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## Hardware configuration has never been this easy

Traditionally, a system's hardware configuration is set up and maintained in a tree structure, where each component must be selected and positioned manually. This approach has two critical disadvantages, however: It is both time-consuming and prone to errors. Wouldn't it be much more convenient to simply copy and paste devices along with all their parameter settings in an intuitive, photorealistic software view? With System Designer in Automation Studio 4, B&R has created just such an environment.

B&R introduced Automation Studio, the first integrated development tool for industrial automation, back in the 1990s. Since that time, B&R solutions have all been developed within a consistent and fully integrated software environment. The hardware configuration is an important stepping stone in the path to a finished automation application since it is essentially lists the hardware on which the software will eventually be required to perform.

The hardware configuration includes everything from controllers and automation PCs, analog and digital I/O modules, drives and motors to HMI devices for operation and visualization – in addition to safety configurations consisting of safety controllers and safe I/O modules.

### Mastering product complexity with B&R

“We've observed a strong and sustained trend toward ever-increasing machine complexity,” says Dr. Hans Egermeier, manager of B&R's Automation Software business unit. “Over the past few years, modular machine designs and mass-produced machines with countless configuration options have become the norm.” To meet these challenges head-on with optimal efficiency, B&R has developed System Designer – a powerful and convenient hardware management tool integrated as one of the many new features of Automation Studio 4.

The traditional approach to hardware configuration uses a tree structure. Although this familiar method remains available in Automation Studio's System Designer, B&R has also built in some convenient techniques from the world of IT to make development even more efficient.

### Configure variants and options effortlessly

Simply copy/paste or drag-and-drop an individual hardware node or an entire branch to modify the configuration. The system automatically updates the necessary configuration parameters in the background. This shaves off a considerable amount

of time previously spent in this phase while also preventing potential errors from ever occurring. It is also possible to select parameters for any number of system components in the Physical View and set their values all at once.

“Copying hardware components along with all of their associated parameters and settings greatly simplifies reusability,” explains Egermeier. “Devices can be grouped in any constellation and duplicated all at once as a single unit.” Machine variants and options can be configured with virtually no effort at all. All of these features provide additional support for designing modular machines.

### Hardware like you've never seen it

The real revolution in user ergonomics for automation designers, however, is System Designer. The system topology is laid out in the visual editor by arranging photorealistic images of the hardware components in a virtual control cabinet.

This method not only provides a substantial boost in efficiency, but also helps prevent mix-ups that could result in an invalid configuration. In the background, Automation Studio uses the device properties listed in the Hardware Catalog to carry out plausibility checks and configure the first parameters. As in the hardware tree – which is automatically synchronized as you work in the graphical editor – groups of devices configured once can easily be duplicated via drag-and-drop, with continuous updates running in the background alleviating all of the headaches otherwise associated with laying out a hardware configuration.

Read the full report on System Designer at:

<http://www.br-automation.com/en/company/press-room/technical-reports/copy-paste-hardware-configuration-has-never-been-this-easy/>

