Case Study

Preparation, Data Gathering and Site Support:
Holly Refining & Marketing Company – Woods Cross LLC's
Migration To Experion R410

"For the Woods Cross Refinery, on-process migration addressed equipment obsolescence issues and allowed an upgrade to the latest Experion PKS release while maintaining view and control of processes."

- Brent Hood, Project Manager, Advanced Controls, Holly Refining & Marketing Company – Woods Cross LLC

Background

Headquartered in Dallas, Texas, and operating five complex refineries, HollyFrontier Corporation is a leading energy company engaged in crude oil refining and wholesale marketing of refined petroleum products. The company is one of the largest independent refiners in the United States, with products ranging from gasoline, diesel and jet fuel, to asphalt and lubricants.

Holly Refining & Marketing Company – Woods Cross LLC, located north of Salt Lake City, Utah, has a crude oil capacity of 31,000 barrels per day. This high-conversion refinery processes regional sweet and Canadian sour crude oils, as well as black wax crude.

Holly Refining & Marketing Company – Woods Cross LLC Refinery

In January 2013, the Holly Refining & Marketing Company – Woods Cross LLC refinery migrated its Experion Process Knowledge System (PKS) R310.3 control system to Experion® R410 and R5500 operator stations. Migration was needed to provide compatible equipment for control system expansion. The upgrade involved 12 servers; six console stations, including a

Safety Manager console; Experion C300 controllers; and multiple PLC interfaces.

The Holly Refining & Marketing Company – Woods Cross LLC refinery undertook On-process Migration to (OPM) meet its control system expansion requirements and address Microsoft product end-of-life support, equipment incompatibility and availability issues. Migration also simplified the pathway for eliminating outdated Basic Controllers.

Benefits

Holly Refining & Marketing Company – Woods Cross LLC's well-planned and executed migration strategy has extended the life of legacy investments and allowed its refinery to not only run on modern platforms that are fully-supportable with readily-available, field-replaceable spares, but also take advantage of increased Experion capabilities. In addition, the refinery will simplify future upgrades in order to utilize advanced C300 controllers.

The upgrade to Experion R410 made it possible to deploy enhanced functionality such as:

- Dynamic alarm suppression functionality
- Alarm help configuration functionality
- Load and performance measurement
- Alarm Tracker functionality
- DSA advanced security
- Advanced parameter security
- Asset alarm security level
- History Archive Manager
- Improved user-defined parameter support
- Improved Experion interface to ControlLogix
- Operator interface style refresh

- Support for more than 65,000 SCADA points

Challenges

Like other process industry companies, Holly Refining & Marketing Company – Woods Cross LLC is faced with an increasingly competitive business environment. Control system performance can have a major impact on ROI throughout the lifecycle of a facility. A structured, organized approach to upgrades enhances the benefits of new technology, reduces risks, and preserves valuable intellectual property.

Holly Refining & Marketing Company – Woods Cross LLC was challenged with ensuring a clear migration path to the latest Experion functionality. OPM is a licensed option for upgrading Honeywell software on redundant servers, stations and process controllers to a new release, and thus licensing was required.

During the planning stage, the migration team posed key questions such as: What existing functionality do we want to maintain, change or improve? What is the desired outcome of the upgrades?

Specific improvement goals included:

- Better organization of directories and system structure
- Better asset management geared toward system expansion
- Ability to upgrade Basic Controllers to Experion using ESVT interim and hot cutover process
- Clean-up server racks (cabling was a mess and rack utilization was poor)
- Simplify future upgrade process

The steps involved in control system migration are many. For example, it is a good idea to create a written migration plan and understand how plant processes will be affected by the work. End users must also determine the need for upgraded Honeywell licenses and software for each system, as well as requirements from other vendors such as third-party software suppliers.

In addition, facilities seeking to migrate their control system should seek Honeywell support as early as possible. This includes working with the TAC OPM group to schedule a suitable migration date. Upgrade projects must be on the TAC schedule, and the OPM group will require extensive data gathering at the plant site. It is equally important to locate an Experion-certified OPM Site Support Specialist (eSSS) champion to oversee upgrades.

Solution

Holly Refining & Marketing Company – Woods Cross LLC initially upgraded PHD, LIMS, Application Node, eServer, FDM and TPS

in preparation for migration to Experion R400. However, issues with LIMS delayed the project for almost a year. The refinery subsequently decided to migrate to R410, making it necessary to re-upgrade FDM, eServer and TPS.

Working closely with Honeywell on-process migration specialists, the project team upgraded 12 servers and 6 console stations over a planned six-week timeframe, including:

- PKS server pair
- ESVT server pair
- ACE and simulator server pair
- eServer
- FDM server
- Domain controller server pair
- WSUS/antivirus/EBR server
- RESS (OneWireless) server

Site engineers created a complete system build in advance. This included implementing ESIS on a 64-gigabit USB to include:

- Windows software
- Experion software
- System drivers
- Current Windows ISO
- Experion patches
- Auxiliary software and drivers

The system build was copied onto a second USB so two machines could be built at once.

Redundant controller migration included firmware upgrade of chassis-resident modules. ACE and SCE nodes were upgraded off process, but Controller Migration Wizard was used to start the migration.

For the refinery's redundant system, on-process migration allowed upgrade to Experion 410 while maintaining view and control of processes. The migration technique involved upgrading one server, switching it to primary mode (now running in dual primary mode), and then upgrading the stations and finally the other server. After upgrading redundant servers and associated stations, Controller Migration Wizard was used to upgrade redundant controllers and associated I/O modules.

The migration project team maintained close contact with plant operations during the OPM (the more they know, the better). It also kept an eye out for improvements without detouring the migration process, and looked for ways to simplify future upgrades wherever possible.

Holly Refining & Marketing Company – Woods Cross LLC paid particularly close attention to safety considerations during its upgrades. The migration process can be long, slow and tedious, and project team members avoided becoming impatient with laborious upgrade tasks. Team members kept safety top-of-mind while executing the migration plan and ensured they had adequate help for each migration task.

Key to success on this project was initial preparation involving the Honeywell eSSS. This individual's expertise, combined with extensive data gathering and analysis in the early stages of the project, helped reduce the effort and risk involved in migration. Close collaboration with the eSSS also minimized interruptions to process operators, and eliminated loss of process control and loss of view.

About Experion PKS

Experion Process Knowledge System (PKS) integrates an advanced automation platform and innovative software applications to improve users' business performance and peace of mind. Unifying people with process, business and asset management, this distributed control system (DCS) helps process manufacturers increase profitability and productivity. It's the only automation system that focuses on people — making the most of the knowledge they hold. By integrating disparate data across facilities, making the most of resources and people, and feeding it all into a unified automation system, users can achieve an operation that's more proactive, efficient and responsive.

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Learn more about how Honeywell's Experion PKS can improve business performance, visit our website www.honeywellprocess.com/software or contact your Honeywell account manager.

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SS-13-16-ENG
September 2013
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