

# AUTOMATION TODAY

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ARE KEY TO AUTOMAKERS'  
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**Rockwell  
Automation**

## Striving for adaptability



Scott Summerville

**T**he old saying “only the strong survive” is instructive in many ways when it comes to thinking about the reasons why some businesses survive and prosper and why others don’t. But the importance of the phrase can be stretched too far. Strength, defined either as raw power or even applied power, is really just one factor in the game of survival. What may be more important is a business’s ability to adapt to the changing conditions of its surroundings.

Adaptability in business, of course, is the capacity to rethink, to reorganize, to redeploy and to devise anew. Simply put, it’s the ability to formulate and execute positive change in a way that encourages growth. Those businesses that can adapt to changing market conditions in ways that enable them to take advantage of those conditions are more likely to survive and prosper than those that have not mastered the techniques of adaptability.

In the early years of the 21st century, the forces of globalization, changing rules of competition, and the mandatory requirement to satisfy individual customer needs place a premium on a company’s ability to move fast and adjust continuously. The techniques of adaptability in manufacturing as well as in other businesses must support these requirements. There are three key techniques: management vision and resolve, organizational agility and technological prowess- the ability to apply technology to achieve maximum operational effectiveness and flexibility while ensuring both longevity and efficiency. These techniques, of course, are inter-related and dependent upon each other. Simply buying technology products, for example, without a management vision of what to do with them, or not having the organizational ability to align them with business processes, would undermine any thought of developing an adaptable business enterprise.

But when these techniques are properly developed and aligned the possibilities are almost endless. Once created, the ability of the business to adapt can open up many new avenues of opportunity to serve current customers in new ways, attract new customers with innovative products and services, and grow the business profitably. Thanks to technological advancements by many companies in the manufacturing marketplace, including Rockwell Automation, the tools now exist to help companies convert the idea of adaptability to a concrete reality.

Nowhere are these ideas being practiced with more success than the automotive industry. The stories in this issue of *Automation Today Asia Pacific* demonstrate how General Motors, Hyundai Motor Co. and Toyota, for example, are embracing adaptability through a close alignment with advanced control and production architectures and technologies from Rockwell Automation. A key lesson these companies have learned is that the foundation of adaptability, that which enables reconfigurable, flexible production models, is a standard control architecture. With it, these automotive companies can respond to rapidly changing market conditions.

The road to adaptability may be new but many of the automotive companies are leading the way on it. Other stories in this issue provide more background on the architectures that act as the foundation for flexibility. Those include two Technology Watch stories, one on Rockwell Automation’s Integrated Architecture, the other on EtherNet/IP. We also provide a glimpse into how Rockwell Automation is working with companies in other industries, including Samsung Corning Precision Glass and Galloway International Limited, a plastics manufacturer.

All in all, the lessons learned from the companies in this issue add up to a body of knowledge that other companies, including your own, will find informative and useful. As we all continuously educate ourselves about the markets in which we do business, we might choose a better metaphor than “only the strong survive”. Perhaps “only the most adaptable have a chance to succeed,” would be more applicable.

Scott Summerville, President  
Rockwell Automation Control Systems, Asia Pacific Region

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# Rockwell Automation

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## Rockwell Automation and Kraft Foods partner on energy reduction plan

**K**raft Foods has selected the Rockwell Automation Power & Energy Management Solutions (PEMS) team to develop and execute a sustained energy reduction initiative across the Kraft manufacturing facilities in North America.

This multiyear initiative will facilitate Kraft's understanding and management of energy, and how it is used within Kraft plants, while also identifying opportunities to reduce the company's energy costs through lower consumption.

"Finding ways to reduce energy demand is fully consistent with our drive to achieve efficiencies in all aspects of our business," said Fred Sherriff, vice president of Manufacturing Technical Services for Kraft. "It is also consistent with our efforts as a responsible corporate citizen to reduce the environmental impact of our operations."

By using Rockwell Automation's Allen-

Bradley Powermonitors and Rockwell Software RSEnergyMetrix energy management software, manufacturers can automate load profiling mechanisms and analyze power quality issues, such as harmonics, to identify energy consumption patterns.

"There's a common misconception that manufacturing-related costs are uncontrollable," said Al Hamdan, product marketing manager, Power & Energy Management Solutions, Rockwell Automation. "On the contrary, qualifying energy consumption for various processes and identifying power quality problems will arm manufacturers with good information that will pinpoint specific operations where they can optimize energy usage. We're looking forward to applying our expertise to help Kraft with this very important challenge." ■

## Allen-Bradley POINT I/O products receive marine, ATEX certifications

**M**arine industry and European Union-based manufacturers and OEMs can reduce the time and cost associated with auditing and approval of their machinery now that Rockwell Automation has received marine and ATEX certifications on the majority of its Allen-Bradley POINT I/O products.

Companies that design and build equipment used in the marine industry (including use on seagoing ships and many offshore oil/gas platforms) must be

"classed" by one of the principal marine classification societies before insurance is arranged and regulatory licenses issued. By using Allen-Bradley POINT I/O products certified by the marine classification societies, OEMs and manufacturers can streamline the auditing and approvals process and reduce the costs associated with system certifications and schedule delays.

For more information on marine and ATEX certifications, visit: [www.ab.com/certification/](http://www.ab.com/certification/). ■

## On-Machine white paper offers in-depth look at technology benefits

**T**here's a growing technology trend to move industrial controls from remote cabinets directly to the machine. OEMs and end users have found that moving controls and hardware closer to the application saves considerable time and money.

To help educate manufacturers on the benefits of this technology, Rockwell Automation recently released a white paper entitled "On-Machine-On the Cutting Edge of Automation". It examines the scope of On-Machine solutions, the key

benefits of this growing trend and examples of where the distributed On-Machine architecture has been successful.

"Manufacturers need every competitive advantage they can find to implement flexible, high performance production lines," said Dave Hart, commercial programs manager at Rockwell Automation. "On-Machine solutions offer real time savings when designing, building, installing and maintaining industrial equipment."

For a complimentary copy of the white paper go to: [www.ab.com/onmachine](http://www.ab.com/onmachine). ■

### Worldwide certification for customer support program

Recognized for their commitment to provide superior technological support and services to customers around the globe, all five of Rockwell Automation's worldwide Technical Support Centers have achieved certification under the Support Center Practices (SCP) Certification Program. SCP Certification quantifies the effectiveness of customer support based on a stringent set of performance standards designed to reflect best practices in the industry.

The centers are located in the United States, Brazil, Australia, Germany and the United Kingdom. Rockwell Automation is only one of three organizations granted worldwide certification.

### Rockwell Automation awarded "Best Performing Supplier" status

In recognition of its ability to exceed Eastman Kodak Company's supplier expectations for quality and service, Rockwell Automation was recently named the "Best Performing Supplier for the Past Three Years."

This award, the first of its kind given by the company, exemplifies the consistent ability of Rockwell Automation to exceed Kodak's supplier performance expectations. With nearly 800 global suppliers, the criteria Kodak uses to measure their performance includes: exceptional year-after-year quality, product and technology leadership, support supplier diversity, productivity and cost savings, service and support leadership and safety and environmental excellence.

### White Paper outlines maintenance activities business case

While manufacturers looking to cut costs have traditionally targeted the maintenance, repair and operations (MRO) department, a new white paper from Rockwell Automation educates managers on how to communicate the value of a maintenance program—improving the likelihood of executive support for new initiatives or additional expenses.

The paper, "Translating Maintenance Initiatives Into Meaningful Financial Benefits," describes the importance of positioning maintenance projects within the context of business goals and outlines the key steps for developing a business strategy.

The paper may be downloaded for free at: [www.rockwellautomation.com/services](http://www.rockwellautomation.com/services).



# Flexible control architectures automakers' global success

As automotive market activity picks up in China and the rest of Asia Pacific, manufacturers say that the ability to rapidly adapt production processes is essential to being competitive.

