Excess heat from mink coat storage in Copenhagen, Denmark

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 capacity: 1.0 MW
Heat source: Industrial excess heat from cooling
Heat pump COP: 5.0
Temperatures: Heating can be delivered at temperatures between 70 and 90 °C
Investment cost: € 295,000 (€ 161,000 financed by Glostrup Varme and € 134,000 financed by Kopenhagen Fur)

Period: Finished in 2017
Link to web page:
https://www.glostrupforsyning.dk/varme/

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Source: Rambøll[1]

Description

Kopenhagen Fur have from fall 2017 been allowed to send excess heat to the local district heating company, Glostrup Varme. The excess heat is from Kopenhagen Furs large cold storage, where mink coat is stored before it is redistributed. Hereby excess heat is utilized instead of being chilled using coolers.

By extracting excess heat from the cold storage facility at Kopenhagen Fur the previous refrigeration units are replaced with a heat pump. The project was a part of Kopenhagen Fur needing a new cooling unit for both process and comfort cooling. It is expected that the heat pump can deliver cooling with an annual capacity of 1MW. Glostrup Varme have a next-door heating central where the excess heat from Kopenhagen Fur is sent to the district heating network, hereby supplying local consumers with heating from mink coat storage.

Currently, Kopenhagen Fur is supplied with district heating from Glostrup Varme. Glostrup Varme is however a part of a major district heating transmission network called VEKS, which supply multiple district heating companies around Greater Copenhagen. Kopenhagen Fur is expected to deliver a baseload of 1MW heating to the network, which is a relatively small capacity compared to the total VEKS-network. The heat pump can produce 6000MWh of heating annually which is delivered at approximately 70 degrees Celsius to the district heating network. If needed, the heat pump can deliver heating at 90 degrees Celsius. The COP is expected to be 5.0 if heating is delivered at 70 degrees Celsius.

The total cost is 295,000 Euro of which e 161,000 is financed by Glostrup Varme and 134,000 Euro is financed by Kopenhagen Fur. The total heat pump costs are approximately e 134,000 higher than if only the cooling system was constructed.[2]

References

1. Rambøll
2. Handbook - 25 cases of urban waste heat recovery