The challenge
Optimum performance and cost-efficiency of water transport and distribution systems crucially depend on the early and reliable detection of leaks and their immediate localization.

The time elapsed until the detection of a leak is critical for the prevention of potential subsequent damages such as undercuttings below buildings or roads. Leaks do not only lead to the loss of valuable drinking water that has been purified at high cost, but may also result in substantial economic losses.

The solution
Siemens offers the following modules for intelligent leakage detection:

- SIWA LeakControl for complex water distribution networks
- SIWA Leak for water transport pipelines

With SIWA Leak, large, medium and even small leaks in water pipes are reliably detected. As an extension for existing control and automation systems, SIWA Leak provides the operators with gapless information on the current state of the water pipes, building a detailed data basis for targeted decisions on the right measures to take in case of a leak.
The efficiency of the municipal water distribution infrastructure, too, may be compromised by an increasing number of small and large leaks caused by corrosion or geological shifts. Without an efficient detection system, such leaks may go unnoticed for a long time. Permanent monitoring, in contrast, ensures the early detection of any leak, reducing leaking time and helping preserve the cost-efficiency of the water supply system.

SIWA LeakControl enables the plant operator to detect and locate new and existing leaks and initiate the appropriate intervention measures depending on importance and risk potential: either immediate repair or inclusion in the ongoing pipeline maintenance plan.

SIWA LeakControl is based on a three-step approach: In a first step, flow measurement is implemented for automated monitoring, measuring water inflow and outflow successively in exactly defined virtual segments (DMAs) and in water reservoirs. The measured values are transmitted to the corresponding SW module of SIWA LeakControl and analyzed using statistical and model-based methods.

In a second step, these data serve as the basis for narrowing down the leak location by temporarily installing acoustic sensors in the segment in question or by opening and closing slide gates to modify the operational conditions. The third and last step uses pinpointing and a correlator to locate the leak to the nearest meter.

The benefits of SIWA Leak and SIWA LeakControl

SIWA Leak and SIWA LeakControl support the operators of water transport systems and water distribution networks in

- ensuring permanent monitoring for cutting leakage times,
- reducing the risk of secondary damages caused by the undercutting of foundations etc.,
- minimizing water losses,
- maximizing efficiency and reducing costs in plant operation and maintenance.