

# Smart monitoring system for potable water treatment

## Oberzent connects decentralized measuring points via LoRaWAN



Oberzent is the third-largest city in Hessen in terms of area, following Frankfurt and Wiesbaden. To supply water to its 10248 citizens, the city operates 19 decentrally located buildings distributed over the municipality's 165 km<sup>2</sup> area. The local water masters maintain a total of seven springs, two deep wells and 18 reservoirs. As there are just four water masters in charge of maintaining the water network, each has a corresponding high workload.

*"Our water masters can now spend more time on their core tasks and less time making trips out to plants. This is key because these specialists are currently in short supply on the job market."*

Christian Kehrer  
Mayor of Oberzent (Germany)



**Previously the water master had to visit each reservoir and each plant individually to read out the measured values and check the instruments. Now a new LoRaWAN network (Low Power Wide Area Network) has been installed, and parts of the measuring systems have been modernized in order to integrate the individual reservoirs and plants into a cloud-based monitoring system. This provides water masters with all information at any time, whether they are using a mobile device or their computer at the operations center.**

**Safe water supply is top priority**  
The reliability of the water supply in each of the city's 19 districts has top priority. As a result, the four water masters in Oberzent have to ensure that the water supply network is running smoothly at all times. While realizing this, they have to deal with obstacles in the Odenwald forest every day. For water treatment and storage for the City of Oberzent, they gather and process information on a total of

19 decentralized water infrastructure facilities, which are spread out over a territory of 165 km<sup>2</sup>. The water masters have to spend a large portion of their workday driving around to the facilities. This is time that they cannot spend on other tasks.

**Smart technology boosts efficiency**  
The installation of a cloud-based monitoring system has now made all relevant information available in centralized form for the water masters. This makes it possible to visualize data from a total of 35 flowmeters, 17 level meters, 7 pressure meters and 2 analysis panels for quality monitoring. The lack of stable cellular service coverage in many areas of the Odenwald made it necessary to set up wireless data transmission that does not use much energy. The solution being used is called LoRaWAN technology. LoRaWAN is ideal for this application where small amounts of data have to be transmitted over long distances (up to 15 km/9.3 miles). Additional benefits of LoRaWAN are

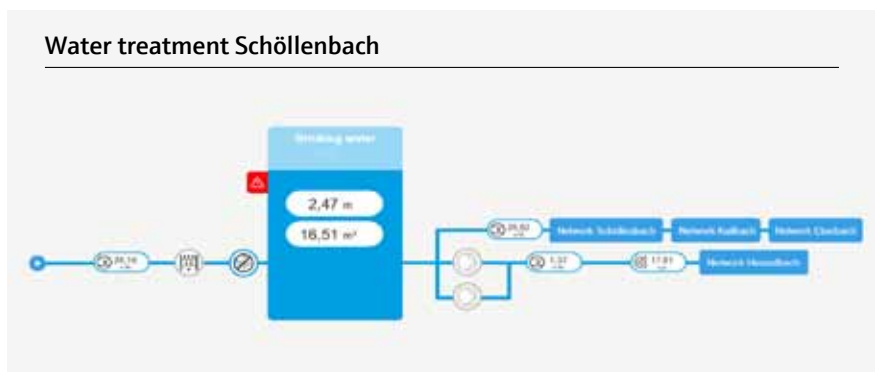
low energy consumption and low costs. Even though the LoRa alliance specifies a uniform standard, LoRaWAN can be used without a contract with a mobile communications provider. The local energy utility Entega takes over construction and operation of the LoRaWAN network in Oberzent.

### Everything at a glance

The city's water masters now see all relevant data points from their water treatment system on a cloud-based dashboard. The dashboard, developed by Endress+Hauser, shows the various networks and can be used by the water masters on a variety of devices, including smartphones, tablets and laptops. This makes it possible to skip the daily routine visits to the reservoirs and the water treatment stations. The water masters can thus use their time much more effectively.

### IIoT ecosystem Netilion lays the foundation

With the Netilion IIoT ecosystem, Endress+Hauser offers a variety of solutions for a smart city. In Oberzent, the IIoT ecosystem provides the basic data needed for creating and programming individual dashboards that display the entire process of water treatment and storage. This is implemented in the online service Netilion Water Network Insights. This service enables monitoring of water networks as well as process optimization, e.g. through leak detection or reservoir management.



*"The LoRaWAN project in Oberzent shows what water supply networks of the future might look like – secure, digital, efficient."*

Stefanie Horchler, Project Manager in Regional Management at ENTEGA AG

### Endress+Hauser's complete solution

Endress+Hauser has vast process knowledge in the water and wastewater industry as well as in instrumentation. This makes us a strong partner, whether you need one individual sensor or a full-fledged cloud application as a complete solution. Endress+Hauser offers plant operators certified instrumentation for all processes, combined with solutions for data transfer as well as data processing and visualization.

### Benefits for water treatment and storage

- Effort reduction through automatic aggregation of sensor data
- Increased ability to react thanks to proactive processing of problems in the water network
- Time saving through reduction of daily routine tours
- Mobile work on various terminal devices through web-based service

### Solution components

- Cloud-based monitoring of 60 decentralized sensors
- Secure data transfer thanks to local LoRaWAN network

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