

Portfolio

Water & Wastewater





Dear reader,

Compared to other processing industries, the water and wastewater industry faces a very special set of challenges. Water is not a commodity product but the source of all life. Plant operators have a responsibility not only to their communities, but to the environment as well. This requires ensuring water safety and complying with relevant regulations to make sure that current and future generations have access to safe and clean water.

Additionally, plant operators have to continuously improve their processes to make them more efficient so that they can optimize costs without sacrificing treatment quality. Finding this balance between water safety and treatment costs is the primary focus of any plant operator in the industry. Add to this increasingly complex processes due to new regulations and new treatment targets and it's easy to understand the challenges the water and wastewater industry is facing today.

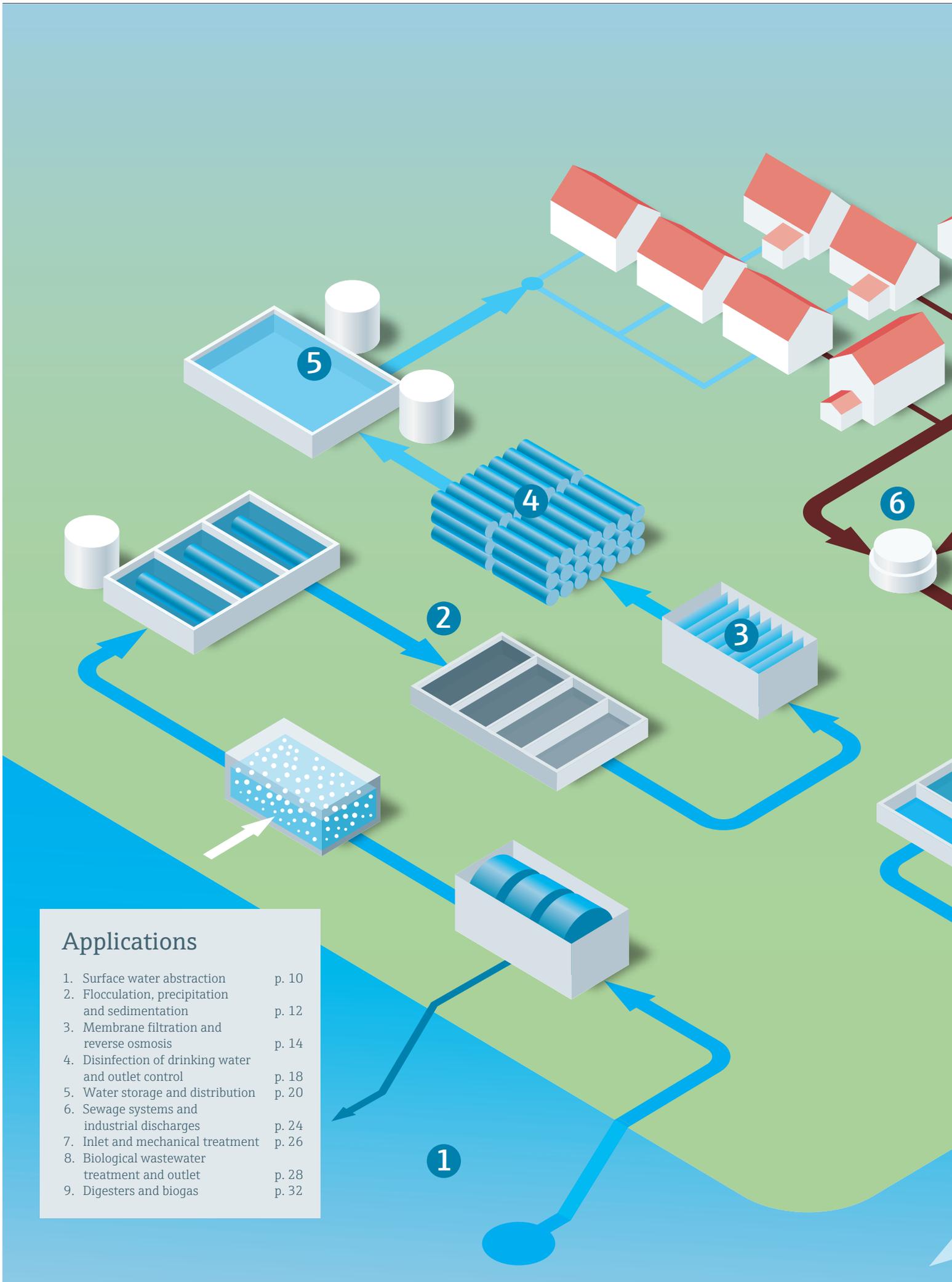
With decades of experience in this industry and close cooperation with our customers, we fully understand these challenges and have developed our portfolio of measurement instrumentation, services and solutions to answer these challenges. What sets us apart from most of our competitors is that we are a main instrumentation vendor, meaning that we cover all relevant measuring parameters for the safe and efficient treatment of water and wastewater. Our portfolio includes different measuring technologies so that we can always find the ideal solution for your challenges.

This brochure presents a visual overview of the most relevant processes in the water and wastewater industry and guides you to select the instruments that best fit your needs. To make instrument selection easier, we have introduced our FLEX portfolio structure (see page 34). The products displayed in this brochure have a FLEX indicator that makes it easy to recognize to which part of our portfolio they belong. Learn more about FLEX selections on the last page of this brochure.

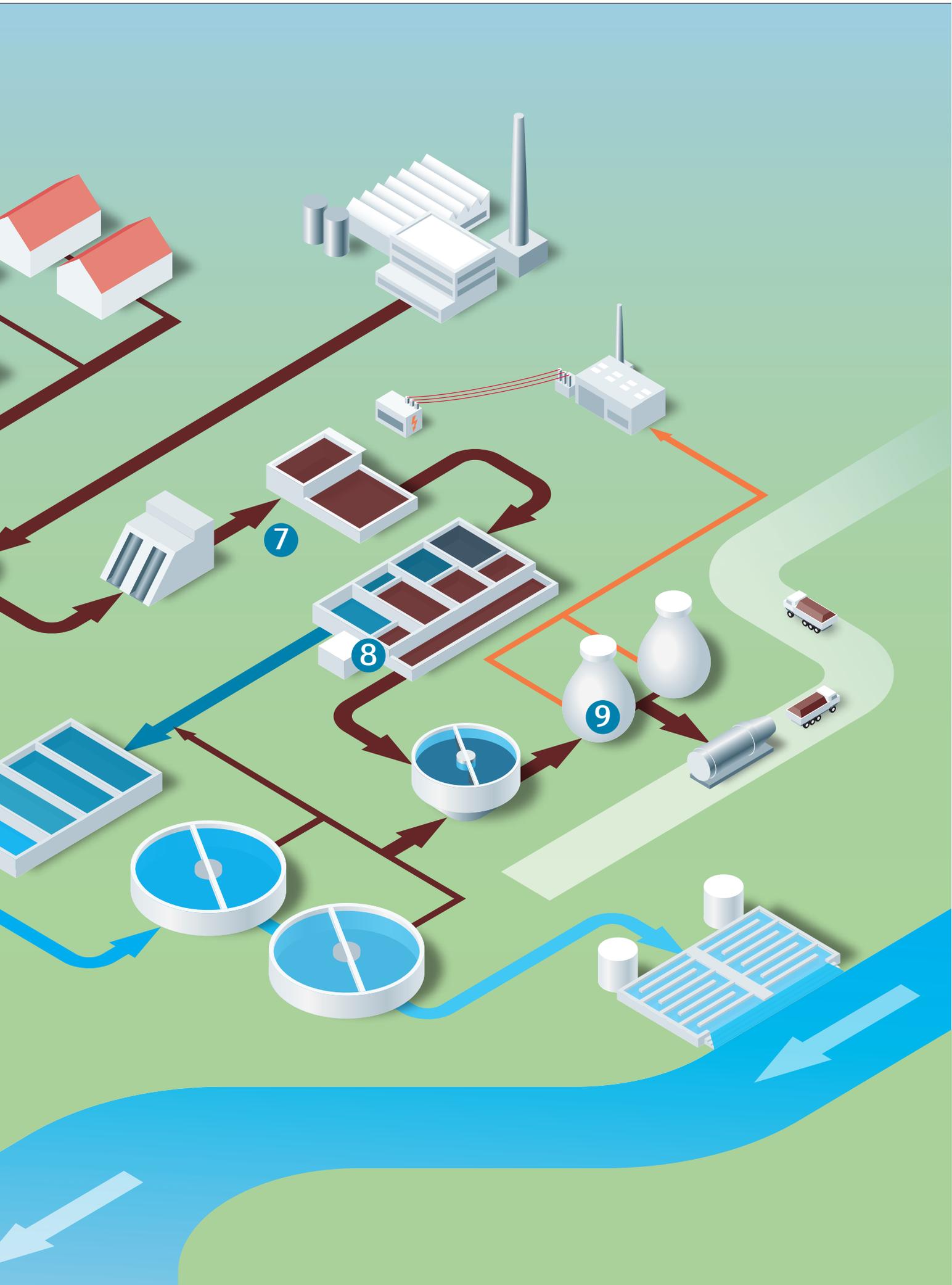
If you want to know more about our complete portfolio for the water and wastewater industry, please visit the industry page on our website.



Learn more about our water and wastewater offering:
www.endress.com/water-wastewater



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What our customers say

Endress+Hauser has been working closely together with customers in the water & wastewater industry for over 60 years. Here are some of their thoughts on our performance



Close collaboration with our customers and a deep understanding of their processes and challenges is the basis for our activities.

