

Eastman Chemical Accelerates Migration, Increases Boiler Performance with the DeltaV™ System

RESULTS

- Boiler re-start reduced from 8 hours to 8 minutes
- Up to \$30,000 savings per boiler re-start
- Powerhouse boiler efficiency increased over 80%
- \$200,000 to \$250,000 savings on rack room construction
- Accelerated migration timeline from 9 months to 90 days



APPLICATION

Boilers in chemical plant producing alcohol and de-ionized water.

CUSTOMER

Eastman Chemical, Texas Eastman Division, Longview, Texas

CHALLENGE

Portions of the 6,000-acre plant site have been in operation since 1952, so modernizing is a continual process. The challenge was to enhance operability of these and other plant areas, many of which were still operating with pneumatic tube controls.

SOLUTION

Texas Eastman began looking seriously at Emerson Process Management's DeltaV™ scalable process system as a way to enhance operability in the site's alcohol, power boiler, and de-ionized water plants. With the DeltaV system's scalable control system capabilities including redundancy and batch, Eastman expanded the scope of its application opportunities—from retrofits to plant-wide control in an upcoming grassroots plant.

Boiler re-start reduced from 8 hours to 8 minutes

The first project was a monitor-only system in an alcohol plant. Before installing the DeltaV system, restarting the boiler would take anywhere from 8 hours to 2 days—a cost to Eastman of up to \$30,000, not to mention the cost of engineers wading through hundreds or even thousands of ladder logic lines to determine where the problem was.

Occupying a small portion of the wall behind a panel board filled with the pneumatic single-loop controllers it will eventually replace, the

“When there is a problem now, and a boiler shuts down, we have a button here for first-out alarms, and it pulls up a pop-up window with every first-out alarm that the PLC has wired to it. You can come in and see what exactly shut you down. We got the boiler running in 8 minutes.”

Keith Bellville

Advanced Chemical Engineering, Eastman



For more information:
www.EmersonProcess.com/DeltaV



DeltaV system took two weeks to install—one week to connect each of two boilers. This process consisted mainly of wiring changes from the PLC change-out. The DeltaV system configuration basically carbon-copied the original—simply changing tag names.

Says Eastman Advanced Chemical Engineer, Keith Bellville, “When there is a problem now, and a boiler shuts down, we have a button here for first-out alarms, and it pulls up a pop-up window with every first-out alarm that the PLC has wired to it. You can come in and see what exactly shut you down. We got the boiler running in 8 minutes.”

With the first boiler restart results, Eastman accelerated its upgrade plan for the alcohol plant, bringing two more boilers on line and completing a 9-month timeline within 90 days.

And because the DeltaV system configuration essentially put the same controls on a PC screen for operators, no training was required. The change was transparent.

Powerhouse boiler efficiency increased over 80%

With the dramatic success the DeltaV system ushered in at the alcohol plant, Eastman looked to a larger, more powerful DeltaV automation system for its powerhouse boiler. This boiler called for critical, redundant control. If the boiler was down for a period of time, losing pressure and temperature, it would require a costly 4-hour start-up period.

With the DeltaV system’s intuitive graphic operator environment and high speed network communications, control engineers could make configuration changes more quickly than ever before. Bringing emissions indications from the field, viewing opacity readings and adjusting alarms on-line allowed Eastman to run a cleaner, safer, more reliable and efficient boiler.

Selective batch control for de-ionized water plant

The DeltaV system’s compact footprint allowed Eastman to convert what was essentially a storage closet into a new controller rack room to replace the obsolete electronic controls for some 1700 I/O plus additional serial I/O to control both the power boiler and the de-ionized water plant. “To build a comparable building to house that much I/O in a traditional DCS, you’d probably be talking around \$200,000 to \$250,000 just for the building,” noted Bellville.

The DeltaV system’s flexibility made configuration easy, and operation intuitive. Said Bellville, “With the operator interface it allowed me to exactly mimic the screen that they were used to using, which, on top, allowed us (to require) no operator training.”

The DeltaV system allowed Eastman to pick and choose portions of the batch software to control a continuous series of sequences in the water plant. Bellville noted the ease of engineering and troubleshooting the

“With the DeltaV system controlling it we don’t lose any time at all. We’re able to, in the space of forty-five minutes to an hour, depending on what type of characterization changes we made, we’re able to make those changes on-line.”

Mark Daniels

Safety and Training Coordinator, Eastman



batch strategies: “With DeltaV batch, recipes and phase logic are not only easy to configure, but easy to troubleshoot, I can view phase modules in real time, determine when and where problems are, fix them, and view the changes in minutes. If we want, down in the future, we can add separate and even more parts of the DeltaV batch, it’s flexible enough that we can do that without major configuration changes.”

A DeltaV, Fieldbus, PlantWeb future for Eastman

Eastman plans to use the DeltaV system and Emerson’s PlantWeb™ architecture as its control architecture in a planned grassroots plant, since the DeltaV system has proven its capabilities in applications of any size. The DeltaV system is a key component in Emerson’s revolutionary PlantWeb architecture, which is changing the economic picture for plants across the globe. The chemical maker foresees improved operations, diagnostics, maintenance, and installation costs by implementing PlantWeb with fieldbus and the DeltaV system.

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