



APPLICATION NOTE Power Industry

Level measurement as part of a fuel management system

- Guided Radar meter replacing mechanical solution
- Reliable and accurate measurement, unaffected by density changes
- Remote transmission of the measured values and local reading of the displays at eye level

1. Background

It is current practice for public buildings, army barracks, hospitals and schools, even entire districts to use a district heating network. A good fuel management system is essential to ensure smooth and efficient running. The amount of fuel used must be permanently monitored so that it can be topped up again at low prices.

A power station in Switzerland works with heat pumps to extract the thermal energy from water in a lake. Two gas turbines provide the complementary heat required. The turbines are operated by biofuel, which is stored in two tanks, each 10 m high and able to hold 600 m³ of biofuel.

2. Measurement requirements

The level meters must be able to deliver reliable, accurate and highly repeatable measurements. Other requirements include simple installation, immediate operational availability without a complex start-up procedure and low maintenance. Furthermore, the operator needs display units to configure the device on site, i.e. measuring devices that can be read and operated at eye level to avoid climbing up the tank.

In addition, all the measurement data must be directly transmitted to the control centre and the purchasing department to optimize warehouse and fuel management. Previously, the power plant had used a float-type level gauge system. However, these mechanical measuring devices have two major disadvantages:

1. Their accuracy depends on the product density. If the density changes, the results are inaccurate.
2. The considerable cost and effort associated with the installation and maintenance of such devices.

3. KROHNE solution

For this application KROHNE provided two OPTIFLEX 1300 level meters with remote signal converters. The probe assemblies are fitted directly on the tank roofs. The converters, equipped with the user-friendly touch screen, are fixed to a support at eye level and connected to the probes using 14 m long flexible conduits.



OPTIFLEX 1300: remote version of the probe assembly installed on a tank



Remote version of the signal converter at eye level

4. Customer benefits

KROHNE's level meters fulfill all the demanding requirements of this application and allow optimal operation of the fuel management system. The robust technology offers excellent value for money. Because OPTIFLEX measures the distance to the product surface and not the product density, the device is completely unaffected by density variations. It measures with a maximum deviation of ± 2 mm and a repeatability better than 1 mm. The installation of these devices is easy and does not require any costly changes to the fuel tanks.

5. Product used

OPTIFLEX 1300

Universal level meter, guided radar (TDR = Time Domain Reflectometry) for liquids, pastes, granulates, powder and liquid interface

- High signal dynamics and sharper pulses for improved accuracy
- Displays level and interface
- Touch screen for simple operation without opening the housing
- Simple installation, no on-site calibration required
- Can be used up to 300 bar, product temperature $-40\dots+200^{\circ}\text{C}$ (300°C optional)
- Available in stainless steel and Hastelloy C-22, other materials on request
- PACTware and DTMs included as standard
- Optimal process safety (with Metaglas dual process sealing system for dangerous products)



Contact

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