

Heater Treater Separation Optimized with Reliable Level Measurement Devices

RESULTS

- Helps eliminate free gas and water carryover
- Reduced complexity of level measurement
- Reduced maintenance



APPLICATION

Level measurement in heater treaters for crude oil and natural gas exploration and production.

CUSTOMER

A major crude oil and natural gas exploration and production company, operating in the Bakken Oil Field located in the US and Canada, producing over 4,800 MBOE.

CHALLENGE

The company was experiencing problems optimizing their heater treater separators, which were causing gas to be carried over to the tanks. Previous methods of level measurement using mechanical valves did not perform as required. The customer was looking to replace these traditional mechanical instruments in order to more efficiently operate their heater treaters. This would allow them to improve level measurement, minimize lost production while maximizing production and yield, and reduce emissions. The main concerns were: improving efficiency of the heater treaters, optimizing liquid level control, and reducing gas carryover to the tanks.

SOLUTION

Initially, traditional DP level transmitters were fitted to improve liquid level measurement in the heater treaters. However, the traditional DP needed the wet and dry legs to be blown out regularly otherwise the readings could be affected. The technology was also not easy for the operators to understand.

The customer retrofitted their existing tanks using Rosemount™ Electronic Remote Seals (ERS) on the oil and water legs and replacing the traditional DP transmitters. The ERS system was much easier for operators to understand than the traditional DP. The ERS system also had no wet or dry legs requiring maintenance.

“Using Guided Wave Radar, we can pull water directly off the bottom of the tank which will eliminate free gas carryover to the tanks.”



Rosemount 3051S ERS installed on oil leg.

Wanting to leverage the ability of guided wave radar to measure level and interface with a single device, the customer required a solution for new separators they were building. Since they were no longer constrained by the tank configuration, their manufacturer added a 4-in. (101.6 mm) stilling well inside the separator to accommodate a Rosemount 5300 Guided Wave Radar. This simplified installation even further. The installation using the guided wave radar in the stilling well was efficient and cost effective because their manufacturer built the stilling well into the separators.

Both solutions resulted in accurate flow and liquid level measurement and reduced gas carryover, which in turn led to increased efficiency. The company measured a reduction in gas carryover from 140 mcf to 60 mcf. The guided wave radar has a low operating cost because it requires minimum maintenance. Using the Rosemount 5300 to control the oil and water levels in the treaters also eliminated the requirement for piping and additional tanks associated with the test treater, resulting in savings of \$30,000 per train. Gas carryover was also significantly reduced, with possible savings of around \$100,000.

The Rosemount ERS and Guided Wave Radar solutions resulted in accurate flow and liquid level measurements and reduced gas carryover, which led to increased efficiency.

RESOURCES

Emerson Automation Solutions Industries

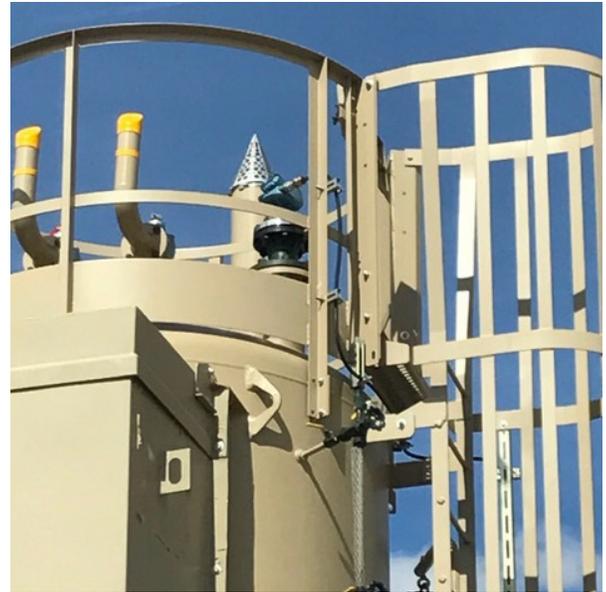
Emerson.com/Industries

Rosemount™ 5300 Level Transmitter - Guided Wave Radar

Emerson.com/Rosemount/5300

Rosemount™ 3051S Electronic Remote Sensor (ERS™) System

www.emerson.com/Rosemount/3051s-ers



Rosemount 5300 installed in stilling well on tank.

	Mechanical valves	Standard DP Level	ERS DP Level	GWR in stilling
Performance	Poor	Good	Good	Good
Installation cost	\$	\$	\$\$	\$\$
Operating cost	\$\$\$	\$\$	\$	\$
Maintenance	High	Medium	Low	Low
Retrofit possible	N/A	Most treaters	Most treaters	Some treaters
Complexity	Medium	Low	Low	Low

Benefits of different Level measurement solutions.

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