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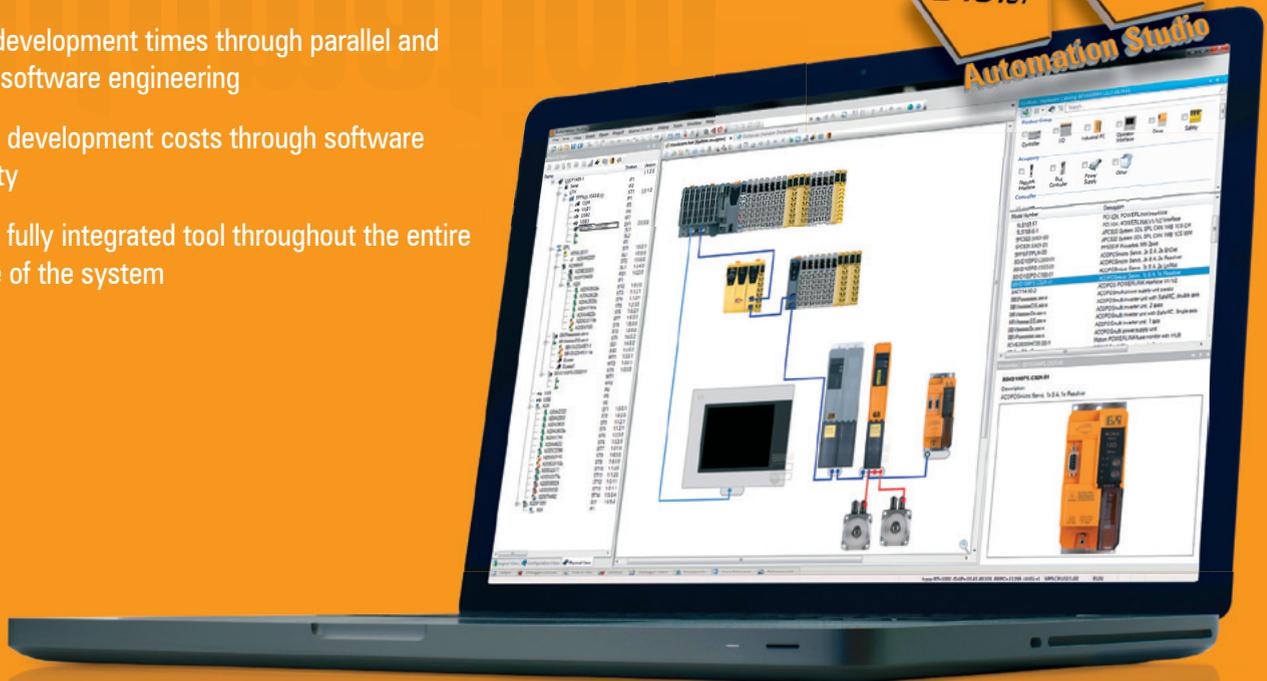
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# Software engineering in Automation Studio 4

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- ▶ Reduced development costs through software reusability
- ▶ A single, fully integrated tool throughout the entire life cycle of the system



The Infor logo consists of the word "infor" in a white, lowercase, sans-serif font, centered within a solid red square. A small "TM" trademark symbol is located at the bottom right corner of the red square.

# Flexible ERP architecture helps manufacturers keep pace with rapid change

By Mark Humphlett

Innovation is transforming manufacturing. To remain competitive, manufacturers must be more flexible, agile and adept at addressing global issues and adopting new technology. From 3D printing to machine-to-machine internets, disruptive technologies are changing the way manufacturers develop products and bring them to market. Collaborative tools, mobility solutions and cloud deployments add depth and dimension to the IT infrastructure. While these technologies bring opportunities, they also bring new considerations. This new industrial revolution brings new issues, expectations and functionality requirements. To manage these new dynamics, manufacturers need to redefine their ERP applications. Solutions must be highly flexible, contain advanced functionality and fully engage the user in decision-making.

The very nature of ERP solutions has to evolve to keep pace with the changing expectations of users and market demands. To make the most of new strategies, such as collaboration through social tools and accessing data through smart phones and tablets, manufacturers need a level of flexibility that doesn't exist in outdated ERP solutions.

Rigid, monolithic ERPs don't accommodate change easily; their hard-coded links are easily broken when modifications are attempted. Heavy modifications, at one time, were necessary for an organization to have the vertical industry functionality it required. Those heavily modified systems now are cumbersome to try to bring up to the new level of performance users expect. Fortunately, there is another option.

Infor offers highly flexible ERP solutions with loosely coupled integration architecture built on the language of the internet. Now, people, applications, machines, and data vaults can be linked in a business network that optimizes real-time communication, remote connectivity and deep analytics. Solutions can easily be expanded to include collaboration tools, business intelligence analytics, mobility solutions and specialized best-of-breed solutions.

Flexible integration capabilities, thanks to Infor ION (Infor Open Network), allow organizations to easily add highly-specialized business applications and enable the enterprise to focus on particular pain points, manage the unique needs of a particular business model and develop a set of competitive distinctions.

The changing workplace also requires changing process flows and new ways to access data. Incorporating mobile solu-

tion is one of the most critical ways manufacturers can empower personnel to make smarter decisions faster. Key employees seldom sit at a workstation all day. Managers may be on the shop floor, in meetings, coordinating activities, overseeing a wide variety of tasks across the plant, and, sometimes, may even be working off-site. To be as responsive and productive as possible, remote personnel must maintain connectivity and continue to have access to critical data—anytime from anywhere. Laptops, ruggedized devices, smart phones and tablets make it easier than ever to maintain this connectivity.

