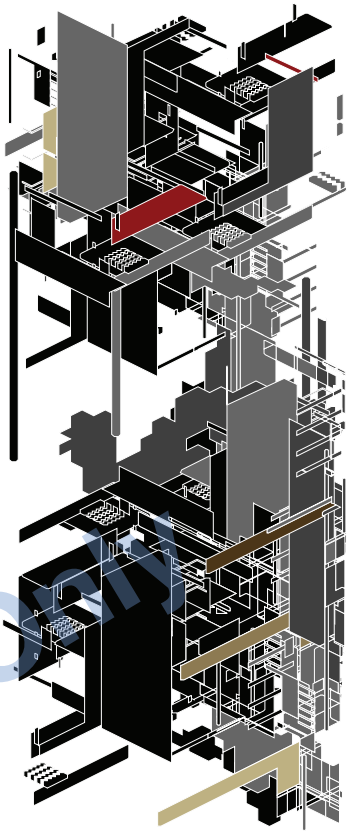
Industry icons: Rockwell Automation

Bolstering efforts for machine builders

Q & A with Christopher Zei, Rockwell Automation

Editor's note: *Rockwell Automation named Christopher Zei VP and general manager of its OEM Business last November. In this role, Christopher leads the company's efforts to help OEMs enhance machine performance and increase their bottom lines by keeping them abreast of new technologies and helping them deliver innovative, best-in-class machine solutions. After his first 90 days in this new position,* Industrial Embedded Systems (IES) *sat down with Christopher to determine what he sees for machine builders in the future.*



IES: ***Why is Rockwell Automation investing in resources to serve the OEM machine-builder market?***

ZEI: The end-user/OEM relationship is changing, and Rockwell Automation is in a unique position to help make that change work for both parties. In the not-too-distant past, end-user engineering departments often dictated automation control system specifications to their machine builders. However, with changing economics and shrinking engineering departments, end users are shifting the responsibility for automation strategies to OEMs. Rockwell Automation's deep experience in automation and unique understanding of the end-user manufacturing environment put us in an excellent position to impact machine-builder success.

Machine builders are in an incredibly competitive environment. They're being asked to deliver machines with higher capabilities at lower costs and to an expanded geographic and industry marketplace. By expanding our global OEM team – a designated group of technical consultants, segment leaders, and business managers – we can help machine builders identify ways to differentiate their machines and deliver them cost effectively on a global basis.

IES: ***How is the Rockwell Automation approach to integrating automation for machine builders different from other approaches?***

ZEI: Unlike conventional automation architectures, the Rockwell Automation Integrated Architecture provides fully integrated, scalable solutions for the full range of control and information disciplines, providing our machine-builder customers with the insight and performance they need to optimize production, respond quickly to end-user demands, and reduce costs. Being "fully" integrated means that our controller family uses a single programming and configuration software package, so machine builders can scale up or down whenever they need to. But being fully integrated also means that you don't need separate controllers for disciplines like motion and sequential control. Our Logix control platform integrates them into a single common environment, which provides better synchronization and ease of operation.

Moreover, OEMs are now being asked to tie their machines closer to upstream and downstream operations, as well as enterprise-wide information systems. The Rockwell Automation Integrated Architecture's information-enabling capabilities are ideal for facilitating this horizontal and vertical convergence.

IES: ***What new automation technologies are you focusing on?***

ZEI: A key focus area that we believe is important to the OEM community is how to apply the right technology directly on the machine so that the footprint is optimized, performance is leveraged, and some cost is driven out of the machine development process. This On Machine strategy of architecting a machine relies not on one component or technology, but a discipline for the entire solution that goes into controlling a machine.

Secondly, one of the key issues facing our customers – both OEMs and end users – is information management. It's more than sending data back and forth; it's taking that data, which is generated in huge volumes in the manufacturing environment, and turning it into useful information for better decision making. We're developing information technologies that help convert data to knowledge so that operators can make changes that affect not only performance, but also predict failure. Using Integrated Architecture, Rockwell Automation combines the Logix control platform and FactoryTalk integrated production and performance software suite into an attractive proposition for OEMs intending to convert manufacturing data into valuable business information.

In addition, we have put a lot of effort into developing technologies that help OEMs reduce design and engineering costs. Reusable code has played a major factor in this effort. We've dedicated considerable resources to Power Programming, or the use of tag-based programming and pre-engineered libraries. This enables OEMs to reuse solutions across multiple machines and applications, allowing for reduced customization and programming time, training costs, and other expenses.

IES: ***Can you share an example of an innovative machine solution your customers implemented recently?***

ZEI: We see examples literally every day. Our recent "Extreme Machine" contest really highlights innovation in automation design and technology as a way of educating the marketplace on the incredible ways that today's contemporary control system technologies can improve machine performance. Last year's Extreme Machine winner, an amusement ride designer called Interactive Rides,

used Rockwell Automation's control solutions to create the X Scream, the world's third highest thrill ride that sits 900 feet above the Las Vegas Strip on the Stratosphere Tower.

