

Safe phosphate elimination with minimal effort

Compliant with EU Water Framework Directive and WHG (German Federal Water Act)



Romuald Nowak, wastewater foreman at WWTP



Turnkey container solution at WWTP in Breuberg-Hainstadt in Odenwald

The WWTP in Breuberg-Hainstadt in Odenwald is operated by the Abwasserverband Unterzent – Untere Mümling. With a capacity of 36,500 population equivalents, this WWTP purifies the wastewater from the city of Breuberg and various surrounding municipalities.

„Endress+Hauser employees have a thorough understanding of our industry and processes. The project was completed in no time at all and the container was supplied fully equipped and ready for connection. All we had to do was install the water connections. We were then able to put all the measuring equipment into operation.“

Romuald Nowak,
wastewater foreman at WWTP

For monitoring, control and regulation of phosphate elimination at the WWTP in Breuberg-Hainstadt, the Abwasserverband Unterzent – Untere Mümling opted for a complete turnkey solution using measuring containers from Endress+Hauser.

The challenge

In accordance with the EU Water Framework Directive, all bodies of water, from groundwater to rivers, lakes and coastal waters, must achieve „good“ status. The directive has been implemented through amendments to the German Federal Water Act (WHG) and State Water Acts, and also through the enactment of state ordinances. The Breuberg-Hainstadt WWTP in Hessen must meet these requirements too and observe a stricter limit value of 0.5 mg/l for total phosphorous and 0.2 mg/l for orthophosphate in the plant's outlet. This is because phosphate is an essential ingredient that promotes the growth of plants and algae in our waters and can even lead to eutrophication and ultimately

fish mortality. The measuring devices must therefore fulfill rigorous requirements; not only do they have to be highly accurate, they should also be easy to maintain. That is why the operators of the WWTP opted to install a measuring container from Endress+Hauser.

Our solution

Endress+Hauser delivered a complete turnkey solution in the form of a measuring container. The core components of this measuring container are an analyzer for total phosphorous for monitoring the outlet of the WWTP and an analyzer for orthophosphate for monitoring and rapid control of the phosphate elimination process. These analyzers use the molybdenum blue method and are particularly suitable for low measuring ranges. A system with microfiltration is used to prepare the samples. For the protection of staff and the technology, the measuring systems are installed ex works in a fully

insulated container, which is supplied ready for connection and includes internal equipment, heating and air conditioning. Lastly, the complete package includes an electromagnetic flowmeter for accurate metering of the precipitant required for phosphate elimination.

The result:

- Guaranteed compliance with the stipulated low limit values of 0.5 mg/l for total phosphorous and 0.2 mg/l orthophosphate due to accurate measurement using the molybdenum blue method, which is on a par with laboratory measurements.
- Cost-savings due to high-precision metering of costly precipitant for phosphate precipitation based on rapid phosphate measurement.
- A complete solution that is tailored to the individual requirements of the WWTP, is quick to install and can be upgraded to meet future requirements.
- Flexibility and cost-savings due to mobile container solution rather than structural solution.
- Safe handling and easy maintenance of installed measuring technology compared with outdoor or cabinet solutions.



Compact installation of orthophosphate and total phosphorous analyzer CA80PH / CA80TP in the container (top)



Precipitant station at Breuberg-Hainstadt WWTP (above), flowmeters for precipitant dosing (left)

The solution comprises the following:

The complete solution is tailored to the individual technical requirements, ambient conditions and communication and service needs. It includes:

- Fully insulated container with internal equipment, heating and air conditioning
- Analyzer CA80TP for total

- phosphorous
- Analyzer CA80PH for orthophosphate
- Sample preparation system CAT820
- Promag P flowmeter
- Project management from conceptual development to implementation and commissioning
- Comprehensive range of services, with training and maintenance concept



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