"I can summarize my experience of the panel in three words: fault-free, maintenance-free, perfect."

Rolf Bügler
Water Supervisor, Water Facility Frasnacht
Switzerland

 Learn more:
www.eh.digital/frasnacht

"When we planned our new industrial wastewater treatment plant, bigger than the old one was, it was obvious that we couldn't manage plant control by manual measurements anymore. Now we benefit from the certainty of automated, comparable measured values."

Alexander Wallays, Pasfrost NV.
Passendale
Belgium

 Learn more:
www.eh.digital/pasfrost

"Any other meter would've been three or four times more expensive due to installation costs alone. The new meter fit perfectly in the existing footprint and didn't require modifications to the piping."

Bryan Clor, Division Head
City of Warren Wastewater Treatment Plant
Michigan, USA

 Learn more:
www.eh.digital/warren

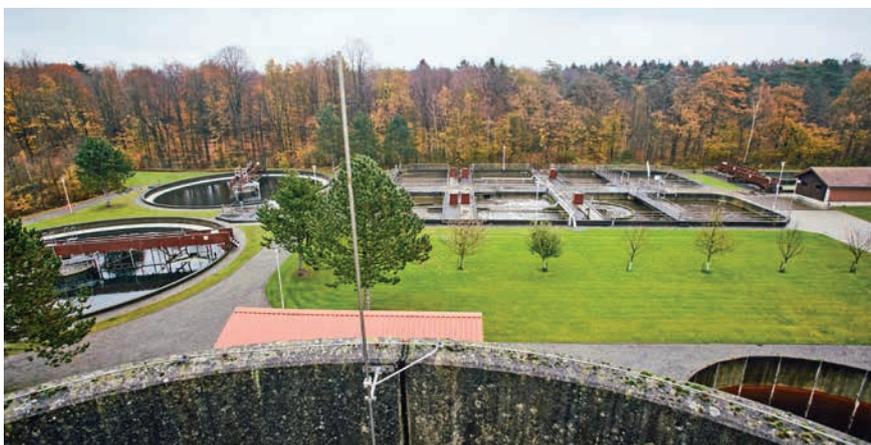
"Our water masters can now spend more time on their core tasks and less time making trips out to plants. This is key because these specialists are currently in short supply on the job market."

Christian Kehrer
Mayor of Oberzent
Germany

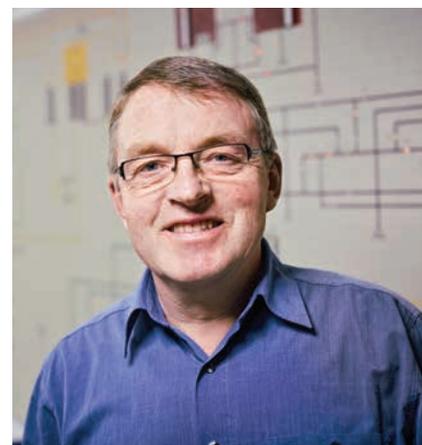
 Learn more:
www.eh.digital/oberzent

Take control

Automated phosphate removal in the Stadtlahn wastewater treatment plant leads to optimized costs and higher process transparency



WWTP in the town of Stadtlahn, North Rhine-Westphalia



“We can always rely on the Liquiline Control control system. Even in difficult inflow conditions, it works as specified, thus ensuring that the outlet parameters are always adhered to.”

Ewald Rathmer
Plant Manager WWTP Stadtlahn
Germany

The Stadtlahn WWTP is designed to handle wastewater from a population equivalent (PE) of 30,500. The plant currently serves a PE of approximately 21,000, roughly 15 percent of which are industrial customers.

Challenges at Stadtlahn WWTP

The customer required a control system that automated phosphate precipitation while also ensuring compliance with the phosphate limit value of the plant (1 mg/l), as stipulated by regulations. The phosphate concentration in the outlet had to be as constant as possible during both peak- and low-load phases.

Our solution

The customer wanted phosphate measurement to take place at three measuring points (see infobox). A phosphate analyzer was therefore installed in a centrally located measuring container. The analyzer automatically analyzes samples from the measuring points every 10 minutes. The Liquiline Control uses the measured value from the inlet of the biological stage to adapt to the incoming load, thus balancing out peak- and low-load phases. Based on the measured value from the outlet of the biological stage, the Liquiline Control regulates precipitant dosage until the desired residual outlet concentration of 0.5 to 0.6 mg/l has been reached.

The results

- Uniform phosphate concentration in outlet of only 0.5 to 0.6 mg/l
- Optimized precipitant usage
- High level of process transparency combined with ease of use
- The switching of the basins from parallel to cascade operation during a plant upgrade posed no problem for the control system

✓ Phosphate measuring points at Stadtlahn WWTP

- Biological stage inlet: measurement of incoming load
- Biological stage outlet: the effectiveness of phosphate precipitation is tested here
- WWTP outlet: final check to verify if limit value has been observed

All from one source

Benefit from our extensive portfolio of products, solutions and services throughout the whole lifecycle of your plant

Expectations and demands are growing. Be it shrinking budgets or shorter timelines, your job is more demanding than ever. To meet your goals, you need a partner that simplifies your life instead of making it more complicated. That's why you can rely on Endress+Hauser, because when it comes to instrumentation, we are the only main supplier that can cover all critical water and wastewater parameters.

How does this help you? Simple, it starts with the selection and ordering process. There is no need to contact multiple suppliers, plus you can save valuable time during the whole ordering process. You have only one point of contact right from the start. In addition, we not only offer multiple parameters for your measuring tasks, but also multiple technologies. This way our experienced technicians can recommend the optimal solution for your applications.

Take flow measurement for example. Magnetic inductive flowmeters are the ideal technology for some tasks, while the Coriolis principle is more advantageous for others. When thinking about commissioning, having instruments from only one supplier results in a smoother overall process. But just to be sure, our experienced service technicians can even install and commission instruments from a wide range of suppliers.

After your plant or application is up and running, you still can benefit from reliance on a main instrumentation vendor like Endress+Hauser. Thanks to our modular instrumentation platform, you can reduce the number of different spare parts you need to keep in stock. And services like maintenance, verification and calibration are also easier to manage if you get it all from one source.



Depending on the application and the measuring task, we can offer the technology that provides optimal support.



Endress+Hauser has an extensive portfolio for the water and wastewater industry, including the most relevant measuring parameters.



✓ Why different measuring technologies matter

Many people in the industry like to talk only about one measuring technology and recommend it for every application. At Endress+Hauser we take a different approach. We know that every measuring technology has its advantages and disadvantages. That's why it is so important to take a closer look at the application at hand and find the optimal technology.

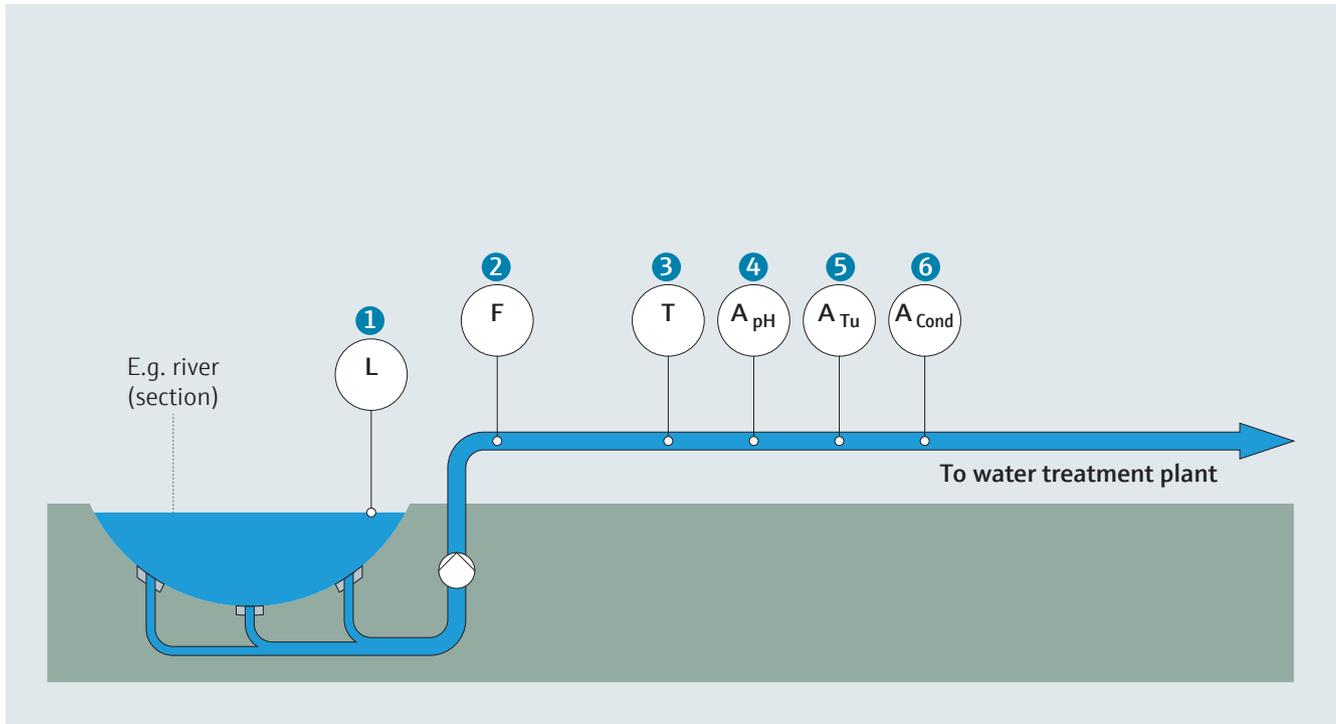
For example, for level measurement there is both radar and ultrasonic. While ultrasonic works best when measuring shorter distances in small, confined spaces, radar works best at larger distances and in demanding applications. Plus, radar is not influenced by dust or foam. Our technicians can help you define the right technology for your applications based on their experience and industry knowledge.

