

Case Study

Motiva Successfully Migrates from TDC 2000 to Experion® PKS



“A global program for addressing obsolete DCS/SIS systems allowed us to leverage Main Automation Contractor agreements for best cost and to share experience and lessons across multiple project teams.”

- Sandeep Pampattiwar, Mark Gordon and Stephen Page, Motiva Enterprises

Background

Headquartered in Houston, Texas, Motiva Enterprises is a leading refiner, distributor and marketer of fuels in the Eastern, Southern, and Gulf Coast regions of the United States. As a joint venture, Motiva is owned equally by subsidiaries of Saudi Aramco and Shell Oil Company.

Motiva owns and operates three refineries – located within a 120-mile radius of each other — in Convent and Norco, Louisiana, and Port Arthur, Texas.



The combined refining capacity of Motiva’s three sites is approximately 1.1 million barrels per day.

Benefits

Motiva achieved a seamless migration from a legacy Honeywell TDC 2000 control system to the latest Experion® Process Knowledge System (PKS) technology. Much of the success of this project was attributed to putting together a good project team, with the following characteristics:

- Experience in project work processes, execution of similar projects, and with the technology being implemented.

- Knowledge of the systems being installed or replaced, and of the facilities where work was being executed
- Leadership to direct the team on the best course of action
- Collaboration between all stakeholders
- Focus on the main purpose of the project with everyone working toward the same result

Project results to date include:

- Zero First Aids or OSHA Recordable events
- Best-in-class cost performance among all program sites
- On-schedule execution during all phases of the project
- Hot cutovers executed without disruption to business operation (leveraged program standards, toolkits and processes to achieve efficient execution)
- Obsolete DCS hardware eliminated and system diagnostics and reliability improved

Challenges

Motiva was experiencing common issues that lead to making a control system modernization decision, including:

- Obsolescence presenting the risk of shutdowns or upsets. Motiva was seeing the cessation of support from Main Automation Contractors (MACs) and low to no availability of parts and replacements.
- Lack of skills due to the dwindling pool of skilled people to manage older installations. Experienced technicians, engineers and craft personnel are retiring. The newer generation is more tech savvy, but at times lacking in experience.

- Technology limitations that are relieved by newer system introductions.

Motiva developed a business case that would justify the migration to a new system. They considered failures, analysis of these failures, and extrapolated future impact over a number of years. The calculated impact on margin presented a compelling case for migration.

Solution

Motiva decided to embark on a Distributed Control System (DCS)/Safety Instrumented System (SIS) modernization initiative, managed under a central program from Houston, Texas. This downstream initiative included 13 Shell participating sites. The early phases of the program were completed in 2010, resulting in an eight-year plan to manage obsolescence at sites through multiple projects.

At the Motiva Convent facility in Louisiana, the legacy Honeywell DCS was migrated to Experion PKS. Hardwired I/O distribution on the system included 13,821 Basic Hiway tags (TDC 2000) and 4,839 High Performance Process Manager (HPM) tags (TDC 3000).

An important aspect of the migration was low-cost execution. Less capital spent on this project allowed for more capital on growth projects. Poor cost performance put future phases at risk; executing at the lowest cost improved the opportunity for future upgrade projects.

The project team decided to use toolkit standards where applicable. It was focused on “like for like” replacement, with very limited improvement changes.

The project execution plan included three primary considerations:

- Scope – Settled on nominally 2,000 points per phase with the units based on the turnaround (TA) schedule rather

than physical location.

- Timing – Coordinated with TA timing to allow some cold cutovers, overlap for efficient use of personnel, and start with low risk units.
- Resources – Optimized utilization of resources by proper scheduling, minimized core team size and exposure to personnel turnover, and maintained core team members from phase to phase.

Motiva contracted with Honeywell as MAC, utilizing its proven expertise and tools. Honeywell was responsible for all of its hardware, configuration, and graphics. This approach maximized the use of back office engineering.

The EPC strategy was used for project elements that were non-Honeywell. This approach allowed the project team to minimize the number of contractors to be managed, minimize issues with engineering package turnovers, utilize a contractor with expertise in engineering and construction of automation projects, and benefit from proven experience with similar projects.

The project team was focused on a complete scope by the end of the project definition phase. A 100% defined scope at this point allowed the team to minimize rework and change of direction during the execution of the project, make Honeywell back office work as efficient as possible, minimize site project team involvement in the execution phase, ensure scope of work was completely understood, and minimize discovery work during hot cutovers.

Communication during the project was a key consideration, with required weekly meetings to engage all team members in understanding decisions, discuss open items and priorities, and ensure alignment on all issues.

The project execution strategy included Factory Acceptance Test (FAT) to minimize potential issues during hot cutovers. Site Acceptance Test (SAT) was performed to ensure configuration and data from FAT was properly loaded into the system. The project team was able to minimize cold cutovers and maximize hot cutovers.

Experion® is registered trademark of Honeywell International Inc.

For More Information

To learn more about Honeywell's products and services, visit our website www.honeywellprocess.com or contact your Honeywell account manager.

Honeywell Process Solutions

Honeywell
1250 West Sam Houston Parkway South
Houston, TX 77042

Honeywell House, Arlington Business Park,
Bracknell, Berkshire, England RG12 1EB UK

Shanghai City Centre, 100 Zunyi Road
Shanghai, China 20051