Natural Gas Compression and Transmission Control and Safety System

Servelec Controls is an independent systems integrator, providing mission-critical control and safety systems to oil and gas operators across the world. Our client, Technip operates an above ground gas storage facility located in north Germany, a greenfield development comprising facilities for import, storage and export of natural gas.
The Brief

Imported natural gas from the Bunde Etzel Pipeline (BEP) and/or Norddeutsche Erdgastransversale Pipeline (NETRA) was required to be compressed and cooled before being injected into one or more of six underground caverns formed in salt strata. Technip required compression equipment, automated control and safety systems to ensure the natural gas was compressed, stored and delivered safely and securely.

The Solution

Three compressors were commissioned to increase the pressure of the imported gas from the transmission system pipeline for injection into the caverns. The stored gas could then be regularly exported to BEP and / or NETRA on demand of the customer. Exported gas was heated (to prevent the formation of hydrates), reduced to pipeline pressure and then dried.

A range of automatic modes were required to route and blend the gas between pipelines and caverns, run the compression and dehydration system, and deliver gas within the boundaries of a strict nomination specification for quantity and timing of gas delivery, metered to fiscal standards using bi-directional ultrasonic flow meters.

Servelec Controls was employed to design and commission a control system to automate the plant, integrate all third party packages, and provide compressor control, access control, CCTV, emergency shutdown (ESD), and fire and gas protection systems.

Servelec Controls delivered a fully integrated control system built on the GE PAC8000 process control platform and GE SafetyNet controllers for the ESD system. For response speed, a redundant GE RX3i controller was used for the compressor control system and anti-surge control. An Autronica Fire and Gas protection system provided monitoring and protection of all site areas and control buildings, whilst a GE CCTV and access control solution provided seamless integration of site monitoring and security to the operator desk. The system was delivered to the client’s specified timescales and budget, with Servelec Controls providing full commissioning services and maintaining a site presence until the system was handed over to the end users. This included full operator training and handover of knowledge to local control engineers who would support the system moving forward.

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Fully integrated solution
Operator training and handover
Fully redundant system to minimise risk of hardware failure
Reduced design and delivery timescales
Minimised system downtime
Business Benefits

The customer required a control system that was fully integrated, affordable, flexible, and easy to maintain. Due to the penalties associated with failure to meet nominated gas deliveries, system availability was an important consideration and fully redundant hardware was selected to address this and minimise any system downtime due to hardware failure.

Servelec Controls’ extensive experience in design of process control and safety systems reduced design and delivery timescales offering the customer an efficient path from concept to commission. Our team of multi-disciplined engineers were dedicated to the project throughout the development and installation of the system, ensuring consistent delivery of knowledge and a familiar point of contact for the project team, operators and third party vendors.

Summary

By offering design, supply and commission of the complete control and safety system, Servelec Controls were able to offer design efficiency and therefore a reduction in cost and time when compared to sourcing each system from independent suppliers. Increased confidence in system compatibility was gained from integrated in-house testing of all components and commission costs were reduced since the system was proven as an integrated solution prior to site installation.

Servelec Controls is an industry leader in the design and implementation of automated control and functional safety systems for mission-critical applications. Contact a member of our team today to find out how we can help you.