✓ Simplify your product selection with FLEX

As a main instrumentation vendor offering instruments for multiple measurement parameters, with different technologies and for various industries, we fully understand that navigating our extensive portfolio can indeed be a challenge. That's why we developed FLEX, our new portfolio structure. The four selections are based on your needs and the requirements of your processes. A FLEX indicator is assigned to the products in this brochure to make selection easier. You can find more information about FLEX on the last page.

1. Surface water abstraction

Starting at the source, precise quality control influences all further treatment steps



1 – Micropilot FMR20

The smallest high-performance radar for level measurement in the water & wastewater industry

- Space saving installation – with compact design even in tight conditions or where access is restricted
- Reliable measurement – unaffected by temperature and wind
- Cost savings – Bluetooth® commissioning, operation and maintenance app
- Cost efficiency – designed for basic water applications/utilities and direct integration software and hardware – integrated web server

F L E X

 www.endress.com/FMR20



2 – Proline Promag W 800

Battery-powered flowmeter for remote regions without power supply

- Accurate flow measurement of raw water from rivers or lakes
- Certified for direct underground installation or permanent underwater use
- Worldwide encrypted data transmission via cellular radio
- Nominal diameters: DN 25 to 600 (1 to 24")
- For larger pipe sizes: Promag W 400 up to DN 3000 (120")

F L E X

 www.endress.com/5W8C



3 – iTHERM TM401

Modular hygienic RTD thermometer

- Basic, fit-for-purpose temperature measurement for standard and hygienic applications
- Flexible system integration with a wide range of process connections and transmitters
- Bluetooth®-enabled (optional, requires TMT71 or TMT72 transmitter)
- Certificates and approvals: 3-A, EHEDG, ASME BPE, FDA, TSE Certificate of Suitability
- Also available as imperial version TM402

F L E X

 www.endress.com/TM401



4 – Memosens CPS11E

Memosens sensor for measurement of pH

- Precise and reliable measurement results even at extreme pH ranges or in hazardous areas
- Robust and easy-to-clean sensor materials minimize buildup and blocking by biofilms, particles, etc.
- Optional salt storage extends the sensor's service life

F L E X

 www.endress.com/CPS11E



5 – Turbimax CUS50D

Memosens sensor for measurement of turbidity in low to medium measuring ranges

- Precise turbidity measurement according to ISO 7027
- Self-cleaning design minimizes maintenance
- Can be installed in open channels and in pipes
- Safe and liquid-free verification without Formazin

F L E X

 www.endress.com/CUS50D



6 – Indumax CLS50D

Memosens sensor for inductive measurement of conductivity

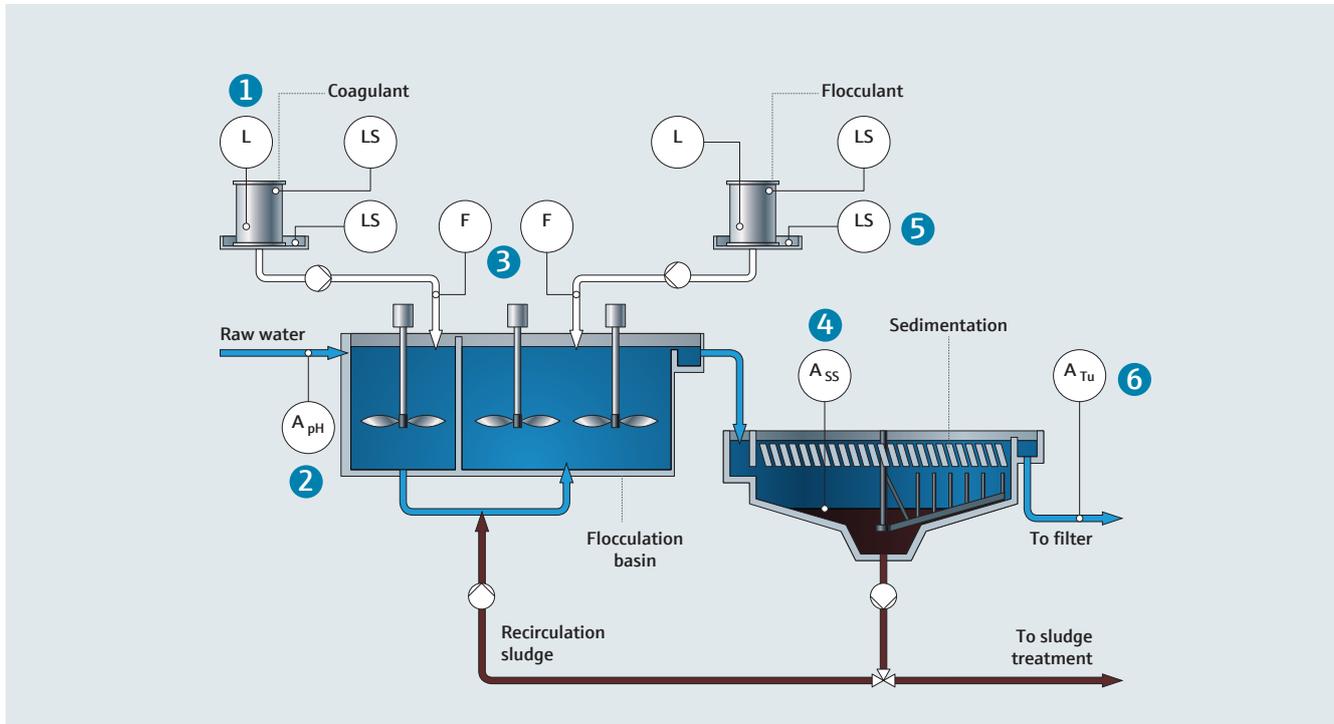
- Designed for low maintenance: dirt-repellent materials prevent soiling
- Wide measuring range enables monitoring from very pure to very polluted raw water
- Long-term stability even under extreme temperatures

F L E X

 www.endress.com/CLS50D

2. Flocculation, precipitation and sedimentation

Optimize the usage of chemical additives by monitoring pH and turbidity



1 – Micropilot FMR20

The smallest high-performance compact radar for level measurement in the water & wastewater industry

- Space saving installation – with compact design even in tight conditions or where access is restricted
- Reliable measurement – unaffected by temperature and wind
- Cost savings – Bluetooth® commissioning, operation and maintenance app
- Cost efficiency – designed for basic water applications/utilities and direct integration software and hardware – integrated web server

F L E X

 www.endress.com/FMR20



2 – Memosens CPS31E

Memosens sensor for measurement of pH

- Precise and reliable measurement results even at extreme pH ranges
- The sensor's fast response time enables use in control loops
- Optional salt storage extends the sensor's service life

F L E X

 www.endress.com/CPS31E



3 – Proline Promag H 100

Highly accurate flowmeter for smallest flow rates

- Precise dosing of chlorine bleach (pre-disinfection) and NaOH (pH setting)
- Extremely corrosion-resistant thanks to PFA lining
- Multivariable measurement for flow, temperature and conductivity
- Nominal diameters: DN 2 to 150 ($\frac{1}{12}$ to 6")

F L E X

 www.endress.com/5H1B



4 – Turbimax CUS50D

Memosens sensor for measurement of suspended solids in medium measuring ranges

- Precise turbidity measurement according to ISO 7027
- Self-cleaning design minimizes maintenance
- Can be installed in basins and in pipes
- Safe and liquid-free verification without Formazin

F L E X

 www.endress.com/CUS50D



5 – Liquipoint T FTW31

Conductive point level device for basic applications in conductive liquids

- Time-saving commissioning – no calibration required, easy to start up
- Mechanical safety – no moving parts in the tank, reliable operation with no wear or blockages
- Reliable sensor – standard setting for the most common conductive liquids
- Process safety – overfill prevention and leakage detection certificate: WHG

F L E X

 www.endress.com/FTW31



6 – Turbimax CUS52D

Memosens sensor for measurement of turbidity in very low measuring ranges

- Precise turbidity measurement according to ISO 7027 – even at the lowest turbidity
- Self-cleaning design minimizes maintenance
- Can be installed in basins and in pipes
- Safe and liquid-free verification without Formazin

F L E X

 www.endress.com/CUS52D



3 – Analytical panel

Analytical panel for turbidity, pH, ORP, oxygen, conductivity, disinfection, SAC and more

- Provides up to five high-quality measuring points at one location (can also be used as HACCP)
- Fittings and measurements require remarkably low amount of water
- All sensors are easily accessible for cleaning, calibration, etc.
- Quick commissioning: connect the panel to electricity and water and off you go

 www.endress.com/drinking-water-panel



4 – Cerabar PMP51B

Highly accurate digital pressure transmitter with metal membrane for a wide range of pressure measurements

- Plant availability – high accuracy and long-term stability; flush mounted process connections
- Plant safety – globally-accepted drinking water approvals and overflow prevention
- Reduction of operational costs – easy commissioning via on-site display or tool (HART)

F L E X

 www.endress.com/PMP51



5 – Cerabar PMP71B

Flexible pressure transmitter to maximize productivity with a piezoresistive measuring cell

- Plant availability – high accuracy and long-term stability
- Plant safety – drinking water approvals and highly resistant alloy membrane
- Reduction of operational costs – easy commissioning via on-site display or tool (HART)

F L E X

 www.endress.com/PMP71



6 – Memosens CLS15E

Memosens sensor for conductive measurement of conductivity

- Precise and reliable measurement results in pure and ultrapure water
- Designed for low maintenance and a long operating life
- Quality certificate stating the individual cell constant enables ideal adjustment of the measuring point

F L E X

 www.endress.com/CLS15E



Our dedicated service experts support you with in-depth process and instrumentation know-how.

