APPLICATION NOTE

Food & Beverage

Level measurement on flour mill silos

- Remote stock control with reduced installation and maintenance costs
- Clear vision even through dust-laden air
- Accurate level measurement on non-flat surfaces

1. Background

Most flour mills estimate their stock indirectly by calculating the amount of product loaded and used. Due to the increasing price of wheat, reliable stock management has become an important issue for this industry.

2. Measurement requirements

The mills keep a permanent stock and each product is immediately available to the end user. The product, from the raw material to the end product, is stored in on-site silos. The silos have various sizes and shapes. Much time is spent climbing up to the top of the silos – some of which are over 15 metres high – to take measurements. In addition, flour is a low reflective medium and there is always dust involved. Under these circumstances it is difficult to obtain reliable level information, not to mention the uneven product surface which generally requires expensive antenna aiming kits when using radar measurement technology.

3. KROHNE solution

KROHNE delivered the OPTIWAVE 6300 C with a DN 80 PP Drop antenna. Fitted on a silo roof, this 2-wire FMCW radar measures the level and thereby calculates the product left in each silo. The device does not come into contact with the product. The meter is connected to a data logger with local display situated in a control room.

KROHNE

Flour silos

Dust filter

4. Customer benefits

There is no longer any need to climb up to top of the silo roof to check the level of product: the stock is now continuously calculated and displayed on a computer monitor in a control room. By combining the high signal dynamics and FMCW radar technology, the OPTIWAVE 6300 C guarantees reliable measurement even on low reflective product and in very dusty atmosphere. Product build-up on the antenna is no longer an issue with the Drop-antennas made of PP or PTFE. Their shape, unlike traditional horn antennas, prevents a crust forming on the antenna: this makes purging systems obsolete and maintenance unnecessary. This, and the fact that a 2-wire device needs less wiring, has an immediate impact on installation and operating costs for the customer. As a result, the customer now uses a robust technology that meets the stringent measurement requirements needed for their application, and all this at a competitive price.

5. Product used

OPTIWAVE 6300 C

- 20 years of proven technology
- The only 2-wire FMCW 24...26 GHz non-contact radar for solid applications
- No more purging systems: the Drop antenna made of plain PP or PTFE minimizes product build-up and makes the device maintenance free
- Higher signal dynamics and greater bandwidth for reliable stock management in dust-laden atmospheres and on low reflective product
- Reduced installation costs: FMCW technology is not affected by angle of repose and expensive aiming kits become obsolete

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