

Emerson Exchange Brings New Products and Innovation in Tough Times

By Larry O'Brien

Summary

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Even in the midst of a recession, some companies continue to invest in new technologies, products, and marketing techniques. Emerson Process Management is one of these companies. Emerson's Global Users Exchange two weeks ago at the Gaylord Palms Hotel in Orlando attracted a crowd of about 1,600 people (a good sign that the travel restrictions in place at the beginning of the year continue to be relaxed). Emerson used the Exchange as an opportunity to introduce several new product and service offerings, alliances, and the long-anticipated, DeltaV Version 11.

Sonnenberg Highlights Continued Investment and Commitment to Process Automation

At the keynote addresses and general session, Emerson Process Management President, Steve Sonnenberg, spoke on the theme of the conference – "Engaging Minds and Amazing Results." No company has been immune to the effects of the recent global recession and, as Steve noted, Emerson's sales this year have been affected. Nevertheless, the company continues to invest in new partnerships, acquisitions, and infrastructure needed to support its clients. Sonnenberg pointed to the recent acquisition of subsea automation supplier, Roxar, and the development of a large new flow lab in Marshalltown, Iowa as evidence of this continued commitment. Roxar is the largest supplier of multiphase metering for the offshore oil and gas industry, while the Marshalltown flow lab will improve Emerson engineers' ability to design and test control valves and instruments for real-world processing conditions, including temperatures up to 1200 degrees F. and pressures up to 3500 psi.

Sonnenberg also announced the release of the new Smart Wireless THUM adapter to wirelessly enable existing wired HART instrumentation, a new



line of wireless valve position monitors, and a new alliance with Meridium, under which the AMS Asset Portal will be built entirely on Meridium technology. This will enable measurement of key performance indicators such as overall equipment effectiveness (OEE).

The Thought Process Behind DeltaV Version 11

The biggest bang at the Exchange, however, was the release of DeltaV Version 11. This release received a lot of buzz right from the early stages, but what Emerson showed us represented fundamental rethinking of how control systems are wired and the elimination of conventional I/O. Sonnenberg began his introduction of DeltaV Version 11 with an overview of many of the same key trends that ARC has been tracking, particularly the ongoing scarcity of skilled workers in the process automation field.

In the world's developed regions, workers are retiring at a faster and faster pace, with very few new graduates to take their places. The Society of Petroleum Engineers, for example, indicates that 40 percent of petroleum industry work force will reach retirement age in 2010. In response to the recent recession, many end users companies have even stepped up their worker reduction programs. In developing economies, there is just a plain scarcity of highly qualified workers. It could take as long as seven years to train a worker to be experienced enough to make the right decisions. As an end user, you have to assume that, in the future, your operators, maintenance technicians, and other employees will not have a lot of process automaton experience. Thus, you will have to make things as easy as possible for them to adapt to their new roles, eliminating unnecessary work and processes along the way.

Soaring project costs are another issue. While the recession has dampened project costs to a certain degree, these remain much higher than just a few years ago. Change orders continue to be a costly problem, and EPCs and design engineers always wait until the last possible moment to hand over the system design. This means that a typical automation project requires a lot of redesign, which often must be done in the field. Conventional I/O does not have the flexibility to accept design changes late in the project. The ability to be less specific in the engineering and design phase can save a lot of money, allowing the user to design with up to 90 percent accuracy, and then make final decisions and design changes at startup. In addition,

- The CHARM provides:
 - Signal Characterization
 - Field wiring Disconnect
 - Circuit protection
 - Current limiting
 - Internal resettable fuse
 - System protection
 - Isolation
 - Non-resettable fuse
- CHARM Module Can be Removed or Inserted Under Power
- Local Power and Health LED (Green/Red bi-color LED on all CHARMS)
- Signal status (Yellow LED on Discrete channels)



CHARMs Plug into the Electronic Marshalling Rack. Each CHARM Has Its Own Characterization, and Allows for Hot Swap.

the system should be built around Human Centered Design principles, so it works the way that people work.

This is the overall concept behind DeltaV Version 11. The DeltaV system's new Electronic Marshalling concept, according to Emerson, has the potential to eliminate thousands of hours of landing I/O. Instead, you add I/O as you need it, one point

at a time. This is done with CHARacterization Modules, or CHARMS. CHARMS turn the idea of conventional I/O on its head.

Instead of conventional wiring landing at a terminal block, wired to I/O modules, which are then wired to controllers – the wiring is connected directly to a DeltaV electronic marshaling rack, a continuous rail onto which CHARM modules are attached. CHARMS can then be characterized however you want them to be and plugged into the rack. CHARMS also have self- diagnostic capabilities.

The uniqueness this solution is that you can put any type of point on the CHARM, and plug it in anywhere in the CHARM module. The approach also makes it possible for any point in the system to talk to any controller in the system. The CHARM is essentially free formatting for the card. This provides freedom from rewiring and significantly reduces the overall level of wiring required for a control system. According to Emerson, this can result in a 50 percent reduction in controller cabinets, a 40 percent reduction in cabinet footprint, and a 90 percent reduction in intra-cabinet wiring.

