APPLICATION NOTE

Water & Wastewater

Simultaneous measurement of flow and electrical conductivity

- Analysis of the quality of water and wastewater
- Indication measurement of electrical conductivity
- Additional costs for analytical conductivity measurement eliminated

1. Background

Electrical conductivity is one of the indicators that provides information about the quality of water and wastewater. As a rule, the wastewater from an indirect discharger or a communal inlet area has a known average electrical conductivity. If the measured electrical conductivity differs greatly from the average value, there is reason to assume an unauthorised discharge. This then leads to further tests.

2. Measurement requirements

Operators of sewage treatment plants and sewer networks use inductive sensors to measure electrical conductivity. This comes at considerable expense. In addition to the investment costs for the analytical conductivity measuring device, there are installation, wiring and maintenance costs to consider. Electrical conductivity is generally measured at pumping stations, gauge wells and sewage treatment plant intakes. Flowmeters are also usually installed at these locations to perform this task.

KROHNE

3. KROHNE solution

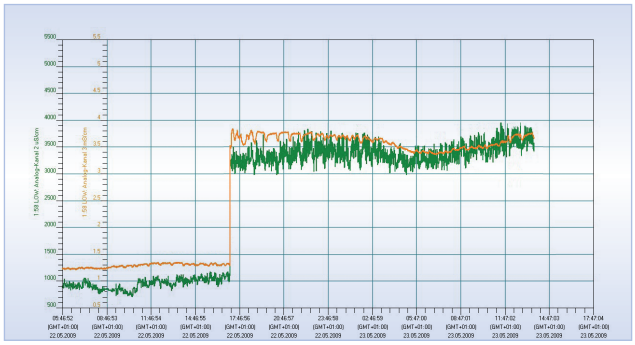
The OPTIFLUX 2300 C electromagnetic flowmeter (EMF) simultaneously measures volume flow and electrical conductivity. The integrated measurement of electrical conductivity was tested in practice using an OPTISENS 1050 W inductive conductivity measuring device as a reference in a variety of sewage treatment plants.

Test set-up at a sewage treatment plant

Downstream conductivity measuring device as reference

4. Customer benefits

Tests showed that in terms of accuracy, the EMF measurement did not come close to the precision of the conductivity meter. However, this is also not necessary because operators of sewage treatment plants and sewer networks do not use conductivity measurement as a controlled process variable. The response time of the measurement is comparable to the reference (see graph) and operators deemed the repeatability of the measuring results to be sufficient. As an indication measurement it is completely adequate in practice. With an optional additional current output on the EMF, the conductivity value can be continuously monitored and controlled in the control room.



Comparison of conductivity measurements:
green = OPTIFLUX 2300 C, red = reference measuring device

Thanks to the use of flowmeters with standard integrated conductivity measurement, operators of sewage treatment plants and sewer networks have other conductivity measuring stations at their disposal with no additional expense. When minimum and maximum limit values are set, deviations are automatically detected and countermeasures can be immediately implemented

5. Product used

OPTIFLUX 2300 C

- Engineered for the water and wastewater industry
- All relevant approvals for potable water (e.g. KTW, DVGW, WRc, KIWA, ACS)
- Unobstructed flow cross-section, no internal objects
- Also available with permanent operation in water or underground (protection category IP 68)
- Hard rubber or polypropylene liner for measuring tube

Contact

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

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www.krohne.com