

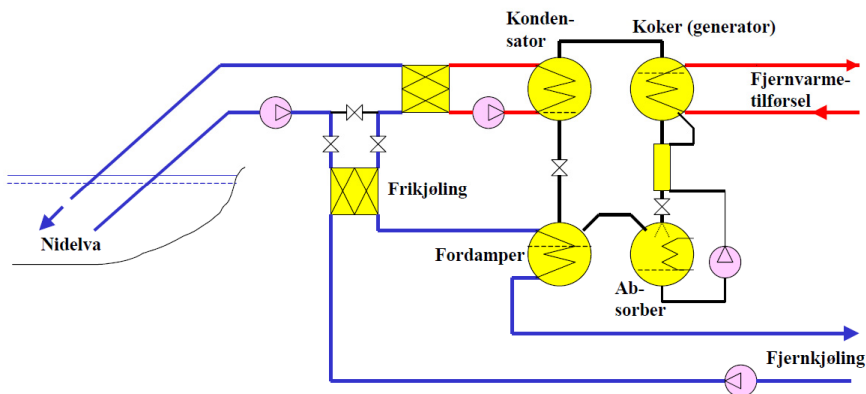


Project information

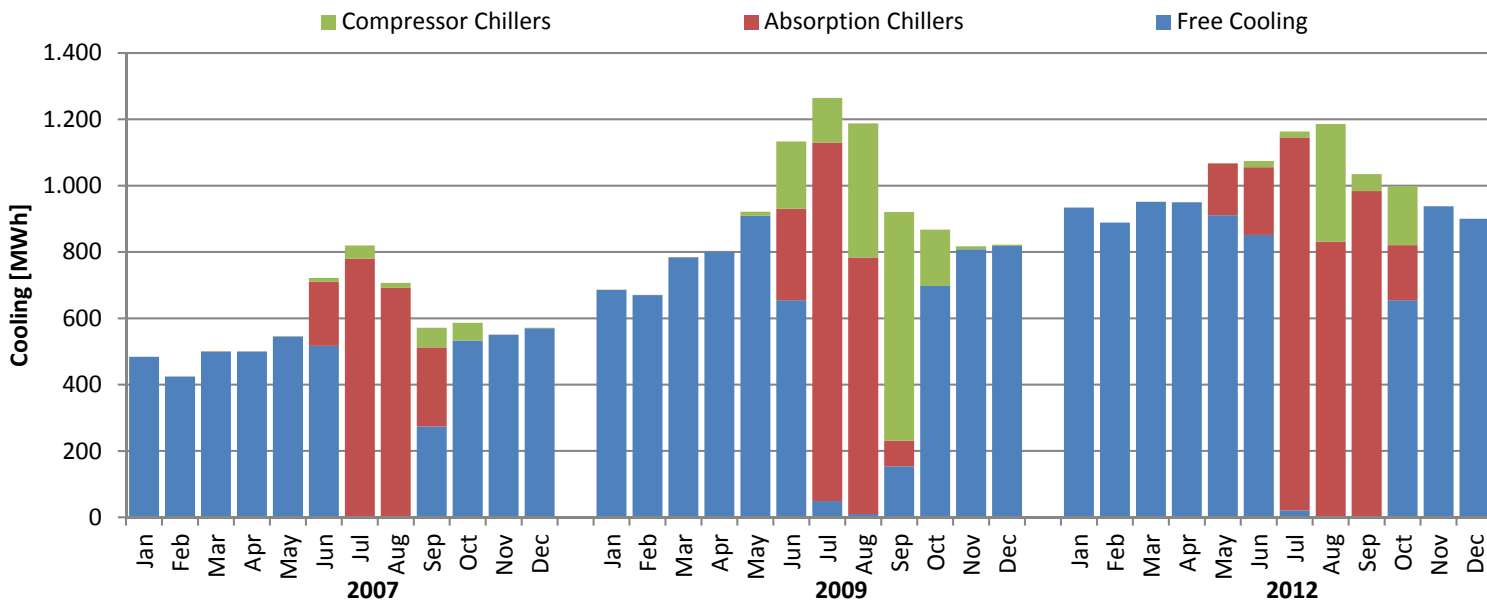
Project type:	Absorption cooling and District Heating
Address:	Forsyningscenteret Olav Kyrres gate 17 7030 Trondheim
End construction year:	2010
Building type:	-
Rated capacity	3000 kW
Additional cost for eco-application:	€ 727 600
Total building cost:	€ 2 500 000

Special ECO-technologies used:

- Absorption cooling chiller
- Using district heating to produce cooling
- At low water temperatures in the river, cooling is produced by river water
- At too high river water temperatures there are used absorption cooling chiller to produce cooling
- The plant has two absorption chillers á 3000 kW, of which the last one is part of the ECO-City.



Energy production



ECO-City project partners

What has been done:

The first part of the absorption refrigeration system at the new St. Olav's Hospital was opened in 2004. The purpose of the installation was to reduce the use of electrically driven compressor chillers. The utilization of the absorption refrigeration system increased with increasing number of buildings, and in 2007 the total cooling demand was 6.6 GWh. Free cooling plus absorption cooling covered 97% of this need and compressor refrigeration chillers brought covered peak load accounted for 3%. In 2009, the hospital's Phase 2 completed, and cooling demand increased to 10 GWh/år. The absorption chiller machine was by then too small so that 10% of the cooling load to be covered by electrically driven compressor chillers. Winter 2009/2010 Statkraft Varme decided to build a new waste district heating driven absorption cooling machine.

Why it has been done:

It was decided to install a new 3 MW absorption chiller similar to the one installed in 2004 to reduce the use of electrically driven chiller, and for the most environmentally friendly refrigerant production at St. Olav's Hospital.

How it was done:

The absorption refrigeration machine was started in early June 2011 and went on probation for the next four days. System worked well, and it was kept transfer business with the contractor 28 of September. It has not gone more than four days because of the moderate cooling in the late summer, and now the cooling of free cooling until June 2012.



Energy production

year 2012	OAT normal [°C]	OAT actual [°C]	River Temp actual [°C]	Cooling total [MWh]	Cooling free/river [MWh]	Cooling 1 absorption1 [MWh]	Cooling 2 turbine [MWh]	Cooling 3 screw [MWh]	Cooling 4 absorption 2 [MWh]
January	-3.0	-1.9	2.5	822.41	822.41	0.00	0.00	0.00	0.00
February	-2.5	-0.6	1.7	780.03	780.03	0.00	0.00	0.00	0.00
March	0.0	3.6	2.2	842.79	842.79	0.00	0.00	0.00	0.00
April	3.0	2.8	2.6	820.90	820.90	0.00	0.00	0.00	0.00
May	9.0	7.9	3.8	916.10	781.18	133.87	0.01	1.03	0.00
June	12.0	11.0	6.2	899.15	712.68	170.77	0.01	15.69	0.01
July	13.0	13.3	11.0	972.77	17.51	492.25	3.47	11.39	448.15
August	12.5	13.3	13.9	977.28	0.16	88.28	268.97	23.56	596.32
September	9.0	8.7	9.6	853.35	0.25	74.27	42.40	0.13	736.31
October	5.5	4.0	6.8	832.57	545.57	0.01	86.13	62.37	138.50
November	0.5	3.0	4.4	779.79	779.79	0.00	0.00	0.00	0.00
December	-2.0	-5.4	2.1	748.21	748.21	0.00	0.00	0.00	0.00
Total 2012	4.8	5.0	5.6	10245.37	6851.48	959.45	400.99	114.16	1919.28

ECO-City project partners