Collaboration is another important tool in today's advanced ERP solutions. The ability to share information and insights in real-time frequently fuels innovation. Collaboration, using integrated social media tools, sparks problem-solving and creative thinking. All key stakeholders from sales to production to engineering and more can participate—no matter where they are located. Most importantly, when the social tools are integrated as part of the ERP system, the interaction is tracked, stored, and incorporated into an ongoing knowledge base where it can be stored and referenced later.

With solutions that allow the organization to quickly and easily adapt processes, expand offerings and change workflows, it's possible to pursue growth opportunities with confidence. Whether it's developing a product for a highly demanding market, expanding services or, or specializing in made-to-order quality products, agility helps manufacturers keep pace with the disruptive changes driving manufacturing forward. Infor ERP solutions help organizations to thrive in the new manufacturing revolution.

By Mark Humphlett, Director Industry and Product Marketing, Infor

A smaller version of the Infor logo, featuring the word "infor" in white lowercase letters on a red square background.

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# The Strategic Importance of Enterprise Resource Planning Systems

By John Preiditsch

Over the last 26 years I have been introduced to many different styles of manufacturers and distributors. I have seen organizations that have a clear strategy and yet others struggle to take the organization to the next level. Many entrepreneurial organizations are successful based on strong people they hire. However, at some point in the growth an organization, just throwing more people at a problem has diminishing returns.

## The Need for Processes.

Many organizations credit their success is due to their own secret sauce. Often driven by key people in the organization, the methods, and way of doing business is engrained as their own way. Once formalized, firms adopt an industry recognizable certification like ISO9000 and others, to demonstrate that their organization can be trusted to have repeatable processes. Industry has proven that processes help control and scale a business. Without a consistent set of processes, a company cannot accurately measure itself.

ERP Systems and specifically the mindful implementation of them, introduce an opportunity to re-think the current processes and create a streamlined approach and create process innovation and efficiencies. When committed to and taken seriously, there is a strong return on investment that ERP systems can provide. More than a platform for improved processes, ERP systems offer a means to continue to evolve the organization to meet the needs of the business.

Aberdeen Group provides many studies that help organizations understand the impact of ERP and provide benchmarks for how other firms use ERP as part of their strategic weapon in today's highly competitive markets. The following chart highlights the typical results that a ERP implementation can offer a firm.

Assuming you're an average firm, the best way to look at the justification for ERP or a new ERP is to investigate the reduction of operating costs and improvement of customer service. Could your firm use a 13% reduction in operating costs? Could you earn more business with improved customer service?

## A Need to Change

Firms without a strong method of measuring the business look at reporting as a measurement project. However what gets measured, gets managed. As firms start to realize the importance of measurement, they are faced with the many roadblocks. Often, the processes and systems that have evolved as the company grew will not allow for the capture of useful information. Organizations will start developing ad hoc tools using spreadsheets, which become islands of information tucked away in staff member's computers. When organizations spend more time discussing where the information is coming from and whether or not it is valid and/or up-to-date are a sign that your organization needs a change.

## So just how can ERP be strategic?

Even in the face of the organizational benefits of ERP, you may still ask "How can ERP be strategic to my company?". The following highlights a few key areas ERP can be of strategic value:

**Measuring the Business** – Reports, dashboards and measured backlog by department automatically allow for highlighting exceptions that need management intervention..

**Organizational Innovation** – Standardizing the requirements that each department agrees to share with each other to get their job completed. Streamline processes and provide visibility to your knowledge workers.

**Adopting Best Practices** – ERP and its origins in MRP have been proven for many years. Chances are others have solved your problems already. An ERP implementation offers an opportunity to adopt best practices that help firms scale up to manage their business.

**Offering real time insight** – Rather than looking at the results of the past, ERP offers real-time insight that allows managers and staff to adjust the course in real time when they can be most effective.

**Platform for Improvement** – Grow the sophistication for your organization and its use of ERP as you need it. Removing the non-value added activities can also have a positive boost to the bottom line that can provide the funds for your next improvement. Identify where the most effective improvements can be made and then measure the results of the effort.

