s::can
Intelligent. Optical. Online.

Monitoring Belgian drinking water quality from source to tap

Municipal Drinking Water

In Belgium, the pipe::scan and the micro::station are used to monitor the drinking water network. Up to 10 parameters are measured simultaneously and s::can's event detection system helps to safeguard the water at all times.

FARYS|TMVW

Parameters monitored:

- **Free Chlorine**
- **Turbidity**
- **UV254**
- **TOC**
- **DOC**
- **Color**
- **Nitrate**
- **Temperature**
- **pH**
- **Conductivity**
- **Pressure**

Facts & Figures

Company/Institution:
FARYS|TMVW

Location:
Belgium

Partner:
Elscolab

Application:
Municipal Drinking Water

Key Products installed:
pipe::scan and micro::station

Background

FARYS|TMVW is a Belgian drinking water company supplying drinking water to the coast area which is produced in the central part of the country. For this, water is transported in large pipes over more than 100 km.

Challenge

To ensure high water quality, FARYS|TMVW decided to install online water quality sensors. These online sensors should ideally be capable of measuring a wide range of relevant quality parameters complementary to the legal routines. Maintenance should be limited, and in places where less space is available, an in-pipe solution was required.

s::can's solution

The s::can micro::station and the pipe::scan are the ideal products as they measure multiple parameters simultaneously and require little maintenance. The pipe::scan is installed in-pipe, the micro::station can be installed next to a conventional sampling line. The possibility for the pipe::scan to support several probes, makes it a perfect alternative for a micro::station for in-pipe applications.

Benefit

One of the greatest benefits of the s::can products is the event detection system that gets the most out of the acquired data by learning to recognise how water quality changes dynamically over time. When an abnormal change occurs, an alarm signal is sent to the SCADA system to warn the operators.

Figure 1 shows the effect of maintenance works on water quality: A reservoir was filled from an alternative production plant. The water from that production plant has a higher conductivity (around 850 µS/cm) than the water produced in the production plant usually filling the reservoir (around 450-500 µS/cm). The switch occurred at 01:00 A.M. on 21/12 and the change in the conductivity is clearly visible in the line graphs of the data measured by the s::can condu::lyser.

The changes in the water quality described in Figure 1 were quickly picked up by the ana::tool software and a pattern alarm was triggered 3 hours and 30 minutes after switching. Pattern alarms are connected to the SCADA system to warn the engineers of water quality changes. During this period the water quality complied to the Flemish and European drinking water standards at all times.

Furthermore, the simultaneous online measurements of UV254, TOC, DOC and free chlorine are usefull to stear chlorine dosage and to mitigate the formation of disinfection by-products. In combination with online microbiological monitoring by FARYS|TMVW the s::can data offers valuable insights in the behaviour of the drinking water quality during distribution.

"**When an abnormal change occurs, the s::can event detection system sends an alarm to warn the operators.**"

Prof. Dr. Bart De Gusseme
Project leader Production and Transport, FARYS|TMVW

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Process Schematic

Monitoring of the drinking water in the network with pipe::scan and micro::station

