CUSTOMER CASE

Making Every Drop Count with Connected Water Assets

Water scarcity, extreme weather, and water quality are among the top environmental issues of the 21st century. Conserving resources requires rethinking the problem and utilizing innovative solutions. Xylem recently introduced Avensor, a digital monitoring and control system for pump stations and other assets that are helping to conserve resources while lowering costs and reducing environmental impact.

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Background

Xylem Inc. is a global water technology provider, in public utility, residential, commercial, agricultural and industrial settings. The company operates in more than 150 countries and employs around 17,000 people worldwide.

Xylem is committed to developing smart solutions that conserve water and help to address the world's wastewater and energy needs. Throughout the water cycle – from collection and distribution to reuse and return to nature – Xylem strives to offer solutions that not only use less energy and reduce costs, but also promote sustainability.

Challenge

Water scarcity and aging or overly stressed infrastructure is threatening critical water, energy, transport, enterprise and health networks. Water, sanitation, and hygiene are among the most pressing and persistent issues.

Today, over 844 million people lack access to clean drinking water[1] with water scarcity threatening as many as 3.2 billion people living in vulnerable rural communities.

By 2025, more than 1.8 billion people worldwide will be living in areas of water scarcity, where more than two thirds of the world's population will face water-stressed conditions[2]. By 2050, it is expected that water demand will increase by 55 percent compared to 2015 levels[3]. Declining water quality due to human activity is compounding the situation.

Against this backdrop, water managers are dealing with acute infrastructure challenges, including pipe leaks, main breaks, sewage overflows, storm water overflows, energy-intensive operations, and inefficient decision-making and asset management.

Cities are expanding at a rapid pace, with a projected 70 percent of the world's population living in urban areas by 2050, putting water networks – already suffering from a historical lack of investment – under immense pressure. Throughout Europe water utilities are contending with aging distribution networks[4] while in the US, a recent survey of 20-year needs estimates that billions will need to be invested in water infrastructure between 2011 and 2030, with more than half needing to be attributed to pipe refurbishment and replacement[5].

The world needs a more inclusive, integrated, and innovative way of addressing the water conservation and contamination problem. Smarter technologies that utilize IoT have the potential to effectively manage water distribution channels, minimize leakage, streamline operations, reduce maintenance costs and energy consumption, as well as increase awareness about water conservation. Xylem is using its solutions and water technology expertise to help customers do just this.

1 https://washdata.org/sites/default/files/documents/reports/2018-01/JMP-2017-report-final.pdf
2 UN Water, Focus area: Water Scarcity, Water for Life Decade
3 UN Water, The United Nations World Water Development Report 2015: Water for a Sustainable World, 2015
4 Smartwater4 Europa citing EUREAU
5 U.S. Environmental Protection Agency, Drinking Water Infrastructure Needs Survey and Assessment, 2011

Solution

Xylem has developed a digital service for pumps and other water related assets called Avensor that is helping operators to better manage their assets.

Avensor gives operators, both in the public and private sector, access to data, alarms and data-driven insights for their devices, helping to prioritize maintenance activities and identify areas that require investment, in order to reduce risk and cost of operations.

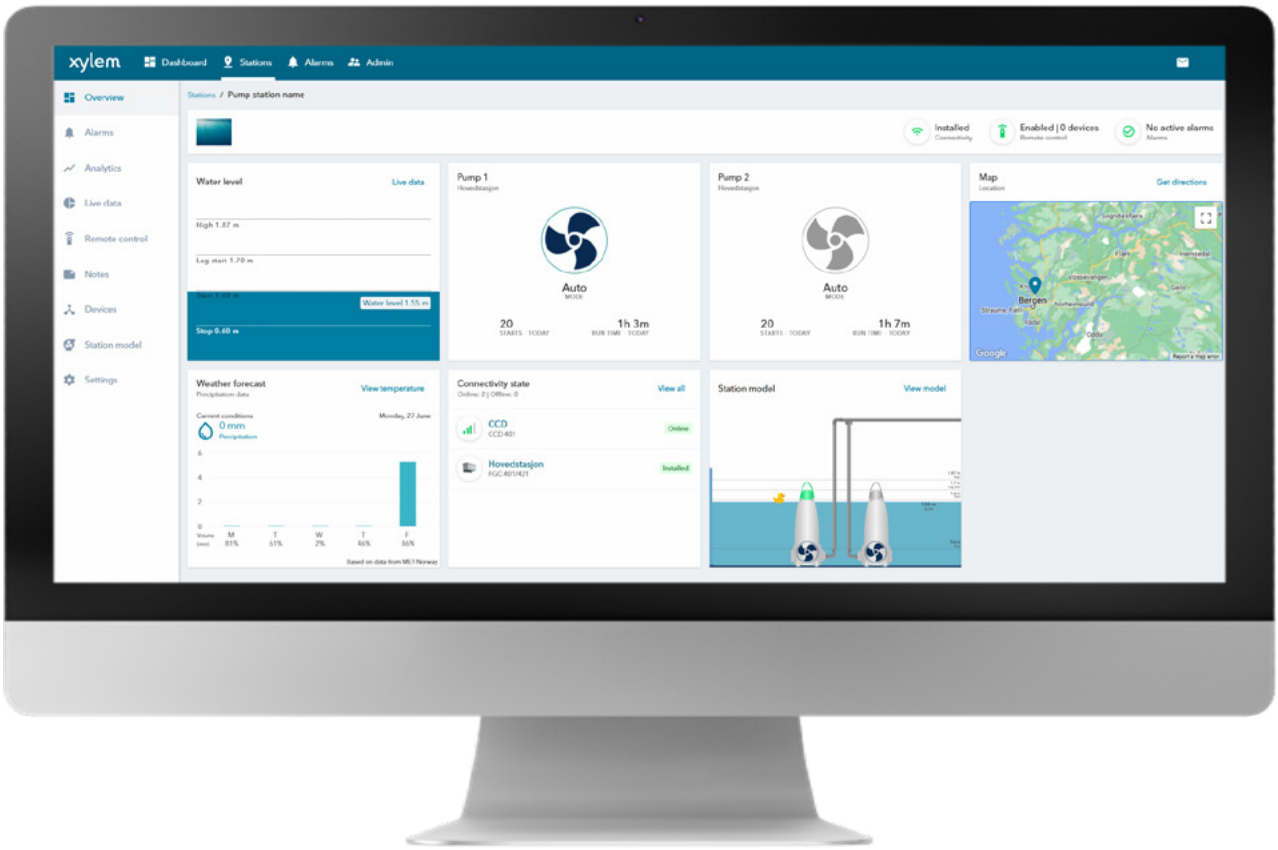
The service enables end-users to better understand the nature of an issue, thereby empowering technicians to make more informed decisions when handling problems. This can reduce the need for urgent on-site visits and help reach better First-Time Fix Rates, thereby saving both time and lowering carbon emissions arising from travel.

