

Oil Production Company Reduces Steam Injection Costs and Increases Production

RESULTS

- Reduced operations and maintenance cost
- Reduced steam cost
- Increased production

APPLICATION

Steam Injection Metering and Data Acquisition

CUSTOMER

Oil and Gas Company in California

CHALLENGE

An oil and gas company was manually monitoring 147 steam injection wells in an oil field in the western United States. Steam usage needed to be monitored in order to avoid oversteaming, which could cause producing well damage, or understeaming, which could result in reduced production.

Steam injection was monitored using chart recorders. This approach had a number of disadvantages. First, operations personnel needed to visit each of the 147 injection wells every day and manually take steam readings. Accuracy of the readings was suspect as the chart recorders were difficult to accurately read, and data entry errors could occur. In addition, the chart recorder at each injection well needed to be calibrated every 3 months. Finally, only one reading per day was made to each injection well. If oversteaming or understeaming occurred the problem could go undetected for almost a full day.

Operations and maintenance costs were high due to the need to drive to and read steam usage at 147 wells a day, and perform almost 600 chart recorder calibrations each year. Next the customer experienced excess steam costs due to oversteaming. Steam costs can represent up to 75% of a producer's cost. In addition, oversteaming can damage producing wells leading to hundreds of thousands of dollars in needed repair costs. Finally, understeaming can result in reduced production from individual wells and the field.



This company expects savings and higher production to pay for the entire project in just a few months.

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Process Management

SOLUTION

The customer replaced the chart recorders on each injection well with Rosemount 3051S WirelessHART™ Pressure Transmitters. At each injection well, one transmitter was placed upstream of a calibrated choke, and one downstream. Almost 300 transmitters were installed on the 147 injection wells. Installation was fast and easy. Existing pressure gages were removed, and the pressure transmitter threaded onto the gage connection. The use of wireless communications also eliminated the need to attach signal wires to the devices. Four Emerson Smart Wireless Gateways were connected to industrial broadband radios to transmit the steam injection readings to the control room about 1 mile from the field. This solution gave the company personnel access to steamflow readings continuously instead of only once per day. In addition, deviation limits for steamflow were set. Now if a deviation occurs operators are notified immediately.

Operations and maintenance costs were immediately reduced by eliminating trips to each of the 147 injection wells each day. In addition, maintenance costs were reduced by changing the calibration schedule from 4 times per year for every chart recorder to once every 5 years for each wireless transmitter. Operators are notified immediately if steam injection deviates from desired levels, so oversteaming and understeaming can be detected and corrected quickly. Also, when a well is “done”, or saturated with steam, operators will know immediately and can redirect steam to other wells. These capabilities will reduce steam cost and increase production.

The customer expects savings and higher production to pay for the entire project in just a few months.



Rosemount 3051S WirelessHART™ Pressure Transmitter.

RESOURCES

Emerson Process Management Oil & Gas Industry

http://www.emersonprocess.com/rosemount/industry/oil_gas/index.html

Emerson Smart Wireless

<http://www.emersonprocess.com/rosemount/smartwireless/index.html>

Rosemount 3051S Transmitters

<http://www2.emersonprocess.com/en-US/brands/rosemount/Pressure/Pressure-Transmitters/3051S-Series-of-Instrumentation/Pages/index.aspx>

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