On June 7, just two days before exhibiting at Auto China 2004 in Beijing, General Motors announced its plan to invest over US\$3 billion in its Chinese business. This is on top of the US\$2 billion that the United States-based manufacturer has already devoted to operations in this nation.

The world's largest vehicle manufacturer invests in many areas of its business and in many parts of the globe. But its focus on China today reflects an expectation of significant upside in the market's current growth and potential.

"With the world's fastest growing vehicle market, success in China is crucial to GM's global success," said Phil Murtaugh, chairman and chief executive officer of General Motors China Group, in a company statement.

Its large population, rising household incomes and a government that now supports business in the open market make China an appealing destination for automotive manufacturers. According to



the National Bureau of Statistics of China, in 2003 there were 4.89 million private cars in the country, a rise of 43 percent over the previous year. That number is expected to balloon to 10 million units by 2005, according to the China National Automotive Industry Consulting and Development Corp.

For global car companies currently competing in what can best be described as a "market jam," China—and other up-and-coming parts of Asia Pacific including Thailand, Korea and India—represents the boundlessness of the open road. But the road to opportunity is marked by many market, technology and regulatory challenges, including:

- Production overcapacity (resulting in plant closings)
- The recent need to tailor products toward specific buying behaviors
- The need to tie tier-one suppliers into



# are key to

assembly operations

- The mystery of building a global business that has local flair
- Country-specific regulations (such as China's government imposed partnerships with indigenous automotive companies; or the U.S. TREAD Act)
- Consistent quality and safety standards throughout worldwide plants
- A lack of technology expertise in markets outside of their domain
- Requirements for a global support structure
- And, participating (willingly or not) in the trend toward industry consolidation

The last point is perhaps the most pressing because over the next decade there will only be a dozen or so automotive manufacturers left in the world, according to industry watchers. That could be the main reason why—as the reality of shifting corporate dynamics resonates in the minds of auto execs—all eyes are on Asia Pacific.

With consolidation on the horizon, there's a lot at stake. Only the companies that most effectively gear their business processes for the global automotive market, Asia Pacific included, and create brand recognition in emerging markets will have a shot in the future. To adopt to this new philosophy, businesses must obtain unhampered access to information, have clear visibility into

operations and build a dedicated, experienced team to execute the strategy—given that the path forward is unfamiliar. For many automakers, including GM, Hyundai Motor Co. and Toyota Motor Corp., the ability to navigate the bumps along the road to globalization is aided by having a relationship with Rockwell Automation.

## Rebuilding the roadmap

The China story is well known. It is a hot bed of activity with the economy growing 10 percent per year. There are 400 million people that are now making enough money to start thinking about buying cars. In India, another target market, there are 100 million consumers ready to spend. That's good news for the industry—which is currently overcapacity by 25 percent. In other words, there are about 16 million cars too many in the world.

Meanwhile, the automakers continue to introduce new car lines. GM will release around 60 new cars over the next few years, say industry sources, 20 of which will be introduced specifically for the Chinese market.

Asia Pacific manufacturers recognize the China opportunity, too. Japanese carmaker, Nissan Motor Co., has a sales target of 90,000 cars in China this year, up from 65,000 it sold in the area last year. It has similar sales strategies for the U.S.

While there is no reciprocal market opportunity for foreigners in Japan—it has a loyal customer base that is difficult to penetrate—the U.S. has been hospitable when it comes to outsiders. That's why Korea's Hyundai Motor Co. constructed its



US\$1 billion assembly and manufacturing plant in Montgomery, Alabama, teaming up with Rockwell Automation, which helped design its adaptable assembly line.

Hyundai knows that in order to be successful in the U.S., it must be adept at tweaking cars to fit the American culture and style. "New models must appeal to smaller customer segments. That drives a tremendous need for flexibility and quick time to market dynamics, which require a lot of information and configuration on the factory floor," says Mike Kluiber, senior vice president, global automotive at Rockwell Automation.

And, it has to be done fast. What used to take five years to design and produce now must be pushed out to market within 18 months. Adding to the complexity of the customization and quick turnaround trend, is the need to do more with less. Gone are the days when one model ran down one assembly line. "Today companies are figuring out how to move multiple models down a single production line," says Lary Marshall, manager of Rockwell

## Integration acceleration: Rockwell Automation and IBM make it happen

Rockwell Automation is a company strong in technology expertise for the factory floor. But, increasingly, customers need more. They need to unite the shop with the enterprise. Enter IBM, the IT hardware and software giant that rounds out the big picture for Rockwell Automation customers.

In September of 2002 the duo signed a strategic alliance to build sensor-to-boardroom solutions specifically for the automotive industry. IBM has developed the links that unite Rockwell Automation's Manufacturing Execution Software (the layer above the control and network architecture that manages what goes on in the plant) with enterprise software. IBM's middleware adapters, incorporated into its eProduction solution, provide reusable connections into enterprise resource planning and supply chain applications.

"By working together we can provide a solution that is tested, proven to work and can be repeated from plant to plant to plant," explains Rick Fournier, IBM's business development executive for the global automotive industry. "It means companies can get up and running faster, can lower cost and mitigate risk. It's all about the quality they are looking for upfront without worrying if it will work or not."

Currently the companies have completed two projects in North America. But the pair—both global entities—are bringing their big picture portfolio to Asia Pacific. Right now they are educating customers in this part of the world on how the team can position Asia Pacific automotives globally. "We let them know that we can give them a 60- to 75 percent jump on what others are doing because we already have the core in place," says Fournier. ■



Automation's Automotive Industry Solutions group.

"The ability to build smaller lot sizes of a variety of vehicles—with the goal of getting to a lot size of one—is still a few years away. GM, however, is further ahead of its competition in this respect," Marshall says. Being adaptable has a lot to do with GM's adherence to a common control architecture—common engineering, processes, manufacturing systems and components.

GM's North American Controls, Conveyers, Robotics and Welding (CCRW) group set the company's mission in 1997 with the decision to standardize the control architecture. It chose Rockwell Automation's Logix processor, RSLogix development software and the combination of Ethernet/ControlNet/DeviceNet networks. These are just some of the components that make up Rockwell Automation's Integrated Architecture. (See Technology Watch, page 12 for more information on the Integrated Architecture).

The architecture injects flexibility into an assembly line. "In order to change your vehicle style one after the other, you have to have fast, efficient communications to all control equipment on the floor so you can tell machinery to behave differently," Marshall explains. The architecture relies on Rockwell Automation's NetLinx communication system, but it is the integration of the HMI system that enables an operator to see the status of manufacturing processes and visualize the production—allowing an OEM to adjust to market needs.

Having visibility into production processes can also aid in a company's ability

to manage the enterprise, track quality and coordinate global operations. In this regard, Rockwell Automation has teamed up with IBM to offer technology and consulting services to the automotive industry to fulfill this need. (See sidebar, page 7, for more on Rockwell Automation and IBM.)

### Setting standards

Establishing a global corporate standard for factory operations is the first step toward controlling costs related to maintenance and training. That's the financial payback. It also sets a baseline for best practices. Once a company has that foundation, volumes can be easily scaled to meet sales demands.

GM is in the midst of taking the control and safety standards it has developed in North America and migrating them to Asia Pacific and Latin America. Safety, increasingly, can mean the difference between operational success or failure.

Rockwell Automation is involved in defining the safety protocols at the network level. It also ensures that its products meet legislated safety standards in Europe and Canada. This is important for multinational companies that are rolling out programs around the world. Even if a country does not mandate certain safety guidelines, it makes the most sense to design once and deploy globally.

### Driver's education

In the midst of rolling out its comprehensive plan to transfer North American standards across global operations, GM turned to Rockwell Automation for not just its technology, but consulting expertise as well.

