Case Story – Highlights

The Gothenburg region is ready for the storm

A digital twin of the wastewater utility in Gothenburg and surrounding municipalities is helping to future-proof the region and make the most efficient use of existing infrastructure

Reduced risk of flooding for peace of mind for both citizens and operators

Cost-efficient long-term planning of inflow and infiltration management for informed investment decisions and better use of existing infrastructure

Improved water quality in the waters around Gothenburg and reduced environmental impact

Challenge

Heavy rainfall causes large loading variations to the Gothenburg region's central treatment facility, the Rya water resource recovery facility (WRRF). Approximately 25% of the sewers in the City of Gothenburg are combined, which increases the risk of floods as stormwater and wastewater are transported in the same system. It also increases the risk of untreated wastewater being discharged into the surrounding ecosystem.

Furthermore, changing climate conditions combined with a growing population add further pressure to Gothenburg's ageing infrastructure and make operations more complicated. The main challenges for Gryaab were:

- Minimising the impact of flow variations in extreme weather
- Improving the attenuation of inflow to the Rya WRRF as much as possible to reduce pressure on the system
- Improving water quality in receiving water bodies

Solution

Gryaab has a history of using innovative and digital solutions to support them in managing the region's wastewater infrastructure, and they quickly saw the potential in having a digital twin of the entire system to improve overview and management.

A digital twin is basically a dynamic digital representation in real-time of a physical object or a process, such as the Gothenburg region's tunnel system and catchment. A digital twin can be compared to the co-pilot on a plane, and it uses analytics and predictive modelling to validate decisions and to automate time-consuming and manual technical or operational processes.

By implementing the Future City Flow (FCF) digital twin, Gryaab could get real-time information about events in the tunnels as well as accurate predictions of potential issues and peak pressure on the system as the FCF digital twin also incorporates weather forecasts in the modelling.

'Water is an integral part of life in the Gothenburg region, and we have an important task in making sure that the water remains an asset and not a liability. The pressure on our infrastructure is increasing as the region grows and we continue to receive more violent cloudbursts, but now we are warned ahead of time and know which actions to take at which time. Our long-standing collaboration with DHI means that we stay ahead of the digital curve with solutions such as the Future City Flow digital twin. We are now ready for whatever weather patterns the future will bring, and we are in a stronger position to protect the receiving waters in and around Gothenburg.'

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