DeltaV Version 11 should ship in May 2010. The hardware in DeltaV Version 11 is backwards compatible with earlier DeltaV hardware, allowing existing Version 10 users to migrate gradually to Version 11.

Human Centered Design Institute, New Dashboards and Displays

DeltaV Version 11 also incorporates what Emerson calls “human centered design.” In fact, Emerson started its own Human Centered Design Institute a number of years ago and the Version 11 development grew out of this. In addition to starting the HCD Institute, Emerson formed a partnership with the Carnegie Mellon University Human Computer Interaction Institute. Since forming the relationship about five years ago, Emerson has put over 60 design engineers through intensive immersion training in the process. According to Emerson Chief Technology Officer, Peter Zornio, “Not incorporating HCD can make you oblivious to opportunities when it comes to improving work processes. Incorporating HCD into the design process has shown an 82 percent reduction in the time it takes to do routine tasks.” DeltaV and AMS Device Manager Version 11 include over 50 completed and redesigned instrument “Device Dashboard” screens that provide improved usability for various workers in the plant.

Emerson treated the media to a live demonstration of this new technology during a press event called, “Conquering Complexity.” For the demonstration, the company showed a new Emerson fieldbus device dashboard next to one of the current fieldbus device configuration applications. Two volunteers from the media were brought up on stage and asked to navigate through each application to find basic data about the device such as status, diagnostic alerts, and other information likely to be required by an operator or instrument technician. The new Emerson dashboard made this information very easy to obtain, and data retrieval was fairly rapid, even for an inexperienced operator. This demonstration also highlighted the over-engineered nature of many of today’s process automation software offerings, especially for fieldbus applications. A typical device configurator will give you many tabs of data with literally hundreds of options. However, without easy and intuitive access to this data, even routine tasks can become difficult and time-consuming, especially if you are an inexperienced operator or technician.

DeltaV Product Roadmap – The Dave Dietz Fire Hose

Dave Dietz performed his usual excellent job at the DeltaV roadmap session, elaborating on many of the points made by Steve Sonnenberg in the keynote address. Dave elaborated on the concept of human centered de-

sign and the great deal of time and effort the company placed into understanding exactly who uses the DeltaV system, what types of information they need, what their motivations are, and their stake in the organization. With human-centered design, the person interfacing with the system sees only what they need to see, when they need to see it.

Further operational enhancements to DeltaV Version 11 include migration to Windows 7, both for DeltaV and AMS Suite plant asset management software. Emerson has been running Windows 7 in its development labs for some time. This will be released to the general public later in October. Emerson also drove many graphics advancements into DeltaV Version 11. While the company previously focused on grayscale graphics as a way for operators to better identify potential problems in the process, in addition to other problems, Emerson found that the grayscale can make it very difficult to see alerts colored in yellow. The latest human-centered interface allows users to choose from several color schemes, all of which provide critical information to the operator in an effective manner.

Version 11 also includes a concept called Pattern Recognition. An enriched set of out-of-the-box graphical elements, or Dyanamos, allow operators to see things like percent in range indication, PV SP deviations, multipoint trends, flexible tag name displays, interlock conditions, and other bits of information, all while incorporating the improved use of color and control information enabled by the Human Centered Design approach.

DeltaV Analyze now provides ISA 18.2 alarm management capabilities, allowing users to create an ISA 18.2-compliant master alarm database, alarm rationalization, documentation, and management of change. Alarm help, alarm lists, and faceplates indicate if help is available, providing user access to an Alarm Wiki, which captures experienced operator knowledge. Authorized operators can modify the Alarm Wiki and help functions at the operator station.

In recent years, Emerson has placed considerable focused on integrating drives. DeltaV Version 11 continues this trend, providing out-of-the-box diagnostic module templates for Control Techniques drives, Siemens Simocode devices, Allen-Bradley overload relays, and others. Control strategies and device diagnostics are prebuilt, and there is a library of device detail displays.

Dave also provided some insight into DeltaV SIS Safety Instrumented System Version 11. This will allow up to 15 different SISnet domains and up to 100 nodes on an SIS ring. This clearly demonstrates that Emerson can now do big safety systems. Future plans also include providing the ability to create SIS templates on a master system and distribute them anywhere around the world.

Syncade Product Roadmap and Customer Case Studies

Introduced in February 2009, Syncade Smart Operations Management Suite adds a new dimension to Emerson's ability to meet the growing needs of manufacturing operations. Syncade Suite is an innovative operations management solution that provides modular electronic functionality allowing manufacturers to optimize across plant-wide work processes to increase productivity and maximize asset utilization. Syncade includes four major categories of software modules, each critical to effective operations management: Resource Management, Operations Optimization, Quality & Compliance, and Integrated Information.



Syncade Smart Operations Management Suite Extends the Value of PlantWeb Digital Plant Architecture

Listening to Bob Lenich explain the many enhancements in Syncade version 4.3 and plans for Syncade version 5 and beyond was like trying to drink through the same fire hose used in the DeltaV roadmap session. Bob went through the roadmap for each of the thirteen software modules in great detail. We were impressed by how rapidly Emerson responded to customer-requested enhancements.

