

Oil Producer Reduces Safety Risks and Energy Costs with Non-Contacting Radar and Level Switch Combination

RESULTS

- Decreased safety and environmental risks
- Reduced maintenance costs
- Increased availability
- Reduced energy costs



APPLICATION

Oil, water, and sand production tank; 7 m. (23 ft.) in height

CUSTOMER

Oil Producer in Europe

CHALLENGE

An oil producer had challenges maintaining adequate storage capacity of one of its production tanks. This initial tank is used for draining produced sand and water. The oil is pumped off so that the tank operates between 4 to 6 m. (13 to 20 ft.) to continuously feed the production process.

Previously this customer used a displacer. The piping inside the tank pumps the oil/water mixture into the tank from several pipes along the top resulting in heavy turbulence and some foam. The displacer performed unreliably in these process conditions. Additionally, the mechanical components of the displacer would stick or corrode and became a maintenance concern. As a result, the instrument technicians resorted to hand-dipping to verify the actual tank level.

Without a reliable level measurement, this customer experienced many negative business results. The technicians would manually hand-dip the level measurement which exposed them to safety risks from climbing the tank and exposure to toxic gas. Without a level measurement, they risked a tank overflow which is both a health and environmental hazard. If the level got too low, they risked damaging the pump and reduced production. Lastly, unreliable level measurements lead to sub-optimized pump usages which lead to higher energy costs.



Figure 1: Rosemount 5401 installed on 7 m. (23 ft.) tall tank

SOLUTION

To solve their measurement problem, this oil producer installed a Rosemount 5401 Non-contact Radar which uses low frequency radar beams that can measure through foam and turbulence. The unique Dual Port Technology of the 5400 helps to track the surface continuously and reliably. The 4-20 mA output of the Rosemount 5401 is sent to a PID controller for pump control. Additionally, they installed two Rosemount 2120 Vibrating Fork Switches for high level and low level alarm to trigger the emergency shutdown system.

By installing this combination of reliable and redundant measurement technology, this customer experienced many positive business outcomes. The automation of pump control eliminated manual measurements thereby increasing health and safety of the technicians. Likewise, the reliable continuous measurement and control lead to decreased environmental risk, increased plant availability, and reduced unnecessary pump usage and energy costs. Lastly, the non-mechanical radar transmitter and switches minimized routine maintenance and reduced operations costs.



Figure 2: Rosemount 2120 Vibrating Fork Switch

RESOURCES

Rosemount Level

<http://www.emersonprocess.com/rosemount/products/level>

Rosemount 5400 Product Data Sheet

<http://www.emersonprocess.com/rosemount/document/pds/00813-0100-4026.pdf>

Rosemount 2120 Product Data Sheet

<http://www.emersonprocess.com/rosemount/document/pds/00813-0100-4030.pdf>

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