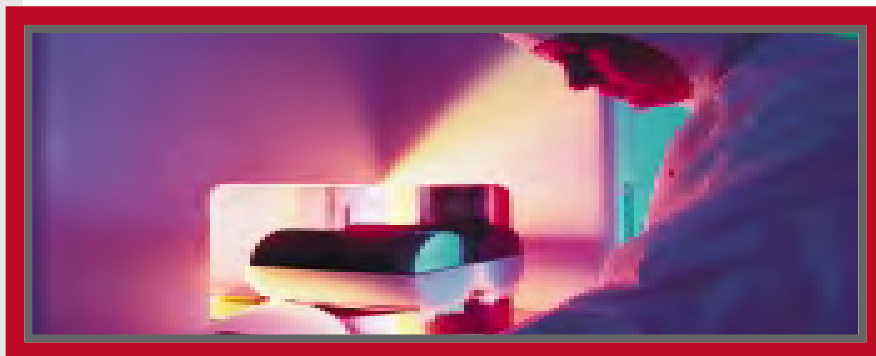


# VALUE PROPOSITION

## SEMICONDUCTOR



"With FactoryTalk ProductionCentre, the production information is available on-line and the integrated datamart gives us the capability to do the necessary complex analysis quickly to solve problems faster."

– Vice President of Operations,  
Reticle and Photomask  
Inspection Division

ROCKWELL AUTOMATION HELPS LEADING SEMICONDUCTOR EQUIPMENT MANUFACTURER TO MANAGE "eQUALITY" AND PRODUCT LIFE CYCLE MANAGEMENT

**The world's leading supplier of process control and yield management solutions for the semiconductor and related microelectronics industries had revenues in 2000 over \$2 billion and 6400 employees worldwide.**

The company's comprehensive portfolio of products, software, analysis, services and expertise is designed to help semiconductor wafer manufacturers manage yield throughout the entire wafer fabrication process, from design to final yield analysis.

This manufacturer offers products and services that are used by every major semiconductor manufacturer in the world. To support its growing global customer base, the organization maintains a significant presence throughout the United States, Europe and Asia, with local sales and applications engineers, customer and field-service engineers and yield-management consultants.

### THE OPPORTUNITY

The manufacturer wanted to leverage the Web to deliver the highest quality equipment and improve product life-cycle management. Its vision was an "eQuality" system to track test results, non-conforming material and SPC trends and use this information to reduce customer defects and improve manufacturing quality. To achieve its goals, they needed deep unit-level tracking capabilities and detailed "as-built" configuration information stored electronically. It would also need visibility of this data on-line.

**“A manufacturing engineer using a paper-based shop floor system could spend days or weeks compiling and analyzing production information about a complex quality problem.”**

– Vice President of Operations,  
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The company looked for a Web-based solution that was easy to use, had a GUI interface, and had wizards for easy customization by end users. It also wanted a solution that would integrate easily with its enterprise-wide systems, including Oracle (ERP), Clarify CRM application, Firepond (Configurator), and product content management system. With an eQuality system in place, the manufacturer expected to improve quality control, improve process control, increase technical data collection, manage product configuration on-line, and improve corrective action capabilities.

## **ROCKWELL AUTOMATION DELIVERS**

The company partnered with Rockwell Automation to achieve eQuality or a Web-based system for tracking quality information to resolve production and field issues faster and to improve unit and product life-cycle management. The company/Rockwell Automation team targeted lines in the Wafer Inspection Group (WIG) and Reticle and Photomask Inspection Division (RAPID) for the initial implementations, which took 12 weeks.

By implementing FactoryTalk® ProductionCentre by Rockwell Automation, the company replaced the paper-based traveler, device history records, and several homegrown quality systems that were on its manufacturing floors. FactoryTalk ProductionCentre integrated with the Oracle ERP system to pull information as needed. The eQuality system provides the company with the manufacturing information needed to improve customer and supplier quality and to decrease cycle time by reducing delays in production. The information collected by the FactoryTalk ProductionCentre system will also help when the company applies for ISO 9002 certification.

FactoryTalk ProductionCentre also helps the company to better leverage knowledge workers such as product, manufacturing, and field service engineers. “A manufacturing engineer using a paper-based shop-floor system could spend days or weeks compiling and analyzing production information about a complex quality problem to decide whether to make a supplier, product or process change and even more time to execute that change in the supply chain and the field,” said the vice president of operations, Reticle and Photomask Inspection Division. “With FactoryTalk ProductionCentre, the production information is available on-line and the integrated data mart gives us the capability to do the necessary complex analysis quickly to solve quality problems faster.”

FactoryTalk ProductionCentre frees knowledge workers from tedious and inefficient time spent collecting paper, enabling them to concentrate on higher-level tasks such as problem solving and improving product quality and performance.

