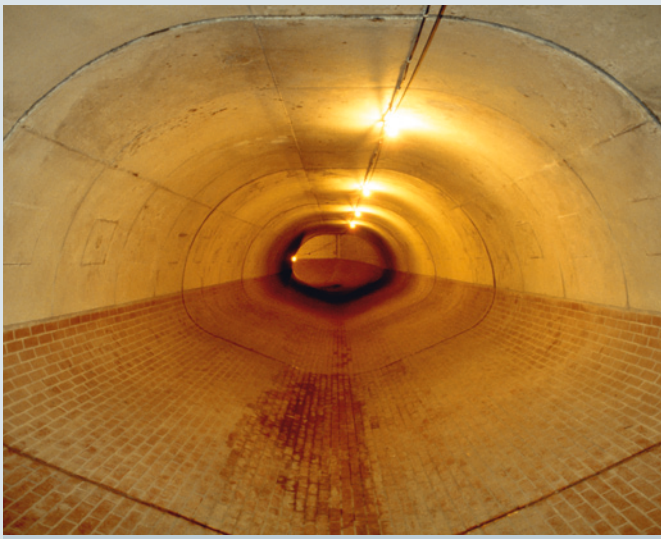
SIWA Sewer Management System

Centrally controlled utilization of reservoir ducts, stormwater overflow tanks and storage capacities in disposal networks

The challenge

Today, wastewater streams in sewer networks are essentially controlled on-site on the basis of locally available information. Although this method is associated with minimal investment costs and rapid implementation, its effectiveness is limited when it comes to reducing or preventing water pollution resulting from combined sewage water discharge. The way to prevent such discharge is through a targeted, centralized sewer network control system that eases the burden on the sewer network and compensates sewer system admission by utilizing the storage volume of components contained in the network.

The goal of interventions into running discharge and storage procedures in drainage systems is to optimize operation of the sewer network and treatment plant. This is done by controlling valves, pumps and weirs on the basis of current measurements of precipitation, water level and discharge.



The solution

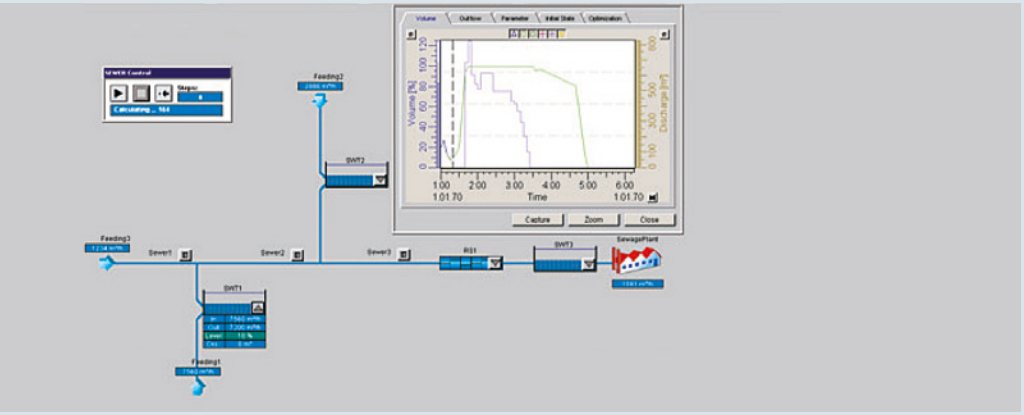
SIWA Sewer Management System are an innovative, high-performance tool for sewer network control that use optimization methods to calculate the best control interventions in drainage systems. In this way the SIWA Sewer Management System ensure optimal utilization of the sewer network and reduce the discharge of wastewater into natural bodies of water.

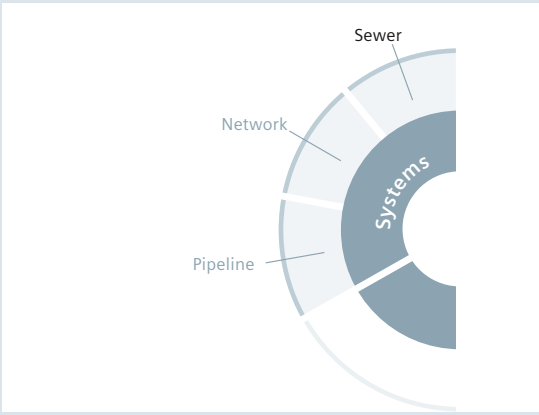
The result

With the SIWA Sewer Management System, operators can improve the utilization of treatment plant capacities, because water treatment performance is optimized through a stabilization of sewer system intake.

In addition, the SIWA Sewer Management System benefit plant operators because they

- reduce investment costs thanks to the optimal use of storage volumes;
- support or reduce the workload of operating personnel during normal and emergency operation.





The use of a special component library means that the SIWA Sewer Management System can be conveniently adapted to any sewer network. Together with a process connection, the system is converted to a high-performance online system that can be integrated into existing automation solutions with relative ease. By controlling component-wide information, the management system allows operators to react appropriately to external events, such as stormwater incidents.

The SIWA Sewer Management System take into account all the important technological and operational restrictions that are relevant for the preparation of optimal plant schedules.

With the goal of minimizing discharge and achieving a uniform wastewater content to the treatment plant, the SIWA Sewer Management System calculate nominal values for the lower-level throttle valves in the sewer system.

Based on current measurements, such as precipitation, water level and discharge, a centralized and optimized control strategy is calculated for all control elements in a sewer network, including weirs, pumps and valves, at regular intervals (for example, every five minutes) based on a mathematical network model. Additional components in the sewer system and sewage treatment such as stormwater overflow tanks, reservoir ducts, throttle valves, sewers und sewage plants are also taken into account. When combined with the SIWA Network Management System module SIWA SIM, the nominal values calculated can be tested by means of a dynamic simulation.

The user interface for the SIWA Sewer Management System is coordinated with SIMATIC WinCC/PCS 7 control technology. The component-oriented project approach allows the SIWA Sewer Management System to be quickly and easily adapted to changes in the plant, and to be integrated into existing control and automation systems.

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