"We go in to these countries in Asia to educate them on standards and best practices," says Bill Sarver, Rockwell Automation's industry manager for Automotive in Asia Pacific. "Depending upon the country, there are different levels of automation requirements."

That education is two fold. It can happen at the plant or offsite. For instance, this past June, Sarver, who is based in Bangalore, India, brought all of the GM representatives from the various joint ventures—Shanghai GM, the Daewoo operation, as well as GM Thailand and GM Australia—to GM's Detroit headquarters for Logix controls training. These engineers then bring their new skills back home.

Rockwell Automation is a good global partner, in part, because it has forged ties with local companies throughout the region, including Tata Motors in India, as well as First Automotive Works (FAW) and Shanghai Automotive Industry Corporation Group (SAIC) in China.

Often times acting as a mediator, Rockwell Automation can offer the technology expertise that adds value in joint ventures. "We set up the support infrastructure," explains Klueber.

Rockwell Automation has operations in 12 Asia Pacific countries and has established strong ties with many universities in China, cultivating local talent to meet the growing needs of Asia Pacific automotives. Beyond the formal university setting, there remains a need for continuous training and education. That's why Rockwell Automation recently established the Automotive Center of Excellence (CoE) in Shanghai. Led by an 18-year veteran of Rockwell Automation's global automotive business, the mission of the CoE is to establish Rockwell Automation as the premier automation supplier to the automotive industry in China. "The Center of Excellence will concentrate on support for China's domestic and multinational automobile manufacturers," says Ken Kofsky, Rockwell Automation's director of automotive in China. "The center also supports the tier one supplier community and the automotive design institutes."

In the frenzy to accommodate the swell of automotive OEMs, the suppliers—from component to tire makers—are often overlooked. But these companies are an important piece of the puzzle for foreign companies that need to maintain existing relationships with high-quality suppliers. Otherwise, the OEM may source inventory from a local company in order to maintain quick time-to-market tactics.

Take Goodyear Tire & Rubber Co., an automotive tire company with American roots that has plants in India, Indonesia, Malaysia, Thailand and, most recently, China. The China plant, established in 1994 and located in Dalian, was set up through the government in Beijing, according to Ernest Rodia, the recently retired vice president of global engineering and manufacturing technology at Goodyear, who established the operation.

"We did a lot of research before we went

## Toyota's global operations approach zero defects using Rockwell Automation technology

When Toyota Motor Corp. went global, what concerned company officials was how to maintain its high quality standards based on the world-renowned model for lean manufacturing, called the Toyota Production System (TPS).

Under TPS, any system Toyota uses must be able to be reconfigured and continually improved by team members at each Toyota facility. One such system, the Assembly Information System (AIS), coordinates the vehicle assembly process by starting, stopping and monitoring the various assembly subsystems. It orchestrates the flow production build data and operating results between Toyota's manufacturing equipment on the plant floor and Toyota's production control and monitoring systems. AIS is responsible for tracking the vehicle throughout the assembly shop and for verifying (error proofing) the vehicle assembly process. AIS—currently in use at Toyota's operations in the United Kingdom, France, Canada and multiple locations in the U.S.—was built on Rockwell Automation technology, which allows compliance with

Toyota's stringent standards.

Rockwell Automation's ControlLogix, ControlNet and PanelView are among the tools that Toyota adopted to implement continuous improvement and the ability to adapt to change. Ultimately, this allows the company to move toward zero defects on the plant floor. It also keeps production costs down. For instance, at Toyota Motor Manufacturing Indiana (TMMI) in the United States, the company wanted to integrate its basic manufacturing and ID tag system with another system in order to download manufacturing information from central host computers to plant controls on demand. It also needed to gather vehicle location and tracking information from the plant floor in order to enhance the flexibility of TPS. AIS and Rockwell Automation's Integrated Architecture have been the key enabling technologies used to accomplish those goals.

With AIS, Rockwell Automation satisfies Toyota's objectives of continuous improvement and the need to adapt to technical change while approaching zero defects. ■

in [to China]," says Rodia. "I went to a hundred or more different tire companies just seeing what the competition was looking for in a joint venture partner."

Goodyear remains at the premium end of the market, leveraging innovative products and its knowledge of North American traceability standards enforced by the National Highway Traffic Safety Administration's Transportation Recall, Enhancement, Accountability and Documentation (TREAD) Act. Any components—regardless of where they originate—must comply with the TREAD Act if the car is sold in the U.S. (for more on the TREAD Act, see page 10).

"First and foremost you want to bring your best to bear within the China market. It immediately sets you at a different level," Rodia says. That's because the products that incorporate a high degree of technology are not as abundant in this region—yet. "Over time they will develop the technical knowledge and become more formidable competitors."

Goodyear's China plant produces 5,000 tires per day for automotive OEMs

including GM and Volkswagen. But the next move is to take the production rate to almost 15,000 tires per day using the same facility but adding Rockwell Automation's Integrated Architecture technology.

According to Rodia, it is Rockwell Automation's local presence and ability to train Goodyear employees throughout the region that is allowing the company to move to new levels of productivity. "You can't afford to do business with any company that doesn't provide hands-on service. You just can't wait two or three days for someone to fly over if you need technical help."

Goodyear also invests the time and technology into its local partnerships because, "it doesn't do the company any good for a local supplier to fail," says Rodia.

Indeed, as automotive OEMs source more parts locally, the suppliers that have set up shop in the region through partnerships need to be willing to transfer technology knowledge to local companies, per government order.

### Dawning of a new era

With China's entry into the World Trade Organization (WTO) in 2001, the country must now conform to the WTO's trade liberalization rules. China has set in motion plans to remove quota and permit barriers on vehicle imports by 2005 and cut tariffs to 25 percent by 2006. Still, the Chinese government is concerned that domestic automakers will be phased out as new competitors come in.

In order to dodge that bullet, Chinese authorities drafted a new policy aimed at raising the standards for new factories, lifting the level of R&D, and encouraging technological progress.

The government has always had a strict policy that any foreign investor must partner with a local company in order to conduct business in China. This past June, the National Development and Reform Commission revised the business policy, which now states that foreign investors will be allowed to control stakes of more than 50 percent in automobile and motorcycle joint ventures if their JVs are built in China's export processing zones and are directed at overseas markets. On the flip side, big Chinese automakers will be encouraged to team up with foreign investors to merge both domestic and foreign vehicle products. Furthermore, the policy states that total investment of any new auto project can't dip below two billion yuan (US\$241 million), and such projects must include a research and development organization with an investment of no less than 500 million yuan (US\$60.4 million).

The policy should not deter movement to the region, as automotive OEMs will continue to circle the globe and invest where there is any sign of an energized market. Regardless of the direction—to Asia Pacific, Europe or the Americas—car companies are learning to navigate the bumps and potholes along the long and windy road. ■

### o n t h e w e b

For more information on General Motors commitment to a common architecture go to:

[www.rockwellautomation.com/newsroom/pdfs/gm.pdf](http://www.rockwellautomation.com/newsroom/pdfs/gm.pdf)

For more information on IBM, go to:

[www.ibm.com](http://www.ibm.com)





# The TREAD Act's Global Impact

**I**n this issue, *Automation Today Asia Pacific* asks Kevin Mixer, research director for the automotive and heavy

equipment industry at AMR Research (Boston, MA, U.S.), about the TREAD Act.

**Q: Do the vehicle manufacturers and OEMs work together to comply or is this an independent effort?**

**A:** It depends on the working relationship. The way the Act is structured, if an event occurs both parties could be required to report on it. If the event is only reported by the vehicle manufacturer, the supplier could still be brought in (to be investigated by the National Highway Traffic Safety Administration) based on its level of involvement. In the past a company might have been involved only if it had been sued directly, but the TREAD Act changes the whole accountability issue. Where did the parts come from? What failed? And who is accountable? The responsibility no longer stops at the vehicle manufacturer.

