References

Technopolis Innova 2 in Jyväskylä, Finland is heated by energy piles



Uponor involvement

- 2.3km of collection pipes and 38 energy piles

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In spring 2012, the six-storey Technopolis Innova 2 building was constructed on the shore of Lake Jyväsjärvi. The building makes use of geothermal energy, which is collected using energy piles. The solution has surpassed all expectations. Technopolis Innova, an office building located in the centre of Jyväskylä, Finland, underwent an expansion in 2011 when a second building was constructed with a gross floor area of 10,000 square metres. The six-storey Technopolis Innova 2 building was constructed on the shore of Lake Jyväsjärvi in spring 2012.

Project Facts:

Location Jyväskylä, Finland	Completion 2012
Building Type Office	Product systems Ground Energy
Address Lutakonaukio 7, 40100 Jyväskylä, Finland	Project Type New building

Partners

Ruukki Construction

Innova 2 is the first site in Finland to use energy piles, which exploit geothermal energy and were developed in collaboration between Uponor and Ruukki. The steel energy piles are driven or drilled into the ground and they provide the building with both a steady foundation and a large amount of useable energy.

Challenging ground conditions put to good use

Nowadays, it is increasingly common that buildings need to be constructed on ground that provides poor support, so piles are required in any event. This was the case for Innova 2, as the ground in Lutakko, in the centre of Jyväskylä, is relatively soft and the groundwater is at a depth of only 1.5m.

The steel piles that are used for the foundations act as both a supporting structure and an energy solution. The energy piles exploit free geothermal energy from beneath the building. They are particularly suited for use in commercial and office buildings such as Innova 2 where there is a significant need for heating and cooling.

The heating system uses the energy that is stored in the earth, while the low temperature of the ground is used for cooling. In the summer, the cooling system outputs excess heat, which is directed back into the ground, ensuring that the temperature level of the ground remains sufficient for energy generation.

Good results from the pilot site

Ruukki supplied the site with a total of 181 piles, of which 38 were energy piles. The piles were approximately 30 metres in length and they were sunk into Uponor's PE-Xa U collection circuits using ground weights. The collection circuits were then connected to manifolds that were installed into the floor.

The pile and the manifold are connected by an insulated pipe, which minimises heat loss. The trunk lines from the manifolds are led into the heat distribution room via insulated pipes.

"Considering that this was the first site on which energy piles from Ruukki and Uponor were installed, everything went very well. The installation sequence was optimised. It was possible to install the heat collection pipes on top of the base slabs in the final phase. This facilitated circulation on the construction site," says Jyrki Kesti, Technology Director from Ruukki.

A lifecycle-efficient solution

Using energy piles improves the energy efficiency of the building and reduces the carbon footprint. Environmental efficiency has also been proven to increase occupancy rates. Innova 2 was 100% let before it was finished.

The amount of energy that Technopolis Innova 2 can obtain from energy piles has fulfilled expectations. In some respects, it has surpassed expectations.

"We have obtained very good results on this site. The output of the energy piles has been better than forecast," Kesti says. The six-storey Technopolis Innova 2 building was constructed on the shore of the lake.

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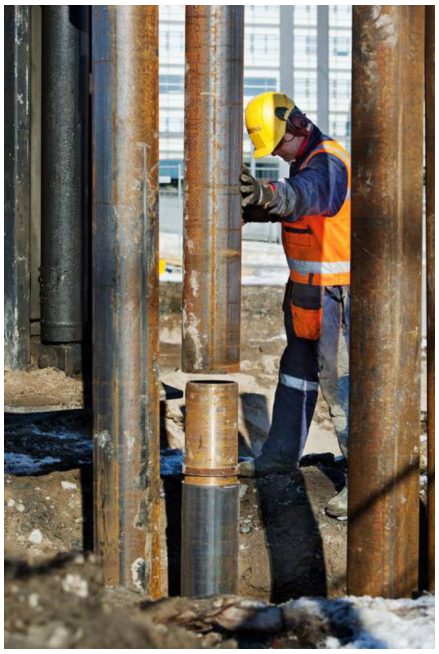

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