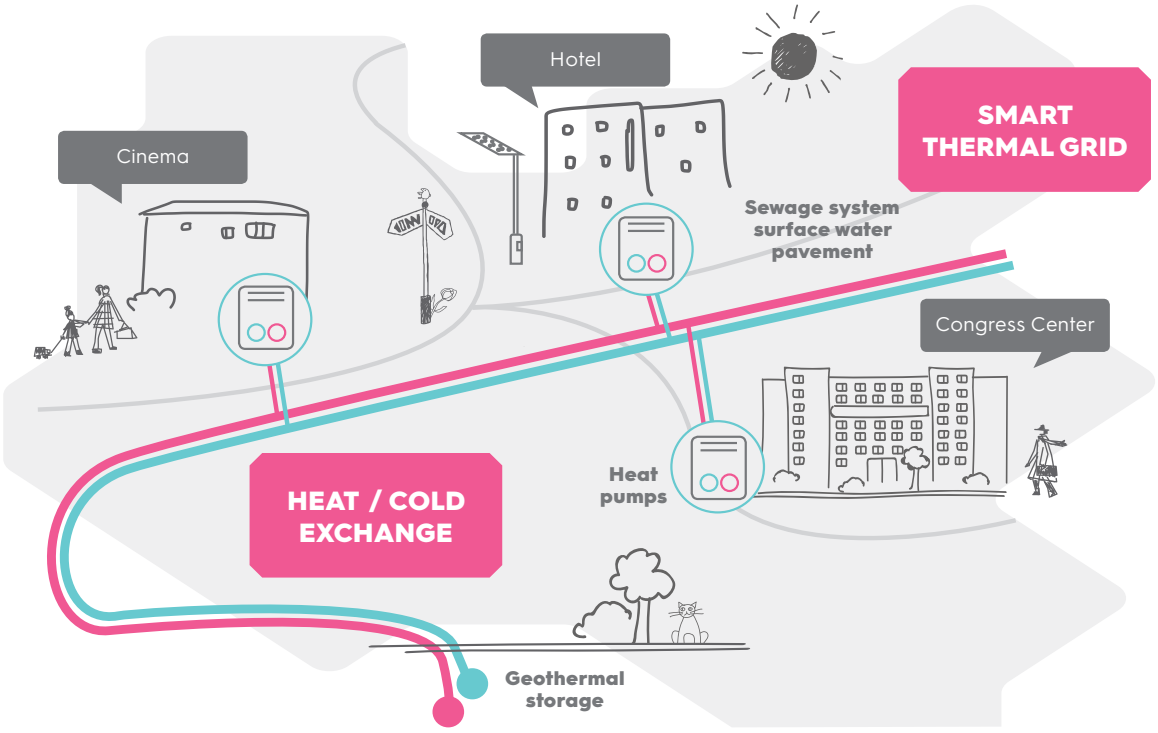
FACTSHEET R1

Geothermal heat-cold storage and heat pumps

Rotterdam **Smart thermal grid**



This solution consists of a thermal grid connecting large buildings in the Heart of South district, as well as new parts of the Rotterdam Ahoy exhibition centre, congress centre, hotel and cinema.

Heat-cold exchange within one building is commonly used, but the RUGGEDISED grid will connect *all* buildings in the Heart of South area and will optimise distribution of heat and cold among buildings.

Main partners involved:

Eneco

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 731198. The sole responsibility for the content of this document lies with the RUGGEDISED project and does not necessarily reflect the opinion of the European Union that is not responsible for any use that may be made of the information it contains.

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How does it work?

The purpose of this solution is to enable local heat-cold exchange, to maximise the use of waste heat-cold through geothermal storage and lower the total cost of ownership (TCO).

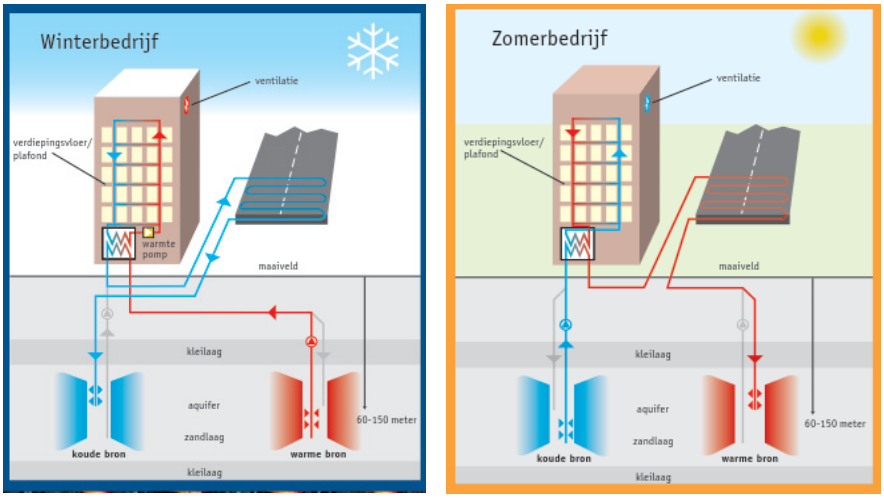
All buildings are connected by a low temperature grid and each building will get a heat pump to provide it with the heat it needs. The waste heat of the condenser is fed back into the heat-cold storage. High temperature cooling is provided directly from the smart geothermal grid. In the next phase, other buildings such as a cinema, a hotel and a hospital can be connected to this grid. A variety of other energy sources will also be connected. Because of the diversity of functions of the connected buildings and the energy sources, peak demands on different times need a lower total base load. This will have a direct effect on infrastructures since installations can be reduced in size, due to this decreasing total demand of energy. The total length of the grid is assumed to be 500 to 1,000 metres.

Estimated impacts

By means of the thermal grid the total usage of fossil energy can be minimised and peak loads can be avoided because the heat and cold will be produced by the buildings and will be stored underground when they are not needed in the buildings. The investments in the heating and cooling systems will be smaller than usual.

Replication potential

Replication in other parts of the city or elsewhere is possible. A potential barrier is the existing energy network that is present in the area. The new grid must be integrated in the existing infrastructure.



Contact:

Email@organisation.com