**Q: Will manufactures have to deploy new technology or adopt new business strategies to comply with this?**

**A:** For large vehicle manufactures the impact is different. They traditionally gather information in different silos, and now they have to aggregate it together and submit it to the government. In some cases, the information might have been on hard copy media, and now it has to be in electronic format. That in itself is a challenge because of the magnitude. There is also the complexity for those who have products of similar make or type that might be in an international environment. They have to aggregate and process, move to an electronic format, and address change management issues.

**Q: Are there efficiency benefits that could come out of compliance efforts? Or is this viewed as all work and no payoff?**

**A:** In all honesty, it is how a company views this. There are two schools of thought, one just to get information in and comply with what the government wants. The other is how to use this and leverage it to get the company to change. But it requires an

investment in change. It could all be for naught if all they do is send information to the government and don't do anything with it themselves.

**Q. How does the TREAD Act affect automotive manufacturers in Asia Pacific?**

**A:** The Act impacts Asia Pacific manufactures in two ways; one, manufacturers who import vehicles into the United States markets are under the same rulings as domestic manufacturers to the submission of reports and informing the government of potential recall items. The second area of impact is that most likely vehicles engineered overseas and shipped to the States share common parts and components with products sold locally in Asia Pacific. Failures in the US markets could be a good indication of problems to come with vehicles local to an Asia Pacific manufacturer. Given the latest involvement of the governments in Asia Pacific around product safety, these warnings could help a manufacturer in avoiding an embarrassing event or publicity around poor quality

**Q. How can Asia Pacific OEMs and suppliers be better prepared?**

**A:** By embracing the "spirit" of the TREAD Act, all manufacturers in trying to comply will begin collecting more information around products, their failures and information surrounding the failure in a much more comprehensive manner. This is the path to early warning and companies analyzing this data have already found significant benefits by further leveraging the data collected for compliance.

**Q. What are the direct and indirect benefits to global manufacturers that are TREAD Act compliant?**

**A:** Bottomline, a product with better quality will yield better profits. Public awareness around quality has become so significant to brand images that quality is no longer a differentiator—it is simply a disqualifier. With vehicles being designed and built globally, the Act itself will help to drive organizations to improve internal visibility among functional areas on their path to becoming TREAD Act compliant. ■



*tires. Although originating in the U.S., TREAD is very much a global issue, Mixer explains.*

**Q: How did the TREAD Act develop?**

**A:** This is one of the fastest passing acts or bills in legal history. Parallel to the perfect storm. Government agencies embarrassed in front of the Senate, a climate where the general public distrusted large corporations, and an election year. Add it all together, and that's how the TREAD Act came to be.

**Q: How is it being enforced?**

**A:** In the fourth quarter of 2003, the first quarterly reports capturing the event of a recall, roll-over, death or injury were due. In January, 2004 the historical reports were due which captured events for all domestic vehicle lines for the past three years. If you look at the way the Act was written, it's not just vehicle manufacturers, but also the original equipment manufacturers (OEMs) making components.

In addition, anyone who manufactures something registered or certified for on the road—trailer manufacturers, RV manufactures, motorcycles—anything that gets registered on a set of wheels now have to comply. That is the broad group. Then there is group one and group two. Group one has rigorous reporting requirements—that's about 87 companies. Group two is



# Galloway achieves 28 percent productivity increase with temperature system

**Quality improvements cook up new data while reducing product reject rates by more than 80 percent.**

Executives at Galloway International Limited of East Tamaki, Auckland, New Zealand, a plastics manufacturer of such diverse products as road barriers, storage tanks and playground equipment, recently questioned whether time was the best way to measure product quality.

The company manufactures its products using a technology known as rotomolding, a method in which pre-measured plastic resin is loaded into a mold, moved into an oven, and slowly rotated on both the vertical and horizontal axis. Rotomolding is traditionally based on the time it takes to “cook” a product once it reaches a pre-determined temperature. But Galloway officials realized that the time-based cooking formula does not guarantee that the right temperature required to cure the product is maintained or is being achieved at all.

Given that Galloway International is required to consistently meet high standards of product quality to satisfy local and world market customers, company officials decided to implement a control system that cooked according to the optimum mold temperatures instead of on a time basis.

The now patented temperature-based cooking process that Galloway International engineers devised, working with a researcher from Auckland University, was also able to be linked into a database from which the company could monitor and control production scheduling, product tracking and reporting. Since the ovens already had Rockwell Automation PLCs, Galloway International decided to use the company's

visualization, historian and data mining applications to audit products and elevate the level of control.

## Hot results

Since the first temperature-based cook process began in 2000, the company operates at a product reject rate of one percent—which is lower than the industry standard of five percent. It reduced the number of times it takes to get the cook time right for a new product before entering production from ten reject “cooks” to only one. And productivity has increased by 28 percent. For instance, the plant can now produce seven water storage tanks in 15 hours versus its previous rate of eight tanks in 24 hours.

“We see a marked difference in the products made in the ovens with temperature control over the parts made by time control,” said Dave Kean, Galloway International's production manager. “With the correct cook, you can measure and check your part and know that next time you can produce the same result again, time after time.”

The use of technology that networks controllers with a historical database is an enabler in the company's ability to produce quality products consistently.

Systems integrator, Information Systems Integration (ISI) upgraded the seven existing CALCOMMS Autotune Temperature controllers from Cal Controls Ltd., located in the ovens, to Allen-Bradley SLC 5/40s with Allen Bradley PanelView 300s local to each machine. These processors were integrated over a network to a PC running Rockwell



Software's RSView32 visualization and Rockwell Software's RSBizWare Historian which analyzes a variety of process and production data including temperatures, pressures and flow rates.

Temperature probes were placed inside the mold so cook temperatures could be monitored throughout the process, which is essential for quality control. As each oven was upgraded it was connected to the network, allowing the company to create a database with a history of every product that runs through that oven.

Product orders are read directly out of Galloway International's ordering system into the Microsoft SQL production database. They are then assigned to the appropriate oven where Rockwell Software's RSSql sends the data to the various oven PLCs. Along with this data, the cook parameters are downloaded from the Microsoft SQL table and sent to manufacturing.

The cooking parameters are logged against the product, which automatically assigns an ID number for future analysis of a particular product. RSView Historian also records historical temperature rotational trends for a six-month period.

The result: “We are now confident of achieving major gains in our operating and quality advantages,” Kean said. Furthermore, the plant is so efficient it operates only eight hours per day, four days per week. Fridays are free of production and instead used for general engineering—which is a good use of time. ■

## o n t h e w e b

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# Driving information optimization

Rockwell Automation's Integrated Architecture uses common control, visualization and communication techniques to lower cost and improve operational efficiency.

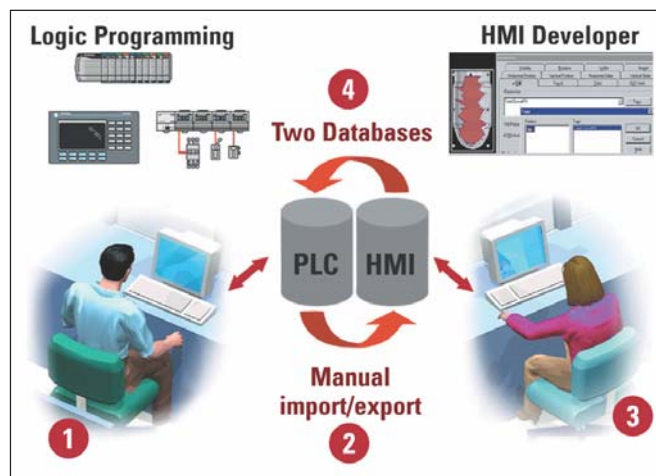
An automobile without wheels is not really a car. Rather, it's a fancy frame with seats that house an engine, exhaust, radiator, brake system and electronic controls. But it's not a fully functional mode of transportation-not until the wheels are attached. Only then does it become a truly integrated architecture that is ready for the road.

