References

Iisalmen Vesi renovated a trunk line by relining



Uponor involvement

- 2.1 kilometres of 280-millimetre Profuse pipe

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Project Facts:

Location	Completion
Iisalmi, Finland	2017
Vrsta objekta	Product systems
Municipal	Potable water
Project Type	
Renovation	

Partners

Customer: Iisalmen Vesi
Main contractor: Uponor Infra Ltd
Pipe washing: SPC Vesitekniikka Oy
Public works contracting: Pyykkönen Yhtiöt Oy

Last autumn, among cast iron and plastic pipes, Iisalmi's water pipe network still had one 2.1-kilometre line where water flowed through an asbestos-concrete pipe. The pipe, which dated back to 1970, had served its purpose well despite a couple of leaks over the years. However, it seemed a risk due to its brittleness. With a bit of bad luck, for example, nearby excavations could break the pipe.

"We don't even have the parts for repairing the asbestos-concrete pipe anymore," states Iisalmen Vesi's network engineer Seppo Keskinen.

Due to the presence of asbestos, special measures are also required when working on the pipe and processing waste material.

The motivation to renew the pipe grew stronger when Ylä-Savon Vesi Oy, a wholesale water company jointly owned by five municipalities, renovated the waterworks in Kyllikinranta, from where the trunk line in question runs towards the centre of Iisalmi.

When we started to think about how to rinse and disinfect the lines, the risks related to the pipe became apparent once again. We decided to renovate it," says Iisalmen Vesi's director Ulla Tyrväinen.

Easily under the railway

Relining emerged as the best option in the early stages, even though the line runs through a soft sandy area.

"More buildings have been built in the area after the original installation, and there are also long underpasses along the way. We decided that relining would be the most convenient way to renovate," says Tyrväinen.

The line also goes under the railway.

"By choosing relining, we avoided complex arrangements and permit applications," states Seppo Keskinen.

A permit was required only for a couple of relining excavations that extended near the railway.

Iisalmen Vesi chose Uponor Infra as the main contractor for relining and opted to use Profuse pipes.

"The Profuse pipe is most often the best choice for relining as the pipe's polypropylene layer protects the pipe during installation," states foreman Veli-Matti Hakala from Uponor Infra.

Without compromising on performance

Work began at the end of October with the cleaning of the old pipe. According to Hakala, the cast iron pipe usually has to be tinkered in order for the new pipe to fit inside. Instead, the inner surface of the asbestos-concrete pipe only collects slime, which can be removed by washing.

The pipes were washed by pigging by Tampere-based SPC Vesitekniikka Oy. Foam plastic cylinders known as "pigs" were hydraulically pushed into the pipe at the waterworks end and out of it at the other end, cleaning the old pipe along the way.

"The entire line was cleaned in one time," says Hakala.

The 280-millimetre Profuse pipe was fitted smoothly into the 300-millimetre asbestos-concrete pipe. Therefore, there was no need to compromise on performance.

"It was interesting and surprising to see how small the clearances for relining were. There really wasn't much room," says Keskinen.

Over one thousand cubic metres of water, accounting for about one-fifth of the town's overall water consumption, flow through the line every day. There are about 22,000 inhabitants in Iisalmi.

Front end in use within a couple of weeks

The relining job was split into 150–200 m portions based on the line's valves and branches. Paltamo-based Pyykkönen Yhtiöt Oy dug a total of 14 excavations at both ends of the relinings, and the new pipe was winched inside the old one by a lorry. Uponor Infra's fitters built the lines from 12-metre pipes by percussion welding.

Relining began at the town end immediately after washing, and the line was taken into use gradually as work progressed. Water was already flowing through the front end within a couple of weeks. Only one property needed a temporary surface water pipe.

"We kept water running every day to prevent it from freezing despite sub-zero temperatures," says Keskinen.

According to him, the pressure gauges froze during the pressure tests and the line valves had to be heated with vapour.

Seamless cooperation

In addition to the contractors, Iisalmen Vesi's fitters and network engineer Keskinen also participated in the project. They were responsible for opening and closing the valves. Hakala praises the cooperation for its smoothness and flexibility, thanks to which small changes could be made while work was in progress.

"Cooperation went very well, and Uponor Infra's foreman was extremely competent," adds Keskinen.

He states that the smoothness of work also resulted in cost savings. Uponor Infra charged based on actual costs. Therefore, Iisalmen Vesi ended up paying less than what they had budgeted.

"The work was completed well within schedule despite the arrival of harsh winter conditions towards its end," says Tyrväinen.

The project was completed at the turn of the year, and the finishing touches are scheduled for the coming spring.

– Uponor tidied the excavations up after spring thawing.

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