Prevent Oil in Water Contamination with Micro Motion Fork Density Meters

RESULTS

- Increased production by reducing interruptions to water injection process
- Prevented government fines of $10,000 for water contamination events
- Avoided damage to pumps that cost up to $5000 to repair

APPLICATION

Upstream - Production Management - Water Flood

A Rocky Mountain Oil & Gas producer collects produced water from production separators and uses it for re-injection as part of its water flood program to improve oil recovery in the reservoir. Oil and water emulsions in heavy crude can be difficult to break and, over time, result in the formation of oil layers in water storage tanks. As the oil layer increases, there is potential to pump the tank level down to the point that oil is discharged. This oil is then sent to the injection pumps and contaminated water is then pumped into the injection well. U.S. government regulatory authorities have restrictions on water contaminants, such as oil, that can result in fines to operators of $10,000 or more for non-compliance events. Water contaminated by heavy oils also damages the pumps costing up to $5,000 to repair each time. Should an event occur, the pipes must be cleaned and any interruption to the water injection can result in reduced production at the producing wells..

CHALLENGE

Previously, the company performed manual checks each time the tank was pumped, taking sample measurements of water levels and the oil layer to mitigate oil excursions into the water. This required personnel to make time-consuming trips into the field. In order to improve efficiency, obtain a more accurate measurement, and acheive tighter control to ensure against water contamination events, the company wanted a continuous online density measurement of the water at the outlet to provide a continuous detection of oil contaminants.

Fork installation during commissioning

Micro Motion®

For more information:
www.MicroMotion.com/oil-and-gas
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SOLUTION

Emerson's Micro Motion liquid fork density meters were installed just above the water outlet drain line of three separator tanks. Presenting a fit-and-forget solution, the vibrating fork units provide a reliable, accurate density measurement of the liquid to determine if there is any oil contaminating the water. This provides a continuous indication of water quality going to the injection pumps and ensures against contamination events. The measurement data is sent to a local SCADA system and then sent wirelessly to the central data collection system. Should density levels rise beyond pre-set parameters, thereby identifying oil in the water, the control system closes a valve and turns off the pump minimizing any risk of oil and water contamination.

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