



Downhole Oil and Gas Monitoring

Sichuan, China

AP Sensing's Distributed Temperature Sensing (DTS) solution was selected to assess reservoir performance and improve gas recovery. The Moxi gas plant, located in Suining, Sichuan, is China's largest gas field. It has a storage capacity of 440 billion m³ and an annual production of 4 billion m³. A solution was needed to assess reservoir performance and improve overall gas recovery results.

The Moxi plant selected AP Sensing's fiber optic-based DTS solution for downhole oil and gas applications. Two, single channel DTS units were acquired for the downhole wells and installed together with 8 km of sensor cable.

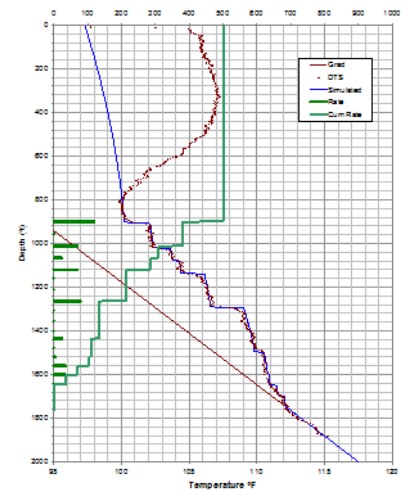
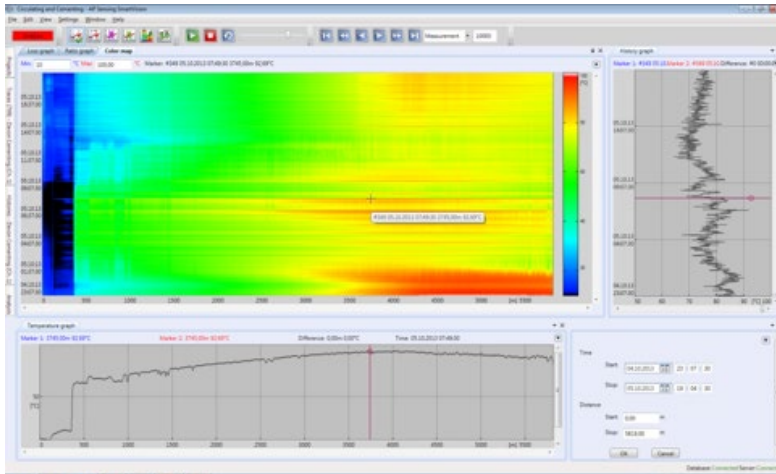


The Moxi gas plant

With the industry's most rugged and dependable DTS, which includes a VxWorks operating system with state-of-the-art IT security, outdoor housing, and an operating temperature range from -40 °C to +65 °C, the DTS unit works together with our MultiSensor Board to enable further calibration after installation.

A DTS solution needs to stand up to the challenging conditions within the wells. A wide range of materials are encountered when drilling: natural gas and oil, salt, mud, hydrogen, hydrogen sulfide, and carbon dioxide. Therefore, the choice of a sensor cable is important to achieve quality, reliable measuring results.

The selected fiber has an external armored material alloy 825 for protection and can withstand pressure up to 137.9 MPa and temperatures up to 175 °C, which exceeds the conditions in the well. The AP Sensing visualization software for traces and data storage, SmartVision, provides operators with a real-time depiction of current conditions, plus stores the data for later analysis:



Temperature profile in SmartVision

AP Sensing (Shanghai) Co., Ltd – a Chinese subsidiary – worked in cooperation with China National Petroleum Corporation (CNPC) and our regional partners. The planning, installation, commissioning and training were completed in 2019.



Outdoor housing model