

Bitumen Tank Farm Mitigates Risk of Overspill and Increases Plant Safety with Wireless Discrete Transmitters

RESULTS

- Reduced risk of overfill during tank filling
- Mitigated risk on plant personnel safety
- Reduced project cost and difficulty of installation



APPLICATION

Tank overfill level alarm

APPLICATION CHARACTERISTICS

Aging plant without prior automation solution

CUSTOMER

Asphalt plant in China

CHALLENGE

Bitumen is largely used as a construction product. It is supplied and stored as hot liquid at temperatures ranging from 150 °C to 230 °C (302 °F to 446 °F). Care is needed for safe handling of bitumen to avoid accidents. The project manager of this bitumen plant wanted an automated solution for monitoring tank level to ensure plant safety during filling as tank status was not visible to engineers on site or at the control room.

The bitumen plant is aging and has no appropriate solution installed for overfill protection for individual tanks in the tank farm. There are no means to signal high-high and low-low alarms of liquid in bitumen tanks.

Without an overfill protection system, potential overflow may occur, which may cause safety and environmental issues. Furthermore, the cost of installing wired instrumentation to all tanks in the tank farm is very high. Aside from the capital needed, man-hours to complete the project could affect plant operation.

The wireless solution was easy to setup, cost-effective, and provided the much needed alarm automation especially for this bitumen plant, which has many existing cables that are risky to remove and had been operating for years.



A Rosemount 702 Wireless Discrete Transmitter installed on top of a bitumen tank provides overspill protection.

SOLUTION

The plant installed 28 Rosemount 702 Wireless Discrete Transmitters connected to 41 third party RF capacitance switches on the bitumen tanks. This combination provided wireless high-high and low-low alarms, saving on cost of wires, junction boxes, and I/O cards. Since the 702 transmitter has dual channel capacity, many of the tanks had only one device for both high and low level alarms, further saving on installation costs. Connecting the alarm signal to the control room via OPC is a Smart Wireless Gateway. Its web interface allowed engineers in the control room to configure the network by navigating a web browser, while the Gateway's universal integration provided the HMI operators on-site, tank level information via Modbus RTU.

The wireless solution was easy to setup, cost-effective, and provided the much needed alarm automation especially for this bitumen plant, which has many existing cables that are risky to remove and had been operating for years. No wires also meant it required less preparation such as scaffolding and excavation, reducing project cost. Lastly, the risk of overspill and risk on personnel safety was greatly reduced.

RESOURCES

Emerson Process Management Chemical Industry

<http://www2.emersonprocess.com/en-US/industries/Chemical/Pages/index.aspx>

Rosemount 702 Wireless Discrete Transmitter

<http://www2.emersonprocess.com/en-US/brands/rosemount/Wireless/702-Discrete/Pages/index.aspx>



A Smart Wireless Gateway manages the wireless network.



Rosemount 702 Wireless Discrete Transmitter

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