



APPLICATION REPORT

Water & Wastewater

Monitoring of waste water quality in the outlet of a grease separator

- Proof of compliance with limit values and full transparency over sewage quantities discharged
- Automated process monitoring by way of combined measurement of pH, conductivity and flow rate

KESSELHUT ENTSORGUNGS GMBH

1. Background

Kesselhut Entsorgungs GmbH specialises in the inspection and cleaning of pipe and sewer systems, roads and industrial plants. The range of services offered by the municipal service provider also includes the professional disposal of faeces, oil and grease separation. In the German federal state of Saxony-Anhalt, the company operates a plant for the separation of grease. The site is fed with industrial wastewater.

2. Measurement requirements

The operation of grease separators is subject to strict technical and environmental regulations. As the wastewater downstream of the grease separator is discharged into the municipal sewage network, the customer must report to the local wastewater association. The authority monitors compliance with the permissible limit values mainly by way of pH and conductivity. Kesselhut is legally required to submit these parameters to the wastewater association on a regular basis. This implies continuous monitoring of the effluent downstream of the grease separator using suitable process instrumentation. In order to be able to further automate the process and increase process reliability, the customer was looking for a partner who could provide both the measurement technology as well as the technical consulting and service needed.

3. KROHNE solution

For limit value monitoring, KROHNE supplied analytical sensors and flowmeters tailored to the customer's needs. For pH measurement, the OPTISENS PH 8300 is used. Designed for wastewater applications, this glass sensor features a robust, dirt-repellent PTFE ring diaphragm as well as an integrated temperature sensor. The pH sensor was installed into a U section using the SENSOFIT IMM 1000 immersion assembly.

KROHNE

For inductive conductivity measurement, the customer uses the OPTISENS IND 1000 with polypropylene (PP) sensor body. The compact inductive conductivity sensor for industrial wastewater also has a non-wetted Pt1000 for temperature compensation. For this application the OPTISENS IND 1000 was supplied with an immersion holder it is firmly attached to.

Both analytical sensors are equipped with the 2-channel MAC 100 analytical transmitter. In this way, only one single transmitter is required to transmit both the pH and the conductivity readings to the control room. The MAC 100 was provided as a panel-mount version, allowing for a flexible installation on the wall regardless of the transmitter's dimensions. To accurately monitor the sewage quantity, the client also installed the OPTIFLUX 4300. Thanks to its PU liner, the electromagnetic flowmeter is ideally suited for measuring even heavily contaminated wastewater. Given the patented "virtual reference" of the device, there was no need to apply a conventional grounding method using additional grounding rings. The flowmeter was supplied as a remote version with field-mounted (F) signal converter.



1 MAC 100
2 OPTISENS PH 8300 with SENSOFIT IMM 1000
3 OPTISENS IND 1000 with immersion holder
4 OPTIFLUX 4300 F sensor

4. Customer benefits

The customer benefits from a bespoke solution which in addition to pH and conductivity also automate the recording and evaluation of data on wastewater quantities in the control room. This enables Kesselhut to provide evidence on precisely the wastewater quantities that are discharged to the sewer system. The customer can use the balancing in billing practice with the wastewater association. The process instrumentation also provides complete proof that all limit values are being adhered to. In case of strongly deviating readings, the disposal company can take countermeasures in time. In this way, the company avoids contamination of the sewage system and unnecessary surcharges from the water authority.

5. Products used

OPTISENS PH 8300

- Potentiometric pH sensor for wastewater applications
- Glass sensor with PTFE diaphragm and optional Pt100 for temperature compensation

OPTISENS IND 1000

- Inductive conductivity sensor for water, wastewater and chemical applications
- For installation in pipelines or firmly attached to an immersion holder

SENSOFIT IMM 1000

- Immersion assembly for installation of $\varnothing 12 / 120$ mm sensors

MAC 100

- Liquid analytical transmitter for measurements with OPTISENS sensors
- Output: 3 x 4...20 mA, 3 relays; Input: max. 2 x sensor, 2 x temperature

OPTIFLUX 4300 F

- Electromagnetic flowmeter for advanced applications
- Up to DN3000 / 120"



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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