



Stadtwerke Lippstadt

Quick and simple retrofitted nitrate monitoring

Modular Online Analysis System in waterworks

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FLUID CONTROL SYSTEMS

Modular Online Analysis System in waterworks

Water treatment is a sophisticated process, and especially when it comes to drinking water for human consumption, which is, after all, the most fundamental necessity of life. Quality monitoring is therefore a top priority for public water utility companies. Manual operations are still very much part of the process: test samples are taken at the source or at the water treatment plant and then examined in the laboratory.

Modular Online Analysis Systems, which automatically determine key parameters, can offer a great deal of potential for optimisation in this field. These can be individually customised, and can also easily be added to without interrupting normal operation, e.g. if it becomes necessary to determine the nitrate content in raw water.



The Type 8906 Online Analysis System automatically determines certain important parameters. With no additional effort required on the part of the user, full control is retained, and continuous monitoring ensured.

Increasing nitrate content is presenting significant challenges

Nitrate is a natural compound that is created in the atmosphere and is normally completely innocuous. Nature makes use of it in a natural cycle for fertilising plants. Humans can upset this cycle, however. If more fertiliser is applied than the plants can absorb, then nitrate enters rivers and lakes via rainfall, and ends up also in our groundwater. About 80% of the acceptable daily intake of nitrate comes from our food, e.g. in vegetables, fruit and meat. If drinking water with a high nitrate content is also consumed over a prolonged period, this can be harmful to humans. This is why both the EU and WHO recommend a limit of 50 mg/l in drinking water.

For this reason, water suppliers who currently do not have high levels of nitrate in their raw water and therefore have no need to process it can consider themselves fortunate. For others, who already have nitrate in raw water due to agriculture, the situation is set to become increasingly concerning over the coming years. This presents the water supply companies with significant challenges. Almost all nitrate compounds are soluble in water, and the nitrate ion is chemically very stable, so the compounds can only be removed through highly technical processes, whereby there is a risk of residues re-entering the groundwater.

“We also blend the raw water from the source or deep well with nitrate-free drinking water from the Lipperbruch and Fichten waterworks if the nitrate content approaches the threshold value. We were therefore very pleased to learn that Bürkert now offers a retrofit nitrate sensor for the Online Analysis System that we have been using for several years.”

Uwe Hense, Operations Manager, Lippstadt Waterworks

Did you know?

The Lippstadt waterworks supply the region each year with approximately four million cubic metres of high-quality drinking water from their own groundwater sources.

Practical tool for the water engineer

The Online Analysis System (Type 8906) in one of Lippstadt's three waterworks has proven its worth in day-to-day operations. Above all, Uwe Hense particularly values the fact that he no longer has to be on site every day to take manual samples and bring them to the laboratory. The Online Analysis System performs this task automatically. It is housed in a compact control cabinet and is tailored to the application with special sensors for turbidity, conductivity and pH value.

The sensor cubes operate using innovative MEMS (Micro-Electro-Mechanical Systems) technology. Unlike the glass probes that used to be widely deployed, the microchips do not require constant replacement. The long lifetimes and calibration intervals for the microchips help ensure low-maintenance and reliable operation. The cleaning system that is also part of the Online Analysis System ensures that all parts in contact with measuring water can be cleaned as and when required without manual intervention. This also saves time and money, and the sensor station does not have to be taken out of operation for cleaning.



The Online Analysis System is housed in a compact control cabinet and is tailored to the application with special sensors for turbidity, conductivity and pH value. Installing the additional nitrate sensor did not require any interruption to operation.

Easy to retrofit and uses existing communication interface

The subsequent connection of an additional nitrate sensor was straightforward, with a plug-and-play connection to the measurement water supply and the analysis system and using the same communication interface that the existing

sensors use. The operation of the analysis system did not need to be interrupted for the installation. In addition to the other parameters, the nitrate value is now also displayed on the Online Analysis System's screen and is directly transmitted from the sensor to the central controller.

“We have full control at all times, with no need for any manual intervention. The Online Analysis System functions perfectly. If there are ever any issues, the fluidics specialists are always contactable, and the same service team that carries out our annual maintenance always gets to us swiftly.”

Uwe Hense, Operations Manager, Lippstadt Waterworks

Nitrate measurement – it's that simple.

The nitrate measurement is performed by an optical sensor consisting of a light source and a sensor, thus requiring no reagent. The light source shines into the sensor chamber, through which water is flowing continuously, and directly onto the detector. If there is nitrate in the water, this is determined by the absorption of UV light at 212 nm. In addition, the sensor measures absorption at 254 nm and 360 nm to test the influence of organic matter and turbidity. This means that the sensor is insensitive to cross-influences in the water. In order to prevent incorrect measurements due to particulates such as sand or clay, this area is measured separately and factored out.



Optical sensor for nitrate measurement

Advantages



Multiple measurement parameters:

pH value, conductivity, turbidity, nitrate content, redox potential (ORP), chlorine, chlorine dioxide content, iron content (flow injection analysis), organic contamination (SAC sensor)



Straightforward retrofitting:

All sensor cubes can be plugged in or unplugged during retrofitting or conversion without interrupting operation and will automatically register with the system.



Hassle-free:

Bürkert takes care of all the planning and configuration on site, as well as the annual maintenance. With no additional effort required on the part of the user, full control is retained, and continuous monitoring ensured.

The water engineers in Lippstadt thus feel well-prepared for the future and will continue to rely on the support of Bürkert.

STADT WERKE

LIPPSTADT

GAS
WASSER
STROM

“This delivers significant cost savings due to fewer inspections of checks at the measurement points and lower maintenance expenditure. Staff members now have more time for more important tasks.”

Uwe Hense, Operations Manager, Lippstadt Waterworks

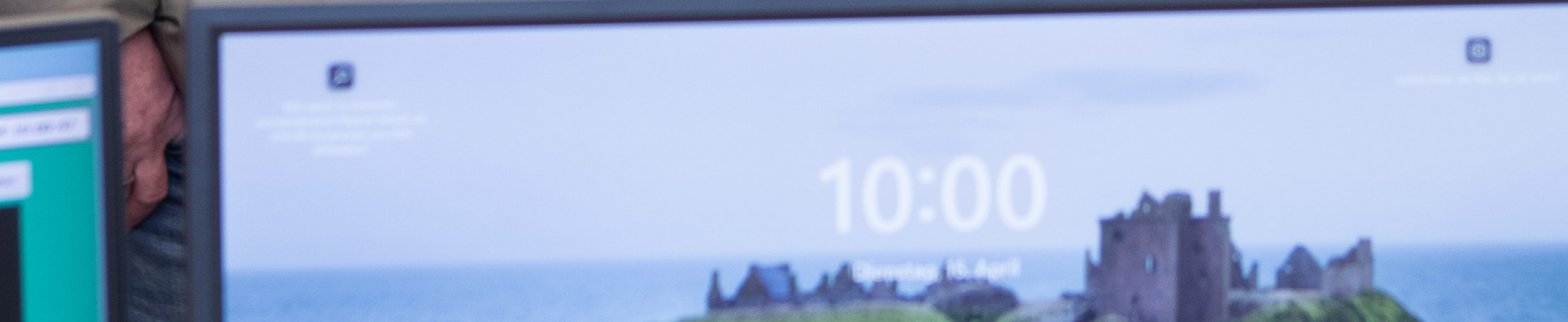


Uwe Hense (right), Operations Manager of Lippstadt Waterworks, together with Stefan Klancic, Account Manager for Water and Environmental Technology at Bürkert.



Wasserwerk Lipperbruch

Aufbereitung und Speicherung



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