“Designing and constructing capital equipment for the semiconductor fab is a critical factor in semiconductor manufacturing. As such, the quality of that equipment — down to the smallest detail — is extremely vital,” said a vice president of Market Research and Analysis, Plant-Wide Research Group. “By implementing FactoryTalk ProductionCentre and making effective use of Web-based Integrated Plant Systems, we are ensuring that our products will measure up to the high standards of quality required in semiconductor production.”

“By implementing FactoryTalk ProductionCentre and making effective use of Web-centric supply chain manufacturing, our company is demonstrating that its products can measure up to the high standards of quality required in semiconductor production.”

– Vice President,  
Market Research and Analysis,  
Plant-Wide Research Group.

## STRATEGIC BENEFITS

### **Web-based eQuality System**

The organization now has a Web-based eQuality system installed on two manufacturing lines of its complex semiconductor capital equipment. Moving from a paper-based system to a Web-based Integrated Plant System provides many benefits to the entire corporation.

**Quality Control** – Using FactoryTalk ProductionCentre, the company looks to improve quality control by 1.5% via statistical process control (SPC) and consistent process and material “nonconformance” tracking. The manufacturer replaced cumbersome paper-based systems.

**Process Control** – The company uses on-line checklists and procedures that help operators follow selective enforcement correctly. Process engineers can quickly access and monitor the information in real time to improve process control.

**Corrective Action** – Many facets of the Corrective Action Request (CAR) system have been automated with internal and external suppliers, reducing the process time by 50%.

### **ISO 9002 Certification** –

By having an automated data collection system in place and on-line control of processes, procedures, and operators, FactoryTalk ProductionCentre will greatly simplify the effort needed to provide documentation for ISO 9002 certification.

### **Leveraging Knowledge Workers**

Technical data collection through on-line input of test results automates the data-collection process. Product, manufacturing, and process engineers can now devote their time to analysis and problem solving, rather than searching and collecting data from paper systems and file drawers. Online access to production data saves several days of time spent gathering data. Now they have integrated data mart enabling the sophisticated analysis necessary to solve problems related to complex equipment.

### **Product and Product Line Life-Cycle Management**

Tracking the life history of units and product lines for manufacturing and warranty improvement efforts across functions and companies provides invaluable information for managing products and product lines. By using such data, cycle times for new product introductions can also be greatly reduced. This information comes from unit-level tracking of “as-built” and “where used” information by serial numbers, lots, quality tests, operator, and machine.

### **Delivering Operational Improvements**

**Speed** – On-line configuration of electronic travelers, rather than paper travelers, gives manufacturing engineers the tools and flexibility to create travelers in minutes, having electronic versions to copy, store, and modify easily for future use.

## **Cycle Time Reduction –**

FactoryTalk ProductionCentre provides the company with real-time visibility into production delays that increases speed to resolution. Repetitive product and quality issues and production delays are highlighted, which promotes quick and proactive identification and the resolution of issues.

**Field Service –** With sales and field services offices around the world, having on-line configuration records available 24/7 is extremely valuable to field service engineers. Now they can quickly identify key critical components built into the equipment using a Web browser, so the task of problem solving can begin immediately.

**Collaboration –** FactoryTalk ProductionCentre provides visibility and distributed application functionality via the Internet to customers, sales people, contract suppliers, field engineers, and other employees.

## **Return on Investment – Payback in Months**

**Quality –** The new eQuality system is projected to reduce recurring quality issues by 25% to 50%.

## **Cycle Time Reduction –**

FactoryTalk ProductionCentre helped reduce troubleshooting cycle time by 40%.

## **Administrative Cost –**

Administrative costs in engineering and field service were significantly reduced with on-line access to information.

## **FUTURE PLANS**

### **Managing Outsourced**

**Manufacturers –** In the future, production managers will monitor the delivery, quality and process capabilities of critical system providers and outsourcers who insert production information directly into its system around the world. The use of electronic and on-line communication will greatly reduce administrative costs and manual reporting procedures with manufacturing partners. New partners can be brought on quickly by distributing FactoryTalk ProductionCentre via a Web browser. Comparison of performance between manufacturing partners will be facilitated to help manage these relationships more effectively.

### **New Product Introduction**

**Process –** The company can capture quality, production, and cycle-time information from the prototype, pre-production, and early production phases in manufacturing. The company will then be able to leverage the analytical capabilities in FactoryTalk ProductionCentre to make faster, data-based decisions on product and process changes to substantially improve quality, cycle time, and time-to-full-production ramp on new products.

*The results mentioned above are specific to this company's use of Rockwell Automation products in conjunction with other products. Specific results may vary for other customers.*

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