

# Flow measurement reveals leaks in the water supply network



## Uponor involvement



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The Water Monitoring Services developed by Uponor Infra enable real-time monitoring of water supply networks – deviations in the network can then be detected and located quickly. Pori, a coastal city in southern Finland, started monitoring an area on the periphery of its water supply network where leaks had caused problems over the years.

### Project Facts:

|               |                           |
|---------------|---------------------------|
| Location      | Completion                |
| Pori, Finland | 2019                      |
| Building Type | Product systems           |
| Municipal     | Water Monitoring Services |
| Project Type  |                           |
| New building  |                           |

Porin Vesi, the municipal water utility, is responsible for the procurement, treatment and distribution of water to almost 85,000 inhabitants. The company's water supply network measures about 850 kilometres.

As in many other Finnish cities, the network is ageing and leaks have not been avoided. The city's financial plan for 2019-2021 seeks to reduce the amount of water leaking from the water supply network to no more than 15 per cent and the number of water pipe leaks to under 50 per year.

Pori spends about EUR 2 million each year on renovating its water supply and sewerage network. "Last year, we renovated about 11 kilometres of the network. Pori is an old city and the oldest sections of its water supply network date back to the 1930s," says Jouko Halminen, Water Supply Manager at Porin Vesi.

### Information straight from the pipes

Porin Vesi has earlier measured water flow only at its waterworks. "We met Uponor representatives at the Finnish Water Utilities Association event last year, and they told us about the Water Monitoring Services. We thought it sounded very promising, so we decided to try the flow monitoring solution," says Halminen.

Uponor Water Monitoring flow meters were installed in the pipes early this year, now enhancing network maintenance. "We wanted to monitor the Meri-Pori area more closely, as it has had leakage problems over the years. Meri-Pori is an independent section of our network and one of the city's three pressure zones. In addition to flow meters installed in the pipes, separate measurement points were set up in the pumping station and water tower in this area. All these measurement points are now displayed in the Uponor Water Monitoring user interface."

Meri-Pori is an extensive area in the western part of the city, on the coast of the Bothnian Sea. It is a peninsula with close to 9,000 inhabitants and the well-known Yyteri sand beach. The area also has plenty of industry, including wind farms and Finland's largest coal power plant.

"This area is on the periphery of the network. Leaks and other exceptional situations easily lead to problems, as there are few backup water pipelines," says Jouko Halminen.

### **Managing leaks in time**

The Water Monitoring Services developed by Uponor Infra enable realtime monitoring of water supply networks. Deviations in the network can then be detected and located quickly. Water Monitoring Services keep track of flow and water quality, and detect leaks.

Water Monitoring Services designed for flow monitoring and leak detection measure water flow, volume, direction, pressure and temperature. Thanks to real-time information, even small silent leaks can be detected in time, preventing large pipe bursts.

"It has been estimated that in Finland, as in many other countries, about 17 per cent of clean water is what we call non-revenue water – water that is lost before it reaches the customer. Leaks are the main reason behind this. Leaking water costs cities and municipalities hundreds of thousands of euros per year. Sudden leaks also cause substantial maintenance costs and interruptions in supply," says Sales Manager Jussi Niemelä from Uponor Infra.

Niemelä points out that water leakage is not just a waste of natural resources: it also leads to extra consumption of energy and chemicals and inefficient utilisation of waterworks.

### **Installation works do not interrupt water distribution**

The pipes in which the Water Monitoring measuring devices were installed are all from different decades – the newest is 10 years old, while the oldest dates to the 1970s.

"The pipe sizes also vary. The smallest has a diameter of 160mm, the largest 400mm," says Jouko Halminen.

Porin Vesi installed the chambers and drilling saddles supplied by Uponor on its own. Uponor then installed the Water Monitoring measuring devices in them. Water distribution did not have to be interrupted due to installation – the drilling saddles made it possible to install the sensors in pressurised pipes.

