References

HAMK's zero-energy hall uses energy piles

Uponor involvement

- 2.8km of collection pipes and 60 energy piles

HAMK's zero-energy hall uses energy piles

Construction of Finland's first virtually zero-energy hall was completed in May 2015. The hall was built for the Thin Sheet Centre research unit of the Häme University of Applied Sciences (HAMK) and it draws its energy primarily from energy piles and solar panels.
Construction of Finland's first virtually zero-energy hall was completed in May 2015. The hall was built to provide new premises for the Thin Sheet Centre research unit of the Häme University of Applied Sciences (HAMK). It is also used for research, development and teaching activities. The hall draws its energy primarily from energy piles and solar panels.

Project Facts:

Location	Completion
Hämeenlinna, Finland	2015
Building Type	Product systems
□□□	Ground Energy
Address	Project Type
Visakaarre 9, 13100 Hämeenlinna, Finland	New building

Partners

Ruukki Construction

The approach was to create a building that exploits renewable energy as efficiently as possible.
"We have long been developing concepts for constructing halls for commercial and industrial uses, as well as concepts related to virtually zero-energy buildings. We have collaborated extensively with HAMK in Hämeenlinna and when the Thin Sheet Centre needed new premises, it was considered to be a good opportunity to pilot zero-energy construction," says Jyrki Kesti, Technology Director from Ruukki.

The ideal site for energy piles

The construction project combined several different energy efficiency measures, making it an excellent fit for the energy pile system that was jointly developed by Uponor and Ruukki. The piles are supplemented by the solar energy that is collected by the building.

In the winter, the energy piles, which are used in the foundations, transfer energy from the ground for use in heating the building. In the summer, they transfer heat energy, which is produced by the solar energy collectors installed on the roof and by the cooling system, back into the ground, enabling the stored heat to be re-used for heating the building in the winter. The energy level of the ground thereby remains suitable for energy generation.

Installation was completed without any problems

Uponor installed a total of 2.8 kilometres of heat collection piping into sixty energy piles on the site in summer 2014.

"The installation went well. Our part of the project began after piling when we received a log of the piling work. This showed the lengths of the piles, enabling us to manufacture collectors," says Tuomas Eskelinen, Uponor's project coordinator.

"We installed the collectors on-site within a week of receiving the log. The next stage of the on-site project is to cast sensors. After that, we will return to connect transfer pipes from the piles to the manifolds. At the end, we will pressurise the system for testing," says Eskelinen.

It is worth being energy efficient

Implementing the hall in the form of a virtually zero-energy solution was approximately EUR 70,000 more expensive than building a conventional hall but, according to the calculations, the energy investments will pay for themselves within just over ten years. After this, the maintenance and usage costs of the hall will be easy on the wallet.

Energy piles and other solutions that exploit renewable energy provide numerous advantages to property owners.

"The energy bill can be halved and the investments have a very reasonable break-even period. The resale value also remains good as the technical solutions in question are durable," says Jyrki Kesti.

A solution for better construction

The hall was designed as a single entity from the start.

"On a Finnish scale, the site was unique. It is the only hall that can operate with such low consumption. It was of essential importance to view the hall as a single entity during the design phase as the hall includes a large number of different energy efficiency solutions in one package," says Kesti.

"Construction regulations do not yet stipulate energy efficiency of this order but we wanted to demonstrate that it is possible and cost effective even today. According to our calculations, a better building solution of this type also makes financial sense."

HAMK's zero-energy hall uses energy piles

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