

# A Phased Approach: Upgrading to Orion for Improved Operations

## Case Study

The upgrade has fully met our expectations, improving operations through powerful functions backed by timely and detailed technical services.

– Wang Zhaoyang, CNOOC, China

### Background

The Xijiang 23-1 oil field in the Pearl River Mouth Basin started production in 2008. With an initial output of 31,000 bpd from 10 wells, it's made a significant contribution to the long-term growth in oil production from the eastern South China Sea, supporting the country's growing energy demands.

Owned and operated by The China National Offshore Oil Co. Ltd. (CNOOC), the offshore facilities depend on Honeywell technology for safety and control. A fully integrated solution was commissioned in 2008:

- The [Experion® Process Knowledge System](#) platform for process control
- [Fail Safe Controller \(FSC®\)](#) emergency shutdown (ESD) and fire & gas (F&G) systems
- [F&G detectors](#) to address the risks of flammable and toxic gas leaks.

Honeywell's system enabled the platform to operate with high reliability and a low failure rate. It also gave CNOOC flexible capabilities for expanding, and a wide range of options in terms of interfacing with different field devices and systems.

### Challenge

As the plant evolved in the following years, a wide range of changes was made to the facilities with the addition of new installations. Over time, these resulted in deteriorating system performance.

CNOOC also wanted to make use of new capabilities to drive continued improvements in its operation, which the existing system could not properly address.

In particular, CNOOC wanted to address three principal challenges: Declining reliability of the PLC control system in service; frustrations in ensuring information exchange between the F&G, ESD, and production control systems; and an inability to facilitate centralized maintenance as a result of the many separate systems from multiple vendors.

### Solution

CNOOC decided to upgrade to the latest technology in phases, allowing it to benefit from increased functionality while controlling costs.

The first phase of the project involved upgrading the Experion control system to release 410 – [Experion® PKS Orion](#). Honeywell's latest control system, it offers new features for enhanced operator effectiveness, improved engineering efficiency and reduced security and upgrade risks:

- ASM® Consortium principles consistently built into its design to improve operator effectiveness
- A wide range of engineering productivity and usability improvements
- Enhancements to increase security while optimizing user effectiveness
- New features to reduce re-training requirements while driving efficiencies through greater consistency and repeatability.

The work was accomplished by two Honeywell engineers as a site service when the oil tanker was in turnaround. It also included upgrading server and workstation operating systems from Windows 2000 to Win Server2008 64bits and Windows 7 64 bits, respectively.

To minimize costs, the FSC system and fire and gas (F&G) detectors, remained in place, with just calibrating gases supplied for the latter. Future phases will see remaining elements of the system upgraded, with the timetable tied to oil prices.

## Benefits

The new system retains all the advantages important to CNOOC in the existing Experion PKS solution. These included the robust network with [Fault Tolerant Ethernet \(FTE\)](#) enabling comprehensive capabilities for fault tolerance and correcting; and Configuration Studio, integrating all necessary software configuration tools for simple, quick configuration.

In addition, the new functions in Orion brought a wide range of benefits to increase safety, reliability and efficiency:

- Advanced Alarm Management functions have boosted operators' ability to respond quickly and effectively to abnormal situations
- Automatic alerts quickly notify operators of faults in the process operation
- Holistic cyber security includes encryption of control level message and security monitoring and analysis
- Improved diagnostic software covers the system, network performance and security
- Procedural Operations software helps operating teams execute procedures consistently and efficiently, reducing incorrect operations and avoid production incidents.

Furthermore, while the F&G system was not within the scope of the project, all F&G information is fully integrated and available from the Orion Console. Users can take advantage of the new Experion R410 features, such as prioritized alerts and automated standard operating procedure (SOP)

assistance for quicker, more effective responses to abnormal situations.

Wang Zhaoyang, Instrument Maintenance Executive, said: "The upgrade has fully met our expectations, improving operations through powerful functions backed by timely and detailed technical services. The installation and aftersales services from Honeywell have been professional and comprehensive."

Honeywell continues to provide technical support, both remotely and, where needed, on-site.



The Xijiang 23-1 Offshore platform in the South China Sea.

## For More Information

To learn more about Honeywell's Fire and Gas Solutions contact your Honeywell Account Manager or System Integrator.

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## About Honeywell's Orion Upgrade

With end of support for the Windows XP operating system, Honeywell provides a secure migration path to current technology. Migrating to Experion R410, users benefit from the most advanced control system functionality with minimal disruption to their operations.

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