With Avensor, Xylem offers an affordable plug and play alternative to traditional SCADA systems, where getting started and integrating new devices can be complex and costly.

Telenor IoT provides Xylem with managed connectivity, meaning the Avensor service gets access to the best global networks for reliable worldwide coverage. This is important because critical water infrastructure equipment is often located in remote areas.

First Time Fix Rate indicates the percentage of time a technician is able to fix an issue the first time, without need for additional expertise, information, or parts.

SCADA: Supervisory control and data acquisition is a control system architecture comprising computers, networked data communications and graphical user interfaces for high-level supervision of machines and processes.



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Simply connect your assets to Avensor plug and play – and get insights even in your existing systems

SUMMARY OF BENEFITS:

- An all-inclusive service where mobile data, hosting, SMS & email alarm notifications and more is included in the service.
- Asset control: enables operators and technicians to receive alarms, start/stop machine/s, set reference points such as water level and set/reset alarms remotely. With the Android/IOS mobile app all functionalities are available for the end-user to monitor their assets anywhere in the world.
- Analytics and smart functions help users in understanding the nature and urgency of an issue and make informed decisions. Thereby preventing costly and time consuming failures in advance.
- Data led operations with Avensor has the potential to provide significant energy savings targeting equipment such as pumps, that alone account for approximately 9% of the world's energy consumption[6].
- Xylem works actively to ensure a high level of uptime with 24/7 system monitoring.
- The Xylem Cybersecurity program aims to keep its customers assets and data safe. A global team of security experts maintain visibility to current and emerging regulations while diligently defending against cyber threats. Development processes are aligned with IEC-62443 to help navigate any compliance needs.

Results

Through Xylem's Avensor service, customers are improving their understanding of the operations within their pump stations in real time, helping to anticipate maintenance events, pump blockages or high pump level occurrences, rather than responding to them after the event has happened.

Organizations that leverage IoT-enabled data have been able to improve first-time fixes by 11%, increase asset uptime by 9%, and reduce mean time to repair by 9%. These trends help Xylem deeper its customer relationships while contributing to its underlying sustainable goals.

The annual positive impact of remote monitoring of pump stations on financial savings and CO2 emission is outlined below:

Nils Irestedt, Product Manager Digital Services in Xylem, says:

"For Xylem Avensor, we were looking for a partner that could provide us with plug and play global connectivity.

"Telenor IoT was able to support us with such a solution, as well as troubleshooting when things did not work as expected. Telenor IoT has also helped guide us with technical decisions that we needed to make. Overall, this has helped us focus our development resources to deliver a world-class application for our customers. At the same time being able to trust Telenor to provide robust global connectivity is of key importance for our application."

Today, Avensor is installed and used in more than 30 countries but being rolled out rapidly across the globe.

Savings per year through reduced pump stations patrolling (physical visits)	
	2,200 EUR saved per pump station per year. 110,000 EUR saved in total for all pumping stations per year
	16,000 km in reduced driving distance per year. This equals about 8,500 kg in CO2 reduction per year.
	These emissions correspond to the carbon dioxide that approx. 300 trees absorb during a year.
	Above values are 48% lower compared to normal patrolling without remote connectivity utilization.

Savings are based on municipal customer with 50 pump stations, one (previous two) visit to each pump station per week (roster) and Nordic typical municipal area size. There are huge variations on number of pump stations, from a few to several hundreds, and municipal area size.

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TELENOR CONNEXION

Telenor IoT is the portfolio of IoT solutions from Telenor Group, one of the world's major mobile operators. With more than 20 years' experience of providing global IoT connectivity, cloud services and expert support to companies of all sizes, Telenor is one of the world's most advanced IoT solution providers.Telenor IoT manages international IoT deployments for global customers in some 200 countries and today operates more than 17 million connected devices to enterprises such as Volvo, Scania, Hitachi, Verisure Securitas Direct and Husqvarna. The IoT solutions are offered to national customers in the Nordics through the local Telenor operations in each country, and on a global level through Telenor Connexion, Telenor's specialized unit that provides IoT solutions for large, international enterprises who need a customized offer with advanced support.

iot.telenor.com

sales@telenorconnexion.com