APPLICATION REPORT

Chemicals

Level measurement on Carbon Dioxide tanks at AIR LIQUIDE

- High reliability with reduced installation and maintenance costs
- Accurate level measurement on moving product surfaces
- TDR technology: optimized cost/performance ratio

1. Background

AIR LIQUIDE - world leader in industrial/medical gases and related services – operated with weighing systems to estimate the level of their Carbon Dioxide tanks.

2. Measurement requirements

During the filling, CO_2 is at -20°C and 20 bar to avoid it freezing inside the pipes. The tank diameters vary from 1.3 up to 3 meter without specific internals. CO_2 has a low dielectric constant of Er 1.6. Weighing systems used so far, are costly and greatly increase the weight of the installation. Ice build-up, due to the cryogenic liquid (CO_2) results into uncertain measuring values. Capacitance probes, pressure transmitters and float systems were tested as alternative solutions to these systems; all of them with limited success.

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3. KROHNE solution

OPTIFLEX 1300 C

- Universal 2-wire TDR (Guided Radar) Level Meter
- Coaxial probe
- Connection type: G 3/4" A ISO 228

KROHNE already sold more than 200 of these devices to AIR LIQUIDE and other CO_2 suppliers (e.g. MESSER, LINDE)

OPTIFLEX on CO_2 tank

4. Customer benefits

The OPTIFLEX 1300 C with coaxial probe amplifies the reflection from the product surface and provides the perfect solution for this low dielectric product (_r 1.6). In addition, the outer sheath of this probe type is drilled with multiple holes, interspaced every 2 cm to maximize the product transfer inside. So, even if it came to stratification due to different product densities, the instrument would always measure the correct surface. Commissioning is reduced to a Quick setup operation; a few seconds later, the instrument is ready. Pressurizing the tank with gas up to 20 bar does not affect the zero measurement and during the filling, level starts immediately after opening the valve. Our customers are impressed by the measurement stability and linearity; the product surface is boiling and the trend shows a perfect trace. By replacing the weighing systems with our OPTIFLEX 1300 C, the weight of the installation was cut in half. The competitive price of our device answered the need for a better cost/performance ratio.

Tank filling

5. Product used

OPTIFLEX 1300 C

- Competitive price
- Reliable and accurate (±3 mm) measurement
- Wizard driven setup
- Maintenance free
- PACTware for routine checks & commissioning
- 2-wire loop powered
- Low temperature suitability

Contact

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