



More than 600 ready-to-use installations of continuous measuring flowmeter systems in Germany and its European neighbours, Lesotho, North Africa, Japan, and China are documenting our customer's satisfaction.

Services and products

Quantum Hydrometrie is Germany's leading manufacturer of ultrasonic measuring instruments for continuous recording of changing water flows in rivers, tidal estuaries, coastal waters, waterways, open channels, drainage systems, sewage water systems, and pressurised pipes. The stations applicable for any width of water bodies and any pipe diameters from DN 800 upwards generate the data for water level and discharge necessary for hydrological work. They are equipped with state-of-the-art signal processing, remote control and maintenance inclusive of data transmission.

Beside of the water level the flow is the most important hydrologic data for appropriate management of available water resources or flood protection. In contrast to impeller ultrasonic flowmeter systems offer continuous and fully automatic measuring over any period of time without staff assignment and without affecting the flow itself.

A stringent quality management and the company's structure dedicated to dynamic development enable Quantum Hydrometrie to develop creative solutions and reliable products. To meet the customer's wishes with our services and products is always the main goal of our efforts.



For further information please visit our website.
www.quantum-hydrometrie.de

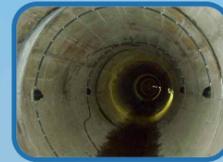


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Water Monitoring

complete measurement stations



Ultrasonic discharge measurement all around the world in rivers, open channels, pressured pipes, tidal water and irrigation systems



Katse Dam, Lesotho, Africa

Matsoku Tunnel (intake side)
3-level crossed path system



Venice Lagoon, Italy

Quantum Hydrometrie installed 18 networked discharge measurement stations around the lagoon to monitor both the drainage into the lagoon and the interaction between the lagoon and the open sea by a continuous discharge measurement. Two of the systems with measurement path lengths of 642 and 708 m were exchanged by wireless systems in the course of the MOSE construction work.

The Quantum Hydrometrie GmbH

founded in 1994, offers high-tech measurement equipment and services for environment and water protection, including the appropriate services. The engineers of Quantum Hydrometrie are experts for technical solutions in all fields of water management. Beside of engineer services our work is focused on the development and production of the latest measurement instruments for water management. Thus Quantum Hydrometrie has captured a strong position in the market for ultrasonic flow measuring systems within a few years.

Using highly flexible components our systems perform reliably with waterbodies of all shapes and sizes. Be it a river, channel or brook, tide-influenced coastal waters, pressured pipe or sewage water systems, around the globe 600 Quantum ultrasonic discharge measurement systems are deployed and dependably fulfill their monitoring duties. The flowmeter's mode of operation is either based on transit-time or Doppler method. Quantum offers stationary systems and portable flowmeters.

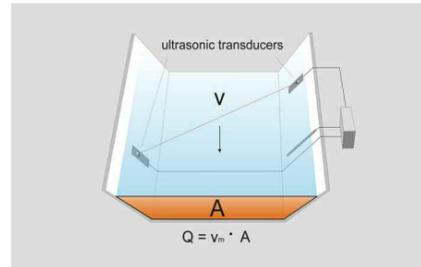
To offer you a complete solution Quantum Hydrometrie provides a wide variety of services ranging from installation and maintenance of gauging stations to on-line data acquisition and presentation.

The Aqua Sound Flowmeter



Continuous flow recording

The Aqua Sound Flowmeter is a stationary flowmeter system. The most accurate way of obtaining the velocity of a water body is the well studied transit-time



View: Transit-time method

method. Since this is the only method that allows for determining the average velocity across the entire cross-section of a stretch of water.

Ultrasonic transducers are installed on both sides of the water body so that the acoustic signal travels diagonally to the flow of the water. A sound wave running against the flow will have a longer transit time than one running with it. The difference in transit time is directly proportional to the velocity of the water body and therefore directly related to a known



cross-section. Different arrangements of the transducers such as single path, cross path and multi level systems allow for adaptation of the system to local characteristics.

The system concept

is about choice: You decide on the communication channel; be it a telephone landline (analog or ISDN), a cell phone connection (GSM, GPRS, UMTS) or an ethernet network connection; you decide on the format of the data and whether you want the system to send it automatically or use your existing infrastructure to fetch the data. You are no longer dependent on special software to access



Mubarak Pumping Station, Egypt

configuration and status information: All you need is dial-up access or an internet connection and a webbrowser. Accessing the station on site is, of course, also an option.

