate basis, just being able to manage overall. I thought it was a great example where a whole suite of tools was brought in.

Bryan Griffen:

I think one of the other interesting things that we're seeing as a use of these sorts of augmented reality and remote access being combined, is where we can take a technician who is the premier technician on a particular piece of equipment, but maybe tied up at somebody else's site. And we can send another technician to the site that's in question, and that technician can connect remotely with the premier technician, and get online, real time assistance for solving whatever the problem is. And so effectively you've turned your standard technicians all into the same level and quality as your premier technicians by having that connectivity.

How COVID-19 Pushed ExxonMobil's Automation Technology Limits

From remote access and robotics to artificial intelligence-driven operator assistants, ExxonMobil is using industry's operational realities during the pandemic to drive the development and expansion of open automation technologies.

David Greenfield

C COVID-19 created the conditions that “pushed us to test our limits and we learned that we could do a lot more work remotely than we previously thought,” said Dominic Clausi, vice president of engineering, ExxonMobil Research and Engineering, during a presentation at the 2021 virtual ARC Forum. “The time efficiency [gained] doing remote work or remote support allowed us to actually better leverage our technical resources to improve the coverage of those events we were supporting remotely.”

Prior to the onset of the pandemic, Clausi said it was generally perceived at ExxonMobil that the perceived risk associated with remote access and support would render it less effective than the in-person support the company had traditionally relied upon.

How COVID-19 Pushed ExxonMobil's Automation Technology Limits

Speaking of industrial companies in general, Clausi said, “We often have the tendency to overestimate the risk and underestimate the value of digital technologies.”

One example of a remote access and support advance made at ExxonMobil in 2020 involved the company's Baton Rouge, La., isopropyl alcohol facility. Isopropyl alcohol is a key ingredient in hand sanitizers and disinfectant sprays, so demand for this facility's product increased at a rapid pace in early 2020. Clausi said ExxonMobil was able to “leverage our remote connectivity tools with our advanced dynamic matrix control capability to rapidly and remotely update control applications. And we did that in sync with physical modifications we were making to the unit at the time. [Remote connectivity] allowed us to very rapidly expand the production capability of that unit and that helped us meet what was really a step change in demand growth and meet a key societal need.”

Beyond pandemic-related benefits

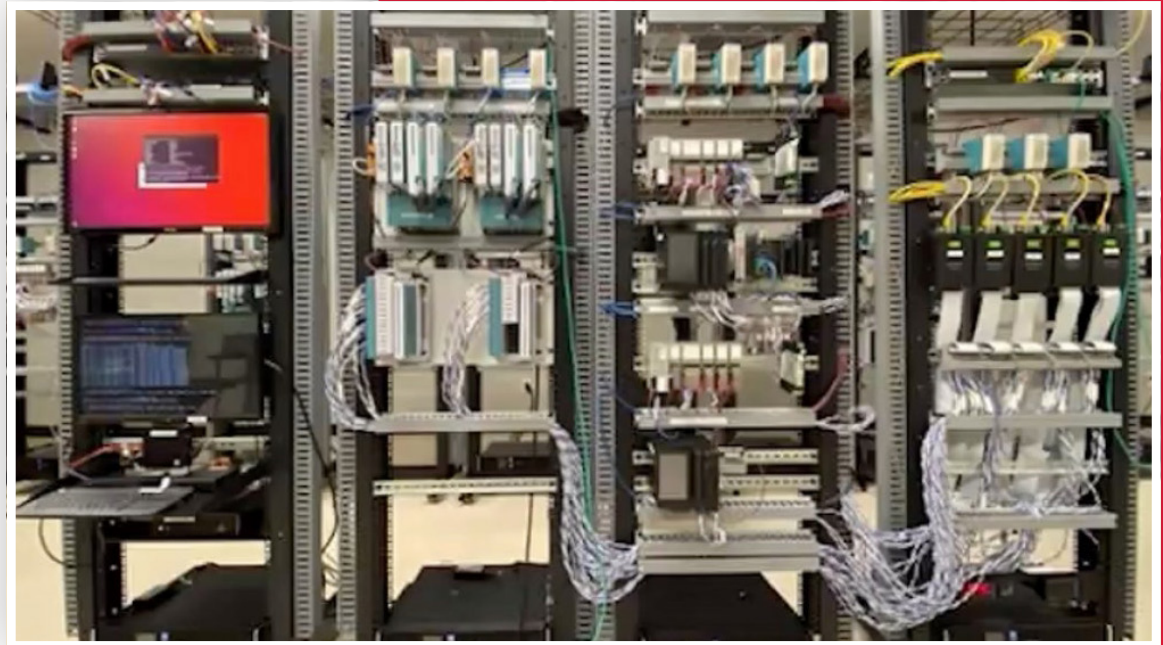
Clausi also mentioned the value ExxonMobil discovered in remote access technology when Hurricane Laura impacted its Beaumont, Texas, facility in 2020. “We had just set up a machinery monitoring group in one of our technical centers in Malaysia when our Beaumont facility was working through an orderly shutdown in preparation for the hurricane,” he said. Because the staff in Beaumont had to perform the shutdown with a reduced number of engineers on site to manage the COVID-19 risk, remote monitoring

