

Refinery Reduces Energy and Environmental Risks with Ultrasonic Control System

RESULTS

- Decreased Energy Usage
- Reduced Safety & Environmental Risks
- Minimized Capital Costs



APPLICATION

Wastewater Transfer Pit Level Control

CUSTOMER

Refinery

CHALLENGE

A major refinery had difficulties optimizing the levels of three wastewater transfer pits for overflow protection. The transfer pits are open sumps designed to collect rainwater runoff and debris. Transfer pumps automatically control the wastewater level within the transfer pits by moving water through the unit.

The previous float switches were at the end of their life and the company wanted to further optimize the unit performance with technology better suited for the application. The original float switches had throw lengths of more than 10 ft (3m) and limited diagnostics, which made troubleshooting and servicing difficult. The mechanical switches were susceptible to debris, suspended solids, and varying viscosities which frequently caused the switches to fail. Also, alternate short switch cycles created extra start/stop cycles on the transfer pumps.

The use of float switches in this application led to several business challenges. The frequent pump cycles increased energy usage for moving water through the unit. The possibility of overflows and injury in the hazardous area increased safety and environmental risks.

Intermittent mechanical failures resulted in increased operations and maintenance costs. Lastly, their Electrical & Instrument Engineer was faced with high capital costs by implementing a control solution with wiring all the way back to the DCS.

“The expanded range has cut energy costs and will lengthen motor life due to a decreased number of start/stop cycles.”

Electrical & Instrument Engineer



A Rosemount 3107 mounted above a wetwell.

SOLUTION

The refinery's challenge of optimizing the level and control of their wastewater transfer pits was solved with the Rosemount 3107 Ultrasonic Level Transmitter and 3490 Control Unit at each of their wastewater pits. The 3107 enabled a reliable and continuous measurement for transfer pit level control. The 3490 provided local pump control and eliminated the need for wiring back to the DCS. The 3490 improved the control system reliability and integrated seamlessly with their existing control circuits and switchgear.

The right technology and implementation for this application led to many positive business outcomes. The Electrical and Instrument Engineer for the company said, "The solution has cut energy costs and will lengthen motor life due to a decreased number of start/stop cycles. The transmitters are more maintenance friendly to service than the original float switches." Safety risks were reduced by significantly reducing routine maintenance in a hazardous area. Wastewater overflow risks were reduced by optimizing the control of transfer pit levels. Lastly, the 3490 Control Unit minimized the capital costs necessary for this small project.

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