

APPLICATION NOTE Water & Wastewater

Flow measurement of treated water for a drinking water supply system

- Monitoring the output of a water treatment plant
- Burial installation of an electromagnetic flowmeter with special coating
- Quick replacement of a DN900 flowmeter in a critical water main

1. Background

An Australian water utilities provider manages the collection, treatment and distribution of water for a coastal local government area. To supply private households and industrial clients with more than 40 million litres of drinking water every day, the company operates a water treatment plant with a network of reservoirs, pumps as well as water mains. .

2. Measurement requirements

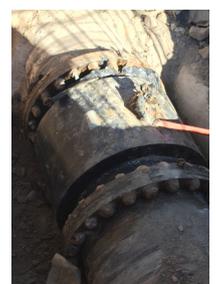
Given that water scarcity is an issue for the local council, flow measurement of treated water supplied to the network is very critical. The treated water discharged from the main water treatment plant must always match with the quantities of water taken in from the adjacent river. The readings are also used to determine the amount of water being treated by the water treatment plant, as cross reference to the volume of chemicals being added and measured in the process such as Cl_2 , lime or CO_2 .

The previously used electromagnetic flowmeter (EMF) from a competitor had not been up to the prevalent conditions and needed replacement. Due to burial installation, this meter had water ingress around the coil. This resulted in a low reading both on the instantaneous as well as the totalised flow rate. Overall accuracy was low and no longer up to the requirement of the customer.

Due to the critical nature of this measurement point, the company needed a flowmeter that was made to the exact installation length of the previous one. Altering the pipe work was not an option as water supply must always be maintained. Reliable ingress protection of the flowmeter was compulsory.



Media leaking from inside the coil housing



Damaged EMF before replacement

3. KROHNE solution

Having had good experience with KROHNE instruments before, the water utility opted for the OPTIFLUX 2300 W electromagnetic flowmeter. This high-end EMF is particularly suitable for potable water applications requiring high accuracy and extensive diagnostics. The EMF was provided in meter size DN900 with a hard rubber liner as well as rugged Hastelloy-C22 electrodes conform to the national drinking water standards. While the readings are transmitted by simple 4...20 mA/HART output to a control room, the remote wall mounted signal converter (W) also allows local monitoring on-site.

The EMF came IP68 rated with special burial coating for sub soil installation. This also involved potting compound, rendering the electronics of the flowmeter well protected against moisture or constant flooding. Potting is applied in all KROHNE subsoil applications as standard. The potting mix protects the terminals and conductors from any condensation or leakage which may occur through the junction box as a result of moisture in the soil or heavy rainfall. The compound also seals cabling insulation from possible ingress of moisture and removes a path for water ingress to access coil windings through the neck of the flowmeter.



OPTIFLUX 2300 W with special burial coating

4. Customer benefits

Due to its dimensions according to ISO standard, the KROHNE meter perfectly met the client's requirements in terms of installation length. There was no need for further pipework and the given infrastructure remained unchanged. In this way, the water utility was able to complete the changeover of flowmeters within 8 hours, ensuring the water supply to the city was not compromised.

The OPTIFLUX 2300 W provides the company with accurate and reliable information to monitor water treatment efficiency. In this way, the EMF also helps the client demonstrate the performance of their water treatment plant to the water authorities.

This EMF adds to several other KROHNE products already in use in water as well as wastewater applications of the client. Confidence in the product combined with the technical consultancy close to the customer had once again tipped the scale in KROHNE's favour.

5. Product used

OPTIFLUX 2300 W

- Electromagnetic flowmeter for advanced water and wastewater applications
- Optional for burial installation and constant flooding (IP68 etc.)
- PP or hard rubber liner: excellent chemical resistance
- Cost-saving option without grounding rings and other variants
- With CT approvals (OIML R49, MI-001)
- Flange: DN25...3000 / 1...120", max. PN40 / ASME Cl 300



Contact

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