Irrigation monitoring

In partnership with Hitachi Ltd. Japan, Quantum Hydrometrie installed 21 ultrasonic discharge measurement systems at the Mubarak Pumping station in front of the 200 km long El-Zahed canal system. This canal system carries the vo-



Nasser Lake, Mubarak Pumping Station

lume pumped from the Nasser reservoir for the agricultural irrigation and water supply in the Nubian desert.

The 21 load controlled pumps with adjustable revolution speed (plus 3 reserve pumps) in the Mubarak Pumping Station (length 140 m, width 45 m, and height 60 m) service the El-Zahed canal system up to 334 m³/s. Due to the fluctuating water level in the Nasser reservoir, the static pump height varies between the intake basin and the canal system: h = 19 m and h = 54 m. The to-be-ascertained discharge in the canal system fluctuates between Q = 0 m³/s and Q = 15,9 m³/s.

Main Expertises

- Ultrasonic flow measuring systems
 - Signal runtime systems
 - Doppler-Effect systems
 - Stationary and portable flowmeters
- Water level sensors
 - Pressure sensors (e.g. in bivalent version)
- Data logger

Wireless Systems - when crossing a cable through the water is not an option

Using a wireless system one of the most expensive parts of an ordinary installation is eliminated: The cable that runs the sole of the river. This makes it an ideal solution for discharge measurements in wide stretches of water.

For years now this technology is applied in the mediterranean Sea and the coastal region of northern Germany and is proving to be a reliable alternative. On either side autonomous systems are installed such that their line of sight is diagonal to the flow of water. Both systems communicate with each other by means of directional radio. Additionally the systems are equipped with GPS receivers. The satellite data from these receivers provide a high-precision standard frequency and accurate timing pulse which is necessary to ensure both systems run absolutely synchronous.

One master system can control multiple slaves making a multi-level system setup



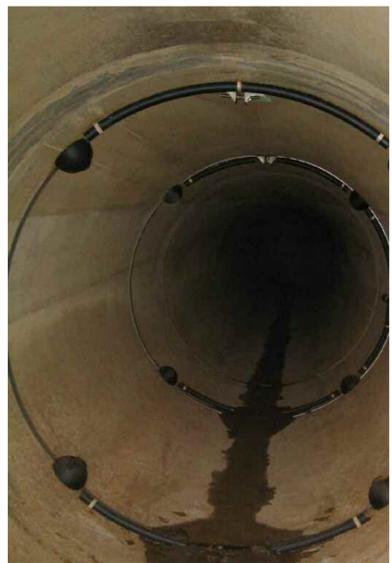
Wireless system, Malamocco, Venice Lagoon

possible. If other power sources are unavailable you can run a wireless system using solar panels or using a hybrid concept with fuel cells and solar panels.



Evora, Portugal

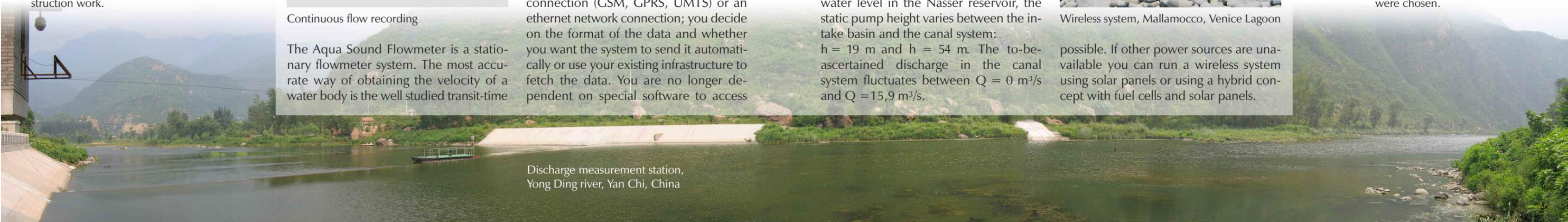
Irrigation channel
2-level crossed path system



Pressured pipe, Evora

Irrigation system

In the area around Evora, Portugal, Quantum Hydrometrie installed 12 ultrasonic discharge measurement systems to monitor the water flow in the irrigation channels and subterranean pressured pipes. The systems afford an optimal irrigation of this dry area. Because the water levels fluctuate in many cases, multiple level systems were chosen.



Discharge measurement station,
Yong Ding river, Yan Chi, China