

Revamp, Reuse, Recycle: An Efficient Refinery DCS Upgrade

Application Note

Honeywell helped a Middle Eastern refinery gain the benefits of a state-of-the-art, integrated control system while minimizing costs associated with ripping and replacing existing equipment.

Background

A Middle Eastern refinery with a capacity of 115,000 bbl/day approached Honeywell with an issue of obsolescence.

Processing a wide range of crude oils and various other crude blends, the refinery was designed for deep conversion of low value heavy products, such as gasoil, into high quality middle and light distillates. The process units, utilities, crude facilities and product dispatching were all controlled by an Invensys Foxboro I/A distributed control system in the main control centers, with local equipment rooms (remote satellite rooms) connected through fiber optic cables.

Challenge

As part of its modernization program, the plant owner and operator decided to replace the entire plant-wide DCS as well as address weaknesses in interfaces with third party systems.

There were several control packages controlled by different PLCs and connected to the main DCS that needed to be included. There was also an obsolete Pepperl + Fuchs Temperature Multiplexer system and an old emergency shutdown system, again from a different vendor.

The project comprised replacing the existing plant-wide DCS and upgrade the ESD system, obsolete temperature multiplexing system and ACCULOAD converters.

Field devices, subsystems and package devices were all to be fully integrated with the new system.

Solution

Honeywell's scope of work included the entire replacement of the installed DCS, along with its associated components. It supplied all necessary hardware, software, engineering and configuration for the new [Experion® PKS](#) solution.

It also provided project management, staging and checkout of the new DCS, commissioning of the new system and confirmation of integration with the refinery control subsystems. Supply and installation of the PCs providing a view-only connection to the process were even included.

Subsequent addition to the scope were Safety Manager, Uniformance PHD for the process historian and Dynamo Advanced Alarm Management software.

To retain existing third-party equipment,

Honeywell has a long track record of executing successful migrations. We have delivered the process industry automation solutions for over 40 years and technology licensing for over 100 years. Our engineers draw on extensive knowledge of competitive systems and key tools for audits and migration.

[Third Party System Migration](#)

Honeywell provides third party system migration ranging from full migration of existing systems to varying options for incremental migration that enable customers to upgrade without any loss of production and efficiency.

Honeywell supplied and installed all required interfaces. The existing marshaling cabinets were retained, as were fiber optic cables to connect the control room, where possible. Prefabricated cables were used to connect termination assembly cards at the front of the marshaling cabinets to new system I/O cards.

Finally, Honeywell supplied and installed an asset management system, and ensured integration of the Experion PKS system to the site's enterprise resource planning solution.

Benefits

Honeywell's highly integrated solution fully met the plant's needs. Not only did it integrate the field and other third party systems, but it also seamlessly encompassed another part of the plant that had the latest version of the same legacy third party DCS system (still under warranty at the time), which was then subsequently replaced.

The Experion system addressed the lack of cyber security in the legacy system and ensuring greater reliability of the plant – recognized among the country's main refineries.

The Experion system will now serve as a foundation with which to integrate further software applications and support further plant expansion.

For More Information

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