

Digitalization Turns Data Into Value

Sulzer is a frontrunner in digitalization. The company had already started in 2006 to realize a web-based solution for pump monitoring. This monitoring and control system is called AquaWeb, and it allows customers web-based, remote interaction with their pumps and pumping stations. Since then, over 5000 stations have been digitalized for online view or site surveys. AquaWeb's sound data enables users to decide quickly how to improve the running performance of their pumps.

Digitalization in practice: For two days, there have been heavy rains in Sollentuna, Sweden. The maintenance engineer for wastewater stations, Sven Johansson, gets a text message on his mobile phone: "Alarm — high-level pump pit at pump station 3!" Immediately he connects via the AquaWeb app on his phone to the monitoring and control system and checks the status of the surrounding pump stations. Via remote control, he can shut down the feed from two nearby pump stations, thereby regulating the water feed to pump station 3 of Sollentuna Energi & Miljö AB.

The setup for digitalization

Sensors and controllers are the foundation for digitalization. They monitor and deliver status data of the rotating equipment and other assets. Sulzer pumps deliver data either via integrated sensors or via external sensors, e.g., level sensors or equipment to measure electrical consumption. The AquaWeb system is able to collect data from optional sensors or from monitoring equipment installed by the customer (Fig. 1). The

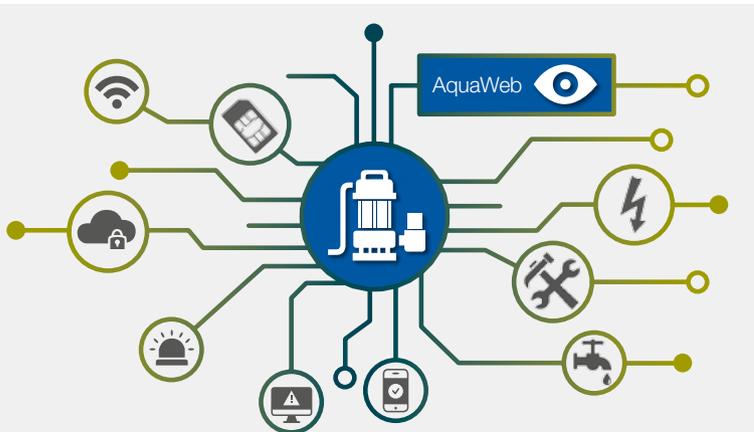
pump status and sensor data are collected locally and then transferred to a cloud database. The data is transferred from the pump via cellular modems equipped with Sulzer's own SIM cards — similar to the ones used in mobile phones. This makes the data collection system independent of a specific network supplier. It can even be used miles from a wired network access point. The highest level of security and availability — these were the main drivers for Sulzer to invest in its own data network for AquaWeb.

Remote access for various user groups

The advantage of collecting the data in a cloud-based central database is remote access: for multiple user groups from all over the world at the same time. As an example, at the municipal water station, the operators, the supervisor, the electrician, or the management can access the AquaWeb system via computer, tablet, or phone (Fig. 2). The system's alarm settings can be specified by the customer. Push notifications via e-mail or text message are sent in case of an alarm to selected persons. They can then react quickly and decide on the next step — whether this is to shut down the pumps or to perform a corrective action. Corrective actions can even be set as an automatic task in the system, e.g., in the case of a "high-level pump pit" alarm, the feed from nearby stations can be shut down automatically.

Security of industrial cloud solutions

To allow data collection and data analysis to work without interruption, Sulzer uses one of the most secure and most stable cloud solutions. Security is the highest priority for industrial data collection. Therefore, Sulzer chose a reliable hosting company — one that also serves prestigious software companies. Security in the data collection process is guaranteed:



1 AquaWeb — a web-based monitoring and control system.

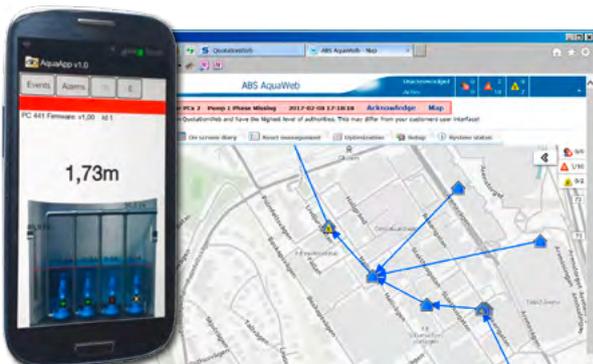
AquaWeb users log into the system with a secure https connection, the same protocol as used for Internet banking.

The value of monitoring

The key to more uptime and greater revenue is knowing when to take action. To make this possible, AquaWeb offers different views for the operators. The initial view of AquaWeb is a map showing all pumping stations that are being monitored (Fig. 2). Any alarms are highlighted in the map overview with a red flag. Clicking on the flag, a detailed alarm report is shown. The AquaWeb system therefore allows customers a better view of their operating pumps — in real time. By monitoring performance regularly, operators can adjust the operational conditions to protect equipment and reduce wear. This ultimately lowers maintenance costs and — probably most importantly — ensures the pumping equipment is working as efficiently as possible. Running pumps at the proper operating range reduces energy costs — a value that counts. Over 90% of the costs of running a wastewater pump over the entire life cycle is attributed to energy, so AquaWeb contributes to sustainability as well.

The 4-Step Process™

“Since 2013, Sulzer Italy has offered data-driven optimization to its customers,” explains Alessandro Comar, General Manager of Sulzer in Italy. “With the first on-site collection of data, Sulzer measures actual conditions at the customer’s wastewater pumping stations. In a second step, the Sulzer engineer and the customer analyze the measured data together. Based on the data, Sulzer presents a detailed report to the customer, pointing out the optimization potential, including operational cost calculations and possible savings. Thus, the customer can decide on an optimization strategy based on sound facts. In a third step, either refurbishments are effected, new pumps are installed, or the personnel is trained. The last step



2 AquaWeb map view with several pump stations.



3 Optimization in four steps: the 4-Step Process™ in practice at the customer Acqualatina in Italy. Click to see the video.

is then to validate whether the optimization goal has been achieved. The combination of the 4-Step Process (Fig. 3) with AquaWeb to optimize operational processes and costs is very powerful; it allows engineers to monitor the optimization process in real time. Customers can set their goals with key performance indicators (KPI) and react if the AquaWeb data show a deviation.”

Digitalization is the future

“Digitalization is changing the way Sulzer customers will do business in the future. It will impact Sulzer products and the business processes of customers. And this is just the beginning.” Greg Poux-Guillaume, CEO of Sulzer adds: “The time is right. The technology is there, and the industry is ready to go for it. In markets using gas turbines or aircraft engines, digitalization is already having a profound impact on asset management. In the future, it will affect our industries more and more. Customers can save money with digitalized solutions by lowering their total cost of ownership through more economic, environmentally friendly, and safer operating conditions, made possible by analytics and modeling. Our customers have massive amounts of data. We are helping them extract value from it.”

Authors: Marc Heggemann / Jörgen Jäger
sulzertechnicalreview@sulzer.com