APPLICATION NOTE

Chemical industry

Level measurement in spherical chlorine storage tanks

- Level measurement as part of overfill protection in accordance with WHG [Wasserhaushaltsgesetz]
- Observance of maximum permissible filling height in chlorine tanks
- Improved tank management thanks to continuous, non-contact measurement

1. Background

One of the world's largest raw material suppliers in the chemical industry operates 60 production facilities around the world. At one of the facilities in Germany, chlorine is produced and then stored in spherical storage tanks before it is further transported. Chlorine is an aggressive substance which is hazardous to water. Hence, in Germany its storage is subject to the Wasserhaushaltsgesetz (WHG), a German law which relates to the use and protection of water.

2. Measurement requirements

Due to technical specifications, the spherical chlorine storage tanks may only be filled to a certain height. Typically, the level in spherical tanks is monitored using vibration fork level switches mounted on the roof and featuring ATEX approval. As the maximum permissible level in this case is a few meters below the level of the roof of the tanks, it is possible to monitor with vibration fork level switches but there is no ATEX approval available for this length of vibration fork. That is why the operator was looking for an alternative solution.

KROHNE

3. KROHNE solution

One OPTIWAVE 7300 radar level meter was installed on each spherical tank. The devices are fitted with stainless steel horn antennas and were mounted to the existing flange connectors. They provide non-contact measurement of the chlorine level via FMCW radar pulses. The OPTIWAVE 7300 features both ATEX and WHG approval and can thus be used as part of the overfill protection according to WHG.

The spherical chlorine storage tanks may only be filled up to a predetermined height

4. Customer benefits

The operator now has continuous level measurement for the entire height of the tank. It does not only detect the maximum permissible level once it has been reached but instead can redirect the supply of chlorine to another tank in time or draw out of the full tank. Tank management at the facility has been significantly improved thanks to the new solution.

On the roof of the spherical tank: OPTIWAVE 7300 installed on the existing flange connectors

5. Product used

OPTIWAVE 7300 C

- Non-contact radar level meter for liquids and pastes
- 2-wire FMCW 24...26 GHz radar
- Optionally available as 4-wire design
- Continuous, non-contact level measurement
- Pre-configured ex-works
- Simple start-up thanks to installation wizard
- Different antennas for measuring ranges up to 80 m
- Maintenance-free

Contact

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