Do you have a strategy that you are trying to execute in your organization? Could that initiative use a boost of proven streamlined processes that can help measure your achievement of that intuitive? The facts are clear – ERP is the end to end tool that can be leveraged to initiate, execute and control your strategic initiatives.

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With offices in Ontario and BC, Six S Partners is a ERP consulting firm whose staff have an average of over 20 years experience in business operations and ERP use and education. Six S Partners is a Platinum Epicor Partner and a leader in the Americas.



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# How to Ensure your Business Software Maps to your Business Needs

By John Fahey

**M**anufacturers use enterprise resource planning (ERP) systems to become more efficient, reduce costs, and provide the necessary information to make informed strategic decisions. But given the mission-critical nature of these systems, many organizations find selecting the right one for their needs to be an overwhelming experience.

Concerns also extend to how an ERP system can evolve to meet the changing business demands of the manufacturing industry. Successful manufacturers are able to tailor their ERP systems in reaction to market trends and pull the information required to make business-critical decisions timeously. For the most part, these manufacturers rely on ERP vendors who offer more than just a 'one-size fits all approach. These vendors become their trusted partners in the ongoing drive for greater efficiencies and profitability.

But what can manufacturers do to help ensure that they select the right ERP system for their specific needs to begin with?

On a very basic level, the easiest step is to select software that fulfills the functions that they want. A manufacturer should choose something that will fit into its organizational structures and processes. When considering a business software package, such as ERP, the decision-making process should be driven by business needs, rather than the technology requirements.

## More than just technology

The biggest cause of a project implementation's failure is often related to people issues. A manufacturer can invest in virtually any technology solution but if it does not consider the people involved in the process, then the success of the implementation is jeopardized from the onset.

Once the business requirements of the solution have been decided on, close consideration needs to be paid to the people who will be involved during the implementation. Far too often manufacturers and distributors make a decision based purely on technology grounds and do not consider the cultural fit between the software vendor and itself.

Often, implementations that are based purely on the technology requirements impose a one-size fits all solution on the company, and the company is forced to fit the system requirements as opposed to the system being tailored to fit the company requirements.

It is crucial that an ERP vendor closely examines the business requirements of the manufacturer. The right vendor will take an intimate view of the processes that need to be focused on and what the major steps will be.

## Systems integration

In the beginning when ERP was still new to the market, companies would look at the hardware that was required and the databases that they would use for implementations. Today, the approach should be on what is the best way that the software can add value to the business of a manufacturer and how is it going to be implemented without constraining itself.

Historically one of the biggest challenges was integrating the ERP solution with the multiple systems that are already running in an organization. And this is not only restricted to large multinationals.

Even smaller and mid-size manufacturers may have several systems in place that need to be maintained and catered for. A contemporary ERP architecture should be open; enabling integration to be as straightforward as possible for the company to connect these other systems to the ERP solution ensuring minimal impact on existing systems and the overall business.

## Taking the next step

The relationship between the ERP vendor and its clients is crucial in order to ensure that there is continuous understanding and flexibility in relation to how the system works in their environment.

Redundancy and scalability of the ERP solution are key factors for clients. When you choose a business software package, making sure that the ERP vendor has a team in place that can support the manufacturing environment as its needs evolve into the future is critical.

The manufacturing business environment is dynamic and the supporting ERP solution should be as well!

John Fahey is President of SYSPRO Canada. Hired in 1996, Fahey has guided the SYSPRO ERP product in Canada through a proven partner network that services over 1,500 manufacturing and distribution businesses across the country.



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# 'Thinking about ERP'

An ERP strategy that is driven by the business objective significantly increases the probability of success with ERP

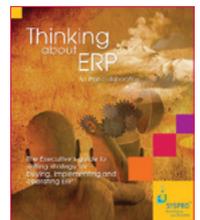
The importance of a well-planned implementation where the business requirements and processes are clearly defined at the start of the project cannot be over-emphasized. A well-implemented system provides a solid foundation for growth, with easy adaptability to business process trends, economic swings, technological, lean and green developments.

