

Drain Pit Safety Improved and Costs Reduced with Reliable Wireless Level Measurement at Petrochemical and Refining Site

Results

- Rapid detection of thin oil layer down to 1 in (25 mm)
- Minimized risk of vapor clouds spreading across site
- Minimized risk for soil and water pollution in the event of a leakage



Application

Hydrocarbon leak detection in drain pits of secondary containment of storage tanks

Customer

A major petrochemical and refining facility in Antwerp, Belgium

Challenge

The customer struggled with reliable detection of potential leakages. These could result in environmental pollution and the formation of vapor clouds that has in the past caused incidents such as the explosion at Buncefield oil storage terminal in the UK in 2005, during which over 40 people were injured and massive property damage was incurred. The facility had relied on manual operator rounds for years to inspect sewer and drain pits, but needed a better solution to ensure safety and compliance.

The instrument application requirements were as follows:

1. Measure/ monitor 100% of the pit.
2. Detect oil thickness layer down to 2.36 in (60 mm) - previous solution was 5 in (130 mm)
3. Must be capable of detecting 3 states: empty (dry), one product present (either water or oil) and detecting if two products present (oil and water) and identifying the position of the interface.
4. Measurements must be unaffected by changes in weather

In the past, in an effort to meet these requirements, wired hydrocarbon sensors were used in the sewer and drain pits but these were prone to triggering false alarms on their fire systems network. This meant manual rounds were needed in the field as well. Different product updates were not able to resolve the issues which made the company research an alternative. The goal was to find a solution that would reduce health, safety and environmental risks, and reduce high operating costs.

“Thin layer detection enables early detection of potential hydrocarbon leaks.”



Rosemount™ 5300 Level Transmitter with large coaxial probe

Solution

The customer purchased and installed the Emerson Rosemount 5302 Level Transmitter with large coaxial probe and thin layer detection capability, together with the Emerson Wireless 775 THUM™ Adapter for continuous level measurement of the pit.

Thin layer detection enables the earliest possible detection of potential leakages. The solution can detect thin oil layers down to 1 in (25 mm) and is able to distinguish between different products in the pit, e.g. rainwater or hydrocarbons. The large coaxial probe offers protection from inclement weather/rain, to provide more robust measurement and better reliability of measurement for a mix of dry and wet states.

The solution provided the customer all they were looking for, including improved safety and a reduction in emissions. The *WirelessHart™* network protocol with THUM reduced cabling costs, support and I/O cards, and reduced the engineering and installation costs, while allowing information to be distributed directly to their DCS system.

Manual operator rounds were reduced resulting in significant operational cost savings, and safety increased.

Resources

Emerson Automation Solutions Industries

[Emerson.com/Chemical](https://emerson.com/Chemical)

Rosemount 5300 Level Transmitter - Guided Wave Radar

[Emerson.com/Rosemount5300](https://emerson.com/Rosemount5300)

Industrial Wireless Technology

[Emerson.com/Wireless](https://emerson.com/Wireless)

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Rosemount 5300 Level Transmitter and Emerson 775 THUM Adapter installation installed on drain pit for early detection of potential hydrocarbon leaks

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