References

Uponor filter chamber part of the stormwater study



Uponor involvement

- Uponor filter chambers

In the pilot project, city of Heinola seeks results and information for stormwater quality management

In recent years, stormwater quality management has become an increasingly important part of urban stormwater strategies. A pilot project was launched in Heinola to clean stormwater with innovative filter chambers developed by Uponor. At the same time, valuable research data will be collected on stormwater quality from two different types of areas and on the treatment results achieved with filter chambers.

Project Facts:

Location	Completion
Heinola, Finland	2023
Building Type	Product systems
Municipal	Storm water

Partners

Contractor: Vesan Kuljetus Oy
Designer/planner: City of Heinola and Uponor
Investor: City of Heinola

"The stormwater project launched with Uponor is an important beginning to develop and study the qualitative management of

stormwater in Heinola," says Project Manager Annika Vinkka from the city of Heinola.

"Heinola, located between the ridge areas, has many groundwater areas and valuable waterways. As rainfall continues to increase in the future due to climate change, so will the amount of stormwater and the harmful substances carried with it. Especially in densely built urban areas, managing the quantity and quality of stormwater is increasingly essential to safeguard the cleanliness of our waterways.

Keijo Houhala, Director of Technical Services at Heinola, says that comprehensive stormwater management is a broad and multifaceted issue that municipalities must invest in actively and systematically in the future.
"Heinola is certainly a fairly typical municipality – things and projects have already been taken forward, of course, but there is also a lot of undone work and renovation dept. However, municipalities are now taking stormwater treatment into account as awareness of the environmental load caused by stormwater has increased and more attention is paid to stormwater quality, Houhala says.

The current state of Heinola's stormwater systems has been investigated, for example, in a thesis by Annika Vinkka. Investment needs and, for example, various stormwater treatment possibilities are also explored in the upcoming engineering work.

"The cooperation with Uponor is also part of this groundwork and research based on which our stormwater system will be built in the future," Houhala says.

Different solutions are needed

Annika Vinkka considers it important that different solutions are available for stormwater quality management, as treatment needs also vary in different areas and forms of land use.

"Nature-based solutions, such as wetlands or green prints, work well in more sparsely built areas, but there is often no room for such above-ground alternatives in city centres, for example. The quality of stormwater also varies in different areas, which must be taken into account when choosing methods.

– It is also not possible or necessary to treat all stormwater, so we must be able to find the key risk areas and suitable solutions for them, Keijo Houhala points out.

First ones in Finland

Vinkka says that Heinola is the first Finnish city to introduce new types of stormwater filter chambers developed by Uponor Infra.

In early 2023, Uponor launched the Stormwise solution, which offers a wide range of sustainable products and solutions for stormwater management.

"New stormwater treatment solutions to prevent contamination of waterways are a key part of the Stormwise concept. Especially in urban areas, stormwater quality has become one of the biggest challenges in stormwater management – there is a lot of need for efficient treatment, but little space," says Product Manager Teemu Salminen from Uponor Infra.

According to Salminen, the Stormwise solution has been very well received. "We have been particularly pleased with the interest that the new treatment solutions have aroused. Stormwater solutions are now being planned for several other cities as well.

Most contaminants are recovered from solids

Uponor filter chamber is a compact, scalable solution for applications with high cleaning requirements. It is ideally suited for parking lots, high-traffic road sections or industrial areas, for example.
In the filter chamber, stormwater is treated by both clarifying and filtering before discharging it into water bodies. Heavier

impurities precipitate at the bottom of the well and fine matter is removed from the outgoing water with a filter.

The chamber's efficient modular filter filters solids, metals, bacteria, phosphorus, oil and particles from stormwater. Drainage of settled solids is carried out once a year and filter changes every 2–5 years.
"A large part of the harmful substances in stormwater are bound to solids. When solids are separated from water, most of the impurities can be removed before they enter the water system. Harmful substances of particular interest to us are heavy metals and factors causing eutrophication, such as nitrogen and phosphorus," says Annika Vinkka.

First samples during the spring

The filter chambers were installed in late 2023 in the districts of Jyränkö and Tommola, which are located a few kilometres from the centre of Heinola.

"The chambers could easily be installed as part of the existing stormwater system. In Jyränkö, the chamber was installed in a stormwater network that runs along the edge of a residential area and a forest, in Tommola to a stormwater network that runs through the park area," Vinkka says.

"The locations were chosen so that we can examine two slightly different sites where the size of the collecting area is optimal. Jyränkö is mainly a residential area, while Tommola has traditionally had industry. The chambers are in non-traffic areas, but close to the road. This facilitates both maintenance and sampling. The stormwater in two areas and the cleaning efficiency of the chambers will be studied with samples to be taken during three rainfall events in the spring.

"The snowfall and freezing temperatures started just after the chambers had been installed. This means that samples can be taken and analysed approximately in March–April, when meltwater begins to accumulate again.
"It will be very interesting to see what kind of results we will get in the spring. Relatively little qualitative research on stormwater has been conducted in Finland, so the results will certainly benefit other cities and municipalities as well. A thesis is also being prepared on the project, Vinkka says.

Installation of filter chamber in city of Heinola












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