Environmental testing Industry

Online Analyzers for Municipal Wastewater Analysis

PUSHING THE LIMITS TOGETHER

Metrohm Process Analytics

There is more than we'd like in water ...

Water is the source and basis of all life. It is used as a source of food and energy, as a solvent, cleaning agent, or coolant, and also as a means of transportation and discharge system for effluents. After it is used, water becomes contaminated with fertilizers, pesticides, drugs, heavy-metal compounds, body care, and synthetic products, so it has to be treated before being discharged.

Because of the associated health risks, the World Health Organization (WHO) has issued guideline values for about 200 substances found in water. For many of these standards and regulations, Metrohm Process Analytics offers robust, reliable, and very precise process analyzers for your municipal waste water treatment plant.

PLUG AND ANALYZE

Given the universal necessity and importance of water, any serious technical solution to monitor its quality should be easy to use, reliable, and of course, sensitive enough and highly accurate. These are in fact the features and benefits that the **202X Process Analyzers** from Metrohm Process Analytics provides.

VERY EASY AND SECURE TO USE

Just connect the power, sample, and reagent lines and the 202X Process Analyzer will be fully operational. Additionally, the electronics part is 100% separated from the wet part of the analyzer, making daily maintenance and checks possible without the need to access the electronic part.

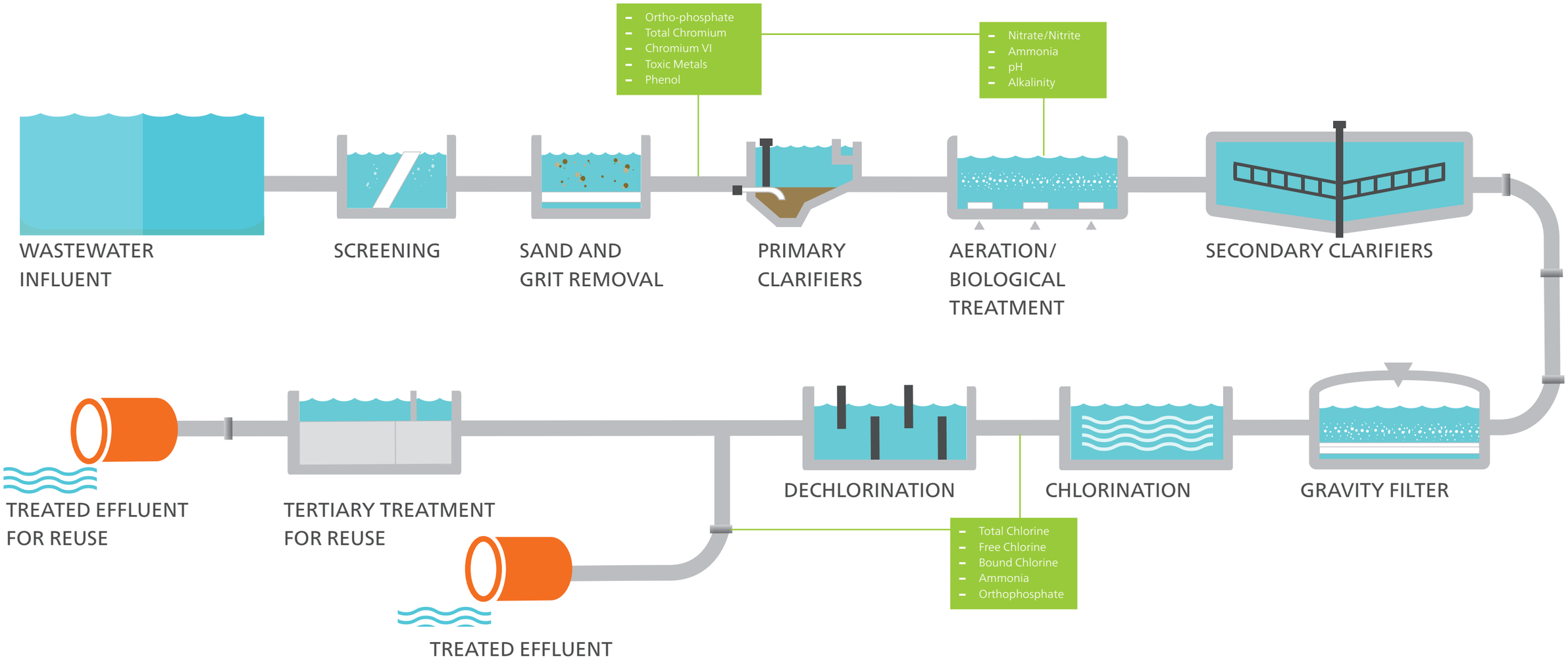
SUPERIOR RELIABILITY

Validation, cleaning, and calibration of your sample are standard features of our 202X Process Analyzers, which significantly reduces downtime and operator intervention.

