TBOX DELIVERS AT THE SHAANXI-BEIJING FOURTH GAS PIPELINE

TBOX
AN OVARRO TECHNOLOGY

PROJECT BACKGROUND

PetroChina Beijing Natural Gas Pipeline Co., Ltd. is a regional company specializing in pipeline construction and operation management for PetroChina. It is mainly responsible for the construction, operation and management of the Shaanxi-Gansu-Ningxia Gas Pipeline Project (referred to as Shaanxi-Beijing Pipeline).

The 4th Shaanxi-Beijing Gas Pipeline Project includes the 1,083 km Jingbian-Kooliying trunk line and the 31 km Gaoliying-Xishayu branch line. The pipeline route starts at Jingbian in Shaanxi and then crosses Inner Mongolia and Hebei before arriving at the Gaoliying Terminal in Beijing.

SYSTEM OVERVIEW

The SCADA system manages the monitoring, control, dispatch and management of the entire line from either of two dispatch control centres.

The primary dispatch control centre is located in Beijing, with a standby dispatch control centre located in Langfang in Hebei province.

Monitoring and control from the dispatch centres allowed for stations along the pipeline route to operate while unmanned.

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OIL & GAS

MONITORING & CONTROL

RTU'S

OVARRO
CONNECTING TECHNOLOGIES

SYSTEM OVERVIEW

TBox RTU's were provided by our Channel Partner, ZKCiT, at 62 locations, for remote monitoring and control. These include 9 Station Control Systems and 53 Valve Control Rooms. RTU's at many of the sites are installed in outdoor cabinets, where the typical winter temperatures are constantly sub-zero.

The SCADA system utilises the IEC 60870-5-104 protocol across a link secured by the TBox RTU. In addition to the standard SCADA protocol, the TBox units make use of SSL/TLS, HTTPS, SMTPS and SFTP/FTP for the secure transmission of information. TConnect software at the dispatch centres manages the VPN links to each RTU and the public key infrastructure certificates for the entire system.

"The TBox RTUs have very low power consumption, which was important in this project, as all sites are solar powered. Battery systems are inefficient at temperature extremes, which means that for any given system, additional battery backup is required above the normal capacity. Utilising a low power RTU reduces the battery capacity required, minimising the total system cost".

KEY DELIVERABLES

Ovarro released an Advanced Development Kit (ADK) for TBox RTUs, allowing for a trained integrator, like our partner ZKCiT who delivered this project, to extend the functionality of the RTU well beyond its base design.

For this project, subtle changes in the IEC 60870-5-104 protocol were required to maintain stable connectivity with the selected SCADA system. Of the RTU's considered for the project, only the TBox RTU, through the use of its ADK, was flexible enough meet the customer's requirements in the time available and achieve the tight project deadlines.