

Efficient upgrade of existing tank gauging system at Nynas Bitumen Refinery

RESULTS

- Online and highly accurate Tank Gauging data available in the DCS
- Compliance with new company safety requirements
- Cost efficient installation due to minimal tank and infrastructure adjustments



APPLICATION

Heating oil stored at 70-80 °C (160-180 °F) in a 10m (30 ft.) tall storage tank.

CUSTOMER

Nynas Bitumen Refinery in Gothenburg, Sweden

CHALLENGE

The existing tank gauging system on some of the tanks is outdated and needs to be replaced due to product obsolescence and decreasing availability of spare-parts. Additionally, new company policies require a separate relay output to an independent overfill alarm system. It is acceptable to use a single gauge for both level and hi-alarm measurements if the device has the appropriate overfill approvals, such as TÜV/DIBt WHG or IEC61508-certification (SIS, or "SIL").

It is essential that the new system fits existing tanks, both mechanically and electrically. It must also have the capability to re-use the existing infrastructure and shall provide online inventory data to the DCS-system.

Many of the liquids in the tanks are very viscous. Previous experience shows that mechanical gauges with moving parts cannot be used. Also, the climate can be challenging with ambient temperatures as low as -30 °C (-22 °F). At the same time, the liquids in the tanks are heated and the measurement gauges therefore becomes a cold spot, with product build-up as a potential result if not properly designed.

SOLUTION

Due to previous experiences with Rosemount Tank Gauging equipment, Nynas decided early on that Emerson was the preferred supplier for this upgrade-project. The Rosemount Tank Gauging System was selected because of its durability, reliability and capabilities to fulfill existing – and future – needs.

Customer Statement:

“I could not think of a better solution than the Rosemount Tank Gauging System”



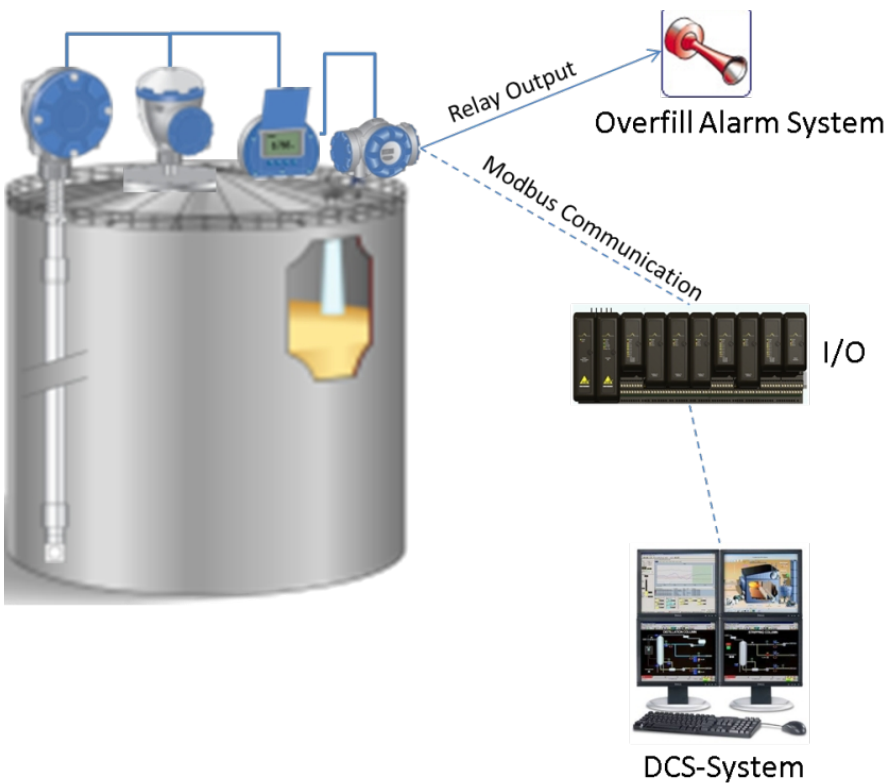
The Rosemount Tank Gauging System on Tank TK52.4.

TANK GAUGING

It was decided that the same Rosemount 5900S Radar Level Gauge fulfilled the requirements to be used for both level and overfill prevention measurements. Mainly because of its safety-classification, separate fail-safe relay output and no moving parts.

In some of the tanks, new multi-point temperature transmitters and sensors were installed. In others, the existing point-temperature sensors were reused by connecting them to a Rosemount 644 Temperature Transmitter.

The Rosemount Tank Gauging System has an architecture that made it possible to minimize the number of tank modifications. Existing power and communication wiring could be reused and it could easily be integrated into the existing DCS-system thanks to its wide array of communication options. The generic Modbus protocol was selected to interface with the DCS-system.



Tank TK52.4: Schematic Overview of Tank Gauging System.

The Rosemount 5900S Radar Level Gauge with its 0.5 mm instrument accuracy was selected as the level measurement device. Depending on the tank, parabolic and horn antennas were used. They both have a condensation resistant design, and a test in one of the plant's tanks during the winter proved that they functioned very well even under the most severe conditions.



The Rosemount 5900S Radar Level Gauge.



The Rosemount 2230 Graphical Field Display.



The Rosemount 2410 Tank Hub.

ROSEMOUNT
Tank Gauging

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
www.Rosemount.com/TankGauging


EMERSON
Process Management