Service by your side

Our service portfolio was developed to ensure water safety, increased efficiency and secure compliance

By your side, with total commitment, today and into the future, Endress+Hauser will help you both meet and exceed your specific industry challenges. This is what drives us - and defines us. As budgets shrink and process complexity rises, we deliver the incremental OPEX reductions and

process stability to make the difference. Moreover, we are here to ensure that you are able to comply with more demanding water safety regulations. With Endress+Hauser Services, you give yourself every chance of success.



✓ Service package for wet chemical analyzers

Wet chemical analyzers are used at many different steps of the water and wastewater treatment process to ensure water safety and to optimize the treatment processes. To ensure reliable, cost-effective operation throughout the lifecycle, we support you with our process analyzer know-how and application expertise. Our scalable support packages include preventive maintenance, reagent refilling, parts replacement and ongoing remote assistance, as well as monitoring and diagnostics and on-site repairs.

✓ Flow verification with Heartbeat Technology

With flow being one of the most important measuring parameters in the water and wastewater industry, regular verification is essential and in many cases a regulatory requirement. Our certified service technicians provide in-depth verification of flowmeters with documented proof of compliance, giving you the confidence that your instrumentation is functioning correctly. And with our Heartbeat Technology, you can perform verifications on your own with just the push of a button.

- Minimize process interruption with inline verification
- Reduce risk with reliable instrumentation that performs in accordance with functional and safety specifications
- Fulfill regulatory, quality and safety requirements with documented verification traceable to international standards



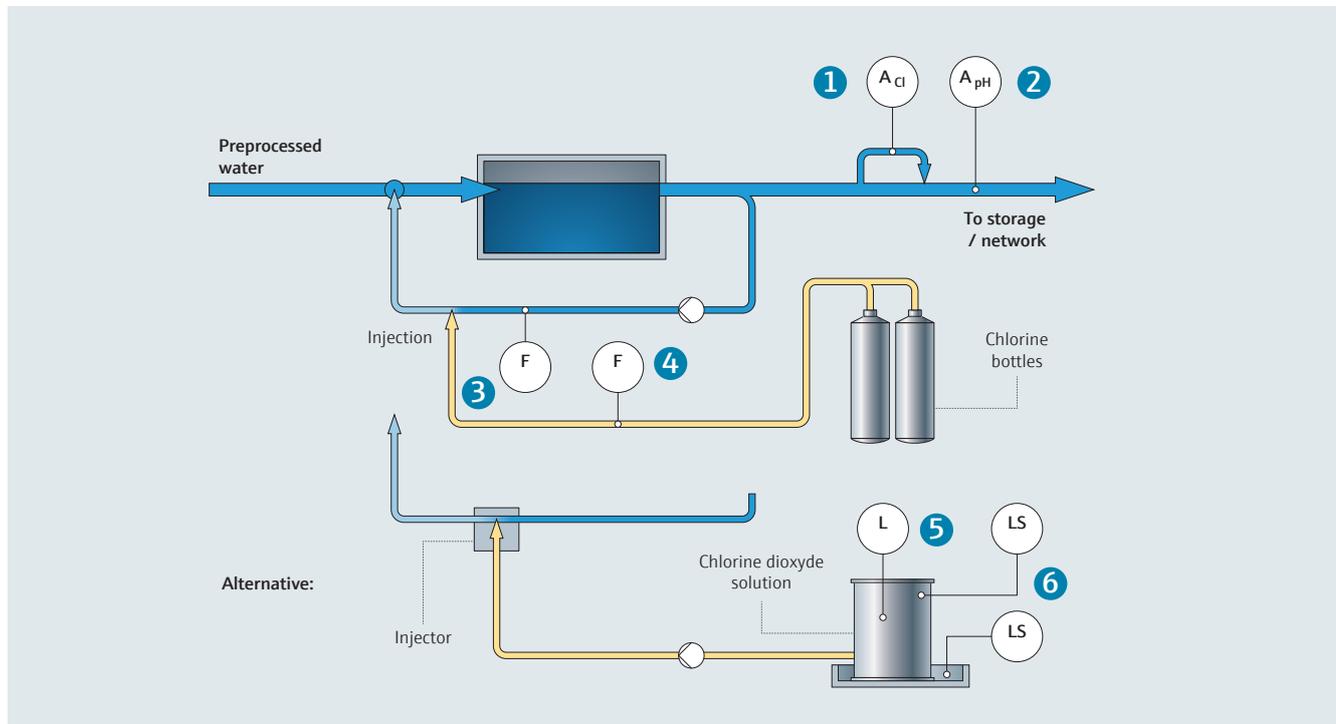
✓ Connected Support for wet chemical analyzers

Connected Support, the optimized complement to the CA80 range, improves service calls and maximizes plant availability. This service enables the remote resolution of technical issues and helps reduce process downtimes, thus mitigating the risk of non-compliance with water regulations. Because you are tied into our comprehensive, global network of expertise, you receive proactive notifications when issues arise, access to a 24/7 online expert knowledge base on CA80, and live video assistance from experts.

- 24/7 knowledge base access to aid your diagnostic, troubleshooting and maintenance activities
- On-demand support from experts for diagnostics and analyzer troubleshooting
- Diagnostic message monitoring with proactive support notifications and access to a catalog of remedy information
- A selection of service agreement levels for Connected Support ensures the right fit for your analyzers, operations and business process strategy

4. Disinfection of drinking water and outlet control

Chlorination is the main disinfection method for water. The main advantage here is the so-called depot effect of the chlorination



1 – Memosens CCS50D

Memosens sensor for measurement of chlorine dioxide

- High-precision measurement ensures sufficient disinfection up to the consumers' taps
- Fast response time avoids over- or underdosing
- Low-maintenance, amperometric sensor reduces cost of ownership
- Pre-calibration of sensors increases process uptime
- Low flow dependence supports safe measurement in varying process conditions

F L E X

 www.endress.com/CCS50D



2 – Memosens CPS31E

Memosens sensor for measurement of pH

- Ideal for pH measurement and pH compensation in the disinfection process
- Precise and reliable measurement results even at extreme pH ranges
- The sensor's fast response time enables use in control loops
- Optional salt storage extends the sensor's service life

F L E X

 www.endress.com/CPS31E



3 – Proline Promag W 400

Versatile standard flowmeter

- Flow measurement for adjusting the chlorine/water mixing ratio
- No in-/outlet runs ($0 \times DN$): measuring accuracy unaffected by flow disturbances close to the sensor thanks to patented full-bore design
- Globally-accepted drinking water approvals
- Maintenance-free operation

F L E X

 www.endress.com/5W4C



4 – Proline t-mass F 300/500

Thermal flowmeter for demanding gas applications

- Reliable flow measurement of chlorine gas for drinking water disinfection
- High measuring accuracy, repeatability and turn-down (up to 1000:1)
- Low maintenance due to drift-free, easy-to-remove sensor
- Extremely corrosion-resistant

F L E X

 www.endress.com/6F3B



5 – Liquicap T FMI21

Capacitance-based continuous level measurement for basic applications in conductive liquids

- Time-saving commissioning – no calibration required, easy to start up
- Mechanical safety – no moving parts
- Cost savings – optimized storage by simply shortening the probe rods on site
- Process safety – overfill prevention certificate: WHGs

F L E X

 www.endress.com/FMI21



6 – Liquipoint T FTW31

Conductive point level device for basic applications in conductive liquids

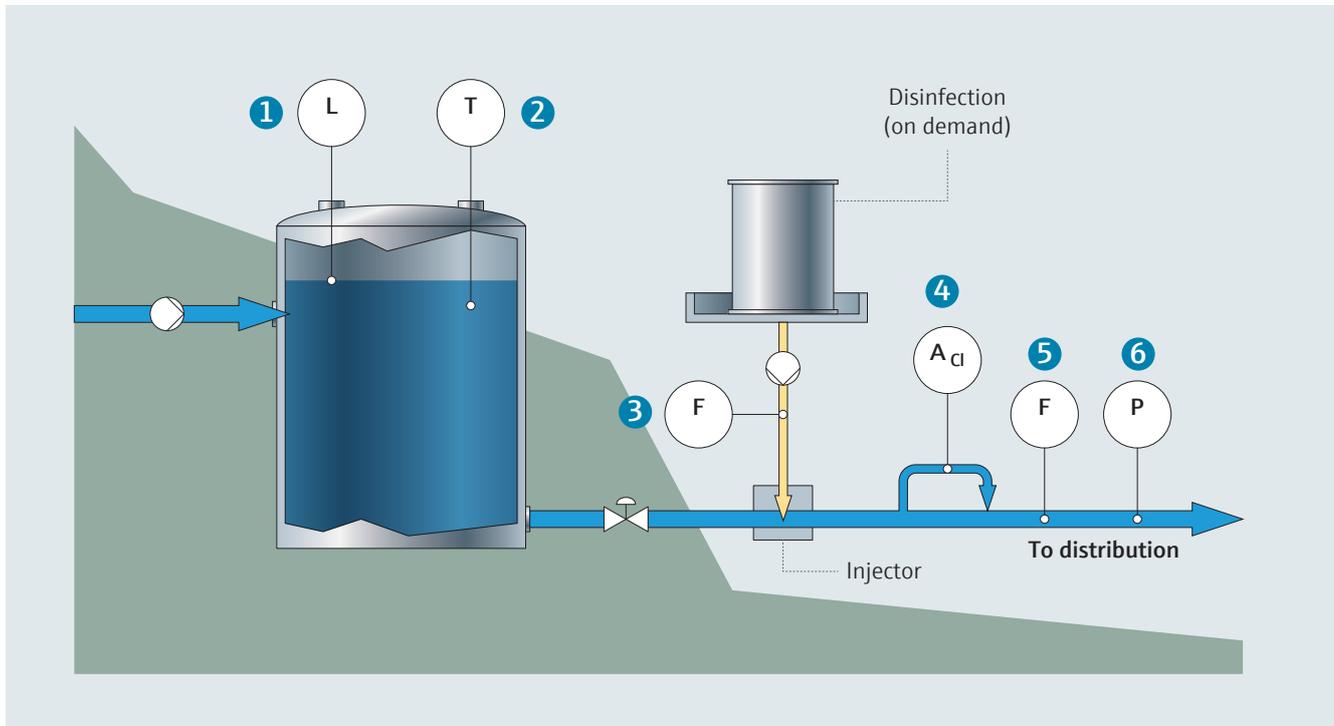
- Time-saving commissioning – no calibration required, easy to start up
- Mechanical safety – no moving parts in the tank, reliable operation with no wear or blockages
- Reliable sensor – standard setting for the most common conductive liquids
- Process safety – overfill prevention and leakage detection certificate: WHG

