Excess heat from vegetable market

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

Building type: Vegetable market
Cooled floor area: 15,000 m^2
Installed cooling capacity: 2000 kW
Installed heat capacity: 2300 kW
Heat source: Heat from district cooling (16 °C)
Refrigerator COP: 2.16
Heat pump COP: 3.14
Temperatures: District cooling is delivered at −8 °C, using an extra chiller, and returns at 16 °C
Investment cost: € 3.36 M

Production: the heat pump contributes with 3 % of the total heat consumed in Høje Taastrup
Period: Finished in April 2016
Cooling potential: The overall cooling potential in Høje Taastrup is 56 MW.
District heating network: 6784 consumers
Link to web page: http://www.htf.dk/

Contact information:
Uffe Schleiss, Høje Taastrup Fjernvarme amba, +45 4355 3019, uffe.schleiss@htf.dk

Source: Høje Taastrup Fjernvarme A.m.b.a.[1]

Description

In 2016, the old vegetable market in Høje Taastrup was replaced by Copenhagen Markets, a new and comprehensive vegetable market with a large cooling demand. Low-temperature heat from district cooling is used to produce district heating.

The local district heating company, Høje Taastrup Fjernvarme, delivers district cooling to the vegetable market through a large joint grid. An electric refrigeration compressor supplies the cooling. Hereby, individual and less efficient cooling systems were replaced by a centralized cooling unit that benefits from economies of scale. Return flow from the district cooling network contains heat, which is upgraded through a heat pump to supply hot water to the district heating consumers.

Source: Høje Taastrup Fjernvarme A.m.b.a.[1]

The overall system takes advantage of co-producing cooling and heating, where production of cooling cannot be delivered without production of heat. The system is currently the most comprehensive district cooling system in the Nordic Region. Fruits, vegetables, and flowers are preserved at optimal temperatures while district heating prices are lowered. The district cooling system displaces old refrigerator units which lowers the overall energy consumption and benefits the environment. The next stage in Høje Taastrup is to expand the district cooling network and add more heat pumps, thereby increasing the numbers of consumers. District cooling proves to be an important part of the future urban development for both comfort and process needs and there is a large potential for district cooling in Denmark.[2]

References

1. Høje Taastrup Fjernvarme
2. Handbook - 25 cases of urban waste heat recovery