## Have you considered?

- What strategic business objective will be served with ERP?
- What, how much and when will ERP contribute to this particular objective?
- How do the answers to these two questions influence what ERP system to buy, how to go about ERP implementation and how to operate the ERP system once it is live?

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# MANUFACTURING IT: THE NEXT GENERATION

BY VANESSA CHRIS



How to keep your **networks**—and **production lines**—running

One are the days when manufacturing IT was its own separate entity, with its own dedicated computers, closed systems and subnets. Today, for companies to communicate effectively and run smoothly, they must have all their networks aligned. Corporate and manufacturing systems alike must share information—from inventory control to production schedules—and if one catches a virus and goes down, the rest are vulnerable as well.

“Before, if you had power in your facility and had the people there, you could keep the plant running and get whatever you needed out of it,” says Dennis Brandl, founder of BR&L Consulting. “When people integrated their systems, suddenly everything was interconnected. The IT department became a critical part of a company’s infrastructure.”

This coexistence is particularly challenging because manufacturing is a unique beast. In many cases, manufacturing IT has a 24/7-uptime requirement—this means that, while an office system might be able to be shut down and rebooted on a Saturday afternoon without much disruption, the same can’t be said for a manufacturing system. Rebooting, backing up and installing patches and virus protection all pose challenges—particularly for the ill prepared.

#### A DEPARTMENT ON ITS OWN

To get around these challenges, it’s important to have a strong foundation in place. One of the first steps, therefore, is to recognize the unique nature of manufacturing IT—and make sure those working on it understand it as well.

Depending on the size of your company, this could mean designating a specific subset of the IT department solely to manufacturing. Given the fast-paced nature of the industry, this will give IT professionals a chance to train themselves on the specific peculiarities of manufacturing systems and understand the needs of the engineering team.

“If someone isn’t trained in this, they might say ‘oh, we’ll just change the router rules,’ and then production will shut down because the PLCs can’t communicate,” says Brandl. “You need a subset of IT that is trained to take care of PLC programming, MES configurations, recipe writing—those sorts of things.”

If a designated department isn’t in the cards—say, for example, because you’re a smaller company with a one-person IT department—you may want to consider selecting one person on the engineering team to be responsible for manufacturing IT. If this is the case, however, you have to ensure they’re properly trained—and understand the appropriate jargon, common risks and basic IT principles.

“It’s always a challenge for the smaller companies, but the advantage is that they have a lot less hardware to deal with,” says Brandl. “They don’t have five or six brands of servers, and five different versions of databases. They’re dealing with a smaller subset of the whole IT product space—so it’s easier because they only have a couple of things to work around.”

If you opt to outsource your IT services, you want to be particularly careful and make sure that the company has experience dealing with manufacturing, says Brandl. He cites one company he worked with who outsourced their IT support and network support to a different organization in a different country. The IT company decided to run port scans on the business and manufacturing networks, with devastating results.

“The port scans were hitting on PLCs and embedded devices that were sitting on the Ethernet. These devices were not designed to manage this influx of information from a port scan. It overloaded their buffers and the system crashed,” he says. “This outsourcing company didn’t think these devices should be on the network anyway. That’s when things can go wrong—when you don’t recognize there are differences.”

#### BASIC RULES OF THUMB

Regardless of who is responsible for your manufacturing IT department, it’s important that they remain current, and follow some basic rules of thumb when developing IT policies and procedures.

When looking for a starting point in developing IT policies and procedures, Brandl says one of the best resources is the Information Technology Infrastructure Library—or ITIL. Developed by the U.K. government, ITIL lays out a set of standard practices for IT service management that can be applied to any company.

There are also a few key lessons that every manufacturing department should take to heart, he says, the most important of which is making sure to segment your corporate and manufacturing networks.

**“The IT department became a critical part of a company’s infrastructure.”**

“If you’re coming into this with your PLCs and different systems, and you’re supposed to get them hooked into the corporate system, you have to be aware that you can’t always follow the same corporate policies as a desktop system,” he says. “ISA 99 offers a set of technical reports that talk about how you should define those networks, segment them and create that security.”

Segmenting your networks will allow you to control things like password changes and regularly-scheduled updates—things that can be catastrophic to a manufacturing network if they are unplanned.