F L E X

 www.endress.com/FTW31

5. Water storage and distribution

Outlet control is the final step in potable water treatment. The quality and volume of the water are the most important criteria



1 – Micropilot FMR20

The smallest high-performance compact radar for level measurement in the water & wastewater industry

- Space saving installation – with compact design even in tight conditions or where access is restricted
- Reliable measurement – unaffected by temperature and wind
- Cost savings – Bluetooth® commissioning, operation and maintenance app
- Cost efficiency – designed for basic water applications/utilities and direct integration software and hardware – integrated web server

F L E X

 www.endress.com/FMR20



2 – iTHERM TM401

Modular hygienic RTD thermometer

- Basic, fit-for-purpose temperature measurement for standard and hygienic applications
- Flexible system integration with a wide range of process connections and transmitters
- Bluetooth®-enabled (optional, requires TMT71 or TMT72 transmitter)
- Certificates and approvals: 3-A, EHEDG, ASME BPE, FDA, TSE Certificate of Suitability
- Also available as imperial version TM402

F L E X

 www.endress.com/TM401





3 – Proline Promag H 100

Highly accurate flowmeter for smallest flow rates

- Precise dosing of chlorine dioxide solution
- Extremely corrosion-resistant thanks to PFA lining
- Multivariable measurement for flow, temperature and conductivity
- Nominal diameters: DN 2 to 150 ($\frac{1}{12}$ to 6")

F L E X

 www.endress.com/5H1B



4 – Memosens CCS50D

Memosens sensor for measurement of chlorine dioxide

- High-precision measurement ensures efficient disinfection avoiding pathogen growth and biofilm formation
- Long-term stability thanks to dirt-repellent membrane extremely resistant to biofouling
- Low maintenance, amperometric sensor reduces cost of ownership
- Pre-calibration of sensors increases process uptime
- Flexible installation options allow the sensor to be positioned exactly where it is needed

F L E X

 www.endress.com/CCS50D



5 – Proline Promag W 800

Battery-powered flowmeter for remote regions without power supply

- Accurate flow measurement of drinking water in distribution networks
- Certified for direct underground installation or permanent underwater use
- Worldwide, encrypted data transmission via cellular radio
- Nominal diameters: DN 25 to 600 (1 to 24")
- For larger pipe sizes: Promag W 400 up to DN 3000 (120")

F L E X

 www.endress.com/5W8C



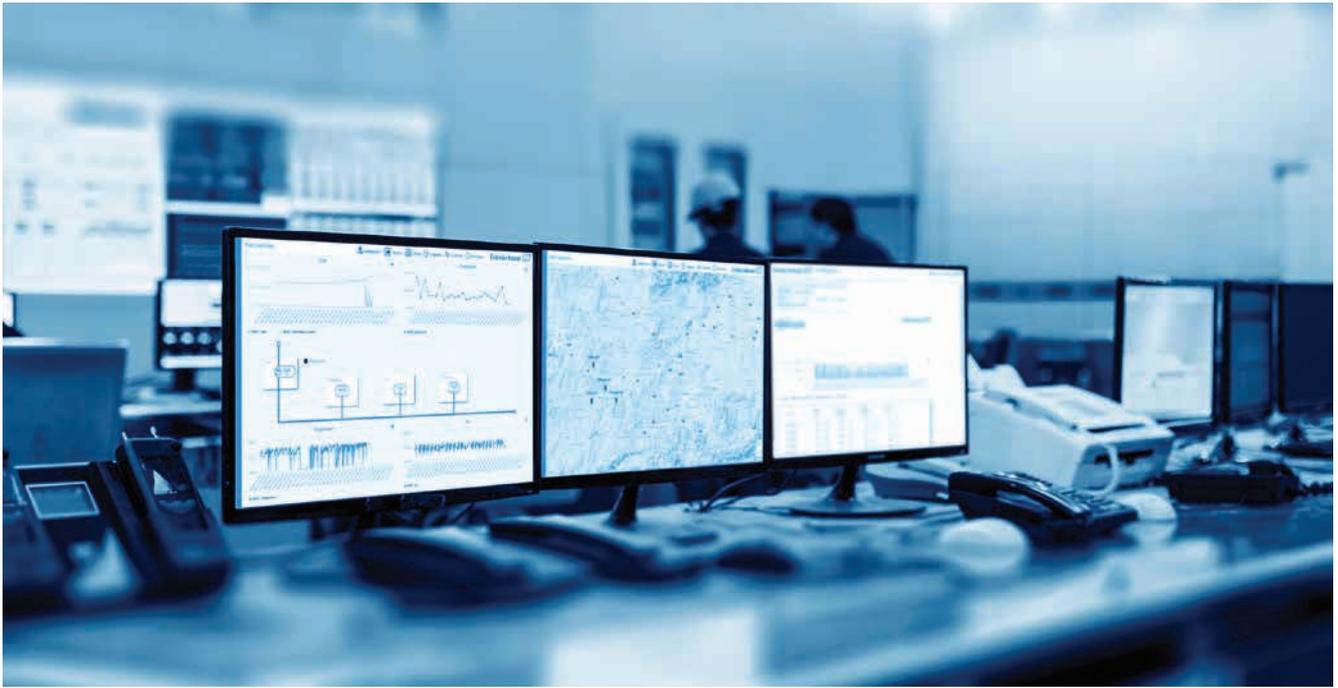
6 – Cerabar PMP21

Compact, reliable pressure transmitter for easy installation

- Reduced installation costs – easiest and time-saving installation
- Plant availability – reliable good long-term stability
- Plant safety – worldwide accepted drinking water approvals

F L E X

 www.endress.com/PMP21



Take the first step into the Industrial Internet of Things with Endress+Hauser

IIoT: the flow of data

Digital data deliver valuable insights into water and wastewater treatment processes. Expanding the control over the installed base means improving water safety, shortening reaction times and optimizing OPEX

Digitalization is the next major challenge for all industries. For the water and wastewater industry it is of particular relevance. Given the high degree of responsibility for both the population and the environment, operators must react quickly in the event of faulty equipment or processes.

Key instrument data can become a crucial lever for increasing the reliability of your processes. At this point, it is revealing to know that 90 percent of the Endress+Hauser field devices are already digital. Their inherent intelligence can deliver relevant information once it is unlocked. This is where Endress+Hauser's field connectivity and the Netilion IIoT ecosystem come into play. Our technology is capable of accessing crucial equipment data like selfdiagnostics or obsolescence status and instrument documentation.

Making the information and files digitally available in a safe way provides more control over the processes. Quick responses in emergency situations, as well as strategic operational activities, can be based on precise data and perfectly managed documents. This is how an IIoT ecosystem unlocks the opportunity to increase plant availability.

When accessed digitally, the measurement data is more precise, leading to greater process efficiency. Many water and wastewater treatment plants have measuring points

that are either hard to physically reach or are situated in remote locations. By integrating them into an IIoT ecosystem, they can be safely and efficiently monitored and help you optimize your maintenance routines.

Endress+Hauser is a trustworthy partner in the implementation of digital services. The development process of the products has been certified group-wide according to IEC62443-4-1. Our Netilion IIoT ecosystem meets the requirements of ISO 27017. Furthermore, Endress+Hauser Digital Solutions complies with the ISO 27001. And Netilion is easy to implement. The standard offering comprises various digital services. The Netilion Connect API can be utilized for individual application scenarios. Several options exist to ensure field connectivity and thus unlock the data in the production system.

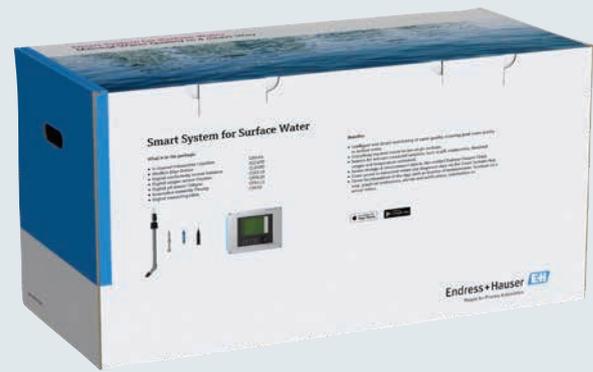
With a partner like Endress+Hauser, whose expertise covers automation at the hardware level and IIoT, you are well-positioned to make a major step toward the future.



