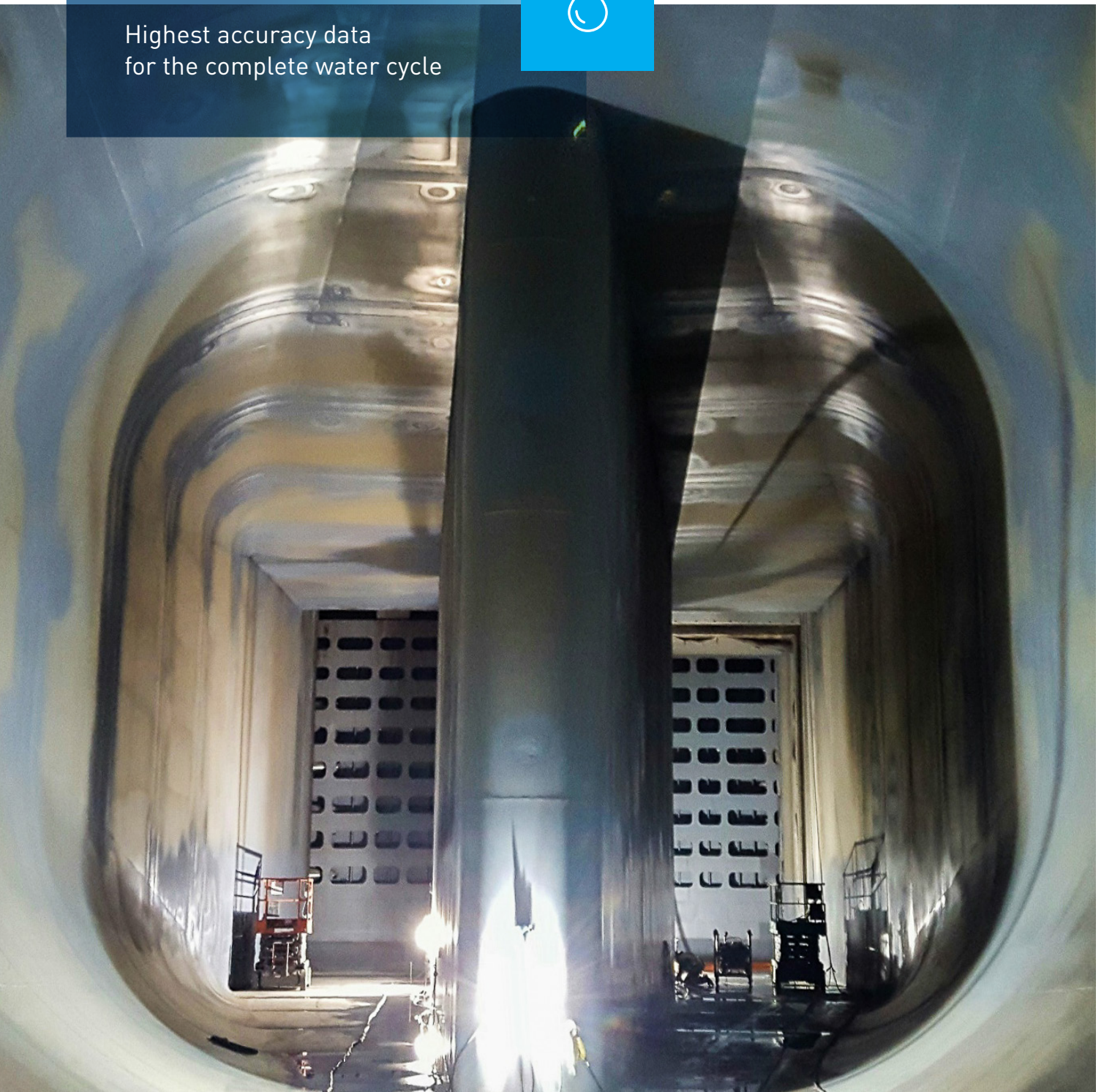


## LARGE SCALE MEASUREMENT SOLUTIONS



Highest accuracy data  
for the complete water cycle



Innovative solutions  
for valuable resources



# The most advanced, flexible, and efficient measurement system you can buy

**GWF measures water and wastewater in all forms and applications in the water cycle.** Raw water, drinking water, pure and ultrapure water, rainwater, effluent and wastewater in fully filled pipes, partially filled pipes, channels, or rivers: GWF can provide tailored solutions with flow ranges of up to 10,000:1, with uncertainties as low as +/-0.15% and velocity measurements down to 0.1ft/s even in pipes and water tunnels as large as 50ft in diameter and open channels up to 3,300ft wide.

