Success Story

Honeywell

Shell Shearwater Alarm Management Project

Operated by Shell Exploration and Production, the Shearwater offshore platform is located in the North Sea, off the coast of the United Kingdom. Equipped with Honeywell's Alarm Configuration Manager, the operation reduced its dynamic alarm count from 1,200 alarms per hour to 288 per day.

Honeywell Alarm Management Benefits

- Improved process control
- • Enhanced alarm control
- • Fewer false alarms
- Integrated control and safety system

Background

Operated by Shell Exploration and Production and jointly owned by Shell, ExxonMobil and BP, the Shearwater offshore platform is located in the North Sea, off the coast of the United Kingdom. The platform produced its first condensate/gas in October 2000.

The platform separates well fluids into condensate, and sells quality gas for domestic consumption. It has an impressive production capacity of 11,600,000 m^3/d of gas and 18,400 m^3/d (110,000 barrels per day) of condensate.

Platform production is high pressure/high temperature (HP/HT) with conditions of 850 Bar THP and 190°C—much higher than typical wells that produce approximately 200 Bar and 100°C.

Challenge: Alarm Management Issues

High standing alarm quantities and alarm floods were noted during start-up, operating and plant trips. Post start-up, more than 20,000 alarms were configured into the GUS process control system.

Industry papers have documented that many plants often have too many standing alarms, and one study showed that 90 percent of all standing alarms are due to incorrect system configuration and poor alarm strategies. This results from the incorrect use of off-normal alarming facilities and alarms that remain enabled on out-of-service or faulty equipment.

In addition, industry studies have identified the causes of alarm flooding that are often associated with process upsets. Alarm flood effects can sometimes be directly attributed to the normal shutdown of equipment and usually occur at the worst possible time for the control room operator.

When Health, Safety & Environment officials investigate an incident, a standard requirement is that alarms should only be valid when equipment is running, which requires an intelligent alarm annunciation strategy.

Shell Defines its Specifications for Alarm Control

Shell performed a review of the Shearwater alarms, which revealed that priorities had not been set for certain alarms. As a result, operators were unsure if all high priority annunciations were truly valid. The review recommended prioritizing and classifying alarms in the categories of personnel safety (most important), financial loss and environmental damage.

In October 2002, priorities were defined and implemented using the Shell Expro tool for all alarms. The database included 22,800 alarms.

A subsequent review by Shell Global Solutions (in the Hague) in the spring of 2003 indicated that standing alarms and frequency of alarms post-plant trip should become the focus to reduce alarm events further.

The Solution: Honeywell's Alarm Configuration Manager

Shell chose Honeywell's Alarm Configuration Manager (ACM) system for the Shearwater alarm management project for its ability to be easily integrated with the Honeywell TPS process control system, providing a single point of responsibility for process control on the platform.

At the end of 2002, Honeywell set up the initial installation of the ACM system and made modifications that took standing alarms into consideration. ACM controls alarms generated by the process control system and masks both standing alarms and dynamic alarms. All changes to the ACM database are logged and auditable. Alarm enforcement history and changes are available to view as post-event reports.

Results

Implementation of ACM reduced the number of alarm activations substantially, from 1,200 an hour in September 2001 to 288 per day in March 2003.

The standing alarms were also reduced substantially, as show below.

Date	Emergency	High	Low
August 2002	12	200	140
February 2003	0	26	60

Summary

The installation of Alarm Configuration Manager and the corresponding reduction in the number of alarms resulted in multiple benefits for the Shearwater platform.

Control operations of the plant improved as it became easier for operators to scan the page for alarms and take actions.

Fewer alarms mean that the operators have more time to check the arriving alarm, which in turn provides more uptime as the platform operates longer between trips.

Trips have been reduced on the plant – even avoiding one trip per year provides payback for the investment.

Further system developments will be reviewed on completion of the present scope with regard to fire and gas alarm suppression. The customer will then determine if further changes can be justified. Alarm handling is a long-term project, which requires day-to-day and year-to-year handling.

More Information

For more information on any of Honeywell's Products, Services, or Solutions, visit our website www.honeywell.com/ps, or contact your Honeywell account manager.

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