

# Oil Field Automates Well Pads with Reliable Wireless Level Instruments

## RESULTS

- Operator safety increased by reducing potential hazards
- Reduction in material and installation cost and time
- Reduced risk of tank overfill and liquids traveling to flares and gas lines
- Enables remote asset management



## APPLICATION

Well pad automation including tank levels and high level alarms in separators and production storage tanks.

## CUSTOMER

Oil field company, USA

## CHALLENGE

The customer owns a large acreage with over 1900 wells. The company wanted to automate both their existing well pads and new installations. The decision was made due to environmental, health and safety considerations as well as a need to manage their assets more efficiently. From an environmental standpoint, high levels in the tanks create a spillage risk. In the separators, high levels can cause liquids to travel to the flares. In addition, sending operators to restricted areas for manual measurements could expose them to sour gas; they also wanted to start managing their assets remotely.

The challenges facing the customer included extreme weather conditions and wet, muddy springs which made cable laying difficult. They also had limited manpower resources.

Key requirements were to provide high level control and alarms for system shutdown. Level and interface measurements were important in the tank farms to monitor tank capacity. The interface measurements were used to recycle contents back into the separators. Automating these measurements would reduce the need for operators to climb the tanks and would also limit their exposure to H<sub>2</sub>S gas.

## SOLUTION

The customer made the decision to use wireless instruments due to time and cost. A wireless gateway was installed with a 50 ft (15m) remote antenna enabling positioning near the power and control system. Even with obstructions and trucks passing through the well pads, the gateway provided reliable communication.

*Wireless instruments were chosen because the total installation cost was considerably less and installation took half the time.*



*Rosemount 3308 Wireless Guided Wave Radars and Rosemount 2160 Wireless Vibrating Fork Level Switches installed on the water/oil tanks*

WirelessHART® devices for pressure, temperature and level were installed, integrating into a PLC or RTU, all connected to the existing SCADA network.

For tank level and interface measurements, the Rosemount 3308 Wireless Guided Wave Radar was installed on all the tanks. Using this device allowed the tanks to be automated for level and control. The overall content could be monitored and emptied on an efficient schedule. The interface measure indicated when the contents needed to be returned for additional separations. With the reliable level measurements, operators could stay on the ground and avoid risk of H<sub>2</sub>S exposure.

For high level alarms on both tanks and separators, Rosemount 2160 Wireless Vibrating Fork Level Switches were used. For the separators, the switches provided shutdown to prevent liquids from entering the flares or combustors. For the tanks, the switches were used for system shutdown to avoid spills.

### RESULTS

The installation took half the time of wired devices. Since there was no wiring, there was no need for cables trays or trenches. Automation of the tank levels reduced the need for operators to climb the tanks, decreasing their exposure to sour gas and increasing safety. With both reliable level measurements and alarms, the overfill risk is reduced. Finally, automation of the well pad sets them up for more efficient asset management from central locations.

### RESOURCES

#### Emerson Process Management Oil and Gas Industry

<http://www2.emersonprocess.com/en-US/industries/oil-gas/Pages/OilandGas.aspx>

#### Rosemount 2160 Series

<http://www2.emersonprocess.com/en-us/brands/rosemount/level/2100-series-level-switches/2160-level-switches/pages/index.aspx>

#### Rosemount 3308 Series

<http://www2.emersonprocess.com/en-us/brands/rosemount/level/guided-wave-radar/3308a/pages/index.aspx>



Rosemount 3308 Wireless Guided Wave Radar installed on remote tanks

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