capabilities allowed engineers in Malaysia to help guide the staff in Beaumont through the shutdown.

Engineers in Malaysia were able to observe “critical machines in detail as they were being brought down,” Clausi said. “The remote connectivity and visibility of the data allowed us to do engineering support during an abnormal operation from across the globe. In addition, the team in Malaysia was able to uncover vulnerabilities that ultimately could have compromised an orderly restart and address those vulnerabilities before the units came back up.”

Accelerated work with remote access and support technologies were not the only technology related advances experienced as a result of the pandemic, according to Clausi. ExxonMobil also pushed its use of robotic inspections further. “During the pandemic there was a premium on minimizing the number of people at our sites, as well as limiting the personal interactions in the field and this helped drive the deployment

An Open Process Automation testbed was launched in 2020 at ExxonMobil's The Woodlands, Texas, facility. Working with Yokogawa as the systems integrator, the testbed contains hardware and software products from a variety of suppliers and is currently confirming readiness for components and standards to support the system design for a field trial in 2021.



How COVID-19 Pushed ExxonMobil's Automation Technology Limits

of various robotic inspection techniques that we had currently under development," he noted.

ExxonMobil's tech outlook

Beyond robotics and remote access, another area in which ExxonMobil sees significant opportunity is in autonomous operations and process control. Clausi noted that, in ExxonMobil's manufacturing facilities, operators are tasked with running complex processes safely and efficiently 24 hours a day, seven days a week and "they need to synthesize large quantities of data and manipulate potentially hundreds of variables to optimize an outcome. And that makes this a rich area to leverage digital technology."

In response, Clausi said ExxonMobil is pursuing the development of what they call an intelligent self-optimizing planner. "The goal here is to take advantage of cognitive learning and adaptive capabilities based on artificial intelligence and machine learning to reduce human error and make better decisions," he said.

In 2020, a pilot unit in ExxonMobil's Clinton, N.J., labs was converted from a proprietary system to an Open Process Automation-aligned distributed control system. According to Clausi, the prototype integrated components from 10 different suppliers and has successfully operated through both routine and non-routine operations.

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Flawed COVID-19 Pushed ExxonMobil's Automation Technology Limits

control system. According to Clausi, the prototype integrated components from 10 different suppliers and has successfully operated through both routine and non-routine operations.

Components of this system include a digital assistant for operators called SmartLane, which uses artificial intelligence to guide a console operator through an optimized transient event. Clausi explained that an example application of SmartLane could be “executing a grade switch on a reactor so that real time benchmarking and self-correcting guidance allows the operator to reduce off-spec material and avoid costly shutdowns and trips.”

Clausi noted that this SmartLane technology is already deployed on ExxonMobil’s polymer plants and the company is in the process of adapting it for other platforms across its facilities.

ExxonMobil is also piloting the use of video

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ExxonMobil is also piloting the use of video images for process control for a program that uses mathematical models to interpret video images and then translate them into signals that can be used to monitor and ultimately control an operation.

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images for process control for a program that uses mathematical models to interpret video images and then translate them into signals that can be used to “monitor and ultimately control an operation,” said Clausi. “This becomes particularly useful in areas where traditional instrumentation falls short, like monitoring the control of a flare.”

Another technology in the early stages of development at ExxonMobil is a virtual assistant for a console operator called Sofia. “Sofia means wisdom in Greek,” explained Clausi, “and the way to think of Sofia is that it’s like Amazon Alexa but designed for console operators. It will contextualize and mine data from various sources and then provide real-time answers to the challenging questions that an operator has in the day-to-day operation of the unit.”