Inside a car there are several core components designed to work together. Independent of each other they still serve a purpose, but once combined and aligned the true value of the vehicle emerges: It gets you where you want to be.

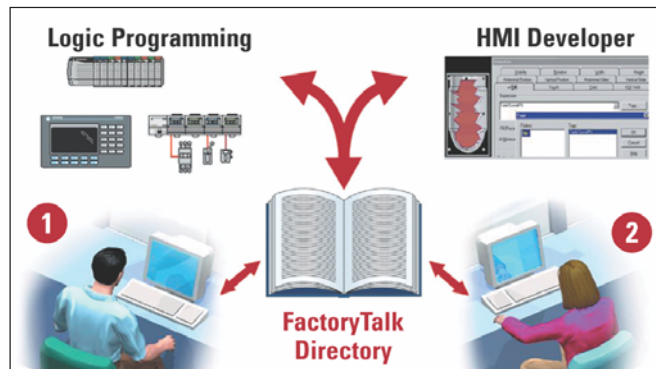
The same can be said for Rockwell Automation's Integrated Architecture. It's a technology framework that unites typically disparate applications on the factory floor under a common control, visualization and communications infrastructure. That data can then be seamlessly funneled up into the enterprise. For many manufacturers it is the driving force behind corporate-wide information sharing, as it provides valuable shop floor information to steer operational efficiency through order flow management, performance analysis, uptime and process optimization. Ultimately, it moves companies closer to achieving their business goals.

### Core components

The Integrated Architecture, comprised of Rockwell Automation hardware and software solutions, continues to evolve as



Rockwell Automation's Integrated Architecture is based on a single coordinated system using the company's FactoryTalk Directory to allow collaboration. When a FactoryTalk tag is updated in the library, the change is automatically reflected within every application and control system connected to the network.



the company finds new ways to extend its reach inside and outside of the plant, as well as enhance its ability to perform in an environment that requires the highest level of safety and security. But at its core, the Integrated Architecture is based on four key Rockwell Automation competencies: Logix; NetLinx; ViewAnyWare; and FactoryTalk.

In the plant, the Logix platform offers the ability to perform sequential, discrete, drives and process control in the same controller and programming package. The NetLinx open network architecture, which offers a common set of communication

technologies and protocols, offers a path for information to be passed between device-, control- and/or information-networks such as DeviceNet, ControlNet, and EtherNet/IP, an industrialized Ethernet, based on Ethernet TCP/IP and UDP that allows for both control and information. ViewAnyWare adds the view into the plant by offering a scalable operator interface solution from the simplest of displays to the most sophisticated supervisory systems. [see sidebar, page 13, for more details on IA elements.]

"Together these comprise the plant wide solution," notes John Nesi, director of commercial marketing for Rockwell Automation's Automation Control and Information group. It is the merging of the entire manufacturing process into a single coordinated system," he says. "At the same time we wanted to make sure our users didn't have to recreate data to

do all those things. So Rockwell Automation devised the FactoryTalk Directory so that tags can be defined just once, and then referenced and reused anywhere within a distributed system."

With FactoryTalk—which is a vertically-oriented collaboration environment—when one tag is updated in the library the change is automatically propagated to every other application and control system connected to the network.

Furthermore, that information can be shared with business systems, out to the supply chain and even to customer relationship management applications.

## Table of elements for the Integrated Architecture

<b>Logix platform includes:</b>	ControlLogix, a high-performance, multi-processing platform.  SoftLogix, PC-based control.  PowerFlex 700S with DriveLogix, combines the power of AC drive technology with a high-performance Logix engine.  FlexLogix, Flex I/O expanded to include distributed control.  CompactLogix, for small to medium-level applications.  RSLogix 5000, a Windows-based 32-bit programming package. An object-based design offers an intuitive design environment.
<b>Kinetix:</b>	This represents an extension from the control information and HMI down to the machine actuators. It demonstrates the benefits of integrating motion control into the Logix platform.
<b>NetLinx architecture:</b>	Each core network including Ethernet/IP, DeviceNet and ControlNet, share the common industrial protocol (CIP) at the application layer to enable seamless integration of plant floor data.
<b>ViewAnyWare:</b>	A window into the control system, it utilizes a common visualization program that can be deployed across a range of electronic operator interfaces and industrial computers.
<b>FactoryTalk:</b>	The "glue" between the different operation layers and the supply chain. It offers a consistent format for sharing manufacturing data.

That's because FactoryTalk complies with international standards and data classifications such as the Instrumentation Systems and Automation Society (ISA) S95, OLE for Process Control (OPC) and eXtensible Markup Language (XML), which aid in delivering real-time plant floor data to the right people in the company at the right time.

Having a repeatable process at the application level allows a company to reduce design time and system programming time, which directly translates to cost savings. FactoryTalk also offers an easier method of extracting information out of a database to be shared with a historian or manufacturing execution system (MES), for instance.

"FactoryTalk is an enabler when it comes to integrating with MES," explains Michel Yasso, Rockwell Automation's automotive marketing leader. "This is important in many industries, but recently there's been a lot of focus on this area from the automotive manufacturers," he says. "There is a need to reduce the time it takes to get a new vehicle in to the marketplace. It is driven around the ability to share data and make decisions faster, and FactoryTalk plays in to that in a significant way," Yasso adds.

FactoryTalk, to follow the opening analogy, is the wheels of the Integrated Architecture. First introduced in 2002, it works with NetLinx to move information in the right direction throughout the enterprise.

### Integrated Architecture evolves

Recently, Rockwell Automation announced expanded support for EtherNet/IP by making its CompactLogix controllers, POINT I/O and PowerFlex drives compatible with the network. This broadens Rockwell Automation's range of Ethernet-enabled products for control and information past controllers, into devices at all levels of the architecture. It also added an EWEB module for the ControlLogix controllers that enables users to view plant-floor

data via web pages.

Later this year, in the United States, Rockwell Automation will introduce RSLogix 5000 with PhaseManager. This version of RSLogix 5000—which is the programming software used for the Logix controller family—takes full advantage of

the ISA S88 model to reduce design time and provide a more efficient batch process solution.

Separately, the company will introduce a range of SIL 3 compliant, DeviceNet Net Safety connected products later this year, and through 2005. By integrating safety solutions into the Integrated Architecture, automotive manufacturers can gain greater efficiencies by keeping their lines up and running.

These new functions will add to the value of the Integrated Architecture—just like a V8 engine makes a car more powerful. But it's not only about what's under the hood, it's every part working together—wheels and all—that makes for a smooth ride. ■

### Benefits of an Integrated Architecture

- Cut system development time by up to 60 percent.
- Increase equipment utilization by nearly 100 percent.
- Speed up system installation by up to 20 percent.
- Reduce system cost by up to 30 percent.
- Reduce floor space by over 25 percent.
- Improve working conditions, safety and plant floor communications.
- Speed integration and upgrades.
- Automatic data tracking enables report generation and operator accountability.
- Simplify training.

Source: Rockwell Automation obtained these numbers from real customer experiences.

**o n t h e w e b**

For more information, visit:

[www.rockwellautomation.com/complete/iar.html](http://www.rockwellautomation.com/complete/iar.html)



# Factory Management Control System increases production efficiencies by 30 percent

To meet increased customer demand, Samsung Corning Precision Glass opens new plant with automated, real-time monitoring and controls.

When its factory in Gumi, Korea reached maximum production capacity, executives at Samsung Corning Precision Glass knew the company was at a critical juncture. Given the competitive business climate, they couldn't stand still. Their options were to either grow the operation to accommodate the needs of the market, or try to manage with the existing resources in place.

Samsung Corning Precision Glass, part of New York-based Corning Inc., manufactures fusion glass, which is used in the most advanced TFT-LCD (Thin Film Transistor Liquid Crystal Display) available today. Samsung Corning Precision Glass customers use the TFT-LCDs in portable computers, LCD TVs and mobile phones.