**GWF tailors the measurement solution to your needs.** Most critical measurement points are truly unique and require careful selection of the right technology to meet your performance requirements. Be it a retrofit or new-build installation: GWF first analyzes the situation together with you based on a detailed approach to ensure top measurement quality for your specific needs.

**GWF measurement solutions provide best total cost of ownership.** Investing and operating high-quality measurement devices can be expensive. This is why GWF uses technology that is self-verifying and maintenance free. The measurement devices are in-field upgradeable and remote service packages are available for your convenience.

**“GWF’s innovative acoustic flow measurement technology sets a new standard in accuracy and reliability to generate high-precision data for water and waste water flows.”**

James Rees  
Water Expert, Houston (TX)



## A unique line-up of technologies and products

### Ductus – for pressurized pipe applications

Extreme low flow measurement accuracy in combination with industry leading dynamic range, maximize flow capture, enabling your **large diameter flow** measurement and custody transfer billing to become much more accurate and reliable. In **wastewater** treatment plants, Ductus will help you to capture low velocities and will optimize your management of capacity needs, biological processes and sludge returns. In **hydropower applications**, Ductus is used to implement turbine efficiency and leak detection monitoring.

### Kanalis – for channels, tunnels, and rivers

Highest accuracy for changing flow conditions in combination with a proven, rugged design, allows you to accurately measure your **raw-water intakes, stormwater tunnels, combined sewer overflows, process water returns, and irrigation canals.** Kanalis provides you with granular data to manage and optimize your processes leading to better efficiency and oversight – and to adhere to regulatory reporting requirements.

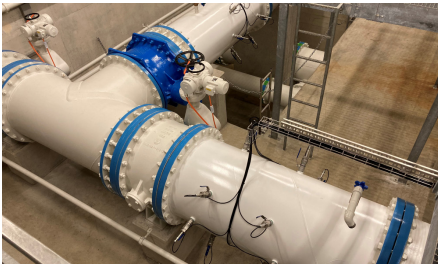
### Tailored solutions for your specific needs

GWF pride themselves in addressing applications that some consider are too hard to measure. GWF has developed numerous tailored solutions for existing infrastructure to **avoid costly reconstruction.** GWF defines performance characteristics together with you and provide you with your **tailored solution proposal.**



## Case studies

**GWF's measurement devices are installed around the globe.** Our network of branch offices and qualified partners allows us to efficiently execute your project. Below, you can find selected impact case studies, where GWF products and solutions provide highest accuracy data in challenging measurement conditions.



### **Water supply: Highest accuracy low flow detection in two directions**

Measuring the reservoir outflow in this case is particularly challenging: The reason for this is the highly fluctuating flow situation. In special operational situations, backflows into the reservoir can occur, resulting in zero flow passages. Therefore, the measurement system must be capable of **accurately detecting even the smallest quantities in both directions.** GWF's Ductus was installed and provides highest accuracy data since 2019.



### **Hydropower: Assessing turbine efficiency at highest precision**

In collaboration with the turbine manufacturer, GWF delivered a high-precision Ductus system to monitor the turbine efficiency and implement a performance contract. **The accuracy level of measurement is +/- 0.15%** ensuring the ability to perform predictive maintenance. GWF has various systems and approaches to work with hydropower plant managers and turbine manufacturers to ensure highest efficiency of the costly infrastructure.



