



APPLICATION NOTE Food & Beverage

Level measurement in starch production

- Storing bran in 20 meter high silos
- Permanent monitoring of bran stock for supply inventory
- Low operating costs due to simplified and maintenance-free installation

1. Background

The world's production of starch and its by-products currently amounts to 6.5 million tons per year. Obtained mostly from corn, wheat and potatoes, starch is used as an additive in various industries: e.g. food processing, papermaking, clothing, chemical and pharmaceutical industry. Several processes allow for the production of starch: One of them, called 'steeping', separates the peel from the grain by soaking it in water for several days. The grain peel is then dried before being shredded and used as an additive in animal feeds.



Corn as raw material for starch production

2. Measurement requirements

One of the largest starch producers in France processes 3 million tons of corn and 1.5 million tons of wheat every year. The shredded peel (bran) is stored in several 20 meter high silos before being added to the next process. To avoid interrupting the production process, the stock must be permanently monitored. Bran is generally a low reflective medium and there is always dust and condensation involved. This and the uneven product surface make reliable level measurement a challenging task. The previously tested devices from competition – a TDR guided radar level meter with cable probe and a Radar instrument with traditional horn antenna – had to be removed frequently for cleaning and much time was spent climbing up to the top of the silos. During the cleaning, the production cycle was interrupted causing financial loss. Therefore, the customer was looking for a maintenance-free solution.

3. KROHNE solution

KROHNE delivered 2 OPTIWAVE 6300 C with a DN 80 (3") Drop antenna made of plain PP and a G1½ process connection. Fitted on each silo roof, the non-contact radar (FMCW) level meters measure the level of bran and communicate the results to the DCS in the control room.

The OPTIWAVE 6300 C uses specific software algorithms for solids. Combined with the FMCW radar technology and the high signal dynamics of its electronics it allows for accurate and reliable level measurement even in dusty atmosphere and on a low reflective medium with an uneven or moving surface.



Drop antenna of the OPTIWAVE 6300: Measurement is unaffected by dust deposit

4. Customer benefits

The starch producer benefits from a maintenance-free level meter as the ellipsoidal shape, smooth polypropylene surface and completely encapsulated design of the OPTIWAVE's Drop antenna is not affected by condensation and crusting. Therefore, interruptions of the production cycle and climbing on the silo roofs for periodic cleaning of the antennas are no longer necessary. As the level meter is unaffected by dust, measurements can also be taken during the filling process without the need for antenna aiming kits.

Since the OPTIWAVE 6300 C sends its accurate measuring values directly to the control room, the customer is now able to monitor its stock on a permanent basis. This enables the user to optimise supply inventory without the risk of overfilling the silo.

Thanks to the installation wizard, the meters are simple to set up and use. Being 2-wire devices, they also need less wiring. This reduces the installation and operating costs. Adding the competitive price of the OPTIWAVE 6300 C to all these advantages, this solution gives a fast return on investment.

The customer is very satisfied with the level meters. Another 14 silos of this production site will shortly be fitted with OPTIWAVE 6300 C and there is potential for 52 corn silos on other production sites of the company.

5. Product used

OPTIWAVE 6300 C

- 2-wire 24...26 GHz non-contact FMCW radar, ideal for solid applications
- No more purging systems: the Drop antenna made of plain PP or PTFE minimizes product build-up and condensation
- Measuring heights up to 80 m
- PACTware and DTMs available fully functional and free of charge
- Wizard driven setup
- Reduced installation costs



Contact

Would you like further information about these or other applications?
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