References

Fire wastewater safely recovered



Uponor involvement

- 2 Weholite fire wastewater tanks with total volume of 600 m3, 2,5 km PVC pipes, 5 km PE pipes, 250 stormwater chambers

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The wastewater from the new biopower plant will be collected in a Weholite tank designed by Uponor for the site.
The tight and durable Weholite tanks ensure that the wastewater from the biopower plant to be completed in Oulu can be safely collected in the event of a fire before further treatment.

Project Facts:

Location	Completion
Oulu, Finland	2020
Building Type	Product systems
Municipal	Tailor made constructions
Project Type	
New building	

Partners

Developer: Oulun Energia
Installer: YIT Infra

Oulun Energia is building a new biopower plant in the Laanila industrial area in Oulu, which will produce 70 MW of electricity

and 175 MW of district heat annually. When completed, the plant will replace the old Toppila I power plant unit, which was commissioned in 1977 and no longer meets today's environmental requirements.

The new biopower plant, which will be completed by the end of 2020, is an investment of EUR 200 million for Oulun Energia and a significant step towards carbon-neutral energy production, as two thirds of the region's district heating can be produced with renewable energy in the future.

The department also opens up new opportunities for the bioeconomy. The design of the plant has taken into account the possibility that biorefineries or other industries using power plant steam can be integrated around it. An eco - power plant for waste - to - energy, which was commissioned in 2012, is already nearby.

Layered durability

The power plant's environmental permit requires that flammable water tanks are also built on the plant site.

- In the event of a possible fire, contaminated extinguishing water is collected in fire water tanks, after which it can be cleaned or safely transported for further treatment, says project engineer Markku Heikkinen from Oulun Energia.

YIT Infra, which is responsible for the piping and foundations of the plant area, selected Weholite tanks made of polyethylene profile for the site. Foreman Mika Still says the choice was easy.

- Lightweight and durable Weholite is well suited for this purpose. Uponor also supplies the region with a large number of pipes for various purposes, so centralizing orders was cost-effective.

The layered structure of the Weholite pipe guarantees durability, flexibility and tightness for the tanks. Containers made of polyethylene or polypropylene have no risk of corrosion and are resistant to most chemicals.

Uponor's regional sales manager Jouni Siironen reminds that in addition to a sustainable structure, Weholite's strengths include the possibility of customization. - Tanks can be manufactured exactly according to customer needs. The tanks are pre-equipped at the factory, so on-site installation work is quick and easy.

The two became one

The Weholite tanks delivered to Oulu were also customized according to the customer's wishes. Mika Still says that originally, four tanks, ie two tanks installed in parallel and located in two different locations in the area, were to be installed to recover the wastewater.

- However, we suggested to the customer that it would be more sensible to use two long tanks instead of four. One tank would then have roughly the same volume as two shorter tanks installed in parallel, but the solution would not require such a wide trench. A large trench would have been difficult to locate in the area.

Uponor designed a solution for the site, in which two Weholite tanks would be installed in succession and combined into one long tank.

- We presented Uponor's plan to the customer, who approved it. The area now has two such tanks, 17.5 meters long and 3.7 meters in diameter. The volume of one unit is 300 cubic meters.

Installation completed in a few hours

Antti Käyrä, YIT's foreman in charge of civil engineering, says that the installation of the tanks was fast.

- The tanks were lifted into a trench supported by steel points. In the trench, the tanks were pushed together and then joined together with a sliding sleeve. Ring shrinks were installed on top of the sleeve joint to ensure that the joint was tight and that the sleeve remained in place. The tanks were then anchored with cloths attached to a concrete slab cast on the bottom of the

trench.

Before the trench was covered, the tanks were still filled with water to ensure they remained in place.

- The actual installation took only four or five hours, Käyrä says.

