

PROVIDING PIPELINE CONTROL AT 40 BELOW



BACKGROUND

PetroChina Pipeline Company Limited is a subsidiary of PetroChina Limited, primarily responsible for the operation, management, construction and scientific research of long-distance oil and gas pipelines. The project set a new record for constructing over 800 kilometres of pipeline in 180 days in a high-latitude, extremely cold environment.

PROJECT OVERVIEW

The second line of the China-Russia crude oil pipeline began commercial operation in January 2018 and doubled China's annual imports of Russian crude oil from 15 million to 30 million tons.

The pipeline starts in Mohe, a region of Heilongjiang province in the northernmost point of China, that borders Russia. After heading south for 941.8km, travelling across the Inner Mongolia Autonomous Region, the pipeline arrives at in Daqing, Heilongjiang province, a city known as the Oil Capital of China.

Mohe is China's northern most city, located almost 53 degrees above the equator and over 850km inland from the Sea of Okhotsk. This remote location, far to the north and from the buffering effect of sea water exposes the region to extreme environmental conditions.

The specification for the project warned that the control systems would be installed in a region where the temperature has seen records of 39.8 OC in Summer and -52.3OC in Winter.



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OIL & GAS



MONITORING
& CONTROL



RTU'S



SOLUTION

A total of 22 TBox-MS Modular RTUs were provided for pipeline monitoring and control. Redundant Ethernet communications and multiple serial ports were used to communicate between the control room and all of the on-site equipment, including the BPCS, ESD, FGS, Metering System and network systems.

The RTU performs all data acquisition, control, and communication functions and also periodically reports the status of all communication equipment to the SCADA control room.



“Temperature has seen records of 39.8 OC in Summer and -52.3 OC in Winter in the region. The TBox MS is robust enough to cope with these extremes.”

Craig Abbott, Sales Manager, Asia, Ovarro



ROBUST

There is no heat tracing in the valve chamber and the entire control system relies solely on ambient heating from the process and other equipment. TBox RTU's are designed to withstand temperatures across the range from -40 OC to +70 OC but are pushed further than these limits during type testing.

KEY DELIVERABLES

At the completion of the first month of operation of the pipeline, our partner, ZKCiT was congratulated on the system performance. It was then revealed that in January 2018, shortly after the pipeline had started transporting oil, that local temperatures of -43 OC had been recorded.

The customer was pleased that the TBOX RTU's continued to operate, exceeding their stated operational limits. The TBox MS RTU solution at Second line of the China-Russia crude oil pipeline was delivered by our Channel Partner ZKCiT.

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