The X Scream is an open vehicle that propels riders headfirst 30 feet over the edge of the Stratosphere Tower and dangles them weightlessly above the Strip before pulling riders back in. Interactive Rides based the X Scream's operation on Allen-Bradley ControlLogix controllers, a PanelView Plus operator interface, and redundant I/O that ranges from simple proximity switches to AMCI multiturn resolvers. The ride's primary control component is a hydraulic proportional valve used to rock passengers in a see-saw-like motion. The valve is controlled by the ControlLogix controller via an analog output, while the redundant resolvers are the principal feedback devices for the angle of rotation. Very interesting application.

IES: ***What do you see as the next major trend for machine builders?***

ZEI: We already discussed the On Machine trend. In addition, we're really seeing three major trends in the machine-builder marketplace: globalization, standards, and cost sensitivity.

Many OEMs can no longer survive by delivering machines to a single geographic market – end users' cost, economies of scale, and global strategies don't allow it. If you're a major supplier of packaging systems for the food industry, there's a good chance that your largest customer will be building its next plant in a country other than your home market. That poses some significant challenges for the machine builder, in terms of meeting local electrical standards, spare parts availability, and the ability to provide high levels of service and support.

Globalization is closely tied to another trend we are seeing in the OEM marketplace – a growing emphasis on standards. Machine builders are under increasing pressure to deliver complete solutions that help customers manage industry regulatory requirements and contain safety risks by design. The irony is that these standards can vary from industry to industry, customer to customer, and geography to geography.

At the same time that machine builders are being asked to provide more complete solutions, we're also seeing more cost sensitivity driven by increasing competition. Most successful machine builders actively manage the value beyond their machines' cost. Rockwell Automation estimates purchase price is only 40 percent of the average total machine ownership cost, so many OEMs are investing more in the control portion of a machine because that allows them to demonstrate value through improved engineering, maintenance, training, disposal, parts and service, installation, and downtime. While the competition focuses on one very narrow segment – purchase price – successful OEMs offer value that registers with the customer long after the sale is closed.

IES: ***What are the biggest challenges in system integration?***

ZEI: One of the most common challenges regards manufacturers using disparate control systems throughout the plant. To remedy this, we've developed our Logix control platform to provide plant-wide control across all the major disciplines – sequential, motion, safety, process, batch, and drive systems. Another challenge is preventing programming flaws, which are among the biggest sources of delay in system integration. In fact, programming can consume up to 80 percent of the total integration cost. That means it's also one of the biggest opportunities for improvement.

To help OEMs clearly identify specifications, use more efficient programming approaches, and meet various industry standards, Rockwell Automation created Power Programming, a programming methodology based on industry standards that provides an integrated, modular approach to application development. Power Programming offers OEMs pretested modules of code that incorporate standardized programming methods and best practices acquired through years of experience. OEMs can use and reuse this code, directly resulting in reduced design time (and, consequently, reduced costs) for machine projects.

Power Programming's specifications, HMI templates, and prewritten basic and fault code are designed using current open standards and industry guidelines, allowing OEMs to improve programming speed, flexibility, and accuracy. The programming methodology also contains all the routines and local tags necessary for operation. Any linkage to external tags is done using the RSLogix 5000 aliasing feature, making each program fully reusable without having to rewrite tag addresses.

IES: ***Where do you see growing automation markets and application segments?***

ZEI: In geographic terms, the Asia/Pacific region obviously presents a huge opportunity for growth, but we are also seeing North American-based OEMs serving new applications and new geographic regions – moving beyond the smaller niche markets they once served.

With regard to applications, we anticipate a lot of growth in safety applications because, until recently, manufacturers had to keep their standard and safety control networks physically separate. This was done to move safety messages reliably through the network as quickly as possible. Today, the Common Industrial Protocol gives engineers a safety networking protocol that leverages their existing investment in DeviceNet or EtherNet/IP. By using the same network, machine designers no longer have to invest in additional wiring or purchase specialized safety-specific gateways and bridges. Additionally, the simplicity of using a single integrated network means training and maintenance become easier, design flexibility improves, and of course, safety is enhanced. IES

Christopher Zei *is VP and general manager of the OEM Business at Rockwell Automation, where he leverages the broad range of Rockwell Automation's control system hardware, information software, and service and industry support resources to provide OEM solutions that help increase machine value. Christopher, a 21-year marketing, strategic development, operations, and management veteran of technology-related companies, was most recently the president/CEO of North American operations at Schneider Electric's ELAU group. He holds a BS in Mechanical Engineering from the University of Wisconsin-Madison.*

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