

Case Study

Valero's Benicia Refinery Benefits from Advanced Trending



“Better visualization of trending information affords us many benefits in our operations.”

- Alan Hugo, Valero Benicia Refinery

Background

Valero acquired the Benicia Refinery in 2000. Built as a grass-roots project in 1968, this plant has undergone significant modifications and upgrades to become what it is today — one of the most complex refineries in the United States. Approximately 70 percent of the refinery's product slate is California Air Resources Board (CARB) gasoline, California's clean-burning fuel. The refinery also has significant asphalt production capabilities and produces 25 percent of the asphalt supply in northern California. Currently, the refinery processes domestic crude from the San Joaquin Valley in California and the Alaska North Slope, along with foreign sour crudes.



Valero's Benicia Refinery has a feedstock throughput capacity of 170,000 barrels per day, and focuses primarily on gasoline production.

The Benicia Refinery was commissioned in 1968, with significant upgrades since that time. The refinery was acquired from ExxonMobil in 2000. With a total feedstock throughput capacity of 170,000 barrels per day, the refinery produces products including propane, butane, CARB gasoline, ultra-low-sulfur diesel (ULSD), jet fuel, fuel oil, residual oil and asphalt.

The refinery produces 10 percent of the CARB gasoline used in California and 25 percent of the CARB used in the San Francisco Bay Area.

Located on 800 acres on the Carquinez Strait, a tributary of San Francisco Bay, it is strategically positioned, allowing the refinery to receive feedstock by both ship and pipeline. Products are shipped via pipeline, truck, rail, barge and ship. The refinery employs approximately 480 individuals

Benefits

The Experion HMI has advanced alarm management, including alarm tracker; suppression and shelving to minimize the impact of alarm floods; advanced trending with integrated events; drag/drop trend configuration to provide instantaneous access to historical data and events; and an intuitive engineering environment with object-based HMIWeb Display Builder.

Using options within Honeywell's HMIWeb Display Builder, Valero was able to develop effective displays of the HC Reactor data for control room operations, enabling operators to make better decisions.

HMIWeb Display Builder is a specialized drawing application used by developers to create custom displays for Experion Stations. These custom displays are usually operator screens that displays information linked to a fully operational Experion system. The screens are almost always presented in a sophisticated and user-friendly manner so as to enable the operators of Station to interpret what is being seen at ease.

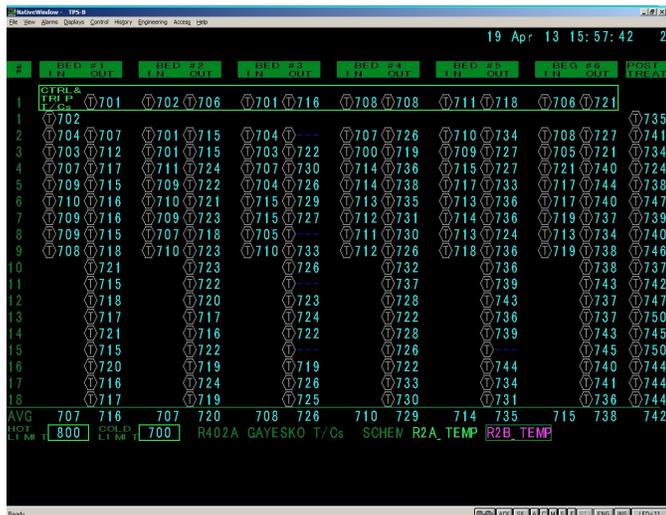
The HMIWeb Display Builder software also allows for the Abnormal Situation Management (ASM[®]) standards to be taken into account during the construction and implementation of displays.

Challenge

Effective representation of trend information was essential to the Valero Benicia operation. Experion standard trends, while useful, only offered time/value plots. There is some capability for customization, but capabilities for some essential features are not available, such as X-Y plots, plot annotations, discrete points and different plot types.

Solution

Plotting packages are widely available as third party components. Some of the run-time components are already installed on an Experion system. Several options are listed in HMIWeb Display Builder, under the ActiveX menu.



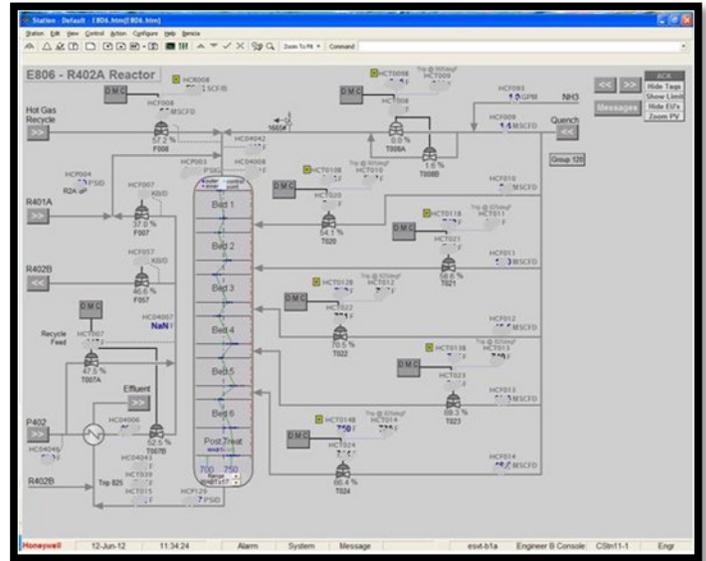
This display illustrates the original Native Window Screen for the HC Reactor.

Data specific to the six beds, plus post treatment weighted averaged bed temperature, is shown in the above native display. This disadvantage of this type of display is that the operator is confronted with a mass of numbers, but no intuitive aspects for handling anomalies.

Valero realized that the Experion HMIWeb Graphic Display Builder contains a sophisticated plotting package that can be used to construct a wide variety of plots. This plotting package, called ProEssentials by Gigasoft Inc., is available as an ActiveX add-in to the HMI Web Display Builder program and is part of the standard Experion software installation.

Valero investigated several different plot types for representing the HC Reactor trending data, including bar, thermograph, and temperature profile.

Based on the pros and cons of each type of plot, the temperature profile presented the best representation of the data in the best format for Valero's needs.



Results

The HMIWeb Display Builder, using the GigaSoft add-in, resulted in this temperature profile display of the HC Reactor bed data.

The temperature profile format offers several advantages. First, all beds fit on the existing display. This display indicates temperature profile in each bed. Color can be used to indicate specific temperature control.

This enhanced display capability affords Valero a way to provide enhanced graphics for its control room operations.

For More Information

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