

# District heating from super supermarkets

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.<sup>[2]</sup>

## Facts about this case

**Building type:** Supermarkets

**Heat source:** Heat from cooling in supermarkets

**Project budget:** € 640,000

**Participating countries:** Denmark and Sweden

**Period:** 2016-2019

**Expected results:**

- A book of guidelines with targeted communication to all interest groups.
- 500-1000 retrofitted supermarkets in Denmark in a period of 3-5 years after the project ends.
- Pursue export potentials and open for Danish export of technology solutions to the rest of Europe, North America and China.

**Project leader:** CLEAN

**Project partners:**

- Danfoss A/S, COOP DANMARK A/S, Dansk Fjernvarme, Dansk Fjernvarmes Projektselskab Amba, Bramming Fjernvarme Amba, Andelsselskabet Mølholm Varmeværk, Bjerringbro Varmeværk Amba, Teknologisk Institut, KTH Royal Institute of Technology Stockholm, Ivar Lykke Kristensen Rådgivende Ingeniøre A/S, AK Centralen A/S, OK A.M.B.A.

**Link to web page:**

<http://supersupermarkets.dk/>

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Source: <http://supersupermarkets.dk> <sup>[1]</sup>

## Description

The aim of the project is to evaluate, demonstrate and implement the possibilities of utilizing supermarket refrigeration systems as sources for district heating networks. Different tasks examine the potential of recycling heat from refrigeration systems and use the demand side of flexibility to fulfill three sub-goals.

- **Recycling heat from cooling operations for in-house use and export to district heating networks.** The sub-goal is to develop and demonstrate a Best Practice for recycling heat based on experience of already installed systems and extensive knowledge from project partners. Hereby the newest knowledge from cooling, heating and legislative sources are combined and 10 to 15 feasibility studies are carried out to examine the potentials.
- **Use heat pump capacity in supermarkets for district heating production.** In Denmark 2684 supermarkets have an installed heat pump/cooling capacity of approximately 400MW, however, only 30% of this capacity is used. The spare capacity has a potential as decentralized district heating production.
- **Optimize power consumption through increased power market flexibility.** The sub-goal is to investigate and potentially demonstrate cooling systems designed for selling power system services. Multiple supermarkets can be aggregated to represent a larger power system service.

Existing supermarkets and district heating companies are examined in three demo-projects:

- SuperBrugsen in Bramming and Bramming Fjernvarme.
- SuperBrugsen in Bjerringbro and Bjerringbro Varmeværk.
- SuperBrugsen in Vindinggård and Mølholm Varmeværk.

There is a large potential in replacing current refrigerator systems with CO<sub>2</sub> cooling and refrigerator systems. Hereby, gas cooling temperatures are increased, and excess heat can be utilized directly in the district heating network. There is accordingly no need for extra heat pumps to increase the temperatures. Multiple supermarkets in Denmark already use excess heat from supermarkets, there is, however, still a large unexploited potential. The heat harnessed from a supermarket typically correspond to the annual heat consumption of 20 ordinary Danish households.<sup>[2]</sup>

## References

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1. <http://supersupermarkets.dk>
2. Handbook - 25 cases of urban waste heat recovery