



APPLICATION REPORT Food & Beverage

Level measurement in poultry feed silos



- Quick filling of round silo cells with feed pellets
- Uninterrupted 80 GHz radar level measurement with extremely short response time
- Real-time information for process control in the event of quickly changing levels

1. Background

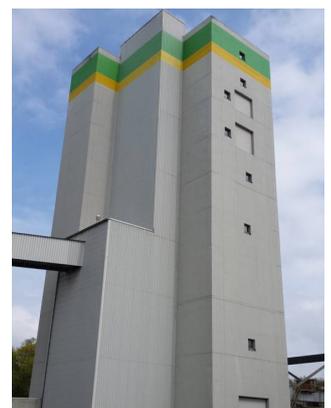
Raiffeisen Kraftfuttermittelwerk Dörpen GmbH in Germany specialises in the manufacture of high-quality animal feed. Every year the company produces a total of 350,000 tonnes of mixed and special feed, which is then sold mainly to regional agricultural operations. In a separate production building, the concentrated feed factory produces poultry feed among other things.



Poultry feed

2. Measurement requirements

The production site stores the prepared poultry feed in a silo block consisting of 21 round silo cells (2 x 2 m / 6.5 x 6.5 ft wide, 9.5 m / 31.2 ft high). The silo cells are loaded in turn by a distributor that fills each silo for a duration of max. two minutes with approx. 1.5 tonnes of feed pellets. After two minutes, the next silo is then loaded. The operator uses level measurement to optimise filling and monitor the inventory of the silo cells.



Silo block

Previously, the customer had fitted all silo cells with a competitor's 80 GHz radar level transmitter. However, the measuring devices reacted too slowly to changes in level and are generally not suited to the measurement of batch applications with high change speeds. They could only generate the level after the filling process had already been completed. There were no reliable measured values available for the filling itself. The factory operator thus started to look for alternate measurement instrumentation.



3. KROHNE solution

The customer decided on a two-week test installation of the OPTIWAVE 6500 C. The 80 GHz FMCW radar level transmitter is designed to quickly fill media with small grain sizes such as feed pellets and can track level changes of up to 60 m/min or 1 m/s (196 ft/min or 3.3. ft/s). Compared to the measuring devices previously used, the KROHNE device boasts a considerably shorter averaging phase. That means that it can generate an extremely stable measured value very promptly. In addition, the OPTIWAVE 6500 enables high signal dynamics, achieving reliable, continuous measurement even with minimal reflection and a bulk cone formation in the silo.

The measuring device was flush-mounted with a PEEK lens antenna (DN70). There is no intrusion into the tank. This way, the level transmitter measures with virtually no dead zone so that the silo can be filled to the roof. It is installed just 20 cm / 7.8 inch from the filler neck used to fill the silo.



OPTIWAVE 6500 C with flush-mounted PEEK antenna



Installation next to filler neck



Measuring points

4. Customer benefits

The OPTIWAVE 6500 tracks changes in level quickly and reliably, even though the measuring point is right next to the filling mechanism. In spite of this potential source of interference and other demanding application conditions (including a low dielectric constant of the medium, agitated product surface and cone formation in the silo), the radar level transmitter met customer expectations immediately. While filling, it provides the feed works operator with the necessary information in real time to optimally control the filling process.

The KROHNE device has proven itself with its quick filling of silo cells, convincing the customer. That is why the animal feed producer decided to equip all 21 measuring points with the OPTIWAVE 6500. There are also plans to use the KROHNE 80 GHz radar at the new plant with 20 other silo cells.

5. Product used

OPTIWAVE 6500 C

- Radar (FMCW) level transmitter for powders and granulates
- Continuous, non-contact level measurement in tall and narrow silos, hoppers or containers up to 100 m / 328 ft
- Extremely high dynamics for accurate measurements of low reflective media in dusty atmospheres
- 80 GHz radar, PEEK lens antenna (DN40, DN 70; 1.5", 2.75")



Contact

Would you like further information about these or other applications?
Do you require technical advice for your application?
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