Uponor involvement

- Uponor underfloor heating and cooling connected to a geothermal energy source for the hall and an Uponor Comfort Panel cooling system for the office

Kiviniityn Auto- ja Maatalouskonehuolto acquired a new underfloor heating and cooling solution

Kiviniityn Auto- ja Maatalouskonehuolto Oy, based in Huittinen, initiated a construction project in 2012 to implement a modern building based around geothermal energy for use as commercial premises for a shop selling tools and spare parts. Kiviniityn Auto- ja Maatalouskonehuolto Oy, which operates in Huittinen, services vehicles and agricultural machinery. However, an important part of the company's operations involve selling spare parts, tools, machines and devices. Customers come to the outlet in Huittinen to buy spare parts for heavy-duty machinery.

A construction project was initiated in 2012 to implement a modern building based around geothermal energy for use as commercial premises for a shop selling tools and spare parts. The project's HVAC planning was handled by Metalli ja LVI-Lundgren in cooperation with Uponor.

Project Facts:

Location	Completion
Huittinen, Finland	2013
Vrsta objekta	Product systems
Office building	Površinsko grejanje i hlađenje
Address	Project Type
Ostoskatu 1	New building

Partners

Planning and installation:

Metalli ja LVI-Lundgren
Autokatu 7
32700 Huittinen, Finland
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Self-sufficiency in energy use

"The starting point for planning was a low-temperature system that could provide free cooling for the entire building. Cooling energy is obtained from wells during the summer," says Jarmo Lundgren, the planner who worked with Uponor to design the underfloor heating and cooling for the site.
"The aim was to realise the energy efficiency enabled by geothermal heating: the customer wanted to minimise energy usage costs and avoid being dependent on oil and district heating."

Using geothermal energy or other free sources of cooling is energy efficient and cheap. The same underfloor heating piping is used during the summer time to cool the premises. For cooling, an Uponor Fluvia EPG 6 pump system is connected to the Uponor underfloor heating system. The product is manufactured at the factory so it is quick to install. The pump system regulates and circulates the free cooling energy that is obtained from the soil, which acts as an energy source for underfloor cooling.

The power of the underfloor heating system is based on a large surface area to be cooled and a small temperature differential in comparison with the room temperature. There is no danger of condensation because the temperature of the water that is supplied to the floor is at least 17 °C. The cooling power installed in the concrete floor is approximately 40 W/m2.

According to Lundgren, the plans and the construction project proceeded smoothly. The end result is pleasing to the purchaser as well as the supplier.

"The project proceeded excellently and everything went as it was supposed to. The requirements were fulfilled even better than we had expected and everything has worked very well. The project proceeded according to schedule and the calculations matched the real-world result. This is a sign of successful planning. And on top of all that, the customer was satisfied – that is the main thing," Lundgren says.

"The new hall has fulfilled expectations one hundred per cent; it could even be said to have surpassed expectations. The underfloor cooling has been particularly great," says Juha-Pekka Kiviniitty, Managing Director of Kiviniityn Auto- ja Maatalouskonehuolto Oy.

An exceptional solution

An industrial hall with underfloor heating and cooling is not something that is seen every day – at least not in Finland.
"Solutions like this have been implemented in continental Europe but there are very few in Finland. This is the first commercial property in which we have installed underfloor cooling. We have previously installed underfloor heating in a school, but there are not many of these," Lundberg says.

Sales Manager Sami Matikka from Uponor is also satisfied with the innovative solution.

"Metalli ja LVI-Lundgren has been a good customer; we have worked with them a lot. I doubt that any other halls in Pirkanmaa

have underfloor cooling. This is a new, energy-efficient solution," Matikka states.

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