“A lot of companies have systems set up to automatically download and install the updates that come from Microsoft once a month. You have to make sure those policies don’t get set in your manufacturing systems.”

When updates are required for manufacturing IT systems, it’s important to create sandboxes in which to test them first, before integrating them into production systems. Brandl also suggests making use of virtual machines, which offer IT departments both on the plant floor and in other parts of the company more flexibility.

And, of course, when in doubt, ask for help. There are lots of vendors and IT consultants out there that can help you with the often overwhelming world of manufacturing IT.

“We’re trying to run really reliable, Six Sigma production lines that never go down and run at 99 per cent run rates. Any glitch is going to mess you up,” says Brandl. “Your system has to be rock solid—and we’re trying to build rock solid IT platforms on technologies that change every six months.”

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*Vanessa Cbris is a freelance writer based in Toronto.*

# POWER PARTNERS

## Software-based safety controller keeps operators safe in the testing of transformers

BY MARY DEL CIANCIO

In the 25 years that Jeff Perry has been responsible for electrical test safety at Hammond Power Solutions (HPS), the company has never had an accident related to electrical testing, and Perry wants to keep it that way.

The manufacturing engineer is responsible for the safety of the processes and equipment at Guelph, Ont.-based HPS — the transformer division of Hammond Manufacturing, which it split from in 2001 to become its own company. HPS designs and manufactures high-quality custom electrical dry-type transformers, as well as related engineered magnetic devices at the facility.

The transformers must be tested before they are shipped to the customer, which is why Hammond has test stations throughout its 110,000-sq.-ft. Guelph facility. Test voltages of up to 250,000 volts are used to ensure the integrity of HPS transformers.

During the testing of transformers, the company is required to ensure the safety of the operators in and around the test cells. Safety, in fact, has always been a priority at Hammond. That's why when Steve Bellamy of Bellamy Electric approached Perry about upgrading the safety system in the testing of transformers to Omron's G9SP software-based safety controller, Perry didn't take the decision lightly.

"We looked at a number of devices, [looking at] the breadth of products that was offered, the ability for them to be easily configured and fit into our application, and the reputation of the product itself," explains Perry.

After careful consideration, he decided that Omron's G9SP was the best way for HPS to "achieve the highest level of safety" for its employees.

"High voltage is a dangerous product to work with, and we wanted to make sure that we provided safety at a level that was acceptable for our company," says Perry. "We place high values on employees and their health and safety, and we wanted to make sure that was achieved, and [this] product did that."

### ABOUT THE G9SP

Omron Industrial Automation's G9SP Programmable Safety Controller is a software-based, standalone controller that can be quickly programmed to satisfy the complex safety control needs of small and mid-sized machines. And because it isn't a hardwired system, user's



From left to right:  
Steve Bellamy, Jeff Perry  
and Chris Parks

benefit from flexibility — the ability to reconfigure the unit when new safety features are added to their setup.

With the Omron Configuration Tool — part of the G9SP package — all aspects of input and output to the unit can be defined, simulated, tested and validated with a graphical user interface. The simulation tool allows users to test and correct settings before the system goes live. On-screen text and icon-driven menus guide the user through all aspects of setup. Clear alerts and system status give the operator an instant overview at every stage of operation. Unlike hardwired safety relays, the Omron G9SP can be reconfigured for multiple purposes, with direct connection to non-contact switches or safety mats. For example, when connected to an Omron pressure safety mat, the G9SP can sense that the mat has been activated, and can be programmed to sound an alert or shut down any dangerous part of a machine, keeping personnel safe. Meanwhile, the G9SP delivers clear diagnostics and monitoring via Ethernet or Serial connection.

The G9SP also includes a memory cassette, which means that systems designers only need to program the unit once, and use the memory cassette to install settings into each identical system. This is also useful if there is a power surge that disables the unit. The operator just puts the existing memory cassette into the new unit, and can upload the program without the need for a computer or programming software.

“The software itself is very intuitive,” says Chris Parks, an account manager with Omron Industrial Automation. “It’s a software program that you can learn inside a half an hour and be very confident in programming.”