More details on Netilion
www.netilion.endress.com

✓ **Netilion Smart Systems** Endress+Hauser's Smart System package is used to monitor water quality parameters. All necessary components are provided in one single package. It combines industry-proven measuring instruments with our IIoT offering. Process values and device diagnostic data are transmitted to a central data hub via edge devices. This provides the user with a wide variety of applications as well as visualizations, evaluations and functions.

Information is transmitted directly to the hub without a control system and is thus accessible to the user from anywhere. The user is thus constantly aware of the status and can initiate measures right on time, or even earlier!



✓ **Netilion Water Network Insights** Whether in heavily populated or isolated areas, Netilion Water Network Insights (NWNi) guarantees complete transparency of your water networks around the clock. You can thus monitor optimally water quantity, pressure, temperature, level, pH value, turbidity and numerous other parameters. The NWNi solution connects all levels of the water supply system: from field measuring devices, data transmission components, data recording and archiving, to data evaluation.

Netilion is a cloud-based, certified and vendor-independent IIoT ecosystem from Endress+Hauser that helps users to continuously monitor and improve their processes and procedures. The main features include:

- Web-based solution for clear visualization of water and wastewater networks
- Comprehensive security and authorization concept for data access
- Permanent monitoring of key performance indicators (KPI), limit values, time curves, etc.
- Comprehensive trend analyses and forecasts using weather data (runoff, water demand, availability) and simple reporting
- Unique Heartbeat Technology: remote, metrologically traceable flowmeter verification without process interruption
- Notification and alarm system via e-mail and SMS

✓ **Netilion Services**

Netilion Analytics is a digital service that lets you manage all the devices in your plant. Use their data to eliminate obsolescence by optimizing and standardizing your equipment. This is the first step to keeping productivity smooth and continuous.

Netilion Health is a digital asset-health management service that helps your maintenance team stay one step ahead of potential problems. Diagnostics and cause and remedies anytime and anywhere.

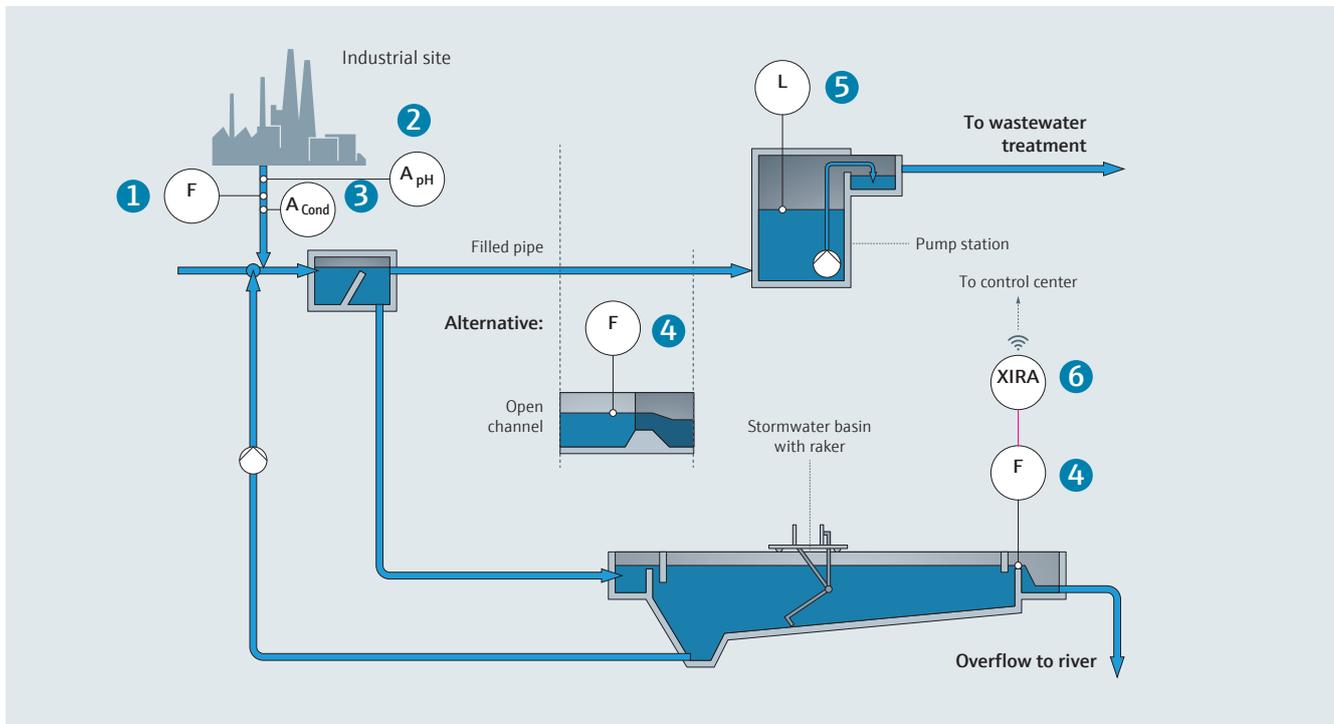
Netilion Library is a file management service designed to organize documents related to your plant's instrumentation. The digital availability of these files increases your team's performance, thanks to automated administration and simple information sharing.

Netilion Value is a digital monitoring service that lets you access your measurements from anywhere, so that you can see what is occurring at your facility at any time. With digital access to this information, you can manage operational quality accurately and precisely – even from a distance. And you can document your compliance.

Netilion Inventory is a digital service for inventory management that allows you to control your supplies. No matter where you are, you can monitor your containers and tanks. Access to precise inventory data is the best way to optimize storage and logistics.

6. Sewage systems and industrial discharges

Monitor the intake of your wastewater plant to ensure the reliability of your processes



1 – Proline Promag W 400
Versatile standard flowmeter

- Accurate water flow measurement, e.g. hydraulic load in canalization (pressurized pipes)
- Certified for direct underground installation or permanent underwater use
- No in-/outlet runs (0 × DN): measuring accuracy unaffected by flow disturbances close to the sensor thanks to patented full-bore design
- Nominal diameters: DN 25 to 3000 (1 to 120")

F L E X

 www.endress.com/5W4C



2 – Memosens CPS11E
Memosens sensor for measurement of pH

- Precise and reliable measurement results even at extreme pH ranges and large pH fluctuations
- Long service life and best value, even in hazardous areas
- Robust and easy-to-clean sensor materials minimize buildup and blocking by biofilms, particles, etc.

F L E X

 www.endress.com/CPS11E



3 – Indumax CLS50D

Memosens sensor for inductive measurement of conductivity

- Designed for low maintenance: dirt-repellent materials prevent soiling
- Wide measuring range and chemical resistance are ideal for residential and industrial wastewater
- Long-term stability even under extreme temperatures

F L E X

 www.endress.com/CLS50D



4– Prosonic S FDU90

Special designed ultrasonic sensor for level and open channel flow measurement in underground installations

- Reliable measurements even during flooding
- Direct ceiling mounting without additional hardware for cost savings
- Smallest blocking distance – large measuring range in confined spaces
- Less maintenance – integrated sensor heating for icy environments

F L E X

 www.endress.com/FDU90



5 – Waterpilot FMX21

Level measuring probe with robust and abrasion-resistant ceramic measuring cell and small diameter

- Plant safety – globally-accepted drinking water approvals
- Reduced costs – simultaneous measurement of level and temperature with integrated Pt100
- Plant availability – unaffected by baffles and foam
- Level and flow (Q/h curve) in the sewage canals

