

CASE STUDY

Industry: Oil Refining

Challenge: Floating Roof Alarm Switch



Preventing overspill on floating roof tanks

Delta Mobrey has installed a floating roof alarm switch in a major oil refinery; this is a critical safety requirement to detect and prevent oil overfills. As well as being cost effective, our solution resulted in improved plant performance and environmental security for our customer.

CUSTOMER BENEFITS

- Prevention of tank overflow and spillage
- Second switch mechanism detects dead weight failure
- Feed lines shut down in event of failure



Potentially dangerous spillage is prevented using the Delta Mobrey vertical switch

CHALLENGE

The challenge for Delta Mobrey was to detect and prevent tank overflow and spillage. Floating roof tanks don't have a fixed point of reference on which to mount a liquid level detection switch, because the roof sits directly on the liquid. The floating roof rises and falls with the liquid level inside the tank, decreasing the vapour space above the liquid level. If the roof rises to a high level, it is necessary to signal an alarm and shut any feed line valves or pumps. For many industries, including petroleum refining, floating roofs are considered a safety requirement, as well as a pollution prevention measure.

SOLUTION

Floating Roof Tank Detection: the inside of the tank was fitted with a Mobrey DS20D – a switch designed to signal an alarm if the roof rises too high. Here a dead weight is suspended on a cable attached to the extension spring of the switch head.



As the floating roof rises and comes into contact with the dead weight, the extension spring contracts and rises to activate the switch mechanism. A second switch mechanism may be specified to operate as a fault alarm. In the unlikely event of the dead weight becoming detached, the extension spring fully contracts and activates the second switch mechanism.

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DS20D (dead weight)

- based on the popular and unique Mobrey vertical level switch
- can be easily wireless enabled using a discrete input transmitter

Liquid Detection: in applications with liquid present, a Mobrey DS21D with a displacer element is available to detect liquid and prevent an overflow. As liquid rises to cover the displacer element, an upward acting force is created. This force is seen by the spring as a weight reduction, which contracts and activates the switch mechanism. On a falling liquid level, the displacer element is uncovered, and the spring extends, resetting the switch mechanism. The displacer element has a flat end to ensure it still engages with the floating roof, in the same manner as the dead weight, even when there is no liquid present.



DS21D (flat ended displacer)

- available to detect liquid, if present and prevent an overflow
- the flat end of the displacer ensures it still engages with the floating roof, even when no liquid is present
- on a falling liquid level, the displacer element is uncovered, and the spring extends to reset the switch mechanism

About Delta Mobrey

For more than 100 years, Delta Mobrey Limited has been a world-leading specialist in the design and manufacture of quality process instrumentation for the measurement and control of fluids and gases in all industrial plant and equipment.

Trusted quality – proven value: quality and reliability have always formed the cornerstone of our success, recognised by industry with international approvals covering every aspect of our manufacturing and product portfolio, together with certifications spanning all areas of hazardous and regulated environments.

Global team – local support: as a global organisation, Delta Mobrey is totally committed to delivering the best possible customer service and technical support, ensuring a lifetime value of ownership, together with a flexible and responsive approach to meet our customers' individual demands.

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