References

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Uponor involvement

- Clean II -panospuhdistamo

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Project Facts:

Location	Completion
Hollola, Finland	2023
Vrsta objekta	Product systems
Multifamily homes	Sewer, waste water treatment

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In the first week of June, earthwork contractor Toni Arvila drove his employees into the yard of a small group home in the village of Kastari in Hollola.

The original plan was to disconnect the water, dig up the old treatment plant at the edge of the forest, and install a new Clean II batch treatment plant in the same trench. This should have happened while the home's residents were away camping. However, the night before work was due to begin, Ari Myllylä, the site manager for water supply and sewage work, heard that the camping trip had been cancelled. He therefore changed plans on the fly to minimise inconvenience to the residents.
''We dug a two-metre deep trench next to the existing trench and installed the new treatment plant there. The sewer was out of service for no more than 20 minutes while we connected the existing sewer pipes from the three buildings to the new inspection well. We then removed the old treatment plant, and were already able to start landscaping on the third day,'' says Arvila.
Arvila says that blueprints for old buildings and systems are often unavailable. So you might encounter additional wells or a range of different-sized pipes when you start digging – which is what happened in Kastari.
''That's when you have to make small tweaks to your plans. But there's always a solution,'' says Arvila.

Low operating costs an advantage

The small group home in Kastari is a cosy child welfare unit for children and young people who have been taken into care. The wooden building houses seven residents and was originally built as a school. The terraced house in the same yard also provides four apartments for young people who are becoming independent or require supported housing.
As the small group home and terraced houses are located in the countryside, outside the municipal sewer network, their wastewater has been treated on site for decades. Only septic tanks were used at first. Vesimies – a biological treatment plant manufactured by Upo – was installed later, sometime in the 1970s. The new Clean II batch treatment plant has now brought biochemical treatment to the site.
''We wanted a cost-effective and largely maintenance-free solution that meets all of the regulations and directives,'' says Mikko Säilynoja, a property manager from the Mehiläinen Group, which includes Familar Oy, the company that runs the small group home.
Antti Nykänen, a designer from the HVAC engineering company Heatco Finland Oy, considers batch treatment plants to be ideal solutions for old buildings.
''Double sewers can be built for new buildings, but all wastewater usually ends up going into the same sewer network at renovation sites. It's therefore a good idea to treat all the water yourself,'' says Nykänen.

For accommodation sites or two detached homes

The Clean II batch treatment plant came onto the market in spring 2023. However, many people were already familiar with its design and functionality, as it is simply a larger version of Clean I, which has been in use for more than 15 years. Clean I is designed for 1–7 residents, while Clean II can treat wastewater from 3–12 residents – up to 2,100 litres per day. This makes it suitable for properties such as two detached houses, a small accommodation site, or a school.
Wastewater is directed from the sewers to Clean II's first tank via an inspection well. The first tank acts as both a septic tank and a storage tank. When 350 litres of water have accumulated in this tank, the water is transferred to the process tank using an airlift pump. This pump has no moving parts, as the water is transferred with the aid of blown air.
''I'm fascinated by the simplicity of Clean treatment plants. A traditional plant in a detached house may have two, or even three, mechanical pumps that will require maintenance and repair over the years. With a Clean treatment plant, you just have to keep the compressor in good working order,'' says Myllylä, who recently retired as an HVAC inspector for the Municipality of Hollola.

Biological and chemical processes in parallel

When a batch of wastewater has been transferred to the process tank, the microbes living in the activated sludge begin to biodegrade the wastewater, while the phosphorus is chemically precipitated from the water. After about three and a half hours, the process tank pumps the purified water into the discharge site. This takes about ten minutes. The surplus sludge and precipitated phosphorus are returned to the first tank to await emptying. A monitoring panel installed inside the building will alert residents when the tank needs emptying – usually once or twice a year.
The purified water is discharged either through a sampling well into a soakaway or through a discharge pipe into a ditch. Soakaway tunnels were installed in the Kastari system.
''There's a steep, sandy slope next to the treatment plant, so the water can easily be absorbed into the soil,'' says Nykänen.

Pump well helps with deep sewers

A Clean batch treatment plant will be installed as a compact package, including equipment such as the chemical tank and control panel. Uponor can provide systems for anchoring the tanks, and no programming is required.

These treatment plants are therefore easy to install. Uponor Product Manager Jyrki Löppönen says that some homeowners may be hesitant if their home has deep sewers. For example, in a post-war detached house with a sauna in the basement. ‘‘This is why we introduced the Clean pump well.’’

The new pump well raises water from a house’s sewer to the same level as the treatment plant, thereby allowing the plant to be installed at a standard height close to a good discharge site. When the pump well is connected to the treatment plant’s alert system, the monitoring panel will indicate when maintenance is required.

‘‘I believe that the pump well will lower the threshold for many people to install their own batch treatment plant,’’ says Löppönen.

Installation images











Telefon +381641852299
E-mail
podrskakupcima.bfs@georgfischer.com
W www.uponor.com