F L E X

 www.endress.com/FMX21



6 – Memograph M RSG45

Advanced Data Manager

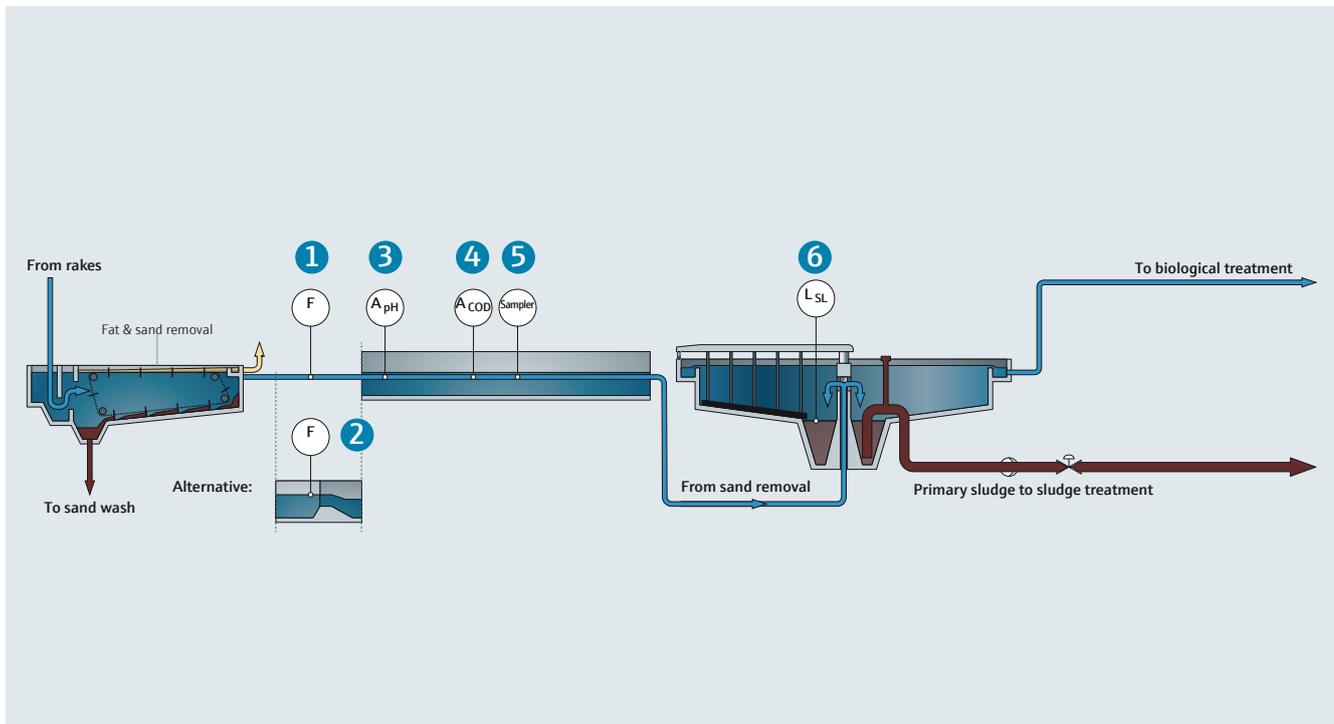
- Secure data recorder with 7" TFT display or without (variant for DIN rail cabinets)
- Process limit alarms, mathematical functions such as mass flow and energy calculation for water and steam application control
- Flexible sensor inputs, HART gateway
- Connectivity for seamless system integration (supports Modbus, Profibus DP, PROFINET, EtherNet/IP)
- Integrated webserver for remote operation

F L E X

 www.endress.com/RSG45

7. Inlet and mechanical treatment

Monitoring the inlet volume can help you optimize the treatment processes and protect your assets



1 – Proline Promag W 400
Versatile standard flowmeter

- Accurate flow measurement at the inlet of the primary clarifier
- No in-/outlet runs (0 × DN): measuring accuracy unaffected by flow disturbances close to the sensor thanks to patented full-bore design
- Build-up detection with alarm function (Heartbeat Technology)
- Extremely corrosion-resistant thanks to PFA lining

F L E X

 www.endress.com/5W4C



2 – Prosonic S FDU90

Specially-designed ultrasonic sensor for level and open channel flow measurement underground

- Reliable measurement even during flooding
- Direct ceiling mounting without additional hardware for cost savings
- Smallest blocking distance – large measuring range in confined spaces
- Less maintenance – integrated sensor heating for icy environments

F L E X

 www.endress.com/FDU90



3 – Memosens CPS11E

Memosens sensor for measurement of pH

- Precise and reliable measurement results even at extreme pH ranges and large pH fluctuations
- Long service life and best value even in hazardous areas
- Easy and uncomplicated sensor cleaning
- Optional ion trap prevents poisoning of the sensor

F L E X

 www.endress.com/CPS11E



4 – Memosens Wave CAS80E

Memosens sensor for optical measurement of turbidity, nitrate, SAC, COD_{eq}, and BOD_{eq}

- Easy-to-install and low-maintenance UV-VIS spectrometer
- Measures several parameters at the same time
- Can be installed in basins and in open channels
- Chemical-free handling is safe and environmentally-friendly
- Simple commissioning thanks to predefined calculation models

F L E X

 www.endress.com/CAS80E



5 – Liquistation CSF48

Fully automatic water sampler

- Full compliance with international standards such as ISO 5667
- Sampling can be triggered by time, flow or an event
- Upgradeable to a fully-fledged measuring station by connecting up to four Memosens sensors
- Easy cleaning thanks to quick, tool-free removal of wetted parts

F L E X

 www.endress.com/CSF48



6 – Turbimax CUS71D

Memosens immersion sensor for ultrasonic based measurement of sludge levels

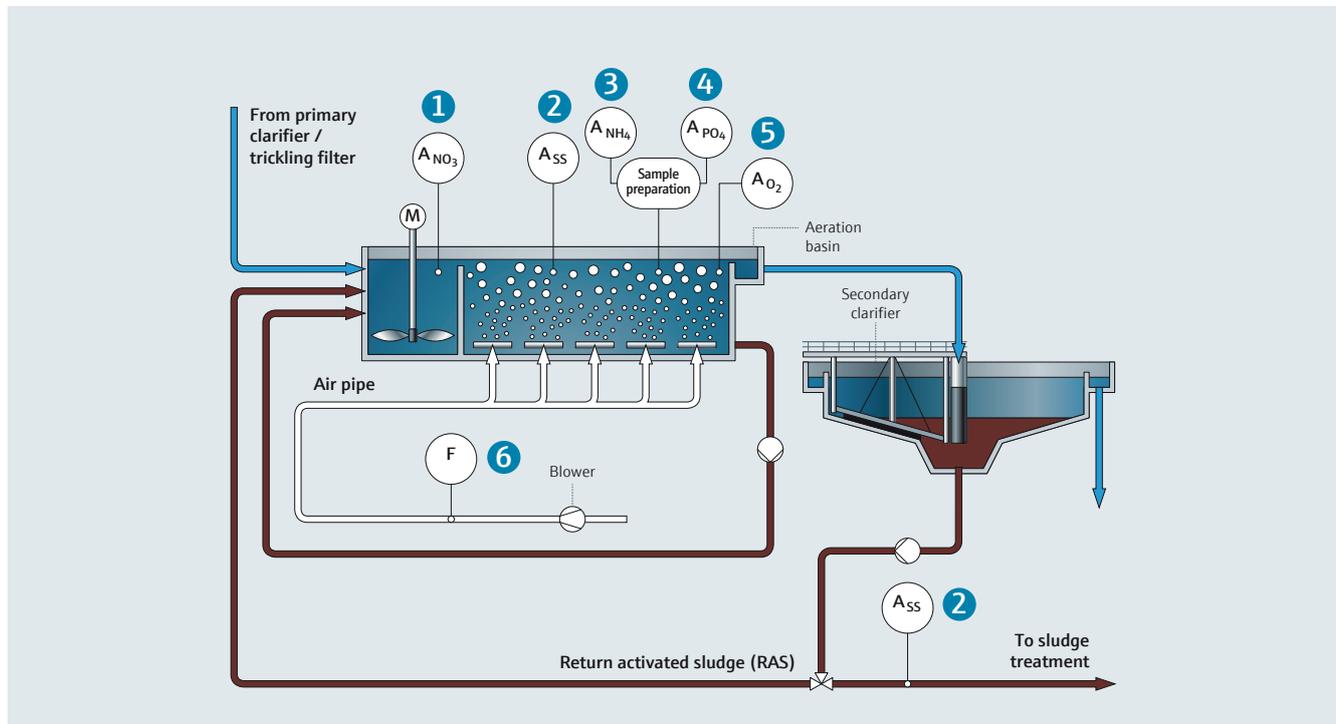
- Accurate and continuous measurement of interface level in sedimentation tanks
- Real-time interface information ensures quick control of valves and actuators
- Simple commissioning thanks to predefined calculation models

F L E X

 www.endress.com/CUS71D

8. Biological wastewater treatment

Optimize your energy consumption and ensure compliant treatment results



1 – Viomax CAS51D

Memosens sensor for optical measurement of nitrate, SAC, COD_{eq}, TOC_{eq}, BOD_{eq}, or DOC_{eq}

- Easy-to-install and low-maintenance UV photometer
- Can be installed in aeration basins and in open channels
- Chemical-free handling is safe and environmentally-friendly
- Extremely fast response time allows set up of control loops
- Self-cleaning design minimizes maintenance

F L E X

 www.endress.com/CAS51D



2 – Turbimax CUS51D

Memosens sensor for measurement of suspended solids

- Can be installed in aeration basins and in pipes
- Sensor fits all measuring ranges thanks to numerous integrated analytical models
- Factory calibration of sensor allows fast commissioning
- Self-cleaning design minimizes maintenance

F L E X

 www.endress.com/CUS51D





3 – ISEmax CAS40D

Memosens sensor for ion-selective measurement of ammonium, nitrate, pH, potassium or chloride

- Trend measurement of ammonium (pH-compensated) and nitrate directly in the aeration basin
- Potassium and chloride measurement compensate for cross sensitivities
- Suitable for automated aeration control

F L E X

 www.endress.com/CAS40D



4 – Liquiline System CA80PH

Colorimetric analyzer for online measurement of orthophosphate

- Reliable measurement allows for optimized precipitant dosing to save chemical costs
- Standard methods (molybdenum blue or molybdate vanadate) ensure comparability to lab results
- Low reagent consumption and increased reagent lifetime reduce operating costs
- Nearly tool-free and easy maintenance decreases service times and increases availability
- Advanced diagnostics with remote access increase process safety

F L E X

 www.endress.com/CA80PH



5 – Oxymax COS61D

Memosens sensor for optical measurement of oxygen

- Suitable for all batch and continuous aeration processes
- Fast, drift-free measurement for precise aeration control
- Long-term stability and low maintenance
- Sensitive surface withstands abrasive particles

F L E X

 www.endress.com/COS61D



6 – Proline t-mass F 300/500

Inline flowmeter for demanding gas applications

- Robust and reliable air flow control in the aeration pipe
- Excellent measuring accuracy and repeatability
- Low maintenance due to drift-free, easy-to-remove sensor
- Intelligent detection of process disturbances and variations

F L E X

 www.endress.com/6F3B



Gain more control over your processes with our industry-specific solutions.

