

Datacentre supplies local heating in Mäntsälä, Finland

This case study is part of a project catalogue produced by [ReUseHeat](#) to provide inspiration on how to utilize excess heat from urban sources for heating and cooling purposes. The catalogue contains 25 existing or planned projects out of which 12 cases are Danish and 13 cases are from other European countries^[2].

Facts about this case

Installed heat capacity: 4.0 MW

Heat source: Cooling of data centre (40 °C)

Heat pump COP: 4.0

Temperatures: Air exhaust from datacenter is approximately 40 °C and the heat pump deliver to the district heating network at approximately 85 °C

CO₂-reduction: 11,000 ton CO₂ annually

Period: June to December 2014

Link to web page: <https://www.nivos.fi/>

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Source: Calefa^[1]

Description

The city of Mäntsälä located approximately 55km north of the Finish capital Helsinki, installed a heat pump capable of supplying 1500 homes with heating. The heat pump extracts heat from a nearby data centre.

Hot air from data centres holds a huge potential for energy recovery. By removing the air and utilizing the excess heat it can be used in local district heating networks. In 2015 Mäntsälä installed a 4.0MW heat pump which utilize the excess heat from the local Yandex data centre.

Heat exchangers extract hot air from the data centre servers at temperatures of approximately 40 degrees Celsius. This is used in the heat pump, where the temperature is increased to approximately 85 degrees Celsius. The heat pumps are optimized to achieve high temperatures

hereby having a high COP, which potentially can be above 4.0. The heat pump does not affect the design of the data centre, as energy is harvested from the outgoing airstream. Extra fan-power is merely added to the building to extract the heat from servers.

By extracting waste heat from the computing centre, 75% of the energy originally used can be reused. Further, the excess heat replaces natural gas heating and hereby reduce the annual CO₂-emission with approximately 4000 ton CO₂ in the first years, which later can be up to 11,000 tonCO₂. Currently the heat pump can supply 1500 homes with heating through the district heating network. Later, as the district heating network is to be expanded, this number can rise to about 4000 homes.^[2]



Source: Calefa^[1]

References

1. [Calefa](#)
2. Handbook - 25 cases of urban waste heat recovery