Since the company was first established in 1995, there has been steady increase in demand for the TFT-LCD products. In order to meet customers' requirements while anticipating escalating sales, executives decided that the best way to increase production was to build a new factory in Asan, Korea. But it had to be a factory that incorporated an integrated, flexible infrastructure that could scale as needed for more efficient operations.

First and foremost, the new facility required reliable processing systems—such as water treatment, HVAC, pumps and fans, compressors and boiler systems, to name a few—which are critical to production capacity for the factory. Uptime, maintenance and efficiency in these systems are as important as the processes in the

manufacturing line itself. Problems in these systems directly impact manufacturing and downtime halts production.

Central to solving any processing problems in the new facility would be a Factory Management Control System (FMCS). Designed and executed by Rockwell Automation Global Manufacturing Solutions, FMCS incorporates the best in e-manufacturing and automation technology. It was engineered with an inherent ability to monitor additional systems, and its real-time, automated control of subsystems and manufacturing processes has resulted in a 30 percent decrease in operational expenses (compared to the Gumi facility). Moreover, technicians no longer waste time dealing with maintenance and operational headaches.

## Information flow

The solution uses Allen-Bradley ControlLogix Software, communicating back-and-forth with Allen-Bradley PLCs to monitor and run the HVAC and utility systems. RSVIEW32, from Rockwell Software, serves as the human machine interface (HMI) offering operators more programming and operational flexibility than a distributed control system (DCS). RSVIEW32 is easier to maintain and troubleshoot and is also less expensive to commission than a DCS.

The FMCS passes information via fiber-optic cabling, using Allen-Bradley's ControlNet, and also includes wireless communication through a M-Linx system—enabling real-time data access,

process monitoring and control from the main control room or from remote locations outside the factory via the Internet. Samsung Corning Precision Glass also chose RSVIEW32 with RSLinx, running on Windows 2000 Pro, networked through TCP/IP Ethernet to monitor production. Lastly, Allen-Bradley PLCs provide a direct link between the factory floor and the monitoring network.

Rockwell Automation led the project with application engineering, programming and system deployment. But as an automation partner, the company also took on the responsibility of training Samsung operators on the hardware and software. That ensured proper use of the system, which results in the highest payback.

## The e-manufacturing advantage

Because of the distinct operational efficiency gains that the FMCS brought to the Asan facility, Samsung Corning Precision Glass has retrofitted, where possible, elements of FMCS in to its Gumi facility as well.

RSVIEW gives system operators all of the information and functional control they need in an easy to navigate graphical HMI. The data is available in real-time and logged, making it possible to keep close watch on operations, react quickly to any problems and access a record of conditions that existed when the problem occurred. Analysis of those logs helps the company continue to refine the processes on the factory floor and make better decisions based on improved feedback.

Overall, the increased stability increases plant uptime, improves maintenance and reduces the labor needed to run the plant. And because the FMCS is designed to grow with the facility, as customers demand more TFT-LCDs, Samsung Corning Precision Glass will be able to meet the demand easily and, of course, efficiently. ■

o n t h e w e b

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# Industrial Ethernet for the masses

**EtherNet/IP exposes the full benefits of Ethernet's flexible communications architecture to the plant floor.**

**T**ransmission Control Protocol/Internet Protocol (TCP/IP) is to Ethernet as spices are to food. You rarely get the best experience from one without using the other. That's because the TCP/IP suite is the key, behind-the-scenes technology that brings the Internet and Intranets to life—just as spices bring out the flavors in our food. As a result, TCP/IP is inextricably linked with Ethernet in the business and consumer worlds.

But what many people don't understand is that using Ethernet and TCP/IP only guarantees that Ethernet devices can coexist within a network; it does not guarantee that these devices can communicate effectively. For devices to be able to understand and interoperate with each other, a common application-layer protocol is needed.

The TCP/IP architects understood this problem and designed these protocols to work with multiple application layers. To date, there are many used with the TCP/IP suite—e.g., protocols for file transfer (File Transfer Protocol (FTP)), e-mail (Simple Mail Transfer Protocol (SMTP)) and World Wide Web Hyper Text Transfer Protocol (HTTP).

Now that Ethernet has infiltrated the plant floor, networking organizations and automation vendors are promoting

several new application-layer protocols. These protocols are intended to make Ethernet suitable for the rigors of industrial automation.

Introduced in early 2000, EtherNet/IP is the front-runner of all the industrial Ethernet solutions. Part of the reason is that it is based on open technology, using the same application layer—the Common Industrial Protocol (CIP)—as DeviceNet and ControlNet. This approach offers myriad benefits to automation users and vendors alike: low product-development costs, ease of use, simple product and network integration and multi-vendor interoperability.

Further, more than one vendor or organization backs EtherNet/IP. ControlNet International (CI), the Industrial Automation Open Networking Alliance (IAONA) and the Open DeviceNet Vendor Association (ODVA) recognize and/or support this networking standard. As a result, EtherNet/IP delivers interoperable Ethernet products from a large community of vendors.

## What is EtherNet/IP?

It's important to understand the basic technology behind the name before delving too far into the specifics. EtherNet/IP is best defined by deconstructing its name.

The "EtherNet" portion refers to commercial off-the-shelf Ethernet (IEEE 802.3)—not a modified, proprietary version—and the TCP/IP suite. "IP," on the other hand, stands for Industrial Protocol and is what distinguishes this network. Unlike many industrial Ethernet options, EtherNet/IP uses an already proven, open protocol at the application layer (i.e., CIP). So EtherNet/IP is CIP deployed on an Ethernet TCP/IP network, just as DeviceNet is CIP deployed on a Controller Area Network (CAN).



In 2001, Web capabilities were added to the PLC-5 Ethernet products

In terms of how it works, EtherNet/IP uses TCP/IP to send explicit messages—those in which each packet not only has application data, but also carries the meaning of the data and the service to be performed on the data. EtherNet/IP also leverages standard User Datagram Protocol/Internet Protocol (UDP/IP, part of the TCP/IP suite) transport services, which provide higher performance and multicast functionality for real time—also known as implicit messaging. So because it leverages both TCP/IP and UDP/IP protocols to encapsulate networked messages, companies can use EtherNet/IP for both information and control applications.

## EtherNet/IP—here and now

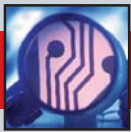
EtherNet/IP is almost three-and-a-half years old. In that relatively short time, this network has seen a significant amount of interest and activity. A year after CI and ODVA unveiled the specification, Rockwell Automation launched the first wave of EtherNet/IP products, which centered around the Allen-Bradley ControlLogix, ProcessLogix, PLC 5 and SLC 500 controller families. Since then, many other vendors have either developed EtherNet/IP products or announced plans to do so.

No piece of technology is capable of addressing every need. That holds true for industrial networks as well. EtherNet/IP is bound by the inherent limitations of Ethernet.

But EtherNet/IP has enough features and functionality to make it work for a wide variety of applications. As a result, it's more ▶



The SLC-500 family includes the option of a fixed or modular controller



versatile than most networks. Because EtherNet/IP provides both control and information capabilities, it also gives companies the ability to collapse their communications architecture.

**The before and after**

A traditional application would look something like the following. An information network links a programmable logic controller to an upper-level, MES-type system. The controller also is connected to a second network—a dedicated I/O bus—to link all the peripheral devices on the factory floor. The end user would use the I/O network to modularize the construction and wiring of the system, gather remote data and manage the speed of production.

In comparison, the controller could now be linked to an EtherNet/IP network for both information and I/O using a flat network architecture. Depending on the particular application, this setup can offer not only better performance than the traditional application, but additional functionality as well.

● New services like voice and video—e.g., installing a camera to watch the plant floor and product flow remotely.

