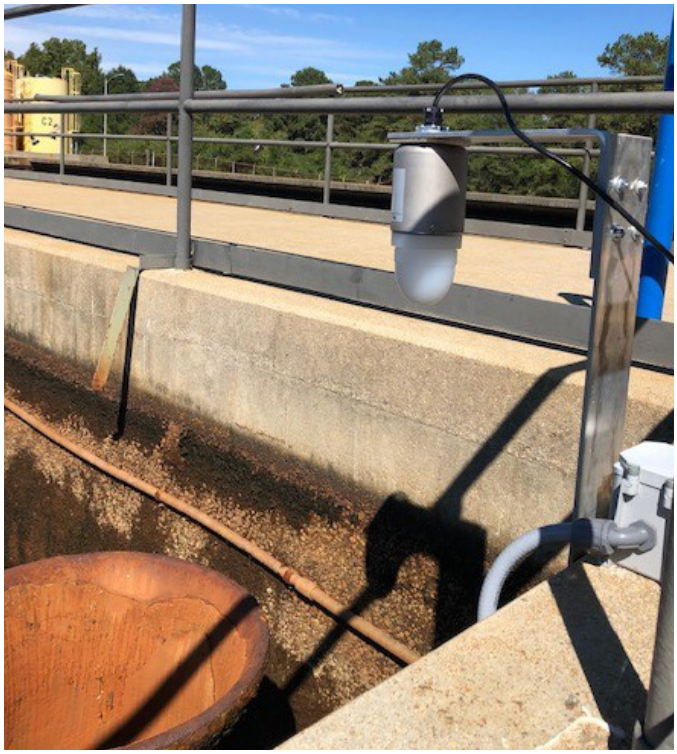


APPLICATION NOTE

Water & Wastewater

Treated water level measurement in a basin

- Preventing loss of drinking water dedicated to water distribution
- Critical non-contact radar level measurement for monitoring of an overflow pipe
- Saving on costs for additional disinfectants, pump capacity and manpower

1. Background

A water utilities company in the USA primarily supplies potable water to private households of an adjacent community. After water filtration and chlorination at the local treatment plant, the water is stored in a basin to be pumped directly into the drinking water network.

2. Measurement requirements

In order to avoid overfilling of the basin and subsequent contamination, water is discharged by way of an overflow pipe once a certain water level in the basin has been exceeded. The drained water, though already chemically treated, must then be cleaned all over again. It is thus the utilities' priority to properly balance out the system to prevent loss of water due to overflow. This makes level measurement key to overflow prevention and the efficient operation of the water supply system.

The customer previously used ultrasonic level transmitters as well as submersible level probes for this critical measurement. As this technology did not work as reliably as intended, the company was searching for a more stable level technology that was also able to cope with the changing climatic conditions such as heavy rainfall, fog or hot sunlight.

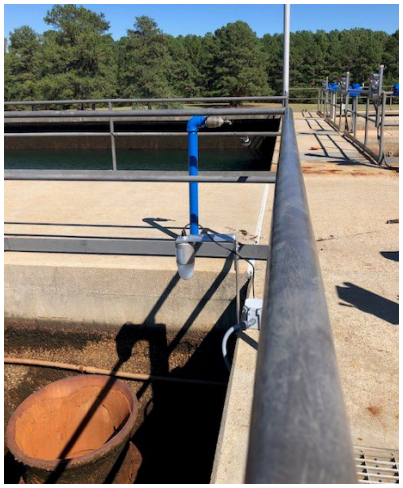
Overflow pipe in the water basin

KROHNE

3. KROHNE solution

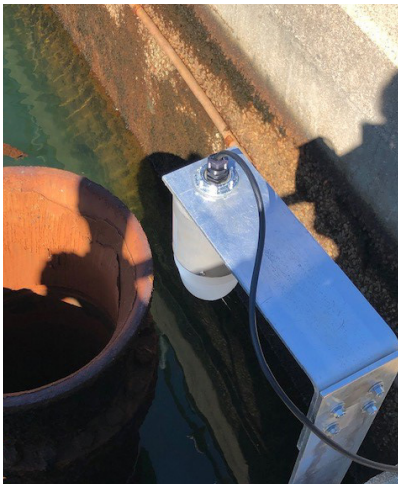
The water utility opted for continuous, non-contact level measurement with the OPTIWAVE 1400. This FMCW radar level transmitter is particularly designed for use in water applications. It features a robust stainless-steel housing and comes IP68 / NEMA 4X/6 rated for use in open air installations with the risk of heavy rainfall or even flooding.

Its PP (polypropylene) Drop antenna has the smallest beam angle (8°) on the market, guaranteeing accurate and reliable measurement of the water basin level, despite of the occasionally moving water surface. The radar level transmitter was attached to the basin edge with a wall-mounted bracket.



Radar level measurement of water basin

FMCW radar installed next to the overflow pipe



OPTIWAVE 1400 level transmitter attached with a wall-mounted bracket

4. Customer benefits

The OPTIWAVE 1400 performs a key function to reduce unnecessary loss of treated water due to overflow. The radar level transmitter provides a 4...20 mA/HART output signal to the PLC that generates an alarm in the control room whenever the water exceeds a certain level. This very critical measurement allows the customer to take immediate steps to balance out the system. Preventing water from entering the overflow pipe helps the operator save on costs for disinfectants, electrical power for pumping as well as manpower.

The water utility stands to gain from a more powerful, yet cost-effective alternative to the previously used level transmitters. The level radar has once again demonstrated its excellent signal dynamics. Right from the beginning the readings taken at the basin have indicated any level change within an inch. The KROHNE device has been working reliably despite challenging weather conditions with heavy rainfall or hot sunlight.

5. Product used

OPTIWAVE 1400

- Radar (FMCW) level transmitter for liquids in the water and wastewater industry
- Continuous, non-contact level measurement in basins, pumping stations, open channels etc.
- Robust stainless-steel design, waterproof (IP68 / NEMA 4X/6)
- 24 GHz radar, PP Drop antenna
- Measuring range: 0...20 m / 66 ft
- Also available with wall-mounted bracket and other antenna aiming kits

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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