APPLICATION NOTE

Food & Beverage

Level measurement of liquid chocolate in an industrial bakery

- Improved stock management through automated level measurement
- Reliable and accurate readings despite viscous, sticky liquid and moving product surface
- Non-contact hygienic level measurement using 80 GHz radar with non-intrusive PEEK Lens antenna

1. Background

An industrial bakery in France produces chocolate buns using liquid chocolate stored at +45 °C / +113 °F in a tank with conical top and bottom of 4.74 m / 15.55 ft height. Every four hours for ten minutes a rotating scraper removes the chocolate from the tank walls.

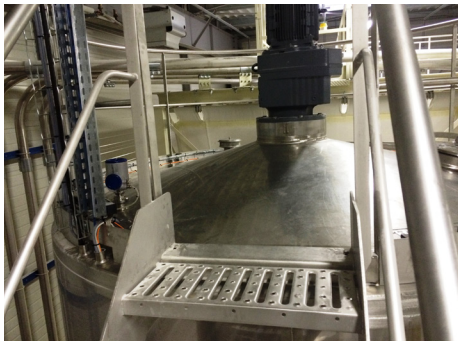
2. Measurement requirements

In order to ensure the uninterrupted supply of chocolate for the production of buns, the level of product inside the tank must be continuously monitored. The viscous and sticky liquid tends to build up, especially on intruding measuring probes. Apart from hygienic issues and increased maintenance costs, this can easily lead to inaccurate readings just like the moving product surface resulting from the scraper. In addition, the customer was looking for an automated measuring solution to manage his stock and reduce manual workload. As the tank was new, there had not been any measuring equipment installed so far.

KROHNE

3. KROHNE solution

KROHNE installed the OPTIWAVE 3500 C. This 80 GHz FMCW radar level transmitter is dedicated to liquid applications with hygienic requirements. It has been installed with a DN51 SMS 1145 hygienic connection and a flush-mounted DN25 / 1.5" PEEK Lens antenna. Fitted on top of the tank, the device continuously measures the level of the liquid chocolate and automatically transmits the values to the control room.

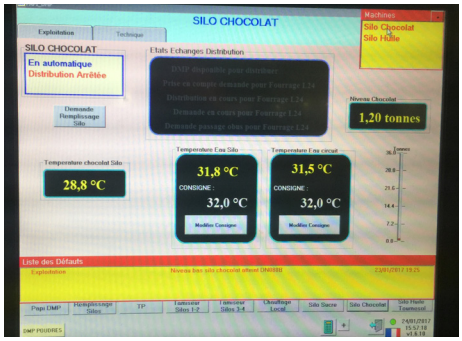


OPTIWAVE 3500 C installed on top of the tank

4. Customer benefits

The customer has optimized the supply inventory and reduced their maintenance and production costs at the same time. The OPTIWAVE 3500 provides continuous and precise readings of the liquid chocolate level right up to the process connection. Its flush-mounted PEEK Lens antenna does not intrude into the tank which avoids deposit and keeps maintenance costs low.

Thanks to its small beam angle, the radar is able to measure agitated product surfaces with an accuracy of ±2 mm / ±0.08". The measured values are automatically forwarded to the control room. Easy to install, commission and operate, this solution gives a fast return on investment altogether.



Stock management of liquid chocolate

5. Product used

OPTIWAVE 3500 C

- 2-wire 80 GHz non-contact FMCW radar level transmitter for liquids with hygienic requirements
- Flush-mounted PEEK Lens antenna (no tank intrusion)
- Small dead zone and beam angle (8° with DN40 / 1½" Lens)
- Measuring distances up to 50 m / 164 ft
- Suitable for Cleaning-In-Place (CIP) and Sterilization-In-Place (SIP)
- Extensive choice of hygienic process connections: clamps, SMS, DIN 11864-1, VARIVENT® etc.
- ±2 mm; ±0.08" accuracy
- Process conditions up to +150 °C / +302 °F and 25 barg / 362.6 psig
- Quick setup assistant for easy commissioning
- Empty tank spectrum function that eliminates false reflections
- Large backlit LCD display with 4-button keypad and text displayed in 12 languages
- Free PACTware™ DTM with full functionality

Contact

Would you like further information about these or other applications?
Do you require technical advice for your application?
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Please visit our website for a current list of all KROHNE contacts and addresses.

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