The Connected Enterprise Helps Rockwell Automation Optimize Facilities and Supplier Networks for Increased Visibility and Better Decision-Making

New approach enables common manufacturing platform and standardized performance measurement across all plants

Challenge
- Implement flexible and agile global MES for diverse product portfolio and variety of manufacturing processes
- Replace individual ERP systems and custom application with a standardized system that spans all plants

Solutions
The Connected Enterprise
- Rockwell Automation integrated control and information portfolio—including FactoryTalk® ProductionCentre® software and FactoryTalk® VantagePoint® enterprise manufacturing intelligence (EMI) software—enables a common manufacturing platform, real-time performance visibility, and better decision-making.

Results
- Lower Total Cost of Ownership
  - Reduced inventory days nearly one-third
  - Captured 30 percent capital avoidance
- Faster Time-to-Market
  - Improved supply-chain delivery to 96%
- Improved Performance
  - Increased productivity 4 to 5% per year
- Enterprise Risk Management
  - Improved on-time delivery to 98%

Background
Rockwell Automation is the world's largest company dedicated to industrial automation and information solutions. Whether working with a highly recognizable food producer, major oil processor or top automaker, Rockwell Automation helps companies improve processes, reduce inefficiencies and increase productivity.

Behind its support for some of the world's most recognizable manufacturers and industrial operators, however, Rockwell Automation is also a manufacturer. About one-third of the company's 22,500 employees work at its 20 global manufacturing plants and manage a product catalog of nearly 400,000 SKUs. The company's average product has a 20-year life span, and the average order includes 200 line items, with product delivery times ranging from a few days to several months.

Rockwell Automation harnessed the power of its own information in a way that could help increase visibility into these complex production environments, support a common manufacturing platform, and enable a restructured supply chain. The best way to accomplish this was to leverage its integrated control and information portfolio to converge its information technologies (IT) and operational technologies (OT) into a single, globe-spanning system. The system would allow an unprecedented level of connectivity, communication and collaboration across all locations.
**Challenge**

Similar to other manufacturers with large product portfolios and a global manufacturing presence, Rockwell Automation used a wide range of manufacturing processes at its different plants. Each plant ran its own enterprise resource planning (ERP) system, with none of them talking to each other, while also using custom applications that monitored and analyzed machine data in different ways.

Rockwell Automation also wanted to establish a fully connected system that could be used to track and swiftly respond to issues that might occur anywhere in the world. That could include responding to a surge in demand at one facility by ramping up production at another nearby facility or adjusting to a disruption with one supply network partner by working with another.

The company also sought to reduce the number of applications registered through its business process mapping. The large number of products and parts being produced had led to the existence of hundreds of applications. The wide variation in data and I/O points increased not only the risk of error but also the time needed to understand collected data.

“The challenges that we faced are shared by many global manufacturers,” said John Nesi, Vice President of Market Development. “We knew that an enterprisewide strategy connecting our plants would give us better visibility into our operations, improve performance measuring and comparisons among plants, and support better decision making using good, indisputable data.”

**Solution**

Rockwell Automation has been on a decades-long journey to enable better decision making using enterprise data. Driven by a standard and open Ethernet network architecture that utilizes the Internet Protocol, and boosted by key enhancing technologies such as the Internet of Things, The Connected Enterprise is helping the company evolve and advance that pursuit.

The Connected Enterprise unifies IT and OT systems, providing new opportunities to access, monitor and capitalize on operational, business and transactional data across a manufacturer’s enterprise.

“We developed a five-year plan for the complete restructuring of our facility and supplier networks at the onset of this project,” Nesi said. “We also created a mutually agreed-upon playbook from which the plan would be executed, and we put goals in place to ensure we either maintained or improved the quality levels that our customers expected.”

Establishing a single connected system across the globe necessitated that Rockwell Automation change its network infrastructure approach. The company decided to implement EtherNet/IP™, a standard and open network infrastructure that enables secure interoperability between corporate IT networks and industrial applications.

The company also replaced the many different ERP systems dispersed at its factories around the world with a single ERP system that could easily manage its multiple systems across its global facilities. The new standardized system delivers processes and points of reference for consistently measuring performance across all facilities.
In tandem with the new ERP system, Rockwell Automation rolled out a new manufacturing execution system (MES) to standardize processes across all of its production sites. The company chose to use its own FactoryTalk® ProductionCentre® software, which uses an extensible work-flow engine and operational model that can grow with operations. The software's high flexibility also fits well with the diverse manufacturing styles needed to produce the company's broad portfolio of products, which include standard, configured-to-order and engineered-to-order products.

Rockwell Automation also deployed its FactoryTalk VantagePoint® enterprise manufacturing intelligence (EMI) software, which tracks and records data, and can help pinpoint production trends.

The combined MES and EMI system brings information from hundreds of applications into one centralized location. It gives workers understandable and actionable information that they can use to make improvements, and enables real-time analysis of key performance indicators, such as quality, production performance and work-flow management.

**Results**

Rockwell Automation is still in the process of deploying The Connected Enterprise to all of its plants, but the company has experienced numerous improvements to date where the new system has been implemented.

The company has lowered its total cost of ownership, reducing inventory days from 120 to 82 and capturing 30 percent in annual capital avoidance. It has also accelerated its time-to-market, with supply-chain deliveries now up to 96 percent and lead times cut in half. Additionally, the company estimates it has experienced a 4 to 5 percent annual improvement in productivity.

Funneling data into and out of the ERP system via the MES platform has continually reduced issue resolution times and supported leaner operations. As a result, an improvement in output efficiencies was realized, which are critical to any manufacturer’s profitability.

The company has also passed The Connected Enterprise benefits on to its customers. On-time delivery has increased from 82 percent to 98 percent, and parts-per-million defects have been cut in half through improved quality.

Rockwell Automation plans to roll out the new system to 95 percent of its facilities in the next two years. Even then, the company will still view The Connected Enterprise as an ongoing effort that will require new goals and a commitment to continuously improve.

The Connected Enterprise is the industrial revolution of the 21st century. It offers numerous competitive advantages that will be imperative to manufacturers in the coming years, including uncovering new opportunities for improving global production, supporting sustainability efforts and increasing agility.

The results mentioned above are specific to the Rockwell Automation use of products and services in conjunction with other products. Specific results may vary for other customers.