

Honeywell Integrated Control, Safety, and Fire & Gas Solution at CNOOC, Shenzhen

Case Study

Honeywell supplied the Experion® PKS Distributed Control System, Safety Manager Emergency Shutdown system, Safety Manager Fire and Gas system, and combustible and toxic gas detectors and flame detectors for the Shenzhen LNG project.

Background

The China National Offshore Oil Corporation's (CNOOC) LNG receiving station in Shenzhen commenced operations on August 31, 2012. The project involved the construction of four LNG tanks with supporting gasification facilities, each with 160,000m³ capacity, and one LNG unloading dock with a capacity of 80,000m³- 266,000 m³. With a total investment of about 8 billion yuan (about \$1.26bn), the station is designed to receive 4 million tons of LNG each year for supply in Shenzhen and its surrounding areas, including Huizhou and Dongguan.

Challenge

To ensure high reliability and security of LNG units, CNOOC needed a distributed control system for process control well integrated with a Fire and Gas system (FGS) and an Emergency Shutdown system (ESD). Seamless information sharing and interlock protection among systems were a priority.

CNOOC also wanted to eliminate the challenge of managing multiple suppliers during the project by choosing a vendor who could meet all their needs.

Solution

The integrated system provided by Honeywell for the Shenzhen LNG project mainly consists of the following:

- [Experion® Process Knowledge System](#) process control system – This system receives the operator's instructions through the HMI in CCR and provides regular control functions like automated control of LNG units and alarm detection.



The Honeywell Advantage

Honeywell has considerable project management experience and execution capabilities in the LNG industry.

The Experion® Process Knowledge System process control system, Safety Manager Emergency Shutdown system, Safety Manager Fire and Gas system, combustible and toxic gas detectors and flame detectors supplied for the Shenzhen LNG project are all from Honeywell. The application of single supplier mode can guarantee on-time delivery of systems, decrease the project costs, and reduce the risks in project design and implementation. As a turnkey project, the automation system in development since 2014, was put into service in 2016 after the Site Acceptance Test (SAT).

After-sales Service:

The professional service team of Honeywell has continued to provide service support for the whole life cycle of the Shenzhen LNG project after the commissioning of the automation system.

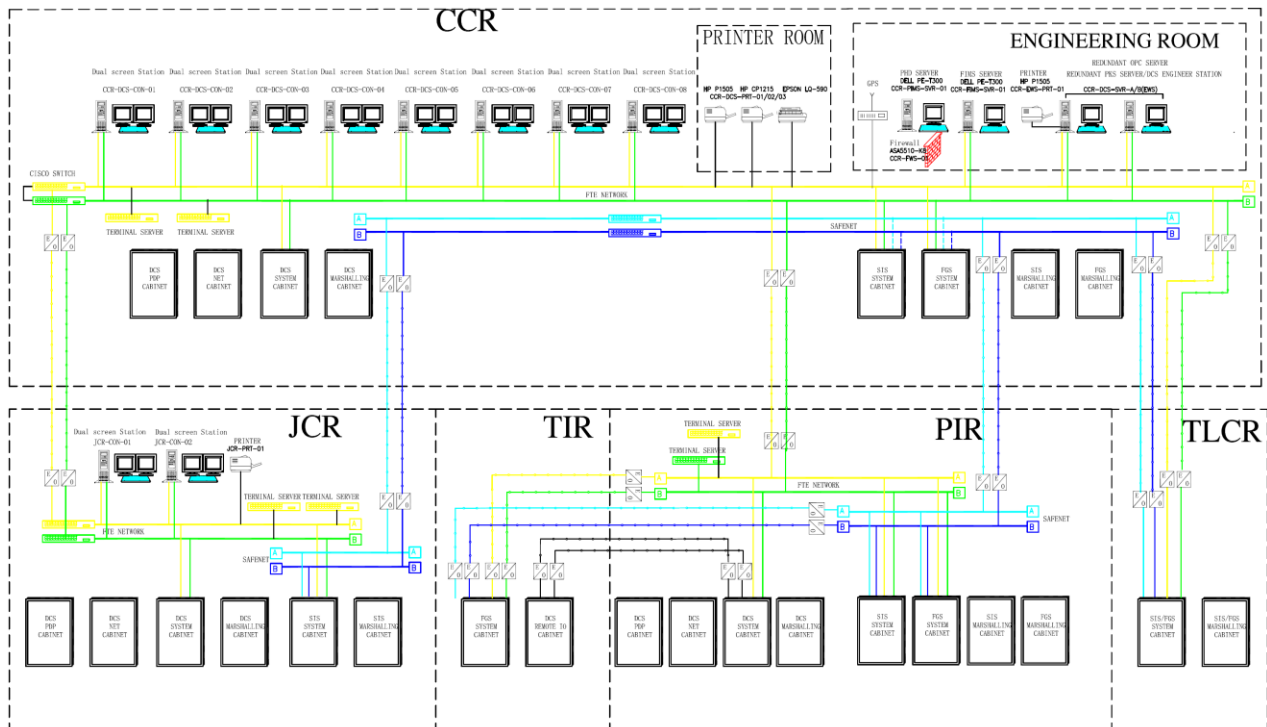
Each subsystem in the integrated system can be supported from a single window. This helps simplify the maintenance and management processes for the users, and makes it possible for Honeywell to better understand the user needs to provide better services and protect their investment.

- Emergency Shutdown system – This system is composed of safety field instruments, [Safety Manager](#) that meets SIL3 safety standards, field actuators, and an auxiliary console. It is used to detect equipment status and receive emergency instructions such as shutdown or interlock protection from the fire and gas system to ensure equipment safety.
- [Fire and Gas system](#) – This system is made up of gas detectors, flame detectors, Siren/Beacon, and Safety Manager fire and gas controller at SIL3 standard. It is used for the detection of combustible and toxic gas leaks and flames on site, and notify the abnormal condition to process control system and Emergency Shutdown system in real time, so that necessary actions can be taken to ensure the safety of personnel and facilities.
- Field equipment – The fire and gas system includes Honeywell’s combustible gas detectors, toxic gas detectors, flame detectors, manual call buttons and siren/beacon that connected to Safety Manager Fire and Gas controller.

The system architecture is depicted in the diagram below. The whole system covers the JCR, TIR, PIR and TLCR zones, and the Process Control System, Emergency Shutdown system, and Fire and Gas system are connected with each other through Honeywell’s patented FTE industrial control network. The Safety Manager Controllers for Honeywell’s Emergency Shutdown system and Fire and Gas system are connected as nodes on the FTE network, so the need for communication network settings and data mapping when integrating non-Honeywell systems with the Honeywell Experion system is eliminated.

This greatly reduced the integration workload, facilitated system commissioning, shortened the project cycle and eliminated potential programming errors.

The Honeywell solution allows for truly seamless system integration. Operators are able to monitor information of each system from one operator workstation, improving their visibility and efficiency, while reducing workload. Also response time for abnormal situations can be greatly reduced.



Schematic diagram of the Shenzhen LNG system architecture

For More Information

Learn more about how Honeywell can help improve Safety at your plant - visit honeywellprocess.com or contact your Honeywell Account Manager, Distributor or System Integrator.

Honeywell Process Solutions

1250 West Sam Houston Parkway South
Houston, TX 77042

Honeywell House, Skimped Hill Lane Bracknell,
Berkshire, England RG12 1EB UK

Building #1, 555 Huanke Road, Zhangjiang Hi-Tech Industrial Park, Pudong New Area, Shanghai 201203

www.honeywellprocess.com

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