



APPLICATION NOTE

Chemicals

Level measurement of different PVC shapes in silos

- Reliable production supply thanks to continuous level monitoring
- Reliable measurement of extremely low tank levels
- No flushing systems necessary despite presence of products that are extremely adhesive and give off dust

1. Background

A company that manufactures and processes PVC stores a variety of PVC shapes in several slim silos reaching heights of more than 20 m. They supply their own as well as third-party production. In addition to PVC powder and PVC granulate, regenerated PVC extracted from old shredded products is also stored.

2. Measurement requirements

To ensure a reliable supply for production, the level in the silos must be continuously measured. The atmosphere in the silos is extremely dusty and the PVC dust raised is very sticky. Level measurement was previously done using ultrasonic but this method often failed due to the great amount of dust; there is no compressed air supply installed on the tanks for the purpose of flushing the antenna. The customer was interested in non-contact measurement as an alternative. In an effort to find a suitable device, radar measuring devices from different manufacturers were installed as test units.

3. KROHNE solution

KROHNE's OPTIWAVE 6300 radar level measurement device was recommended for continuous and non-contact measurement. When it came to the antenna, a polypropylene drop antenna (specifically designed for solid applications), with a nominal size of DN 80 was used. The larger DN 150 drop antenna was used for the particularly minimally reflective PVC powder. Compared to the DN 80 antenna, it features an even greater signal dynamic.

4. Customer benefits

In the comparative test, the OPTIWAVE 6300 devices provided reliable and stable measurement for all PVC shapes, especially at low tank levels. When measuring granulate, the devices could be used without rotating mechanisms to align the antenna due to the high signal dynamic and increased focusing of the signals emitted. These mechanisms were only used for the extremely fine PVC dust to ensure more stable measurements.

Even though the PVC dust sticks permanently to the antenna, the enclosed design prevents any negative impact on the measurement. Thanks to the antenna's large radiating surface and the low dielectric value of the product, the radar wave can easily measure through. No flushing or special dust protection is required, the antennas are maintenance-free. The devices come pre-configured; which amounts to a significant advantage for the operator in terms of installation and maintenance costs.

This solution allows the company to monitor the level in the silos at any time. It also eliminates any chance of running on empty and thus putting the production process at risk as a result of faulty measurements in the tanks.



Reliable measurements despite dust deposits

5. Product used

OPTIWAVE 6300 C

- Radar Level Meter for solid applications
- 2-wire FMCW 24...26 GHz radar
- Specifically designed for measuring solids
- Continuous non-contact level measurement
- Pre-configured ex works
- Simple start-up thanks to the installation wizard and its prompting for the necessary parameters
- Basic version with DN 80 drop antenna measures up to a height of 30m
- Also available with DN 150 drop antenna for a measuring range up to 80 m or products with very low reflectivity



Contact

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