

APPLICATION REPORT

Food & Beverage

Level measurement of raw feed and grain

- Improved inventory management for intermediate storage and disposition of soybean meal, rapeseed meal and other goods
- Equipping 63 Silos with 80 GHz radar (FMCW) level transmitters
- More efficient logistics processes through enhanced transparency of goods and silo capacities

August Eilers GmbH & Co. KG

1. Background

August Eilers GmbH & Co. KG from Bramsche, Germany, specialises in the handling and storage of raw feed and grain for animal feed production. The company operates one of the most efficient transshipment ports for soybean meal, rapeseed meal, wheat bran and grain on a major canal ("Midland Canal") in central Germany.

The products are delivered by the major suppliers by ship from all over the world and temporarily stored on site. Via the port, the family-owned company supplies the mixed feed businesses in North-Western Germany as well as feed wholesalers. The products are loaded onto the customers' trucks via two loading routes. At night customers can load their trucks on their own with a self-service cheque card.



Transshipment port for raw feed and grain

2. Measurement requirements

For interim storage, the company operates numerous silo cells, some of which are very narrow, as well as free-standing round silos up to 20 m / 65.5 ft high. The complex logistics between goods delivery, storage and loading routes require flexibility in planning and thus a high degree of transparency regarding the actual feed stock in the silos.

Until now, the silos have only been equipped with full detectors. In order to enable continuous monitoring of the available goods and silo capacities, the customer planned to equip his systems with new level measuring instruments. Since the silos generate a lot of dust – especially during filling – only measuring instruments that can measure reliably and trouble-free under these conditions were considered. In addition, ATEX approval was mandatory for use in potentially explosive areas with combustible dust.

KROHNE

3. KROHNE solution

After several weeks of testing, the customer decided to use the OPTIWAVE 6500 radar (FMCW) level transmitter. 63 silo cells and round silos were equipped with the KROHNE device. The non-contact level transmitter was installed above the silos with a flush-mounted PEEK ($\varnothing 70$ mm) lens antenna and low-pressure flange.

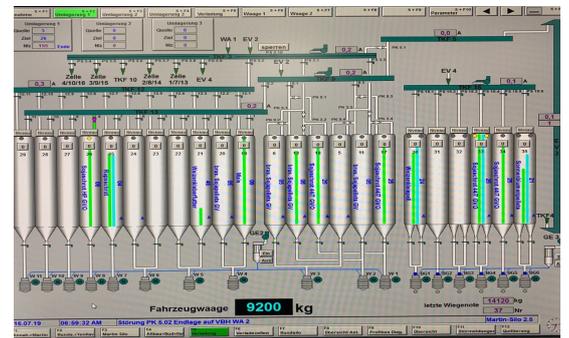
Due to the high signal dynamics of the 80 GHz radar, the OPTIWAVE 6500 is designed for use in difficult level applications with fine-grained, highly dusty bulk materials. Due to the small beam angle of only 4° , the FMCW radar is ideally suited for level measurement in the very narrow feed silos without disturbing reflections from the silo wall affecting the measurement.



Level measurement in raw feed and grain silos

4. Customer benefits

The continuous level measurement enables the customer to store goods accurately and clearly. With a glance into the visualization system, the operator can immediately see which free storage capacities still exist and which feeds are currently available. Accordingly, the filling of the silos and the disposition of the goods can be actively planned. Trucks are loaded on schedule. Since loading can take place both during the day and at night, the on-site workload can also be significantly minimised. The operator benefits from more efficient logistics processes.



Visualisation of silo levels

Compared to four other 80 GHz radars from a competitor installed on site, the OPTIWAVE 6500 has a much better response time during loading and unloading. The KROHNE device reacts faster and measures reliably. The strong signal focussing of the 80 GHz radar offers the decisive advantage here.

Due to the front-flush installation of the radar level transmitters, there is no intrusion of the antenna into the tank. The silos can therefore be filled up to the ceiling almost completely and without dead zones. Storage capacities are optimally utilised.

5. Product used

OPTIWAVE 6500 C

- 80 GHz FMCW radar level transmitter for raw feed, cereals and other applications with extremely dusty bulk solids
- Continuous, non-contact level measurement in high and narrow silos, hoppers or containers up to 100 m / 328 ft
- Extremely high dynamics for clear vision despite dusty atmospheres or low reflective media



Contact

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