

APPLICATION REPORT Chemical

Gauge pressure measurement for inerting storage tanks

- Maintaining a protective layer of nitrogen
- Reliable prevention of oxidation of stored ester
- Increased product yield
- Use of pressure transmitter with ceramic measuring cell

oleon
A NATURAL CHEMISTRY

1. Background

Oleon is part of the Avril Group, a manufacturer in the oil and protein sectors. Established in 1950, the company is now one of the biggest manufacturers of oleochemical products based on renewable raw materials such as natural fats and oils. The company offers a wide range of products including fatty acids, glycerin, esters, dimers, technical oils, speciality oleochemicals and biodiesel. Headquartered in Ertvelde, Belgium, the company runs several production sites in Belgium, Germany, France and Malaysia.

2. Measurement requirements

The customer stores ester in several tanks at its European sites. The ester is covered with a layer of inert gas (nitrogen) to protect it against oxidation. There is a slight gauge pressure in the tank (between 0...25 mbarg / 0...0.36 psig), which the customer must continuously monitor by way of relative pressure measurement at the top of the tank. If the gauge pressure cannot be measured, there is a risk of air intake. If oxygen gets into the tank, it can cause the ester to oxidise. This is a new application for the customer, there was no previous measuring point for this parameter. The temperature in the tank is +80°C / +176°F. ATEX-approved measuring devices were required for this application.



Measuring gauge pressure of the nitrogen layer

3. KROHNE solution

KROHNE suggested 4 OPTIBAR PC 5060 C pressure transmitters. They were installed in the top portion of the steel storage tanks.

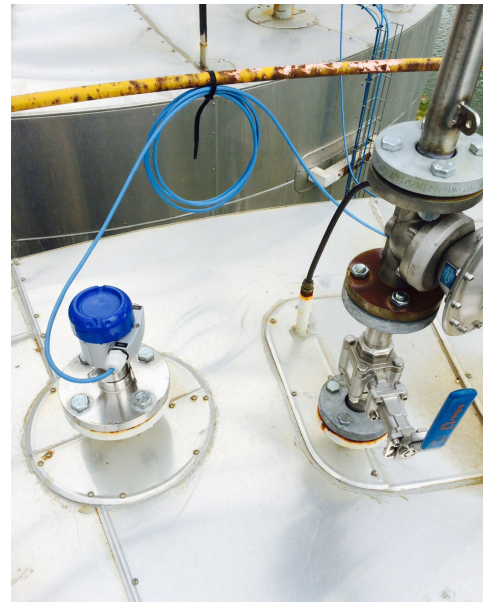
The numerous available mechanical screw or flange connections allowed the customer to keep the existing thread and thus avoid having the tank re-certified.

The OPTIBAR PC 5060 C pressure transmitter is made up of a sturdy ceramic diaphragm that is resistant to oxidation and corrosion in chemical surroundings. This ceramic protects the device from product vapours while ensuring reliable and accurate measurement.

Furthermore, the OPTIBAR's pressure measuring range allows it to cover extended ranges while remaining immune to overload of 5 times the measuring range.

From the range of housing available, a version made of powder-coated aluminium was selected to meet the customer's requirements and suit the surrounding conditions.

The device comes with 4...20 mA signal output (incl. HART®). It was decided not to use the "SIL 2/3" device option as the device is only used for a process measurement and not in PCT safety equipment.



OPTIBAR PC 5060 C pressure transmitter at top of tank

4. Customer benefits

The nitrogen layer is maintained by measuring a constant gauge pressure. The ester does not oxidise, which allows the customer to effectively limit product loss and increase his yield.

The customer values the good business relationship and the technical support provided by KROHNE. As a result, Oleon has meanwhile acquired additional pressure and level transmitters as well as temperature sensors.

5. Product used

OPTIBAR PC 5060 C

- Pressure transmitter for the measurement of process pressure and level
- For applications with gases, liquids and steam
- High plant availability thanks to maximum overload and vacuum resistance in the ceramic measuring cell
- Extremely quick step response times <85 ms
- 2-wire, 4...20 mA/HART®, FOUNDATION™ fieldbus, PROFIBUS PA
- Also with option for Safety Instrumented Systems (SIL2/3)
- Optional display and adjustment module
- Factory parameters set via display module or PACTware



Contact

Would you like further information about these or other applications?
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