Floating Roof Monitoring
Increased safety with continuous surveillance of floating roof movements

WHAT IF...

you could be sure your floating roof tank is operating safely?

Radar level devices can give you an early warning if the roof starts tilting or is not being drained properly.

CHALLENGES

Floating roofs on storage tanks offer advantages in terms of reduced need for vapor recovery, but can also create operational and safety issues. A sinking, tilting, leaking or collapsing roof can cause significant mechanical damage and create overfills and the release of explosive hydrocarbon vapor. The product in the tank may also become contaminated.

The causes of the tank malfunctioning may be that the roof is stuck due to damaged or wrongly mounted rim seals. Leaking pontoons, overfills, strong winds and inadequate draining during heavy rain or snowfall can also dangerously affect buoyancy and roof position.

OUR SOLUTIONS

- Monitor roof position and tilt with radar devices mounted on the tank top or the floating roof
- Get alarms for roof tilting and other hazardous tank conditions
- Combine with liquid level measurement in a still-pipe for complete tank overview and overfill prevention
- Use wireless or wired signal transmission to the control room
- Integrate with operator’s interface including complete tank gauging and inventory management in the control room
**HOW IT WORKS**

**Shell Mounted Installation with Non-Contacting Radar**

Up to six non-contacting radar transmitters are placed on top of the tank at equal distances. Reflector plates on the floating roof enable measurements without any object protruding from the roof surface. Roof tilt is tracked by comparing the distance between each radar gauge and the floating roof.

This non-contacting solution is highly accurate and reliable. It can be retrofitted to existing tank gauging systems without taking the tank out of operation. Adding the tank level measurement as a reference means that roof buoyancy also can be monitored.

**Roof Mounted Installation with Guided Wave Radar**

An alternative solution is to use up to six guided wave radar level transmitters directly on the floating roof, with rigid probes penetrating through the roof and into the liquid below. Roof tilt is tracked by comparing the distance from the floating roof down to the product surface. The roof buoyancy will also be monitored automatically.

A major advantage of the on-roof configuration is that it uses wireless transmission, battery power and existing nozzles.

**Fully Automatic Solution**

Measurement data is transmitted via wired or wireless communication to the control room, where an operator can monitor the roof status and make configurations using the Rosemount™ TankMaster software.

Drain sump monitoring and liquid hydrocarbon detection can be added to the TankMaster roof monitoring function by installing a Rosemount 2160 Wireless Vibrating Fork Detector and a Rosemount 702 Wireless Discrete Transmitter with Liquid Hydrocarbon Detection.

Automatic alarms are given for out of limit roof tilt, buoyancy, roof sticking, as well as drain sump blocking and hydrocarbon detection.

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*External floating roofs with still-pipes are typically used for crude oil storage.*

*Dangerous roof conditions initiate alarms and graphic indication.*

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