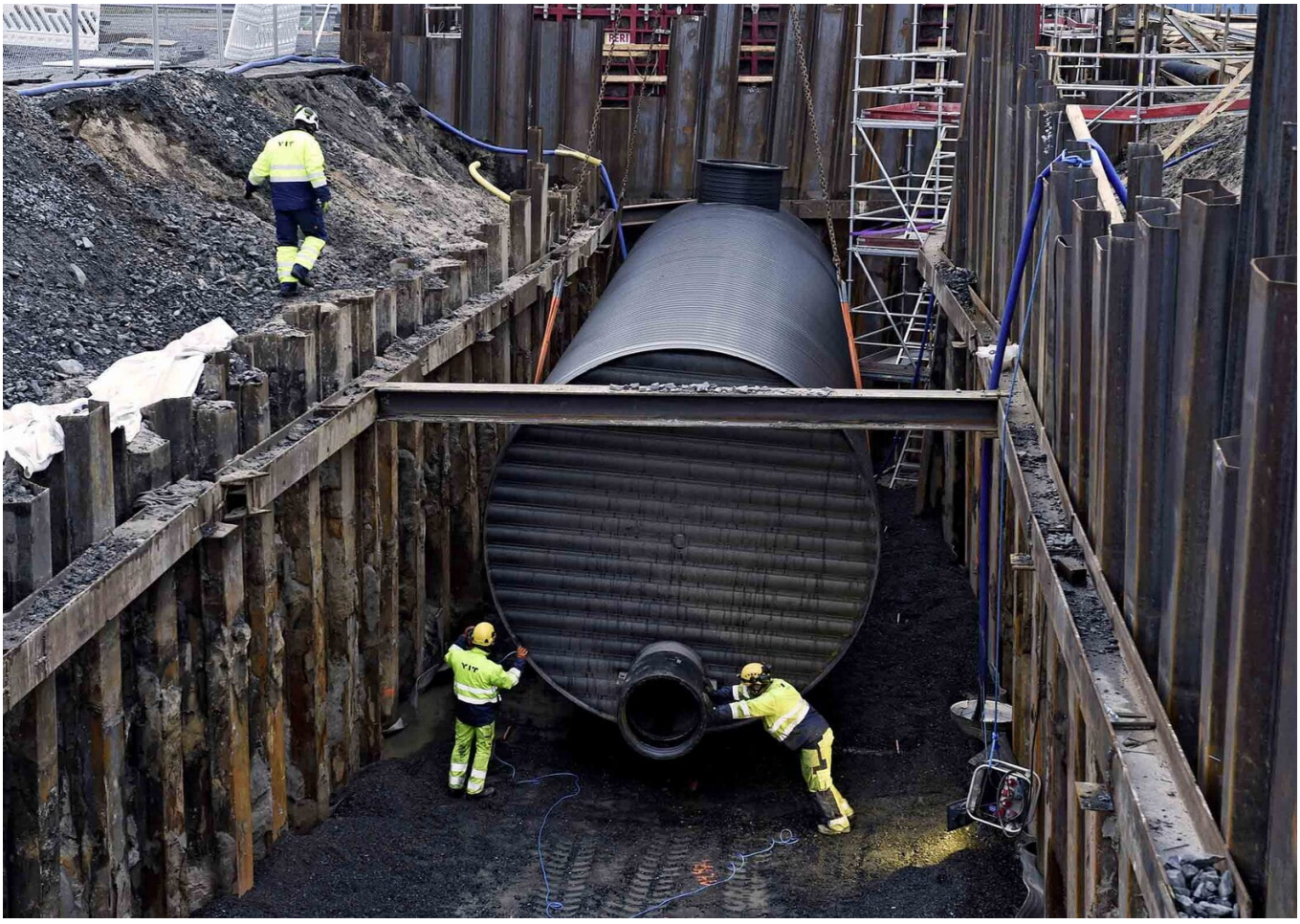
The first of the tanks was installed in place in October 2018, the second just over a month later in November.

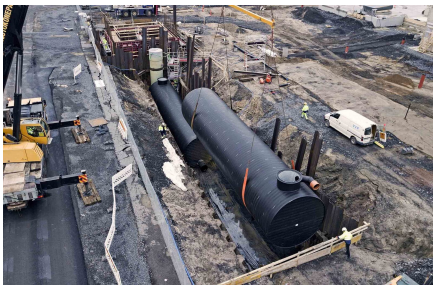
Flexible deliveries

In addition to Weholite tanks, Uponor will supply a significant number of pipes to the biopower plant site for various purposes. 2.5 kilometers of PVC pipes will be delivered to the site's stormwater and wastewater lines. Uponor will supply a total of five kilometers of PE pipes for use on fire and sprinkler lines, water mains and process water lines, as well as on pressurized wastewater and storm water lines.

- About 250 stormwater wells are coming to the site. As the site progresses, the plans have been constantly slightly updated. Because of this, we have also had to change our own plans for the wells needed at any given time. However, Uponor has been able to respond flexibly to our wishes, says Mika Still.

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