● Variable topologies—e.g., setting up all the programming terminals on a virtual LAN, which would allow engineers to connect the terminals on a single network, yet segregate and isolate multiple control systems at the same time.

● IT integration—e.g., accessing the MES system from the plant floor to review and refresh in real time maintenance scheduling information.

● Remote management— e.g., programming the control system to send a message to a maintenance pager when alarms occur.

● Internet connectivity—e.g., accessing an online troubleshooting guide to adjust an inoperative sensor.

● Flexible security—e.g., restricting access to a port on a switch, which results in restricted access to a specific I/O block.

These additional capabilities provided by Ethernet give manufacturers a significant advantage, assuming EtherNet/IP can meet all of their

industrial network requirements. These capabilities are not, and cannot be, available on a fixed-purpose industrial network. Moving to this type of architecture marks a philosophical and operational shift for most companies—one that opens a realm of new possibilities to an innovative user.

**And after the after?**

Like all thriving technologies, EtherNet/IP is not static. So the organizations and their member companies responsible for its growth, including Rockwell Automation, are sure to add features that will help companies evolve with changing business requirements, such as safety, synchronization and wireless utilities. But no one knows what lies on the horizon for sure.

**o n t h e w e b**

For more information on EtherNet/IP, visit:

[www.controlnet.org](http://www.controlnet.org)

[www.iaona.org](http://www.iaona.org)

[www.odva.org](http://www.odva.org)

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## MiniPowermonitor reduces energy costs

The Allen-Bradley MiniPowermonitor (MiniP) from Rockwell Automation is ideally suited for OEM power and energy panel metering, energy sub-metering, cost allocation or load profiling. It allows manufacturers to cost-effectively gather power and energy information and communicate the data to a central control system or programmable controller for analysis and energy optimization. The two product offerings include MiniP M610 and MiniP M620, which are part of the Power and Energy Management Solutions product family.

The MiniP M610 is a three-phase AC monitor that reduces installation costs by providing a digital three-phase replacement to traditional analog panel meters. In the past, three-phase AC power systems required four analog measuring

instruments. The MiniP M610 now combines these measurement functions into a single compact instrument that cyclically displays line-neutral and line-line voltages of all three phases simultaneously. This allows manufacturers to rapidly view critical information, versus scrolling through a screen to read the data.

MiniP M620 continuously measures power and energy parameters of three-phase power lines. It provides basic power and energy data at a low cost-per-metering point by collecting usage information directly from individual pumps, chillers, heaters and motor loads. In addition, when over- and under-voltage conditions occur, the MiniP M620 trips an alarm relay and simultaneously displays a code character to identify the cause of the alarm.

When used with Rockwell Software RSEnergyMetrix energy management



software suite, the MiniPowermonitor devices allow manufacturers to proactively manage a facility's power consumption patterns and analyze power quality issues to help reduce electrical expenses. ■

For more information, visit:  
[www.ab.com/PEMS/products.html](http://www.ab.com/PEMS/products.html)

## RSLogix 5000 v13 saves control system development time

Upgrades to Rockwell Automation's RSLogix 5000 programming software will improve productivity during control system development. New functionality in RSLogix5000 v. 13 allows for the reuse of previously written code and documentation, providing substantial savings in control system development time. The new Ladder Diagram (LD) Partial Import/Export capability allows users to create libraries of code that can be reused from project to project. Specific rungs of code can be exported from a project using Extensible Markup Language (XML) tag formatting and stored in an external file. This code can later be imported back into the same project or applied to new projects.

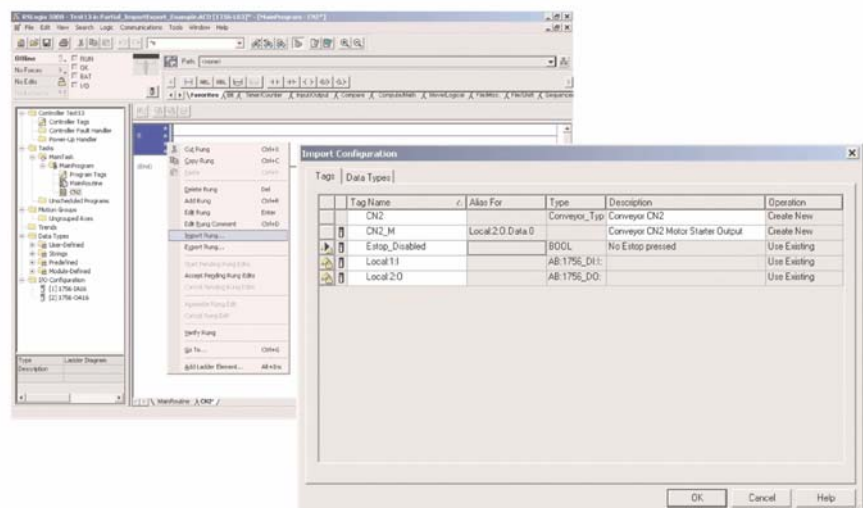
LD Partial Import/Export automatically includes the definitions for tags, User-Defined data Types (UDT) or structures and their associated descriptive comments — defining everything required to operate the code. During import, RSLogix 5000 can modify the names and descriptions so that the imported code is ready to run. The UDT Pass-Through Description feature allows RSLogix 5000 to locate the priority member description from the UDT definition and combine these with the tag's root description to create tag

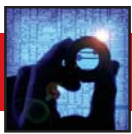
documentation automatically. Automating this process can eliminate hundreds of hours of development time for systems integrators and improve documentation to reduce start-up time, simplify maintenance and reduce downtime.

RSLogix 5000 v. 13 also has the ability to modify Sequential Function Chart (SFC) and Structured Text (ST) routines online. This supports the modification of routines in any language on a running controller, avoiding downloads and maximizing

equipment uptime. Other options for enhanced productivity include an import/export feature for rung comments, the ability to set instruction default values and an instruction argument dialog tool for the configuration of complex instruction blocks. In addition, a custom tools menu allows users to launch external software tools from within RSLogix 5000. ■

For more information, visit:  
[www.ab.com/logix/](http://www.ab.com/logix/)





## New diagnostic and design options in FLEX I/O family

Rockwell Automation expanded its Allen-Bradley FLEX series of modular I/O products, giving systems designers and end users improved diagnostic capabilities, greater design flexibility and a broader selection of cost-saving I/O options. Designed for distributed, in-cabinet applications, the line expansion features new digital diagnostic modules, 32-point I/O modules and an

Intrinsically Safe (IS) coax barrier for the ControlNet network.

The new FLEX series modules include: 1794-IB16D and 1794-OB16D, new digital diagnostic modules that allow control systems users to quickly identify conditions that may result in system failure, improving troubleshooting speed and accuracy and helping prevent downtime. The modules can detect open wire, short circuit and reverse polarity of external power.

The 1794-IB32, a 24 VDC sink input module, and the 1794-OB32P, a 24 VDC protected source output module, are 32-point I/O modules providing a cost-effective solution for I/O installations

where more than 128 points are required in a single location or panel. For users with a large number of I/O points, these additions save panel space by reducing the number of modules required.

1797-BCNR is a FLEXEx ControlNet coax barrier module that allows users to connect to FLEXEx ControlNet adapters in hazardous areas via coax directly from the safe area without having to convert to fiber media hubs. This offers architectural flexibility and a more cost-effective method for using FLEXEx in intermediate point count applications.



For more information, visit:

[www.ab.com/io/](http://www.ab.com/io/)

## Module upgrades SCANport-enabled drives to EtherNet/IP

The new Allen-Bradley 1203-EN1 module from Rockwell Automation allows SCANport-enabled drive users to upgrade to EtherNet/IP while maintaining their drives' capital investment. Both new and legacy systems can now be controlled, configured and have data collected over EtherNet/IP.

