

Energy recovered from sewage water in Sandvika, Norway

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 heating capacity: 23 MW (2 x 6.5 MW from 1988 and 10 MW from 2008)
Installed cooling capacity: 9 MW (2 x 4.5 MW from 1988 and 10 MW from 2008)
Heating source: Sewage water (from 12°C)
Production: 95% of district heating is from heat pumps. Additionally, 30,000 m² of sidewalk is heated.

Period: Operation begun in 1989
Organization: Oslofjord Varme AS
Link to web page:
<http://www.oslofjordvarme.no/>
Contact information:
Oslofjord Varme,
firmapost@oslofjordvarme.no



Source: Oslofjord Varme ^[1]

Description

In 1989 the local district heating company in Sandvika, a suburb to Oslo, started operation of two heat pumps utilizing sewage water for both heating and cooling purposes. The heat pump facility called Sandvika Energisentral have since produced cheap and environmentally friendly energy for the local consumers.

With urban expansion in Sandvika throughout the 1980's came an increased need for district heating. It was decided that a new heating central was to utilize excess heat from sewage water in two 6.5MW heat pumps. The system further enabled district cooling, and the project was one of the firsts to combine district heating and district cooling in northern Scandinavia. Since construction, delivery of both heating and cooling have increased. As modern office buildings install more and more data units, the district cooling demand increase. The project further includes defrosting of pavements in winter, which is a popular need in urban northern communities.

The heat pumps are supplied with sewage water from a major waste water channel leading sewage water away from the areas of Oslo, Bærum and Asker to a waste water treatment plant. To be near the waste water channel, the heat pumps are placed in a subterranean cavern, excavated from bedrock. As a supplement to the heat pumps, oil burning vessels and a conventional refrigeration unit were integrated in the system. In 2008, a third heat pump of 10MW was installed. In 2013, approximately 95% of the production needed came from heat pumps and the remaining 5% was produced by the peak load units.

With the project comes lowered energy prices and environmental benefits as fossil fuels are not used to produce district heating and cooling. As the system is optimized, the total amount of refrigerant R134a used in the heat pumps is lowered.^[2]

References

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