

Major Pharmaceutical Company Uses Water Distribution Monitoring System to Effectively Manage Resource Usage

MAVERICK created central monitoring system algorithms to distribute pure water to consumers at the exact specifications needed.

Main Objective

A major pharmaceutical company needed to control and direct two pure water ingredients that support a number of manufacturing operations and control overall water purity.

Customer Results

MAVERICK installed a control and distribution management system which successfully meets each consumer's needs. Purified and injection water is readily available without a capital investment in additional generating capacity.



Application Description

In pharmaceutical manufacturing, the most costly ingredient is typically the purified water used in the manufacturing processes, even if it is not an ingredient in the final product.

The pharmaceutical company planned to add three storage tanks to support new production processes, but demand patterns suggested new generating capacity might also be needed.

MAVERICK's challenge was to develop a new prioritization system to eliminate the need for new generating equipment.

The MAVERICK team met with all consumers involved to ensure the new solution addressed specific water needs.

MAVERICK developed algorithms based on priority logic to evaluate the needs of the consumers competing for the available supply. These algorithms measure current supply levels and determine if the demand is compatible with the time available to resupply a given tank.

The monitoring system considers the percentage of production flow and length of time to divert water to a tank.

The system constantly monitors the relative capacity and availability of each tank and meters out the water (in separate loops for purified and injection water) to various holding tanks, day and night.

A PLC network interface technique enables the system to interface with existing controllers and minimize downtime.

The central system monitors and controls the consumption of each water resource and provides consumers a monthly report.

New system visibility allows consumers to reduce waste, identify losses and repair problems.

The control system automatically and continuously monitors for total organic carbon (TOC) and conductivity. Out of range levels send an alarm to operators.

The flexible monitoring system allows for the addition of new elements, easy reconfiguration and adaptability to consumer priorities. Additional benefits include a solid database of consumption information, centralized water reports and realistic cost allocation.

The MAVERICK Difference

MAVERICK balanced production and demand with a complex-needs algorithm which resulted in a solution to provide efficient control and eliminated the need for more investment.



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Large Pharmaceutical Company Generates FDA-Compliant Alarm Summary Reports using the OSIsoft® PI System

Due to its high data reliability and availability, OSIsoft PI is the historian of choice for most large pharmaceutical companies. Their need to produce context-specific reporting requires a robust data infrastructure as well as data abstraction using the Asset (AF) and Event (EF) Framework.

Main Objective

The system showed performance problems with reoccurring time-outs of key data interfaces and hundreds of non-functioning tags due to equipment decommissioning. The objective was to stabilize the system and layout the foundation for future developments. To do this, the project was organized into three phases: interface and point remediation, AF / EF configuration and knowledge transfer.

Customer Results

The MAVERICK team resolved all interface issues and remediated stale points using an automated process. The alarm report is now being used to create weekly summary reports. During the knowledge transfer, the team installed a monitoring system to reduce the maintenance tasks and improve reliability going forward.



Application Description

Phase I: MAVERICK identified the root causes for the interface malfunctions by setting up monitoring on PI-OPC, PI-TCP, PItoPI and PI-EMDVB interfaces. The result showed that excessive polling of network monitoring interfaces caused connection time-outs. The scan rate was reduced and the system was then readily stabilized.

An automated process identified stale tags. The process reviewed all tags by key metrics such as write speed and last good value recorded.

The MAVERICK team reviewed the point analysis review with the controls engineering group. Stale tags were cross-referenced to the configuration in DeltaV.

MAVERICK provided Excel templates for the operational verification of point changes and used work orders as the change order process to document the modifications in the system.

The team completed Phase I ahead of schedule, and the analysis discovered all questionable PI points and interface problems.

Phase 2: In this phase, the team installed ISA-95 compliant AF templates and ISA-88 compliant EF templates. These templates are standard templates provided by MAVERICK and allow seamless integration of PI data in the Manufacturing IT environment.

In collaboration with the customer, the team developed an initial equipment structure, which was reviewed with operations.

Phase 3: During the knowledge transfer phase, MAVERICK set up error log monitoring on all interface nodes. This will reduce the maintenance efforts and, over time, lead to a more robust system.

The main operations in the project were packaged in a C# library and integrated into Excel as an Add-In feature. This includes tag analysis, validation and alarm reporting.

The MAVERICK team trained all engineers and managers on ISA standards and how they apply to OSIsoft AF and EF, best practices to achieve high data quality, and fast and effective operational verification of PI points.

