

Open District Heating in Stockholm, Sweden

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 cooling capacity: 1.2 MW

Installed heating capacity: 1.6 MW

Heat source: Cooling of data centre (three data halls)

Heat pump COP: 3.0

Temperatures: District cooling is delivered at approximately 5.5 °C, while district heating is delivered at approximately 68 °C.

Investment costs: € 0.53 M (Banhof Thule) and € 0.26 M (Fortum Värme)

Project: Open District Heating include more than 30 data centres in Stockholm.

Further the system includes supermarkets and other businesses with excess heat

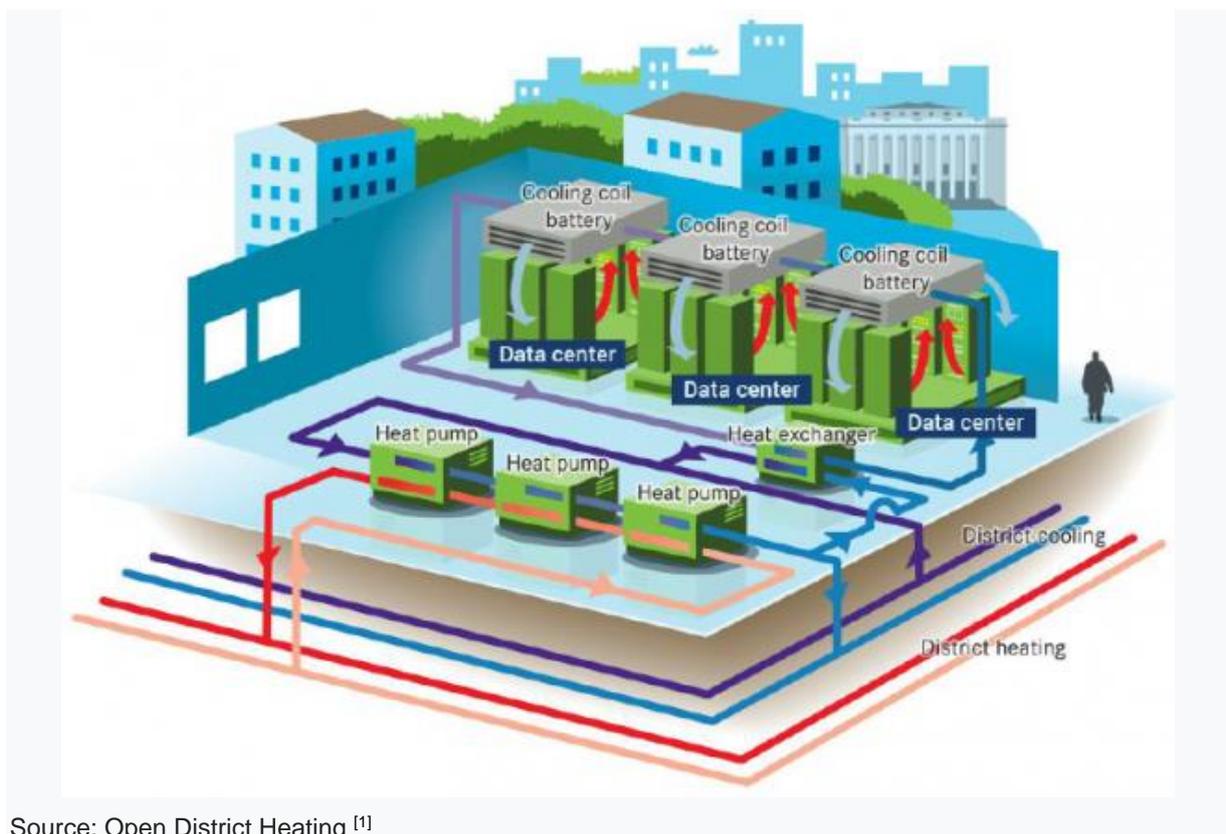
Organization: Fortum Värme AB

Link to web page:

www.oppenfjarrvarme.se

Contact information:

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Source: Open District Heating ^[1]

Description

Open District Heating is a unique offering for data centres, supermarkets and other businesses that generate excess heat to sell heat at an open marketplace. Currently, more than 30 data centres in Stockholm are connected to the district heating and cooling networks.

The aim for Open District Heating is to improve the efficiency of heating and cooling plants by enabling energy transfers from industries with surplus heat to the local district heating network. A district cooling network is further included, to make supplying both heating and cooling possible. Open District Heating was launched in 2014 and have since experienced a growing number of excess heat producers connected to the system. The concept increases overall energy efficiency but also results in economic gains for companies through sustainable urban heat recovery solutions. It is operated and administered by the district heating supplier Fortum Värme in Stockholm.

One example is the delivery of heat from Bahnhof Thule, a data centre company with three data halls in Stockholm. Fortum Värme and Bahnhof have incorporated the synergies between industry and district heating network through a highly flexible heating and cooling system composed of three series of heat pumps. Energy is harnessed from the data halls and from the district cooling network return pipeline. During normal operation, the total cooling output is nearly 1.2MW corresponding to district cooling temperatures of approximately 5.5 degrees Celsius and district heating at temperature of approximately 68 degrees Celsius. The corresponding heat output is approximately 1.6MW.

The heat pumps can operate independently from the data halls hereby working as a backup for the district heating and cooling systems. Bahnhof has invested a total of e 0.53M in the cooling system, including the three heat pumps, pipe installation, electrical work and control equipment, data collection and construction. Fortum Värme have invested a total of e 0.26M for expansion of the district heating and cooling network.

Another mentionable partner of the Open District Heating network is the fashion retailer H&M, who have decided to build a new data centre in Stockholm with both cooling and heat recovery. The data centre is expected to supply heating for 2500 residential apartments at full load. Further, a new high-efficient data centre by Multigrid Data Centers is prepared to supply the network with 5MW. Energy costs are expected to be very low for these new data centers, as efficiency is expected to be increased significantly.^[2]

References

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