The module can send and receive drive operating and metering data, provide parameter read/write access and offer additional EtherNet/IP features such as Web-page monitoring and e-mail

notification. Additional benefits are derived from its ability to serve as a second network to an existing control network.

"If an existing Remote I/O System or other network is left in place, the user has the option to use EtherNet/IP to provide a separate means for device configuration and

data collection," said Greg Mears, product manager, Rockwell Automation.

When used with the Allen-Bradley DriveExplorer and DriveTools SP software, the 1203-EN1 allows drive configuration directly over EtherNet/IP via a Web page. The module can also be configured to send a message to user-specified e-mail addresses, including a text message to wireless devices.



For more information, visit:

[www.ab.com/drives/](http://www.ab.com/drives/)

## ControlLogix SOE module is reference of timestamped data

The ability to accurately pinpoint and record faults is critical for utility companies. To address this issue, Rockwell Automation has introduced the Allen-Bradley Sequence of Events (SOE) input module for the Allen-Bradley

ControlLogix control platform.

The SOE module has the ability to timestamp to a per-I/O-point level and discriminate events that occur within 100 microseconds of each other, providing functionality that is unachievable with

standard input modules. Combined with new Allen-Bradley DC power supplies and a global positioning satellite (GPS) module from Rockwell Automation Encompass partner Hiprom, the SOE module is an ideal solution for a variety of power applications, such as utility and substation automation, emergency shutdown systems, energy management and load shedding.

SOE operates in two modes—Coordinated System Time (CST) per point, in which a module provides two timestamps per input unit point, and First In/First Out (FIFO) mode, which can timestamp multiple transactions of any input point and store this data in an on-board buffer.

The SOE-driven solution can give a real-

time reference for all timestamped data in the controller by adding the 1756HP GPS module from Hiprom. This module helps users determine the order of events in their system and correlate those events to a real-time clock.

Companies can also apply a common time base for control components scattered across a wide geographic area. With one GPS module in each remote system, multiple installations can operate and timestamp on the same real-time reference. This is for applications that may need to determine the cause of a power failure or grid collapse.

For more information, visit:

[www.ab.com/plclogic/](http://www.ab.com/plclogic/)





## New CompactLogix controllers offer flexible machine control

Rockwell Automation has added two high-performance controllers to the Allen-Bradley CompactLogix line, increasing the options for end users and OEMs seeking flexible machine control in a compact, space-saving package. The CompactLogix 1769-L32E provides cost-effective EtherNet/IP connectivity, while the CompactLogix 1769-L31 delivers the necessary functionality for stand-alone control.

The 1769-L32E controller is a scaled-down version of the previously released 1769-L35E, creating a more economical solution for less complex applications. It includes I/O memory capacity of 750 Kbytes, with support for 16 local I/O modules. Removable CompactFlash enables fast, portable program archival and recovery options, integrated 10/100 Mbps EtherNet/IP connectivity delivers high-speed data throughput for distributed I/O, HMI and data collection. These features make the L32E controller ideal for material handling, high-speed packaging and

water/wastewater applications.

The second controller, the CompactLogix 1769-L31, brings the next-generation Allen-Bradley Logix platform to a stand-alone controller, expanding features, power and performance with an only modest increase in price over the previously released CompactLogix 1769-L30. L31 has double the memory, double the speed and more backplane throughput than the L30. In addition, the CompactLogix 1769-L31 provides dual serial ports, which allow users to communicate with two different types of equipment.

The CompactLogix 1769-L31 also supports DF1, ASCII and Modbus master and slave protocols. It is ideal for

stand-alone packaging, oil/gas and municipality SCADA applications and HVAC building automation. ■

For more information, visit:

[www.ab.com/plclogic/](http://www.ab.com/plclogic/)



## PowerFlex 40 users gain Ethernet data control

The new Allen-Bradley 22-COMM-E adapter from Rockwell Automation gives Allen-Bradley PowerFlex 40 AC drive users the ability to control, configure and collect data over

Ethernet. The EtherNet/IP adapter sends and receives PowerFlex 40 drive operating and metering data, including alarms, so that users can maximize uptime by reducing the chances of production stoppages.

Enabling the Web option provides additional access through standard PC Web browsers. "The adapter gives users a 'window' into the drive for timely, accurate troubleshooting diagnostics, said Greg Mears, product manager, Rockwell Automation. "With discrete wiring,

users know that a drive has faulted, but the 22-

COMM-E adapter gives users information showing why the drive is faulted or not running and how to begin correcting the problem."

The adapter can be configured via a Web page to send a message to user-specified e-mail addresses, or other wireless devices, for notification of drive alarms, faults, or reset conditions. When used in conjunction with Allen-Bradley DriveExplorer and DriveTools SP software, the 22-COMM-E gives users the ability to configure drives directly over Ethernet. A hyperlink on the 22-COMM-E Web pages can also launch the software tool on the users' PC and automatically connect on-line with the drive.

A "Multi-drive" feature on the adapter allows up to five drives to be accessed as a single Ethernet node. In this configuration, the 22-COMM-E is installed in a PowerFlex 40 drive, and up to four additional PowerFlex 4 or 40 AC drives can be connected over their built-in RS-485 ports. Each drive can be individually controlled, configured and monitored through the single Ethernet connection. ■

For more information, visit:

[www.ab.com/drives/](http://www.ab.com/drives/)

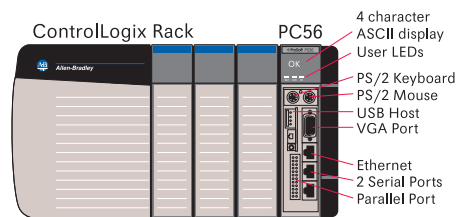


# More than just an industrial PC

The PC56 is an ideal solution for OEM manufacturers and automation solution providers requiring tight integration of their applications into the ControlLogix® world.

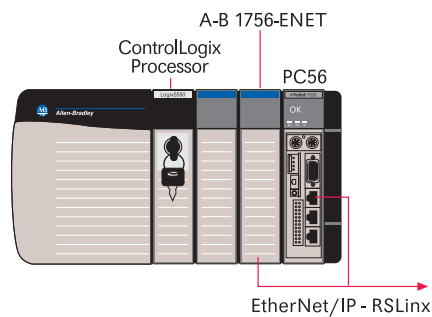


PC56



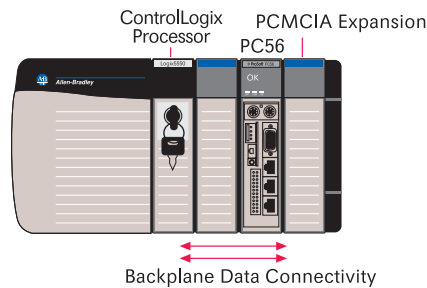
## Stand-alone Industrial PC

- Run typical PC-based applications such as data storage, and custom applications
- Space saving industrial in-chassis design
- Open flexibility to work with or without the ControlLogix processor
- Built-in media storage using compact flash, IBM microdrive connection or IDE hard drive device



## Industrial PC with Network Connectivity

- Run typical industrial applications, i.e. HMI, ladder logic, Windows and IT server applications
- Provides network connectivity, i.e. Ethernet, serial, USB
- Resides in the ControlLogix system



## Industrial PC with Backplane Connectivity

- Provides OEM platform for end user development of process-intensive applications, i.e. turbine control, high-speed data collection, C/C++ application
- Backplane connectivity for data with read/write capability
- Processing power of a PC fully integrated into the ControlLogix environment
- Software Development Kit (SDK) includes API calls to:
  - Backplane read/write
  - User LED
  - 4 character ASCII display
  - 3 position switch
  - Ethernet, Serial & USB ports
  - Data storage, compact flash or drive

## General Specifications

- Space saving, in-chassis, industrial hardware
- Pentium II processor
- Supports Windows (NT, CE, 2000, XP) and DOS environments
- Supports applications using Serial, Ethernet, USB, and parallel physical connections