Process solutions tailored for optimal plant performance and water quality

Dedicated to improving your efficiency while lowering your costs and ensuring compliance

At Endress+Hauser we understand the unique challenges of your industry. By combining our portfolio and technologies with expert consulting and requirements analyses, design and engineering capabilities and seamless integration of the instrument data into your systems, we partner with you to provide the optimal industrial process solutions for superior plant performance. Endress+Hauser offers plant-wide process solutions focused on your applications needs.

From the management and distribution of residential or industrial water systems, to the treatment of wastewater, the water industry faces manifold challenges. Apart from optimizing efficiency, compliance and safety, plant operators must also adhere to relevant government regulations. Combining expertise with extensive experience and an innovative, broad portfolio, our water and wastewater processing solutions provide simplicity and clarity. Together we can meet your challenges, enhance water safety and unlock cost savings.



✓ **Phosphate precipitation** Phosphorus is removed from the wastewater by adding precipitants, which can be dosed at various points. If the dosage is too high, it can increase the salinity and thus increase the volume of the sludge. Too much salt increases the number of ions in the water, which in turn changes the pH value and can ultimately lead to corrosion of the system. Higher sludge volumes mean increased disposal costs.

Last but not least, overdosing means that the precipitant, which is usually very costly, goes to waste. Optimizing the precipitant dosage can lead to significant savings. The dosage is at an optimum level if your plant reliably adheres to the limit value but does not use more than required. How do we optimize phosphate precipitation? By using the Liquiline Control to automate the dosage for instance. This solution utilizes a controller that doses the precipitant in accordance with the actual load and your individual phosphorus limit value.

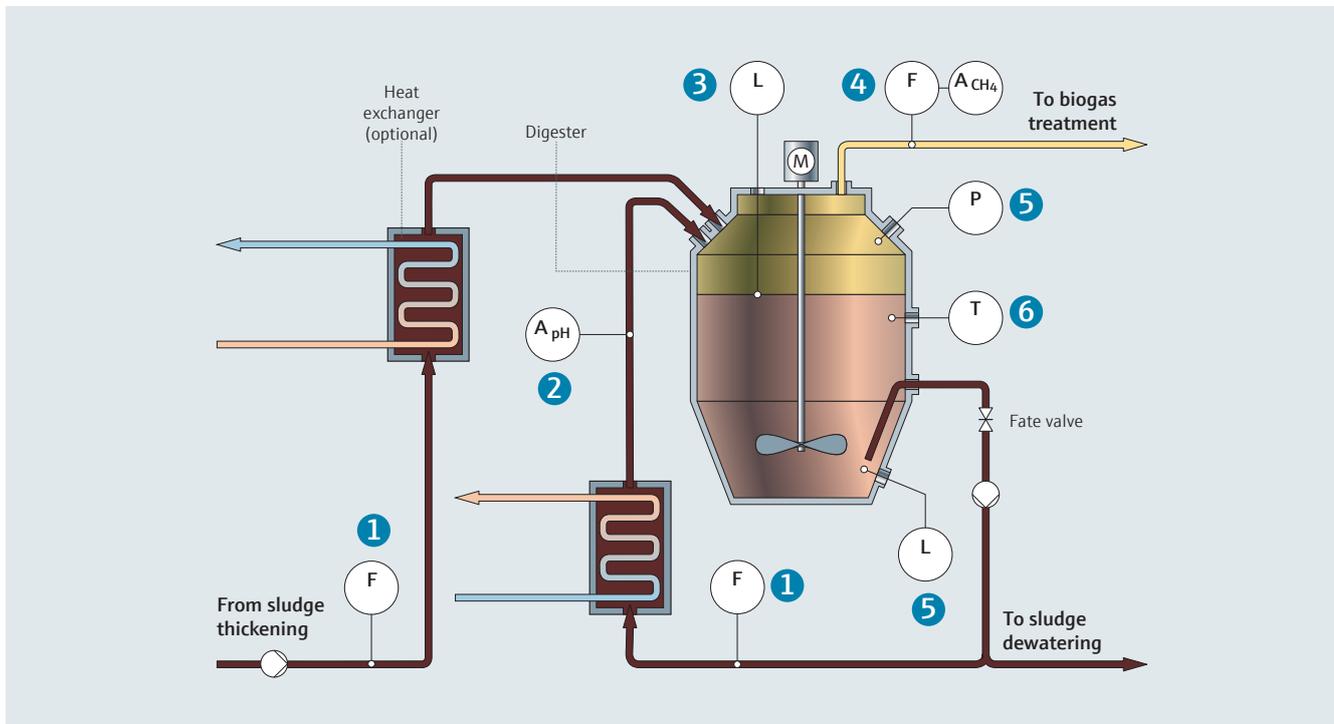
✓ **Monitoring panels** For water and wastewater treatment a large number of parameters must be measured and monitored, which can be different for each measuring point. We developed panels specifically for the production and distribution of drinking water and the safe treatment of wastewater to satisfy every measuring parameter. The panels, which consist of modules that we put together based on your needs (sensors, assemblies, transmitters, valves, piping) are fully installed, wired and connected.

You no longer need to worry about the specific characteristics of each individual measuring parameter. All measurements are perfectly designed and provide precise and reliable measured values from the start. Installation and commissioning of the measuring points could not be simpler: simply mount the panels onto the wall, connect them to electricity and water and you're ready to go. And if you need to monitor other or additional measuring parameters, the modular structure of our panels ensures that you remain flexible. You can replace or add modules at any time.



9. Digesters and biogas

Sludge digestion not only reduces the volume of the sludge but also produces biogas



1 – Proline Promag W 400
Versatile standard flowmeter

- Maintenance-free measurement of sludge flow (30 to 50 g/l) at the inlet of the digester
- Build-up detection with alarm function (Heartbeat Technology)
- No in-/outlet runs ($0 \times DN$): measuring accuracy unaffected by flow disturbances close to the sensor thanks to patented full-bore design

F L E X

 www.endress.com/5W4C



2 – Memosens CPS16E
Memosens sensor for simultaneous measurement of pH and ORP

- Precise pH and ORP measurements enabling the calculation of the rH value in the transmitter
- Robust and easy-to-clean sensor materials minimize buildup and blocking by biofilms, particles, etc.
- Optional ion trap prevents poisoning of the sensor

F L E X

 www.endress.com/CPS16E



3 – Micropilot FMR54

Non-contact radar device for high temperature, high pressure and stilling well applications

- Reliable sensor – non-contact measurement even for changing product and process conditions
- Time-saving commissioning – HistoROM data management concept for fast and easy commissioning
- Reliable sensor – even with vessel obstructions due tanks to multi-echo tracking analysis

F L E X

 www.endress.com/FMR54



4 – Proline Prosonic Flow B 200

Flowmeter for reliable biogas measurement

- Highly accurate biogas flow control at the digester outlet
- Optimized for low pressure gas thanks to a special sensor design
- Available with approvals for explosion-hazardous areas
- Integrated real-time methane fraction analysis

F L E X

 www.endress.com/9B2B



5 – Deltapilot M FMB50

Compact and accurate pressure transmitter with condensation-resistant measuring cell

- Plant availability – high accuracy and long-term stability; measurement unaffected by foam
- Plant safety – drinking water approvals, overflow prevention and highly resistant alloy membrane
- Reduction of operational costs – easy commissioning via on-site display or tool (HART)

F L E X

 www.endress.com/FMB50



6 – iTHERM ModuLine TM131

Robust, highly configurable RTD or thermocouple thermometer

- High-performance modular temperature assembly for demanding applications in hazardous areas
- Integrated Bluetooth® transmitter (requires TMT71 or TMT72)
- iTHERM QuickSens sensor technology and special thermowell for fast process response times
- iTHERM StrongSens: highly reliable, vibration-resistant Pt100 sensor
- iTHERM QuickNeck technology for quick, tool-free insert removal
- Explosion protection according to ATEX, IECEx, CSA C/US, INMETRO and NEPSI

F L E X

 www.endress.com/TM131

FLEX Selections – Flexible answers to individual needs

Simplify your product selection with our FLEX portfolio structure

Xpert Selection	Master your most challenging applications	<ul style="list-style-type: none"> Specialized products Designed for demanding applications 	F L E X
Extended Selection	Optimize your processes with innovative technologies	<ul style="list-style-type: none"> High-end products Highly functional and convenient 	F L E X
Lean Selection	Handle your core processes easily	<ul style="list-style-type: none"> Standard products Reliable, robust and low-maintenance 	F L E X
Fundamental Selection	Meet your basic measurement needs	<ul style="list-style-type: none"> Simple products Easy to select, install and operate 	F L E X

Selecting the right products for your application can be a challenge for several reasons:

- 1) The instrument must be suitable for the process
- 2) Sensors with unnecessary functions should be avoided
- 3) Time is usually of the essence

In line with our brand motto, our goal is to provide you the best possible support. With these things in mind, we are introducing our new FLEX structure, which separates our extensive portfolio into four distinct segments based on your needs.

Benefits

- Easy to understand
- Logical structure based on user needs
- Filter function on the website

How to make the best use of FLEX Selections

Apart from this brochure, the FLEX structure is also used in the product section of our website. Products can be filtered according to four selections, or the filters can be combined for easy comparison of the selections. All products now have a FLEX indicator that shows to which selection they belong, all according to the key features of the product.



For more information, visit:
www.eh.digital/flex-water



www.addresses.endress.com

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