

Case Study

Honeywell's integrated control and safety expertise helps HLJOC's offshore oil platform start production ahead of schedule



“Honeywell committed to and delivered the project on a fast track schedule that reduced the overall project schedule by three months.”

Nguyen Thanh Dung, Project Manager at HLJOC

Background

Hoang Long Joint Operating Company (HLJOC), an oil & gas exploration and production company, is one of the largest joint operating ventures in Vietnam, and the country's second largest petroleum producer.

Following the discovery of the large Te Giac Trang (TGT) oil field off the Vietnamese coast, HLJOC embarked upon the TGT Field Development Plan, an ambitious program to extract the oil and gas and bring it to market.

The TGT field consists of two wellhead platforms (H01 and H04), a floating production, storage and offloading unit (FPSO) and an under-sea product transportation system. Hydrocarbons from the TGT Field are transported via a sub-sea pipeline system to the FPSO, named Armada. The oil is processed, stored and exported to regional refineries while the gas is transported to shore for further distribution.



Development of the TGT oil field plays an important role in Vietnam's energy production, alleviating the country's reliance on foreign oil.

An integrated control and safety system (ICSS) that includes process control, an emergency shutdown system (ESD), and fire and gas (F&G) detection and suppression systems is key to the oil platform's safe and successful operation.

Challenge

Extracting oil from the sea bed and transporting it is both complicated and dangerous. Technologies, skills and resources must be well orchestrated to achieve safe and profitable operations.

The ICSS is critical to this effort, ensuring safe and effective control of the process at the wellhead, while the F&G system in turn assures the safety of the process and employees. Other subsystems also play an important role, including those dedicated to telecommunications and surveillance, power generation, and chemical injection.

Each requires careful and thoughtful planning, and their integration into a cohesive operation presents significant engineering challenges. Successful project implementation and timely start-up depends on state-of-the-art products, knowledge, and experienced project management resources.

Solution

HLJOC selected Honeywell Process Solutions (HPS) as its engineering, procurement and construction (EPC) contractor for the electrical, instrument & telecom (EIT) systems at the H01 wellhead platform. Technical competence, quality products, systems integration experience and a single point of contact, were all factors HLJOC cited as determining the selection.

Its confidence in Honeywell was based in no small part on the earlier and successful completion, ahead-of-schedule, of the H01 wellhead instrumentation project, also performed by Honeywell.

HLJOC determined that Honeywell's turn-key solution provided the greatest value and lowest risk for the H04 project.

Integrated control and safety

The distributed control system (DCS) at TGT is based on Honeywell's Experion Process Knowledge System (PKS) with C300 Controllers.

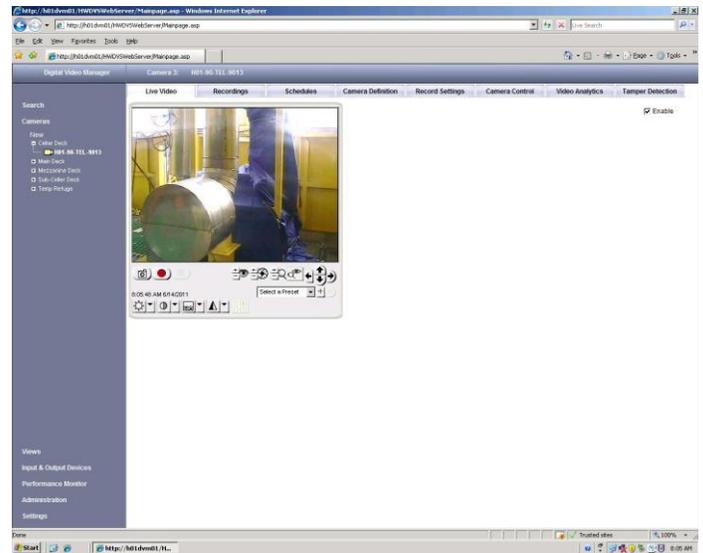
An advanced automation platform with innovative software applications, it is used to control topside operations and monitor operational safety. C300 controllers, based on the space-saving Series C form factor, provide powerful and robust process control. The controllers support advanced process control with Honeywell's Profit® Loop algorithm as well as custom algorithm blocks, allowing HLJOC process engineers to create custom code to run in them.