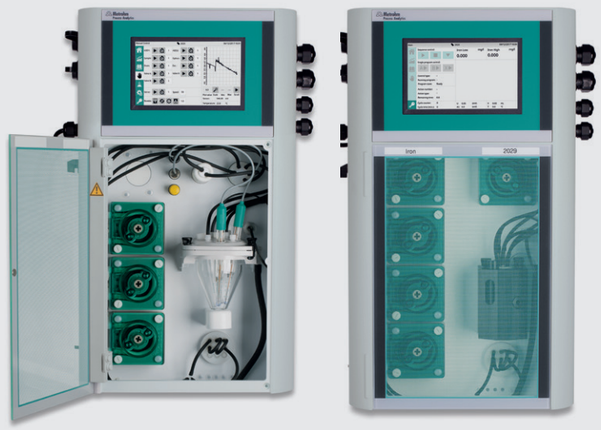
OUTSTANDING SENSITIVITY & ACCURACY

Depending on the analyte and sample matrix, the measurement ranges of the 202X Process Analyzer vary from trace µg/L to mg/L.

Analyzer locations in the treatment process



OUR 202X PROCESS ANALYZERS CAN BE SET UP TO MONITOR A WIDE RANGE OF SUBSTANCES AND PARAMETERS, EASILY AND RELIABLY.



More than just process analysis

Numerous parameters need to be continuously monitored in industrial and municipal wastewater plants. These include, for example, the heavy metals cadmium, lead, zinc, and cobalt as well as nitrate, ammonium, phosphate, and sulfate anions. Metrohm Process Analytics has a wide range of analyzers available suitable for these applications. The 202X Process Analyzers can be set up online to monitor a wide range of substances and parameters, easily and reliably.

ALKALINITY IN BIOLOGICAL TREATMENT

The hardness of the influent water entering the Wastewater Treatment Plant (WWTP) depends a lot on where it comes from. Variations in pH can have a dramatic impact on the correct balance in aerobic biological treatment processes (e.g. removal of bacteria, phosphorus and nitrates) and to maintain a healthy bacteria environment. In areas where the water is soft, the water has much less capacity to buffer the natural production of acid during aerobic digestion and so pH can drop rapidly, reducing productivity of the plant.

In order to manage this scenario, it is important to monitor the **alkalinity** of the incoming water and in the aerobic process. Alkalinity in water is due to the presence of compounds such as carbonates, bicarbonates, and hydroxides which raise the pH of the water and buffer it against further pH change.

Only analysis of alkalinity will provide the right information for accurate addition of chemicals to control the pH of the process. Highly accurate alkalinity analysis can be carried out on the **2026 Alkalinity Analyzer** from Metrohm Process Analytics.

NITRIFICATION - DENITRIFICATION

Nitrogen removal from sewage is an important process in the WWTP to minimize water pollution and avoid eutrophication of water bodies. Nitrogen is present in wastewater as mostly organic nitrogen, ammonium/ammonia, and nitrate, and it must be treated to comply with strict effluent requirements imposed by legislation.

Nitrification and denitrification are the processes used in WWTP to oxidize ammonium present in the water into nitrates (NO_2), and to subsequently converted them into harmless nitrogen (N_2) gas, which is then released into the atmosphere. Online monitoring of these nitrogen compounds in waste effluent guarantees high nutrient treatment efficiency and low operating and energy costs (e.g. high ammonia or nitrite levels, indicate an insufficient aeration step). To ensure complete nitrogen gas conversion, monitoring of ammonia and nitrates/nitrites is extremely important. Metrohm Process Analytics offers the robust **2029 Ammonia Analyzer** to measure low levels of ammonia and the **2026 Ammonia Analyzer** for high levels on the water stream. As well as the **2029 Nitrate/Nitrite Analyzer**, which is the most easy-to-use analytical tool to ensure that the concentrations of nitrate/nitrite do not exceed the limits.

PHOSPHOROUS REMOVAL

Phosphorus is highly reactive thus binds easily to oxygen, forming phosphates (ortho-phosphates o-PO_4, polyphosphates, and organic phosphates). Water companies are legally obliged to control the level of phosphorus in the wastewater they discharge, because of the eutrophication effect it causes in aquatic environments.

European directives have led to ever tightening consents on phosphorus removal. The **Urban Wastewater Treatment Directive** in 1991 set a consent of 2 mg/L for larger works or those discharging into sensitive waters. However, the Water Framework Directive (WFD) in 2000, with its focus on continuous improvement and achieving 'good' status for all watercourses, has led to 0.5-1.0 mg/L limits being typically imposed. In order to achieve the ultimate aim of 'good' WFD status across the board, it is thought that limits as low as 0.1 mg/L will be necessary.

Therefore, phosphorous removal will be a big focus over the coming years in municipal WWTP. Ensuring the most efficient process monitoring of ortho-phosphate and Total Phosphorous at high and low levels, is possible on the **2029 Phosphate Analyzers.**

INCOMING WATERS – SAFEGUARDING THE PLANT

Metrohm Process Analytics has analyzers that can offer online solutions for many parameters in incoming waters for municipal waste water treatment. In the event industrial waste waters are being discharged in close proximity, then, then parameters such as cyanide may be important to monitor in order to protect the treatment works. Trace toxic metals may also need to be monitored to identify if industrial effluents are discharging outside their consent limits.

OTHER PARAMETERS

WWTP often have their own unique challenges for various chemical parameters going through a particular plant. Other parameters that can be monitored by Metrohm Process Analytics analyzers are sulfate, sulfide, chlorine, COD, iron, and aluminum.

In addition, Metrohm Process Analytics offers a large number of sample preparation systems that can be combined with any application, no matter how unusual that application might be.

Subject to change without prior notice
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