Drinking water production
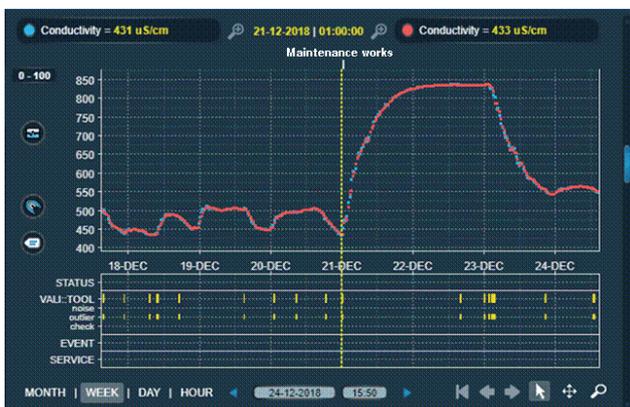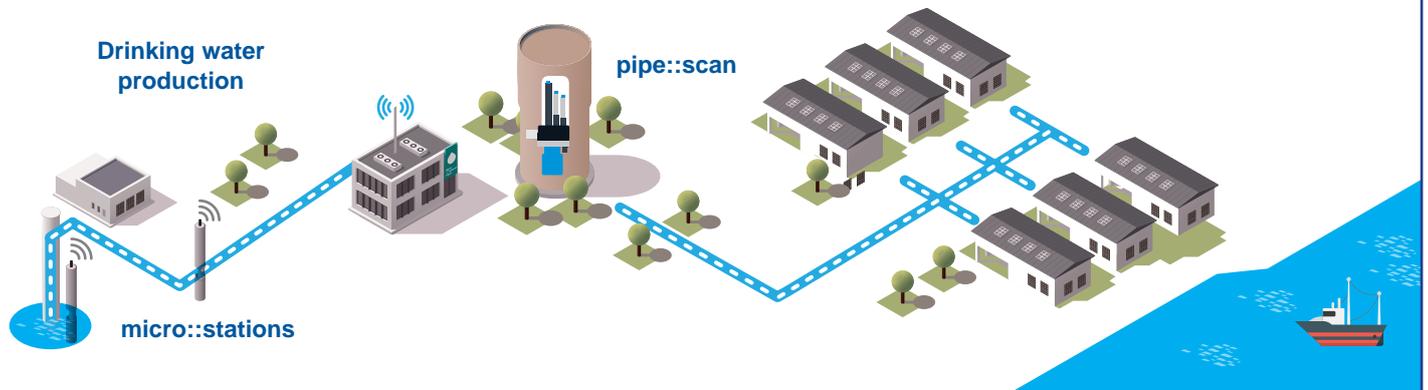
pipe::scan

micro::stations

Figure 1: In the event of maintenance works, a reservoir was filled from an alternative production plant. This led to a clearly visible change in the conductivity.
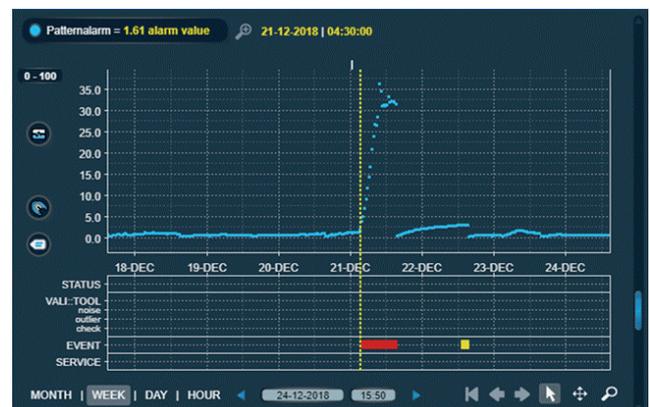

Figure 2: The changes in the water quality described in Figure 1 were quickly picked up by the ana::tool software and a pattern alarm was triggered 3 hours and 30 minutes after switching.

The fully modular micro::station combines several s::can instruments to a compact and versatile system.
The s::can micro::station is designed for online monitoring of water quality parameters in clean media, such as drinking water. The components are factory assembled with all required flow cells, mounting fittings and pipework on a compact panel.

The pipe::scan is a sensor system for monitoring drinking water quality in pipes under pressure. It measures up to 10 parameters in one device: TOC, DOC, UV254, Turbidity, Color, Chlorine, pH/Redox, Conductivity, Temperature and Pressure. The water quality data can be sent to any central database via almost any protocol. Multiple pipe::scans are the ideal solution to monitor drinking water at any point in the network.
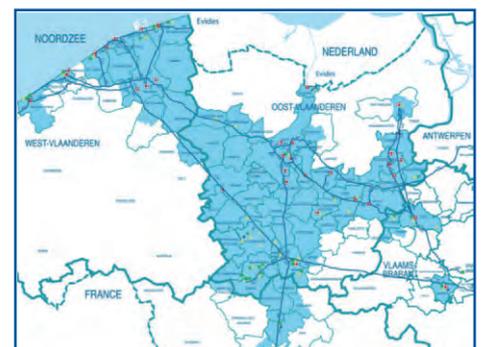
FARYS|TMVW is a Belgian drinking water company supplying drinking water to more than one million customers in 52 towns and cities.
The water is provided throughout Flanders using an 11.166 km low pressure network.

More info: www.farys.be