This is tightly integrated with the F&G system and ESD. Essential to ensure SIL3 safe operations, these are monitored and controlled by Honeywell's [Safety Manager](#) with [Universal Safety I/O](#) (USIO), giving HLJOC a unified platform for both systems, as well as burner management systems, compressor control and protection, and critical control. Seamless integration with the Experion PKS process control system nevertheless maintains separate databases and redundant networks.

The solution enables operators to respond rapidly to safety issues, ensuring maximum plant uptime while protecting people, assets and the environment. In case of an incident, automated emergency actions to mitigate the effects are initiated within Experion PKS and Safety Manager. Remote, ATEX-certified I/O cabinets interface with the process.

A number of subsystems are also critical to the safety effort:

- **Fire & gas sensors**, with [Honeywell Analytic gas monitors and flame detectors](#) acting as the first line of defense against hazardous gas and flame threats at the wellhead. Reliable and rugged, the sensors provide continuous, dependable operation in the challenging offshore environment. The integrated fire and gas solution includes fire detectors, fire alarm panels, fire suppression systems, gas detectors, sounders and beacons.
- **Closed circuit TV** with Honeywell's [Digital Video Manager](#) (DVM), seamlessly integrates with Experion® PKS to give platform personnel access to process and security video. Operators can access and control video anywhere within the operator HMI (pictured above) and benefit from an integrated workflow for navigating alarms. Integrated logic and control



strategies are implemented through configuring cameras as points within the Experion PKS control and security system, enhancing incident response times and improving operators' situational awareness.

- **A powerhouse**, solely responsible for reliable generation of the platform's entire power requirements was also engineered and delivered by Honeywell as EPC contractor. The E-House includes the diesel engine generator, micro turbine, frequency converter, UPS, low voltage switchboard and motor control center, lighting panel and HVAC.
- **Telecommunications**, considering the platform's remote offshore location, required a robust system to provide access to information from a variety of sources. These keep workers informed of weather, operations and safety related matters. The telecommunication system comprises the public address and general alarm system, radio communications, weather monitoring system, wireless communications with the FPSO and other platforms, and the satellite communications system.
- **Process control skids** for wellhead control and for the chemical injection system were also provided by Honeywell.

Benefits

The TGT Field now produces between 40,000 and 55,000 barrels of oil a day, with approximately 30 million cubic feet of gas. Honeywell's turnkey solution enabled HLJOC to exceed expectations with start-up and production from the H4 oil platform 37 days ahead of schedule.

Nguyen Thanh Dung, Project Manager for HLJOC, said: "Honeywell supported the pre-commissioning and commissioning by mobilizing skilled resources on time and with a minimal notification period, helping to start oil production earlier and faster than planned."

With successful start-up accomplished, the fully integrated fire and gas system based on Experion PKS and Safety Manager continues to deliver a range of benefits to HLJOC:

- A unified platform for fire and gas detection, fire suppression, and emergency shutdown
- Seamless integration with the process control system
- Common engineering tools and a single window on the process, reducing operational risk
- Integrated, high sensitivity flame and smoke detection
- Networking of intelligent devices through peer-to-peer communication
- A site-wide evacuation control and public address system
- Reliable performance resulting from a rugged design built to withstand the demanding offshore environment.

As Dr. Cu Xuan Bao, HLJOC general manager, concluded:

“Initiating operations quickly and safely in the oil field was of the utmost importance. Honeywell was able to provide a level of project management, integration capability and reduced schedule risk that we couldn’t find anywhere else.”

For More Information

Learn more about how Honeywell’s Fire & Gas Solution, 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 200051

www.honeywellprocess.com

SS-15-13-ENG
July 2015
© 2015 Honeywell International Inc.

Honeywell