

Micro Motion® Introduces World's First Coriolis Multiphase System for Oil Well Testing

RESULTS

- Reduced the amount of maintenance
- Wells can be tested daily
- Reduced the amount of capital equipment
- Enabled 1% match between well test and LACT units
- CO₂ flood effectiveness can be tracked
- Optimized well workover scheduling



APPLICATION

In order to optimize oil recovery, a major oil producer in West Texas must continuously analyze the condition of its producing oil wells. To determine the condition of the well, the oil producer conducts tests on the proportions of the major components of well fluids: oil, water, and gas (CO₂ and methane). Testing costs the oil producer millions of dollars annually, so it's very important to schedule tests efficiently.

Originally, the oil producer tested wells with a three-phase test separator. First, gas was separated from the liquids in a test vessel and then measured by dP meters. Second, capacitance probes on the separator measured the percent water cut. Third, a turbine meter was used for measuring the oil/water emulsion as it was passed to a production separator.

CHALLENGE

The amount of equipment made this traditional three-phase test setup extremely expensive. Because of wide fluctuations in gas flow, five parallel orifice runs were required to produce accurate measurements, and variations in the gas mixture could not be detected. Also, as is typical for orifice meters in this application, calibration drift necessitated frequent recalibration and maintenance.

The turbine meters required constant repairs and replacement, and the capacitance probes were unable to handle high water cuts. In addition to the heavy direct costs, the frequent need for some kind of maintenance made it impossible to test wells on a daily basis.

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Two Micro Motion Coriolis flowmeters replace costly three-phase test separators, enabling an oil producer to conduct accurate daily well tests.



For more information:
www.EmersonProcess.com/solutions/oilgas
www.micromotion.com/oilgas



SOLUTION

The oil producer decided to replace the three-phase test setup with a less costly horizontal two-phase test unit, which incorporated two Micro Motion® Coriolis flowmeters.

A single Micro Motion flowmeter replaced the five orifice runs. It monitors the flow rate and the gas composition with continuous density readings. Coriolis flowmeters measure mass flow and density directly and are accurate over a wide flow range.

Another Micro Motion flowmeter replaced the liquid turbine meter. It measures total liquid flow and provides flow and density data to a Micro Motion Net Oil Computer (NOC), which computes water cut, net oil, and net water totals.

At the end of a test cycle, the Micro Motion meters transmit total gas volume (SCFD), total fluids, net oil, and net water accumulation in barrels to a SCADA host for analysis and archiving.

Since Coriolis sensors are non-intrusive and have no moving parts in the flow stream, there is no calibration drift, and the meters are virtually maintenance-free.

Micro Motion is the world leader in Coriolis oil and gas production measurement. With several thousand Net Oil Computer systems as an installed base, this major oil producer had the confidence to invest in 50 of these multiphase systems. Micro Motion provided the support, service, and expertise to make this project an engineering and financial success for this customer.

