APPLICATION NOTE

CAS DATALOGGERS

Oil Well Monitoring Made Safer & More Productive

DataTaker Provides Advanced Alarms, Secure Data Transfers & Prevents Cross-Channel Interference

An oil company which regularly drills into reserves containing heavy crude oil required an advanced data logging system for oil well monitoring. This crude is commonly harvested by drilling a horizontal well into the deposit and injecting steam into it to heat the bitumen and allow it to be extracted. A second horizontal well is then drilled directly below the original to collect the oil and pump it to the surface, an involved process known as Steam Assisted Gravity Drainage (SAGD). These wells are connected by long pipelines to the refinery itself for processing. Optimizing harvest efficiency is critical given the sheer volume of oil pumped from these reservoirs, requiring a powerful data logging solution to monitor the temperature of the injected steam and the effects on the oil and ground environment in the surrounding area. This is needed for environmental, efficiency and safety reasons - any increase in temperature could cause a blowout, while sudden decreases often lead to wasteful pumping inefficiencies. Remote connectivity is therefore a must for connecting these loggers to a central computer for ease of reference.

Installation

This particular company decided to install a dataTaker DT85 data logger and 2 Channel Expansion Modules (CEMs) at a central point at the top of the thermal observation well, enclosing them safely inside a NEMA4 industrial enclosure along with a solar power cell and battery. The DT85 is a cost-effective logger expandable to 300 channels with 600 isolated or 900 single-ended analog inputs.

The company's operators can use its built-in web and FTP servers to remotely access logged data, configuration and diagnostics, while Modbus slave and master functionality enables connection to Modbus and devices, and also to SCADA systems. The DT85 also boasts smart serial sensor channels capable of interfacing to a wide range of sensors via serial interfaces, including RS232, RS485, RS422 and SDI-12. Ruggedly designed and constructed, the logger offers reliable operation even under the extreme conditions of the oil wells, and USB memory stick support is included for easy data and program transfers. Advanced alarm capabilities ensure that any increase or decrease in temperatures is detected and reported as they happen, making for a safer and more productive work environment as well as better oil well monitoring.

Usage

The DT85 and its CEMs are connected to thermocouples which are located at 30 points down-hole. The dataTaker captures the temperatures and transmits its recorded data via a radio modem to the master unit that aggregates the data from several observation wells. To maximize results, the refinery's operator places thermocouples down-hole at regular intervals. The well's temperature is now carefully measured and the steam-injection adjusted to meet all parameters needed for optimum oil pumping.

Benefits

The customer realized several benefits from installing this dataTaker solution, not least of which is the free technical support offered to help dataTaker logger users get up and running. In fact, if the customer needs immediate implementation, the logging system can be provided completely preconfigured for a nominal fee, so the field personnel would be only responsible for connecting the power and sensors and let the DT85 handle the rest. The DT85 has also increased ease of access to the data recorded from the oil wells, making it available in either comma delimited (CSV) or binary (DBD) formats. The low power requirements of the DT85 let the solar panels keep it fully operational while maintaining a full charge on the internal battery. This solution also helps improve accuracy since the DT85 has fully isolated channels that prevent any cross-channel interference. Our customer's SAGD operations have been enhanced with a minimum of labor and cost.

For further information on the dataTaker DT85 Data Logger, oil well monitoring solutions or to find the ideal solution for your application-specific needs, contact a CAS Data Logger Application Specialist at **(800) 956-4437** or www.DataLoggerInc.com.