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 draining properly.*

CHALLENGES

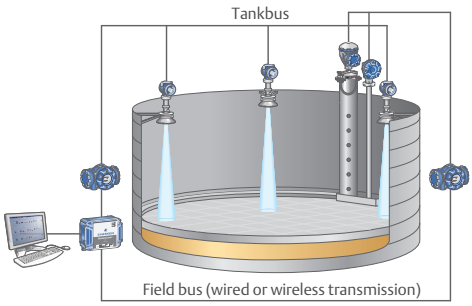
Photo courtesy of www.ASTanks.com

Improper draining can severely disturb roof operation.

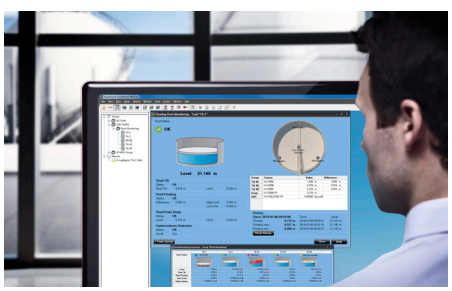
Floating roofs on storage tanks offer advantages in terms of reduced need for vapor recovery, but can also create operational and safety issues. A sinking, tilting, leaking or collapsing roof can cause significant mechanical damage, create overfills, and release explosive hydrocarbon vapor. The product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

The causes of tank malfunction may be that the roof is stuck due to damaged or incorrectly 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



Automatic floating roof monitoring with radar.



Operator checks tank conditions in real time.

- 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 interface including complete tank gauging and inventory management in the control room

Rosemount™ 3308 Radar Level Transmitter

Rosemount 5408 Radar Level Transmitter

Rosemount 5900C Radar Level Gauge

EMERSON™

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 can also 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.

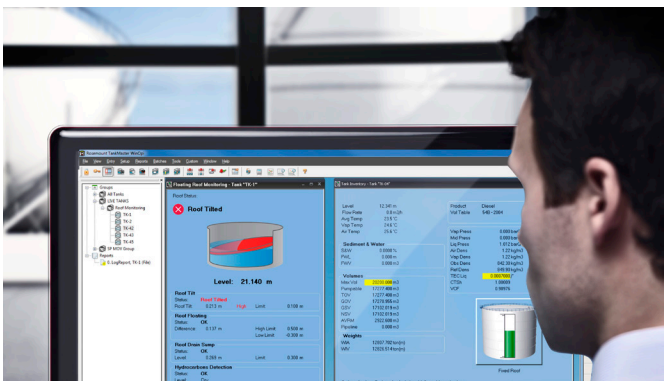
A major advantage of the on-roof configuration is that it uses wireless transmission, battery power, and existing nozzles.

Fully automatic solution

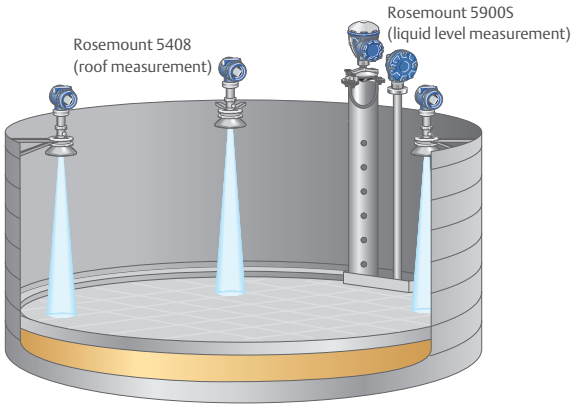
Measurement data is transmitted via wired or wireless communication to the control room, where an operator can monitor the roof status and make configurations using the Rosemount TankMaster™ software.

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.

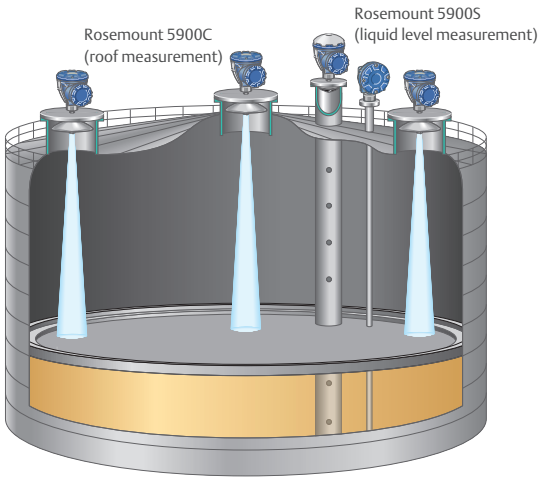
Automatic alarms are given for out of limit roof tilt, buoyancy, roof sticking, as well as drain sump blocking and hydrocarbon detection.



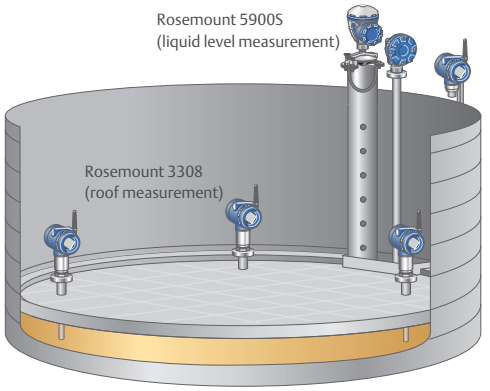
Dangerous roof conditons initiate alarms and graphic indication.



Tank top installation using non-contacting radar.



Inner floating roof using non-contacting radar.



On roof installation using guided wave radar, and WirelessHART® transmission of data.

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Emerson Automation Solutions
Box 150
(Visiting address: Layoutvägen 1)
SE-435 23 Mölnlycke
Sweden
T +46 31 337 00 00
Sales.RTG@Emerson.com

00807-0300-5100 Rev AD 12/20

Emerson.com/Rosemount-TankGauging
Facebook.com/Rosemount
LinkedIn.com/company/Emerson-Automation-Solutions
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