

## Solutions

- **FactoryTalk™ Data Platform**
  - Distribute critical plant floor data throughout the facility quickly and easily.
- **RSBizWare Historian™**
  - Provides Web-based production reports from current and historical information sources.
- **RSBizWare PlantMetrics™**
  - Provides Web-based machine efficiency reports from current and historical information sources.
- **RSView® Supervisory Edition**
  - Establishes a centralized location for screen design, delivering those screens from a single server to each computer on the system.

## Results

- **Faster Response Time**
  - Standard engineering allowed EAGLE to create large system in a relatively short amount of time.
- **Reduced engineering time**
  - Controls engineering time was reduced by 12 percent for this system.
- **Increased flexibility**
  - EAGLE is now quoting systems that are more flexible for its customers, using standard engineering to provide a more reliable, higher-performing system.
- **High return on investment**
  - Using this method of system engineering, EAGLE'S customers enjoy the benefit of an overall lower cost system with the benefits of:
    - Reduced risk
    - Lower warranty cost
    - Reduced scrap production
    - Lower product recall issues
    - Increased efficiency

# EAGLE Technologies Group Integrates Advanced Data Management and Control Technology from Rockwell Automation to Streamline System Engineering by 12% and Shorten System Delivery by at Least 4 Weeks

Standard engineering reduces design and installation time while making maintenance and troubleshooting easier

## Background

EAGLE Technologies Group, an OEM / Systems Integrator company, builds custom assembly and test systems for a variety of industries ranging from automotive to consumer goods to pharmaceuticals. These systems are used by manufacturers to build and test their products. By incorporating testing throughout the manufacturing process, companies can ensure that each product meets its own strict quality specifications.

At various stages of the end user's assembly, the components are tested and the data is logged and tracked throughout the system. Layers of data are added throughout the assembly process, even during the final phases of assembly. This tracked data is then downloaded to a database that stores part origination information. It is important for the manufacturer to capture every piece of data relating to how a part was built. In the event of a product recall, this information can help define the group of products to be recalled. Through this data, EAGLE's customers can also identify additional areas of cost-savings, such as scrap reduction.

"The key here is being able to reprocess parts if they are misassembled rather than just throw them away," said Mike Zimanski, Project Manager, EAGLE. "So we build the methodology of how to reprocess defective

parts into our designs, which helps reduce overall scrap."

## Challenge

One of EAGLE's customers needed a large new assembly system that would consist of almost 800 linear feet of conveyor with approximately 20 automated work cells. The customer also had a tight timeline — it needed the new system delivered in 28 weeks. Typically a system of this size can take up to 32 weeks to complete.

Though challenging, EAGLE felt it could meet the tight deadline on this project if it could reduce the engineering time. EAGLE asked Rockwell Automation to review the system specifications and identify opportunities that would help it complete the system within the allotted timeframe. Rockwell Automation engineers met with EAGLE, where both reviewed the concept to make sure the design would meet the customer's needs, both now and in the future.

Working together with input from the customer, Rockwell Automation and EAGLE created a system that required more investment in hardware and software up-front, but would ultimately reduce the amount of time spent engineering the system. In essence, this project established a new engineering standard for EAGLE that it could apply to future system designs.

Within six weeks of the project kick-off, Rockwell and EAGLE created the entire system specifications outlining the specific type of data to be collected, and how that data would be protected and used. Typically it would take EAGLE 12 weeks to produce similarly complex specifications.

## Solution

EAGLE integrated a number of Rockwell Automation products into the system. The system's communications structure utilizes the Rockwell Automation FactoryTalk™ platform, combining a flexible architecture with a common set of services and software modules to create a seamless information flow across the enterprise. This allows EAGLE to distribute critical plant-floor data throughout the facility quickly and easily. This data sharing ability came in handy during the project engineering, which took place simultaneously in two separate facilities, using a VPN connection on EAGLE's networks.

EAGLE also applied Rockwell Software RSSQL™ as a transaction manager, serving as the engine that moves data between the control system and the database. Rockwell Software RSBizWare Historian™ provides the production reports to the customer through Web-based reporting. These tools allow the customer to see part and process characteristics as they are happening. Additionally, the customer can access current and historical information on machine performance through Rockwell Software RSBizWare PlantMetrics™, to help the customer achieve the system's maximum efficiency.

EAGLE used five Allen-Bradley ControlLogix™ processors to share tag database information across the backplane. With a typical system of this size, a large number of network connections would go

into the processors, slowing communications. To avoid this bottleneck, EAGLE used Rockwell Software RSLinx™ Gateway to split the communications workload and used a single connector to each ControlLogix processor. Allen-Bradley Ultra3000™ digital servo drives and MP-Series motors provide the new system with high-performance motion control functions; the servo programming is performed in the controller, eliminating the need for integrating additional motion software. The drives are connected via SERCOS fiber optic communications, which deliver real-time information about any changes in process characteristics, so operators can adjust the drives accordingly.

Operators view this data via 22 Allen-Bradley VersaView® industrial computers stationed throughout the system. Equipped with Rockwell Software RSVIEW® Supervisory Edition HMI software, the computers feature operator-friendly touch-screen displays with few moving parts, making them ideal for use in a variety of demanding plant-floor environments.

RSVIEW Supervisory Edition provides the capability to establish a centralized location for the screen design, which EAGLE used to deliver each screen from a server rather than from each computer. Additionally, RSVIEW Supervisory Edition's editing capabilities allow an administrator to edit screens while the system is running, thereby eliminating a major cause of downtime.

For enhanced operator safety, EAGLE added lifelines around the entire perimeter, and wherever operators enter a robotic cell, Allen-Bradley light curtains and motion cells are used to protect them from the robot's moving parts. Every operator cell on the system is controlled by an Allen-Bradley safety relay that's networked back to a main

safety relay, allowing a user to stop any one cell without halting the entire process.

## Results

EAGLE delivered the new system in 28 weeks, right on schedule. With the standard engineering developed during the system's design, EAGLE now estimates it could create a similar system in even less time – approximately 22 weeks.

Standard engineering also was critical to reducing the system's design time. For example, controls engineering time was reduced by about 12 percent for this system, a number that EAGLE expects to reduce even further, perhaps as much as 20 percent.

Installation time also was significantly reduced by an estimated 10 days, thanks to the up-front engineering by EAGLE and Rockwell Automation. Up-front engineering also allowed the customer to complete user training before the equipment was actually installed on site. The ability to put trained employees in place right away saved another 3 weeks in system development time.

With the success of this project, EAGLE is now quoting systems that are more flexible for its customers while continuing to meet its strict standards of quality. By standardizing with reusable engineering, EAGLE can provide its customer with a more reliable, higher-performing system at a lower overall cost.

*The results mentioned above are specific to EAGLE Technologies Groups use of Rockwell Automation products in conjunction with other products. Specific results may vary for other customers.*

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