

Shell Drives Shale Development with Advanced Automation Solutions from Honeywell

Case Study

With Honeywell's integrated technology, Shell has optimized its shale production in the Neuquén region of western Argentina. The Sierras Blancas/Cruz de Lorena EPF project was successfully completed on time and on budget.

Background

Shell is a vertically integrated oil and gas company, one of the world's six "supermajors" and the largest company in Europe.

Shell affiliate, O&G Developments Ltd S.A., has a play in Argentina's expanding shale fields, which are estimated to be among the world's most promising shale developments. Shell has interests in three onshore blocks in the Vaca Muerta Basin located in the Neuquén region of western Argentina.



Shell's Sierras Blancas/Cruz de Lorena EPF project.

In 2015, an initiative known as the Sierras Blancas Early Production System (EPS) project was launched. The scope of work involved construction of four new well pads at the Sierras Blancas and Cruz de Lorena sites that will transfer oil and natural gas to an Early Production Facility (EPF) via multi-phase flow lines. The oil and gas will be processed and treated to achieve the entry specifications for third-party pipelines and then transported to third-party operated pipelines in the region.

The Honeywell team worked closely with Shell in Houston, Shell Upstream in Argentina and local project engineering contractors to install and commission the Honeywell Experion® Process Knowledge System (PKS), Safety Manager™

Safety Instrumented System (SIS) and Digital Video Manager (DVM) Closed Circuit Television (CCTV) system. This project also marked the first shale gas field where Honeywell applied its ControlEdge™ RTU solution for wellhead automation.

Challenge

With changing product pricing dynamics, increased supply chain complexity and stricter compliance requirements, the need to execute capital projects on budget and on time are critical to achieving investment targets.

Operating companies must find ways to de-risk capital projects, reduce capital expenses, improve asset optimization, maintain safe and secure operations, and extend performance.

Shale fields are typically expensive to build compared to conventional oil fields, so capital project cost reduction is a priority.

On Sierras Blancas/Cruz de Lorena project, Shell required an Integrated Main Automation Contractor (IMAC) that was competent to deliver a complex project with automation, telecommunications, and security in a remote location. This project was particularly demanding since all the project engineering was coordinated remotely in Houston. The Honeywell Sales and Engineering teams were required to demonstrate value, experience, execution capabilities and local support to the electrical contractors.

Shell's Engineering, Procurement, and Construction (EPC) contractor had a very tight project schedule for the construction. The Honeywell team had to provide fast response to ongoing changes and focus its project management skills to ensure a successful installation, commissioning and startup.

With current operating challenges, the shale industry requires access to real-time data and improved process control capabilities to continually optimize the performance of wells and production facilities.

About Honeywell's Oil & Gas Solution

Honeywell's infrastructure for oil and gas production provides a unified platform with a single operating view of safety and automation systems. This solution elevates the safety and availability of production assets, personnel, equipment and the environment.

Solution

Honeywell's solution for Shell focused on digital transformation and leveraging technology advancements associated with the Industrial Internet of Things (IIoT). The goal was a digitized well and facility automation.

The Integrated Control and Safety System (ICSS) included Honeywell's Experion PKS Distributed Control System (DCS), Safety Manager SIL3 rated Safety Integrity System (SIS) and ControlEdge™ RTU (Remote Terminal Unit), as well as Honeywell's DVM CCTV solution and XLS3000 intelligent fire detection, suppression and mass notification control system.

The Experion PKS system with C300 controllers proved to be a highly effective DCS for the Sierras Blancas project, as the system's advanced applications help increase throughput and condensate recovery from the wellhead through the production processing center, to increase yields of valuable products and lower the cost of production with existing capital resources.

Safety Manager provides a Safety Integrity Level (SIL)-certified integrated safety platform. With integrated SIL3 rated Safety Manager, Experion PKS becomes a unified platform that offers a single operating view of safety and automation systems.

Honeywell's newly released RTU is low-cost, easy-to-commission RTU that is ideally suited to the oil and gas industry. Enhanced with native redundancy, expanded input/output (I/O) modules and wireless I/O, it is a modular process controller that provides complete visibility into the most efficient utilization of distributed assets. The RTU's I/O provides built-in HART,

therefore the controller has no requirement for separate expensive and power-consuming HART I/O modules or third-party components.

At the well pads, Honeywell took a standardized approach to RTU skids, which was very quickly implemented, and enabled remote instrument maintenance. Four RTU cabinets were installed safely within the well pads. Each cabinet supports both a wired HART® instrumentation (168 hardwired I/O points per RTU) and a WirelessHART® Access Point to transmit data from WirelessHART transmitters installed at the wells. The solar-powered cabinets communicate with wireless radios to the EPF. The RTUs are monitored with an Experion SCADA system. Low power consumption and compact design enable the smallest cabinet and solar panel footprint.

For the EPF, the Experion PKS-based control system includes 300 wired I/O points and 5,000 SCADA points. The Emergency Shutdown (ESD) system is based on Safety Manager, which has 312 wired I/O points. The fire & gas system employs the XLS-3000 fire detection panel with industry-leading detection devices. This includes 34 flame and gas detectors from Honeywell Analytics. The system provides UL-listed and NFPA 72-compliant detection and suppression for smoke, fire and gas.

The Honeywell DVM system includes 20 fixed cameras, one thermal camera for the EPF, and 16 PTZ cameras on the well pads – allowing remote operations and reducing the need for trips to the field.

Benefits

The Sierras Blancas automation project was completed on time and on budget helping Shell to achieve its asset ROI targets. Honeywell's solution transformed operations by unifying assets, processes, and people to improve business agility.

Shell can now scale its EPF and well pads to full production with minimal risk and lower capital expenses. The company is working on a plant expansion, including additional well pads and EPF upgrades.

Experion® is a registered trademark of Honeywell International, Inc.

For More Information

To learn more about how Honeywell's Oil & Gas solutions can improve performance, visit www.honeywellprocess.com or contact your Honeywell Account Manager.

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