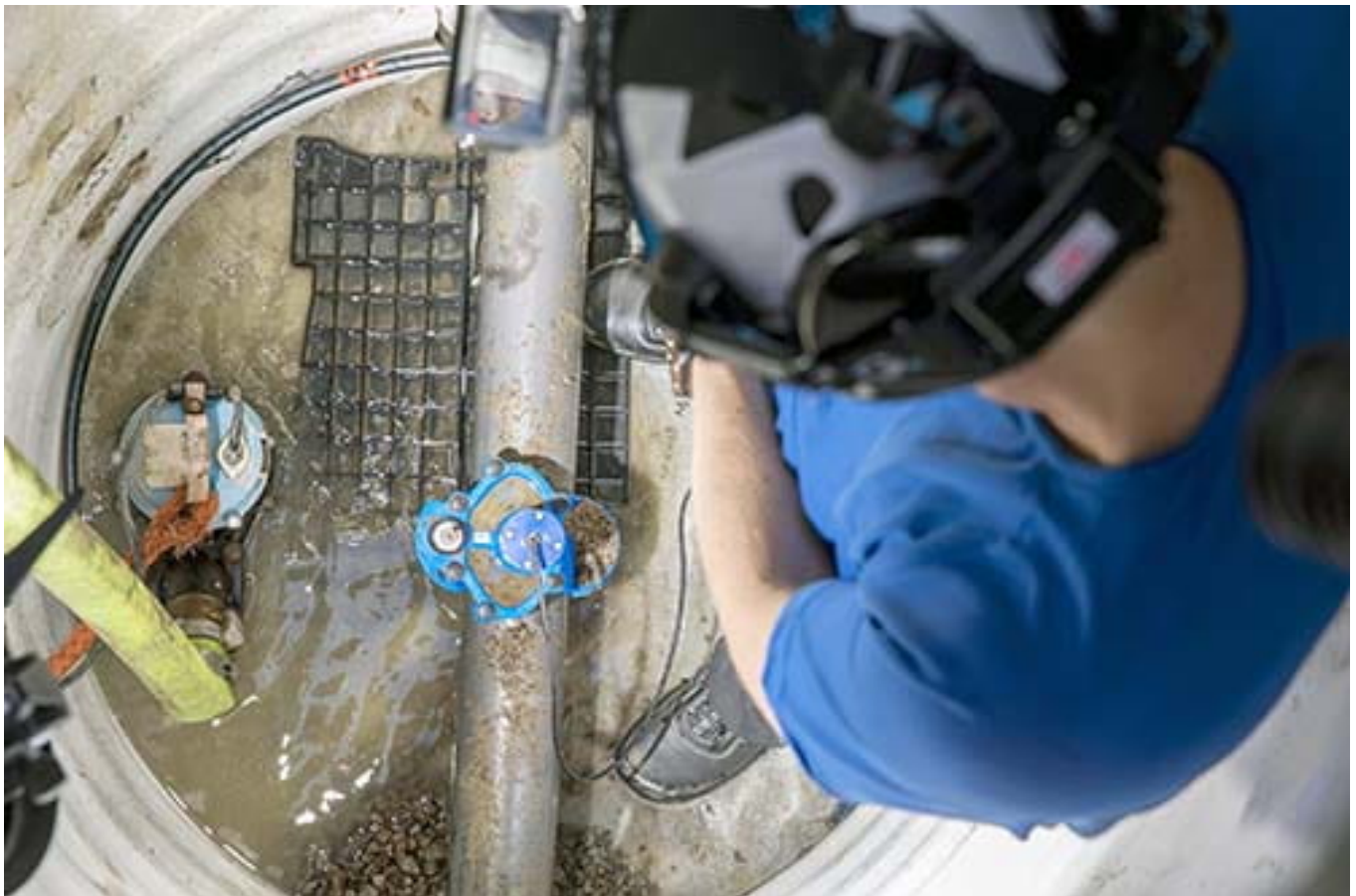
Sensors installed in the pipes now measure the volume and direction of flow and transmit the data over the mobile network to Uponor Infra's cloud-based monitoring system. This system analyses the data. If the flow limits set in the system are exceeded, the measurement point sends an alert to mobile phones and computers.

The data can also be fed into the waterworks automation system if necessary, but Pori monitors the flow data over a browser-based service provided by Uponor. "At the moment, we don't track the data in real time. The data is updated in the system at six-hour intervals. In addition, we have set the flow limits in the system so that we don't get an alert for minor deviations," says Halminen.

He says that the system has enhanced awareness of flow and water consumption in the area. "The system has worked very well. Now we know more accurately what is going on in the network. We can react rapidly to any leaks."

According to Uponor's Jussi Niemelä, it's great that water utilities are interested in the service. "Leak management can extend the useful life of existing infrastructure by several years and help allocate funds for renovations more accurately," he says.

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