Success Story

Yokogawa Receives Award for Hot Cutover of BP Sharjah Plant DCS

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BP Sharjah

Location: Sharjah, UAE
Order date: July 2007
Completion: October 2009
Industry: Oil & Gas

bp

Executive Summary

BP Sharjah was established in the Emirate of Sharjah in 1978 and is one of the UAE's largest private producers and sellers of natural gas, condensate, and LPG. Its main gas production and processing facility about 40 km outside the city of Sharjah provides a key energy lifeline to the people of the UAE.

In 2007, BP initiated a project to replace the existing DCS at the Sharjah plant with a modern, reliable, and expandable system that is compliant with BP's engineering standards and Automation Blueprint and is supportable for at least the next 15 years.

The Challenges and the Solutions

In 2007, Yokogawa was selected by BP as main automation contractor (MAC) for a project to replace the Sharjah plant's existing Rosemount RS3 DCS with a Yokogawa DCS (CENTUM VP). This brownfield upgrade demanded sensitivity to the needs of the customer balanced with an innovative approach and a willingness to leverage the benefits of modern automation technology. The team set out to achieve this from the outset, specifying and designing a system that was in full compliance with BP's Automation Blueprint. It did so while planning to implement this system as a hot cutover - a phased signal-by-signal changeover to the new system with the plant remaining operational throughout.

A comprehensive user requirement specifications (URS) study and a FEED study were carried out by BP and Yokogawa in order to ensure that the Yokogawa system's capabilities closely matched the requirements of this complex BP facility. Taking an integrated team approach, Yokogawa Middle East worked closely with BP, ABB Engineering Services, and Maritime Industrial Services Company (MIS) with the shared goal of safely completing the upgrade and minimizing its impact on plant operations.

During the project, the team overcame various challenges and successfully delivered the job safely, on schedule, and on budget. A deep desire within BP and Yokogawa to learn lessons from previous projects was a catalyst in this project's success.

Some of the challenges that the team faced were:

- A lack of up-to-date documentation
- The need to integrate 32 subsystems spanning a variety of communication protocols
- The requirement that the upgrade not interfere with normal operations at the critically important Sharjah plant

To address these challenges, numerous site surveys were conducted to collect and verify data on the existing plant facilities. A team of highly skilled engineers was deployed during the FEED study to examine the existing systems, and this team remained active until the commissioning of the new system was complete. Several unconventional decisions were made that included a decision to pre-test all the serial subsystems during the FEED stage to remove a known project scheduling risk.

Hot cutover

The BP Sharjah facility supplies gas to the power plants operated by the Sharjah Electricity Water Authority and is a critical part of the UAE's infrastructure. The plant is so important that even a one day shutdown was to be avoided. Hence, the commissioning was executed as a loop-by-loop hot cutover, requiring meticulous planning and execution. The cutover was executed successfully with no downtime, and saved an estimated 1,550 MMSCF of LPG and 60,000 barrels of condensate at present production rates.

Award from BP

At a function held at BP's Sharjah facility, four members of the Yokogawa team were commended by BP for outstanding contributions to the success of the project. The function was attended by executives from BP Sharjah and representatives of the Government of Sharjah.

Central control room

Award from BP

Customer Satisfaction

Comment from Craig Fisher, Project Engineer:

“This was a complex job - minimising disruption to our customers meant replacing the control system while plant was running - not unlike performing a brain transplant while the patient was doing their normal day job. Brownfield upgrades such as this demand sensitivity to the requirements of the existing assets and matching these with CENTUM VP’s extensive capabilities was a fine balance. Yokogawa put a lot of effort into helping us define the scope, and deployed an exceptional team to deliver it. Several of the core team remained dedicated to the project until the last loop was commissioned. This commitment and one-team approach were key to our successful delivery, which has been widely recognized as such within BP.”

Craig Fisher
Project Engineer
BP Sharjah Project

Key Project Achievements

- Excellent health, safety, security, and environment performance
- One-team approach with the client - Smooth and safe changeover to the new system
- Project installation and start-up to schedule
- High level of system integrity, reliability, and quality management
- High level of customer satisfaction

System Details

Integrated control and safety system: CENTUM VP
Number of hardwired I/O: 1,500
Number of serial I/O: 2,500, 32 subsystems
Number of cabinets: 14 (including 8 extensions to existing cabinets)
Number of graphics: 100
System distributed across two local equipment rooms and a central control room

System information:
6 x FCS, 1 x ENGS, 4 x HIS,
1 x Exaquantum (server for interface to MIS)
1 x large LCD (52” HD)

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