The system is more than just a safety controller. It has diagnostic abilities, too. Online diagnosis is meant to reduce debug time to a minimum during implementation in the machine control system. And when the G9SP is up and running, it can tell the operator the state of an interlock switch — if it is damaged or if a panel door is open. All the operator needs to do is look at the screen to see where the problem is.

### G9SP AT HPS

Previously, the company used a simple monitored relay and switch safety interlock system. When operators tested the transformers, it was a manual procedure. As Perry explains it, the operator recorded the data onto a sheet of paper. They then took that data after the test was done to a computer and entered that information into a test database.

This approach was time consuming and increased the potential for errors, explains Perry.

“We were generally running up to four decimal points of accuracy, so sometimes there were keystroke errors and recording errors.”

With the installation of two new R&D and large power transformer test stations, a new design for a safety interlock system using Omron’s G9SP was implemented. The safety interlock system is interfaced with National Instruments’ LabVIEW software — a development environment for engineers and scientists creating test, measurement and control applications. The test is selected on a computer, applied in a controlled, consistent manner, and the data is downloaded automatically at the completion of the test into the test database. The operator has monitoring capabilities so that they can control or be aware of what’s going on. It’s all done on a computer screen, rather than with analog meters and dials.

“Certainly there are some productivity advantages to having this,” Perry says, referring to the new system. “Presently [on the test stations where the G9SP isn’t installed], it takes as long to record and enter the test data as it does to do the actual test.”

One of the G9SP’s main benefits, aside from safety, of course, is its diagnostic ability, says Bellamy, who implemented the new safety interlock system at HPS.

“One of the features it does have is a test output, which it self monitors for short circuits. So it will catch problems as they happen, where as just the regular safety relay would only get it upon the next initiation of the...circuit.”

And when the G9SP detects a problem, it shuts down the circuit and kills the power so the operator can fix the issue. The operator can see on LabVIEW that the G9SP has detected an issue with the interlock and where that issue is.

Another huge benefit, he says, is its ease of use, which translates into savings.

“It’s easy to program. I would say this is a complicated interlock system here, and it took me less than an hour to program that, and it probably saved two days worth of wiring,” he explains.

In fact, the new system has reduced installation time at HPS’ Guelph facility by 20 percent, and trouble-shooting issues by 30 percent.



Omron’s G9SP Programmable Safety Controller is a software-based, standalone controller that can be programmed to satisfy the safety control needs of small and mid-sized machines.

### THE FUTURE

While the system is currently installed in four electrical test stations at the plant, Perry plans to have them installed in the remaining test stations in the near future.

And, following the G9SP’s success at HPS in Guelph, the company plans to install the controller at 10 more of its facilities — three in Canada, two in the U.S., three in Mexico, one in India and one in Italy.

“All of our test facilities will be standardized on this exact platform right here, with the G9 being the safety component and the National Instruments being the controlling and recording and measuring platform,” says Perry. “The installation is much quicker; the configuration is much quicker. Those are advantages, especially going forward, when we plan to use these in all of our other facilities.”

And the company plans to use it in additional applications; not just for the safety of personnel testing transformers. The G9SP will be used in their transformer resin bake ovens to monitor damper position and flow switches to make sure that fumes are exhausting. The team also plans to install it on a new high-speed lamination cutting machine, as well as a Core Build lift/tilt table.

“We currently have a large transformer resin impregnation system under construction with a G9SP safety interlock system. We are also working on a safety system strategy utilizing the G9SP platform for operations such as material slitting, cutting and punching,” says Perry.

“I think the Hammonds have always had the best available safety system, and as we’ve upgraded [it],” explains Bellamy, “we went from just basic relays and contactors to safety relays, and now there’s a better product — the G9SP.”

“They’ve taken it to the next level,” he continues. “Hammond has taken the initiative, spent the money, and made sure that the operators are safe.”

And thanks to this technology, Perry and the HPS team are able to continue to achieve their goal — to make sure that there are no accidents related to electrical testing at HPS, and that the employees remain safe.

### HPS’ SAFETY INTERLOCK SYSTEM INCLUDES:

- Omron Industrial Automation’s G9SP Programmable Safety Controller
- National Instruments’ LabVIEW software
- Yokogawa Digital Power Analyser
- 8 Omron tongue switches
- 7 Idec 30-mm e-stops

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