

# Vopak Mussalo Terminal Reduces Risk of Overfills with Independent Radar Level Transmitters

## RESULTS

- Environmental protection by reduced risk of tank overfill
- Improved reliability and less operational disturbances
- Cost savings and reduced maintenance



## APPLICATION

Independent overfill prevention on 34 storage tanks with both fixed and floating roofs.

## CUSTOMER

Vopak Mussalo tank storage terminal near Kotka in southern Finland.

## CHALLENGE

The Mussalo storage terminal used mechanical point level switches for independent overfill protection. The on-off switches needed manual testing which was done at irregular intervals. You were only sure that they worked at the time of testing, which created uncertainty during tank filling operations.

Since the terminal sells storage capacity to customers who own a broad variety of liquids, different products with varying properties are stored in each tank. Under such conditions mechanical equipment with moving parts have reliability problems due to condensation and product build-up. In addition, many of the tanks are heated, and have thermal insulation making them generally unsuitable for equipment with moving parts.

## SOLUTION

The facility turned to Emerson Process Management to provide an upgrade of the tank instrumentation based on Rosemount Tank Gauging equipment. The project comprised installation of a new independent hi-hi alarm system as well as a general modernization of the tank inventory system. The solution had to provide contact-free level alarms as well as high precision measurement of level and temperature for net volume calculations.

After evaluation, the following instrument solution was proposed:

- Rosemount 5400 radar level transmitters for independent overfill protection. On the tanks with floating roofs, the 5400 transmitter measures against the roof.
- TankRadar Rex gauges for custody transfer accuracy radar tank gauging.

**Rosemount 5400 allows continuous testing of the hi-hi level transmitter.**



*A 5400 level transmitter can have HART or FF output.*

## OVERFILL PREVENTION

- Multiple Spot Temperature sensors.
- Rosemount 3051S transmitters (to measure tank vapor pressure).
- TankMaster Inventory Management software package.

By using a reliable and continuously working level measurement device such as the 5400 as an independent overfill alarm, on-line proof-testing during normal operation is now possible.

Each tank has two radar gauges. The Rex gauge is the primary tank gauge for inventory and operational purposes.

The 5400 transmitter and the 3051S pressure transmitter are connected via HART outputs to the separate emergency shutdown system. In case of a hi-hi level alarm, or too high/low pressure, an alarm output is given which closes valves and pumps.

All level and temperature data are fed into the TankMaster inventory management software for net volume calculations, batch transfers, reporting, alarm handling etc.

### RESOURCES

#### Rosemount TankRadar Rex Technical Description, 703010En

[www.rosemount-tg.com](http://www.rosemount-tg.com)

#### Rosemount 5400

[www.rosemount.com](http://www.rosemount.com)

*Technical details are subject to change without prior notice.*

#### Emerson Process Management

##### Rosemount Tank Gauging

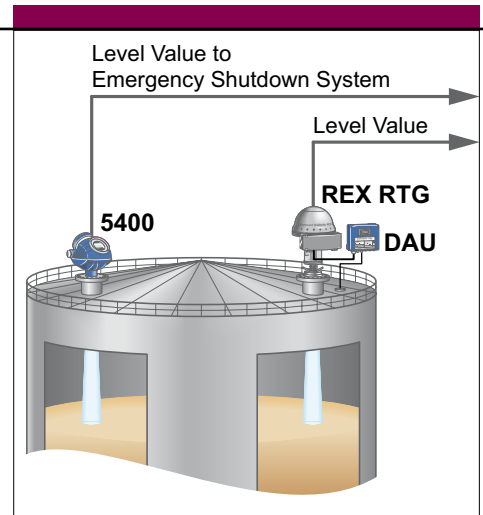
Box 130 45, SE-402 51 Göteborg, SWEDEN

T: +46 31 3370 000 F: +46 31 25 30 22

E-mail: [sales.rtg@emerson.com](mailto:sales.rtg@emerson.com)

[www.rosemount-tg.com](http://www.rosemount-tg.com)

**ROSEMOUNT**  
Tank Gauging



*The two radar gauges on each tank are fully independent.*



*TankRadar Rex measures level with 0.5mm instrument accuracy.*

  
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