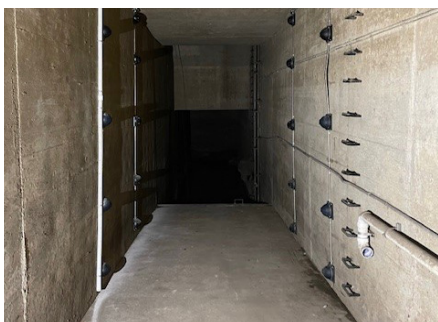
### **Wastewater: In-field upgrade with ultrasonic measurement technology**

The installed electromagnetic flowmeter was removed due to erratic behavior, and an acoustic profiler meter didn't provide reliable data (6% of recorded values are zeros or negative values). GWF installed a multipath Ductus with feedthrough sensors and was able to avoid costly infrastructure investments with its in-situ installation. The device is providing highest accuracy flow data despite the challenging applications: The 48-inch diameter interceptor passes through a flow meter vault, a 9-foot vertical 90-degree bend, a vertical 14-foot riser section and then discharges into the WWTP. Summer nighttime flows can be less than 1 MGD, and peak wet weather flows can exceed 125MGD. **With approx. 89% of the flows having velocities less than 1 fps and high peak flows requires accuracy over a wide range.**



### **Stormwater: Measuring a 30-foot water tunnel**

Heavy weather events can bring existing water treatment infrastructure to its limits. An increasing number of cities build stormwater infrastructure and GWF supports these projects with highest accuracy measurement devices. In this example, we installed Ductus in a **30-foot tunnel as integral part of the infrastructure project.** The generated data is used to remain an oversight on water storage capacity and support the gradual disposal of stormwater to the treatment plant.



### **Rainwater: Measuring inflow in rainwater retention basin**

With many wastewater networks operating as combined sewer and storm water collection systems, **retention basins or overflows are required to provide capacity for managing the excess flows during storm conditions.** In this application, a basin has a capacity of 5.5 million gallons and is designed to provide 30 minutes of detention time for a one-year, one-hour storm. With an existing measurement system being life expired, GWF provided a full turnkey installation of a multipath Kanalis system to accurately record the flow across a wide dynamic range allowing for greatly improved management of the basin.

# Areas of Application

 <b>HYDROPOWER</b>	 <b>HYDROLOGY</b>	 <b>WASTEWATER</b>	 <b>IRRIGATION</b>	 <b>WATER SUPPLY</b>
<p>Ductus (12 in to 49 ft) Kanalıs (3 ft to 330 ft)</p>	<p>Fluvıus (300 ft to 3000 ft) Kanalıs (3 ft to 330 ft)</p>	<p>Ductus (12 in to 49 ft) Kanalıs (3 ft to 330 ft) Q-Eye PSC / Radar (4 in to 30 ft)</p>	<p>Kanalıs (3 ft to 300 ft) Q-Eye PSC / Radar (4 in to 30 ft) Sonıco EDGE (2 in to 12 in)</p>	<p>Ductus (12 in to 49 ft) Sonıco EDGE (2 in to 12 in)</p>
<p>Stationary multipath flow meter for penstocks to determine the <b>efficiency</b> of a turbine, <b>pipe burst</b> and <b>leakage monitoring</b>, process control, digital power plant</p>	<p>Stationary multipath flow meters for rivers, waterways and natural channels to measure <b>floods</b> (forecast), <b>low-water situations</b>, to control cooling water extractions and <b>ecological minimal flow</b></p>	<p>Stationary and portable flow meter to measure the <b>inflow and/ or the outflow</b> of wastewater treatment plants, sewer network monitoring, <b>infiltration studies</b> in sewer systems (groundwater)</p>	<p>Stationary multipath flow meter to measure the <b>flow in irrigation networks</b>, farmers outlets, gate control, <b>billing on demand</b></p>	<p>Stationary multipath flow meters to measure the <b>flow in pressurized pipes</b> with high accuracy, independent of bends, valves or pumps. Process control (SCADA). Insertion type and spool pieces</p>
				

## GWF: Your trusted partner since 1899

GWF looks back at a rich 125-year history providing leading utilities worldwide with innovative and robust solutions for flow measurement. Headquartered in Lucerne, Switzerland, GWF stands for highest quality measurement devices, communication and data collection modules, and data platforms. The family owned business operates out of nine offices in Europe and the USA and works with partners and distributors across the globe to solve water and wastewater challenges.



### Ask our experts

Our experts have decades of experience in the water sector and are more than happy to talk with you about our innovative solutions for your water network. We frequently host water network related events and virtual meetings – please reach out for more details.



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