

NEOMATRIX

CASE STUDY

Pharmaceutical Company Invests in a Fully Distributed Control System to Quickly Introduce New Products into Manufacturing

NeoMatrix utilized Allen-Bradley programmable automation controllers (PACs) and Rockwell Automation's FactoryTalk® Batch system to provide a flexible, efficient solution.

A leading U.S. pharmaceutical company with offices throughout the United States and 17 other countries, the company wanted to expand its capabilities in its purification suite from "islands of automation" to a distributed controls network.

CHALLENGE

The company's existing process control systems were designed to manage and control a single piece of equipment. Over time this architecture created challenges for recipe management and communication with other process systems. To rectify this situation and avoid ongoing issues, the company wanted a new industrial controls system that would:

- Simplify the color palette used for the HMIs;
- Utilize Rockwell's FactoryTalk Batch for recipe creation and management;
- Be scalable to other pieces of equipment in the suite and to similar equipment in other suites;
- Minimize the use of scripting behind objects on the HMI screens;
- Provide a robust high availability solution; and
- Provide flexible processes controls for operations to allow configuration changes by Process Engineering.



SOLUTION

NeoMatrix designed a new control system utilizing Allen-Bradley programmable automation controllers (PACs) and Rockwell Automation's FactoryTalk® Batch v14 system for one of the company's manufacturing facilities. The FactoryTalk Batch system utilizes ISA-S88 compliant code and directly integrates with a new FactoryTalk® View SE v12 HMI/SCADA for user interaction and alarm management.

NeoMatrix used Allen-Bradley 1756-L75 PACs for the local process equipment controls:

- PhaseManager phases were used to integrate directly into FactoryTalk Batch. Phases were designed to perform small tasks and to be reused multiple times per operation. With programmed phases, process engineers can now more quickly and easily create a process for a product without having to change the PLC code. For the company, this standard framework for configuring and sequencing phase state logic positions them for future scalability, while lowering user cost.
- NeoMatrix used SequenceManager equipment sequences to integrate directly into FactoryTalk Batch, providing a more robust solution in the case of a network outage. Because the PLC sits next to the equipment, if the server connection goes down, the logic is safe and the operation can complete without interruption. Overall, the SequenceManager solution allows operators to configure, view and obtain critical information about batch sequences stored in the controller, increasing visibility and accessibility to all stages of the production process.

FactoryTalk View Site Edition for HMI/SCADA Controls

FactoryTalk View Site Edition was already widely used on site, making it an easy choice for the HMI/SCADA software. Graphics were built to control the purification equipment utilizing standardized objects both built in house and from the PlantPAX® distributed control system library. Along with standard PLC code, this reduced development and validation time.

FactoryTalk Batch

On top of the HMI, FactoryTalk Batch provides recipe management and control for ISA-S88 batch control. Recipes are stored in a single SQL database for easy backup and management. The latest version provides a pre-built control object that integrates seamlessly into FactoryTalk View for creation of Control Recipes to be executed on process equipment.

Flexible Operations

Small re-usable phases were designed to allow Process Engineering to make changes to an operation without making a detailed coding change. By utilizing smaller phases, they were easily validated and re-used for all 24 operations.

Simplified HMI Graphics

HMI graphics were developed to only utilize color when conveying information that requires the operator's attention. Parts of the High Efficiency HMI Standard, ISA-101, were used for the design.

High Availability

Redundant servers were implemented at every point for FactoryTalk Batch, FactoryTalk View HMI Server and FactoryTalk View HMI Clients and Microsoft SQL Server. Utilizing SequenceManager equipment sequences keeps operations running during an unplanned network outage.

RESULTS

This pharmaceutical company now has a fully distributed control system with batch recipe management which allows for flexibility when quickly adapting to new products introduced to manufacturing. This solution allows for the centralized location for all GMP data related to this system, which provides for easy management and compliance for 21CFRPart11 and data integrity requirements. While the current deployment is a subset of the overall manufacturing, the solution allows for the full conversion of the manufacturing site to occur over time to minimize any impact to existing manufacturing operations.

The full system upgrades to improve flexibility and efficiencies can be done without negatively impacting the production from the site. The operations team was impressed with the new graphics style and found the graphics easy to follow and use for quality and efficient production. Process Engineering found the flexibility to modify operations without an automation engineer to be very efficient.



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