APPLICATION NOTE Water & Wastewater

Monitoring the pH value in industrial wastewater

- Process monitoring for the transfer of cleaned wastewater to a municipal sewage treatment plant
- Long service life and reliable pH measurement due to integrated sensor cleaning
- Reduced acquisition and operating costs thanks to integrated transmitter technology and the possibility of servicing the sensor directly at the measuring point

1. Background

An Austrian industrial company operates a production site for textile materials. The company pipes the industrial wastewater produced during manufacturing to an in-house wastewater treatment plant. The wastewater is treated and then transferred to the nearest municipal sewage treatment plant.

2. Measurement requirements

The quality of the wastewater loads that the company transfers to the municipal wastewater treatment plant has an effect on the offsetting of the wastewater levies to the community. In order to continuously monitor the quality of the wastewater, the customer needed to measure the pH at the outlet of the wastewater treatment plant. The pH measurement is a vital control parameter for the industrial waste-water levy to the local wastewater treatment plant.

3. KROHNE solution

KROHNE provided the SMARTPAT PH 8320 for process monitoring. The rugged pH sensor with integrated Pt1000 for temperature compensation is designed to measure industrial wastewater. That is why the glass sensor features a dirt-repellent PTFE diaphragm.

The 2-wire loop-powered sensor makes direct transfer to the control system via 4...20 mA/HART possible. Because the customer wanted a local display, KROHNE also provided the SMARTMAC 200. This operating unit features a sensor replacement function, making it possible to calibrate and configure the pH sensor on site.

KROHNE

The pH sensor was installed in a PVC pipe (DN50) located in a measuring container with the help of the SENSOFIT RAM 5830 automatic retractable assembly. Using the retractable assembly, the SMARTPAT PH 8320 can be automatically and continuously rinsed.

pH measurement with the SMARTPAT PH 8320

SMARTMAC 200 operating unit

4. Customer benefits

The pH measurement enables seamless process monitoring when transferring the wastewater loads to the local wastewater treatment plant. If the pH value is high, the industrial company can react quickly and condition the wastewater at appropriate injektion points. This effectively controls the wastewater loads to the municipality. It also prevents increasing costs caused by pH values that are too high. Thanks to the transmitter integrated into the SMARTPAT PH 8320, it is not necessary to invest in an external transmitter. The measurement data is made available right in the control system.

The customer also benefits from significantly lower maintenance intervals and costs. The automatic cleaning function means that the pH sensor has a significantly longer service life and must be replaced less frequently than comparable sensors. In addition, it can be quickly calibrated on site using the SMARTMAC 200. The pH sensor is simply removed from the line via the pneumatic retractable assembly, held in a buffer solution and calibrated via the operating unit. It is then installed into the process line once again. Alternatively, the operator can also calibrate it using a PC. KROHNE supplied the entire solution, including the pH sensor, operating unit and pneumatic retractable assembly.

5. Products used

SMARTPAT PH 8320

- Potentiometric pH sensor for water and wastewater applications
- 2-wire (loop-powered), 4...20 mA/HART® 7, for direct connection to a process control system (PCS)
- Process connection: PG13.5
- Glass sensor with PTFE diaphragm and Pt1000 for temperature compensation

SMARTMAC 200

- Operating unit for on-site calibration and configuration of SMARTPAT sensors
- With sensor exchange function, error and calibration logbooks

SENSOFIT RAM 5830

- Automatic retractable assembly with position switch and cleaning connection.
- For sensor exchange, calibration and cleaning without interrupting the process

Contact

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