

Automated pH measuring point in wastewater

More safety and less effort at Dow in Stade



For more than 60 years, Dow operates production facilities, sales offices and research and development facilities at 13 German sites. One of the most important production sites is located in Stade, Lower Saxony. Here, around 1,300 of the company's own employees produce around four million tons of basic and special chemicals annually for the company's own use and for international customers. The chlor-alkali electrolysis plant produces chlorine, caustic soda and hydrogen as important basic materials for numerous other production stages throughout the plant. For example, it produces precursors for polyurethane. This is the basic material for thermal insulation of heating or cooling units and is used for sportswear or in the automotive industry.

„Together with Endress+Hauser, we tailored the CDC90 automation solution to our needs. The systems run reliably and satisfactorily all around.“

Alexander Kehrbach,
Maintenance, Dow plant Stade



Alexander Kehrbach, Division Maintenance



Basic and specialized chemicals are produced at the Dow plant in Stade, Germany.

The Dow plant in Stade relies on Endress+Hauser solutions for pH monitoring in the treatment of production wastewater. These are used for continuous pH measurement and automated cleaning and calibration of the sensors. In this way, Dow achieves reliable measured values and a safe process.

The challenge

Well-monitored wastewater treatment is required when production wastewater, wastewater from various catch basins and general wastewater flow together in the BIOX plant at Dow's Stade site. The wastewater passes through a neutralization basin, a settling basin, buffer tanks, the high-tower biology and the flotation basin before joining wastewater from other production plants in the main reactors. Individual process steps and the dosing of chemicals such as hydrochloric acid or flocculants are monitored and controlled by continuously measured pH values. To obtain permanently reliable pH values, regular cleaning, calibration

and condition monitoring of the sensors is essential. The manual effort required for this is substantial. Therefore, Dow opted for the CDC90 automation solution from Endress+Hauser.

Our solution

Endress+Hauser supplied several Liquiline Control CDC90 for different process steps. CDC90 is a system for automated Memosens pH measuring points: It automatically cleans, calibrates, monitors and verifies the connected pH sensors. The system at Dow is particularly suitable for heavy-duty applications and the use of aggressive cleaners such as concentrated acids and alkalis. Dow has configured specific, automated cleaning cycles with 5% HCl every eight hours and two calibration cycles per week. If status values of the pH sensor, such as slope, zero point or operating hours, are outside a defined range, a fault message is automatically triggered in the process control system. Thus, the operator is informed about the

status of the measurement at all times and can intervene quickly, replace the sensor and restore the function of the measuring point in the shortest possible time.

The biggest gain for Dow is the increase in process reliability: The pH values are measured precisely and reproducibly and serve as a reliable control parameter, e.g. for hydrochloric acid dosing and the introduction into the biological stage.

Results

- High reliability of the pH measured values due to consistent measuring conditions and optimized cleaning and calibration cycles
- Automatic transfer of sensor calibration data thanks to Memosens technology
- Automated status monitoring of the sensors and fault message directly to the control system when limit values are exceeded
- Minimized maintenance and servicing



Automated wastewater monitoring: CDC90 with weatherproof cabinet and heated insulating cap for fitting and sensor



Main components in the transfer cabinet: CDC90 and pneumatic control unit as well as cleaning agents and pH buffer solutions



Ideal for heavy-duty applications: The pH retractable assembly CPA473

The solution components

The measuring device at Dow consists of the following components:

- Liquiline Control CDC90
- pH sensor Memosens CPS11E with digital measuring cable
- Cleanfit CPA473 retractable holder in heated protective box
- Piping for compressed air, water and electrics

Liquiline Control CDC90 is composed of

- Weatherproof cabinet
- Control unit with color touch screen
- Pneumatic control unit
- Spannungsversorgung
- Pump canister unit for storing and conveying buffer solutions and cleaning agents
- Integrated heating against the freezing of the chemicals
- Heated multi hoses for guiding cleaner, buffer and compressed air to the purge block
- Purge block, mounted on the process assembly



www.endress.com/CDC90

www.addresses.endress.com