Increasing efficiency with SIWA Pipeline Management System
SIWA Pipeline Management System – increasing efficiency in water transport

The SIWA Pipeline Management System is designed for the specific requirements of the water industry. It helps customers operating networks in the water and wastewater industry to achieve their economic and technological optimization potentials in the areas of energy and system reliability.

The SIWA Management System for drinking water and wastewater transport is based on system modules and offer functions like optimization, simulation, prediction, and monitoring of leaks. The modules are easy to operate because the user interface is coordinated with SIMATIC WinCC/PCS 7 control technology.

SIWA OPTIM – energy-optimized system operation

The challenge

The efficient operation of your pumps and optimized system scheduling both have a crucial influence on the cost efficiency of the water supply.

The solution

SIWA OPTIM is a scalable management system that supports the operation of (remote) water supply systems. With the objective of minimizing the costs of obtaining energy and water, SIWA OPTIM calculates the most economical pump, well and water tank schedules. Supply reliability and system reliability and availability are ensured at all times. Schedules can also be designed for different scenarios, for example, emergency operation management, maintenance planning, the development of planning variants for conversions or new buildings, or the procurement of backup units.

SIWA OPTIM also ensures the efficient utilization of energy for operating pumps and pumping stations. It assists plant operators in the selection of pump sets and the setting of speeds, and ensures that both fixed- and variable-speed pumps achieve their optimal efficiency. For this purpose, the ideal distribution of pumping current to the individual pumps is calculated for a preset pressure level. The system data required is obtained from sources like the pumps’ characteristics and the system characteristics in all relevant pipeline segments.

SIWA OPTIM uses all of these processes to reduce your energy consumption and operating costs through energy-optimized pump operation.

The benefits of SIWA OPTIM

SIWA OPTIM increases your cost efficiency by:

- Calculating the optimal operating schedules while ensuring operational reliability and a secure supply
- Reducing energy consumption and operating costs by optimizing efficiency of pump operation
SIWA Leak – reliable detection and localization of large and small leaks

The challenge
The efficiency and cost-effectiveness of water transport systems are crucially dependent on the fast and reliable detection of leaks and on locating them rapidly. This is vital to preventing occasional cost-intensive damage to structures as well as the loss of precious drinking water.

The solution
SIWA Leak helps detect medium and small leaks promptly and accurately to the nearest meter. The sensitivity of the system can be optimally configured by setting the parameters accordingly.

In order to also detect slow leaks, SIWA Leak combines a series of commonly used methods and processes. Its algorithms take into account pressure, flow, and temperature as the most important measurands. Specifically, the following processes are used for detecting leaks:
- Compensated mass-balance process for analyzing flow measurements at a minimum of two measuring points. This offers the advantage of homogeneous sensitivity over the entire length of the pipeline and the capability of setting sensitivity parameters. Temperature variations are compensated in this process.
- Flow change process for fast analysis of flow volumes at one measuring point
- Pressure drop process for analyzing pressure measurements at one measuring point for detecting leaks. The very fast reaction time is especially relevant for detecting large leaks that occur suddenly.
- Pressure wave process for analyzing pressure measurements at one measuring point
- Pressure flow process for analyzing pressure and flow measurements at two measuring points

SIWA SIM – reduced costs and higher reliability through dynamic simulation of pipeline systems

The challenge
In order to guarantee water supply even in extreme situations, operating personnel must have a thorough understanding of the way the system behaves. A real-life simulation enables them to run through critical conditions as well.

The solution
SIWA SIM is a computer-aided system for calculating hydraulic behavior in water supply systems. The operator is provided with dynamic information about pressure and flow for all actual measurement points as well as virtual ones. In this way, the effects of various operator actions and exceptional events can be tested and evaluated without risk.

SIWA SIM allows scenarios to be studied with varied hydraulics or a modified automation model. Through risk-free testing of automation functions, SIWA SIM helps at an early stage to ensure that an automation concept performs properly.

SIWA SIM assists you with the optimization of operating processes during the planning and operation phase of your system. SIWA SIM therefore helps not only minimize your total costs for engineering and start-up but also creates the basis for assessment when expanding the system or adjusting its capacities. SIWA SIM also proves its value in training operating personnel: thanks to an additional integrated training module, operators of water distribution systems can be trained to operate the control system under realistic conditions.

The benefits of SIWA Leak

By integrating complementary processes for leak detection and localization, SIWA Leak ensures:
- Fast leak identification
- High operating reliability and secure supply
- Minimized water loss and resulting damage
- Simple integration of existing instrumentation so that additional cabling and measuring systems are unnecessary

The benefits of SIWA SIM

SIWA SIM helps you:
- Optimize your operating processes while the system is running
- Simulate operating forms, fault states, and structural alternatives for optimizing system operation
- Test automation functions and interactions between system components without risk
- Illustrate complex relationships and procedures for training purposes
- Increase your system’s operating and supply reliability through realistic, scenario-based training
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