Message Broker, introduced in mid 2009, is a key new highly configurable software module that enables communications between modules and third-party systems through controlled information transaction management. Message Broker functions include XML formatting, transaction processing, message queue management, error detection and notification, and task scheduling. Some of the available connectors include OPC DA, SAP NetWeaver, Data Stream, Thermo SampleManager, and Juno Systems NLINK.

Syncade's tightly integrated single data model and web-based client functionality provide lower cost of ownership. Its scalable modular approach is designed for faster time to implementation. Tightly and automated integrated documentation and documentation management, plus a unified engineering environment, differentiate Syncade from other production management software.

Savanna River, Genentech, and Eli Lilly provided Syncade implementation case studies. Most impressive was how Eli Lilly used Syncade to implement electronic batch records/tickets across all the company's global API and drug products plants. ARC sees this as one of the most challenging and necessary parts of improving future pharmaceutical manufacturing operations.

Xi Technology Eliminates Security Holes

Emerson debuted a new technology, called Xi, at the Exchange. Part of the new DeltaV release, Xi addresses current OPC authentication and security issues. According to Emerson, since OPC is a COM-based technology, it can present problems for users wishing to access data remotely through plant firewalls. For example, for an operator who wants to check the status of the process remotely via a Blackberry or iPhone. Xi facilitates data exchange between the control system and the business system and supports the same OPC servers that Emerson already supports. The difference is in the underlying protocols used to control the flow of information. Xi uses the firewall-friendly HTTPS protocol. This does not affect Emerson's support for OPC or OPC-UA. Many other suppliers also support Xi technology, including OSIsoft, Mynah, and InduSoft.

Redundant Wireless and.....Wireless for Control Applications?

Emerson remains a leader in wireless technology for process automation. Over 1000 sites globally have Emerson Smart Wireless. In addition to releasing the long-anticipated Smart Wireless THUM adapter, Emerson made several announcements related to increased wireless robustness through redundant wireless solutions. Basically, Emerson took the existing 1420 wireless gateway and split it into two pieces - the Smart Wireless Remote Link and DeltaV S-series Wireless I/O. The Smart Wireless Remote Link can be deployed in hazardous Class 1 Div 1/Zone 0 environments, while

the wireless I/O and Remote Links are available in redundant configurations with redundant power and communications. The company also announced a new 4300 Series wireless valve position sensor that can be mounted on existing manual valves.

With new redundant wireless I/O, power supplies, and communications; can wireless for control applications be far behind? Emerson believes that up to 44 percent of all current process inputs can be made wireless. While just about all wireless installations today are for monitoring applications, ARC believes that wireless for control will become a reality in the future. Some Emerson customers are already experimenting with it.

Bob Karschnia also handed out the annual Smart Wireless Innovators awards. This year's Most Innovative award went to Cal Portland Cement Company, which used Smart Wireless devices to monitor temperature on a rotating kiln to help meet NOx emissions standards. There were two co-winners in the business results category. Steel product manufacturer, Severstal Wheeling, has an extensive wireless installation, that provided \$300,000 in production gains, saving around \$100,000 in installation costs. CHS Refining in Laurel, Montana implemented a refinery-wide installation of Smart Wireless to improve tank level accuracy and reliability. CHS achieved \$500,000 in installation costs and achieved improved plant safety.

Emerson and Meridium Combine Asset Management Expertise

Emerson Process Management and Meridium announced a unique partnership to deliver enhanced asset management capabilities to their customers in the process industries. By combining the power of Emerson's PlantWeb predictive intelligence with Meridium's advanced analytics and decision support technology, customers can now more effectively manage and maintain their most critical production assets.

Emerson and Meridium worked together for several months to develop the new AMS Suite: Asset Portal v4.0 powered by Meridium. The new product provides real-time integration to other AMS Suite applications to link asset diagnostics with business metrics and key performance indicators (KPIs). Built upon Meridium's Asset Performance Management (APM) Framework, the AMS Asset Portal v4.0 includes pre-defined analysis, views, and reports of AMS Suite information. Powerful query, reporting, and graph-

ing capabilities enable users to perform custom analysis. Select Meridium application modules are also available for use with AMS Asset Portal. These options provide advanced metrics and scorecards, management of data collected using handheld devices, and integration with computerized maintenance management systems, such as SAP PM and IBM MAXIMO.

Emerson also announced a PlantWeb Services offering to cost-effectively design, implement, and quantify the business benefits of asset strategies for users. Meridium's best practice deployment models are available as part of the PlantWeb Services offering. The solution extends to mechanical equipment, instruments, control valves, electrical switchgear, process equipment, fixed assets and SH&E (safety, health and environmental) assets.

Conclusion

Emerson has taken a major step forward with DeltaV Version 11. It has clearly shown its long-term commitment to the process automation business and its willingness to invest in new technologies, products, partnerships, and acquisitions. Emerson places a lot of emphasis on technology, but it does so in the context of the business value proposition it can provide customers, exemplified by its focus on human-centered design principles.

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