The MAVERICK Difference

By automating PI server maintenance operations and providing templated solutions for AF and EF, MAVERICK provides fast, consistent and standardized PI installations and configurations. As a result, applications such as alarm reporting are easy to maintain and extend.



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High-Performance Enzyme Manufacturer Partners with MAVERICK for a DeltaV Renovation

The manufacturer's pilot plant was controlled by a proprietary system which limited modifications and new product development. They partnered with MAVERICK to define their existing processes. MAVERICK brought the customer closer to a future upgrade of their DeltaV system.

Main Objective

The customer needed to define the processes at their pilot plant. The definition would facilitate a renovation of the customer's DeltaV DCS system. A DeltaV upgrade was needed for research and development of new product processes. Processes proven at the pilot plant could migrate to other global production facilities.

Customer Results

MAVERICK provided the manufacturer with a detailed user requirement specification (URS) and functional requirement specification (FRS) for their existing processes using the ISA-88 batch standard. The results of the project form a solid foundation for a DeltaV DCS upgrade.

Application Description

A DeltaV control system operated at the manufacturer site. The existing configuration contained software elements secured as proprietary code and inaccessible for maintenance and revisions. The legacy system also caused timing issues for operations.

The manufacturer opted to re-use the existing DeltaV hardware platform and re-automate the current field hardware. The customer desired an open software configuration with enhanced functionality, updated graphics standards, improved maintainability and superior flexibility.

MAVERICK engaged with the manufacturer for a year and became intimately familiar with the facility's processes and hardware architecture. MAVERICK interacted closely with employees in the collaboration.



By evaluating existing operations and interacting with process personnel, MAVERICK gathered information to develop the FRS, which captured the basic functional requirements.

The FRS defined the processes of the facility and contained a description of the required ISA-88 batch control programming. It was broken down into the building blocks of control modules, equipment modules, phase modules, unit procedures and formulas.

MAVERICK captured the existing process knowledge of the facility by interacting with employees and investigating operations. MAVERICK's integration of the manufacturer's corporate standards with subject matter expertise resulted in a successful project.

The MAVERICK Difference

MAVERICK provided a detailed functional specification to give the customer transparency into their current enzyme processes. The customer gained not only the ability to better troubleshoot and support their existing DeltaV control system, but also the blueprints for a future renovation.



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Pharmaceutical Manufacturing Facility Requires Fast-Track Construction and Production with 100% FDA Compliance

A manufacturer of high-quality pharmaceutical eyewash solutions needed to establish new systems to ensure consistent satisfaction of Food and Drug Administration (FDA) standards. The speed, accuracy and 100% reliability of these systems are essential.

Objective

The project goal was to meet the customer's rigorous construction schedule of more than 1,600 I/O monitoring points, including HVAC, process and batch control. The customer uses a combination of stainless steel portable vessels and stationary tanks for batching more than 100 different types of eyewash and saline solutions. Because of the sensitive nature of these solutions, extra care must be taken to ensure the cleanliness of the vessels and the entire processing facility. Approximately 150 valves control the different substances that must be piped into each tank according to tight FDA specifications.

The manufacturing facility requested that MAVERICK Technologies provide installation services for electrical conduits for process and Ethernet backbone communications. The customer also required pneumatic sensing lines accompanied with the provision of the FDA-required instrumentation and PLC-based control panels. Engineering and drawings were to be provided by the owner based on an 80 percent completion factor.



Results

The PLC system was tested by the customer for factory acceptance at the OEM before delivery. This testing revealed inaccuracies in panel and field design. Working within a tight schedule before delivery and execution, the MAVERICK engineers red-lined the panel drawings and modified panel designs to reflect a working system. The customer was pleased that MAVERICK had the expertise to assist in this arena.

Once the engineering was complete and the panels were delivered, the project proceeded by the installation task and met the schedule and project requirements for an on-time and successful project.

Solution

To meet FDA standards, the PLC-based control system monitored the quality of the batch control, bottle filling and packaging of the different eyewash solutions.

PLC programs were created to facilitate the accurate batching and filling of these intricate systems. The amount and orientation of each of the different eyewashes must be accurately measured, dispensed and labeled.

HVAC, humidity and temperature controls are essential for a class 10 cleanroom environment; these delicate processes require state-of-the-art design and implementation for a fungus- and bacteria-free laboratory.

To fully utilize the PLC, it had to be professionally installed and accurately tested to the FDA standards, with trace documentation provided to the owner and the FDA at the time of validation.

The MAVERICK Difference

MAVERICK's team of professionals was able to meet the customer's aggressive schedule and ensure compliance with FDA standards. Our industry expertise was crucial to the success of this project.



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