

SIWA Blockage Predictor

Preventing unconsented flooding from waste water networks

Preventing blockages

In many countries Combined Sewer Overflows (CSOs) help to safely manage the waste water network. However, heavy rainfall, unforeseen system overloads, and blockages can lead to unconsented spillages and financial penalties for your utilities business.

What are Combined Sewer Overflows?

Combined sewer overflows are a vital relief mechanism for combined sewers during heavy rainfall to ease pressure on the sewer network. When rainwater and sewage rise inside the sewer, CSOs will allow the water to run off the main sewer through an overflow pipe and prevent flooding.

During extreme weather, and typically with approval from a regulator, the weir within the CSO system allows diluted waste water to overflow into nearby watercourses, when required, to reduce the load to be processed at the treatment works.

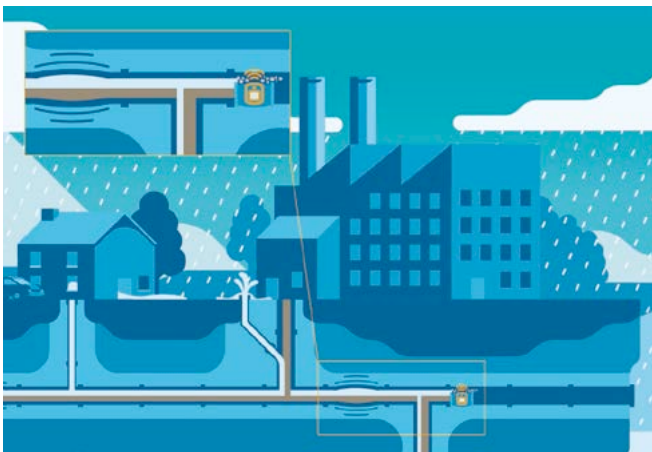
Siemens Industry Suite – smart apps for the water and waste water industry

Applications and digital services from the Siemens Industry Suite for the water and waste water industry ensure greater transparency, and thus identify potential for greater efficiency and savings and ensure a high level of supply security. With the Siemens Water (SIWA) applications developed especially for the water and waste water industry, operators can optimize energy efficiency, avoid water losses, prevent flooding, and take preventive maintenance measures, among other things.

Combined Sewer Overflows



During extreme weather, the CSO dam will release a controlled amount of waste water to ease pressure on the network.



The challenge: internal CSO blockages could overload and damage the network.

The solution: identification of blockages with SIWA Blockage Predictor before they happen

The SIWA Blockage Predictor, a Siemens MindSphere solution, evaluates combined sewer overflow behavior in real time, providing a better understanding of the system's performance of any issues.

This solution helps to identify if a sewer is blocked, or is not operating correctly, or if a CSO is soon to have operational issues. The analytics are embedded within a web application, enabling remote access on mobile devices or PCs and notifying users in advance of any issues.

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Conventional level monitoring in a CSO chamber will be set to a threshold level. This is a blunt method for detecting alarms as it cannot differentiate between level rises due to normal operations or an issue. The SIWA Blockage Predictor uses Artificial Intelligence to make this distinction. An AI model is built for each asset that reflects its specific response to rainfall based, which is influenced by the geography and network topology at that point.

The system highlights all deviations from normal operation in the network of CSOs. The early detection method arms you with the knowledge of the issue and gives you time to attempt to resolve it.

Particularly challenging use cases addressed by the SIWA Blockage Predictor include detection of partial blockages, detection of abnormal behavior with summer rainfall, avoiding false alarms during high rainfall and normal operation, and shifts in baseline indicative of a level sensor issue.

The benefits of SIWA Blockage Predictor

- Pinpoints problems within the network
- Reduces flooding risks, pollution incidents, and sewer collapse
- Gives you more time to act and increases your operational efficiency

Siemens Blockage Predictor will not just alert you to problems within the system, it will detect them early in their development giving you time to act.

What is MindSphere?

Siemens MindSphere is a cloud-based Industrial Internet of Things (IIoT) operating system that enables the industry to link their machines and physical infrastructure to the digital world easily, quickly, and economically. As a Platform as a Service (PaaS) it is hosted on either AWS or Azure infrastructure.

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