



City of
Gothenburg

CELSIUS - intelligent district heating and cooling systems

CELSIUS is an EU-funded Smart Cities project that illustrates how cities can save energy and create a more self-sustaining energy economy through the deployment of smart district heating and cooling (DHC) systems. As lead partner, Gothenburg collaborates with London and Islington Borough, Genoa, Rotterdam and Cologne to accomplish the project's objectives. Within this effort the CELSIUS consortium brings together excellence from 20 key partners along the value chain; cities, industries and leading universities.

One of the CELSIUS objectives is to become a respected and influential organisation supporting the development of legislation, regulation and policy. As one step towards this goal, to put district heating and cooling solutions higher up on the EU agenda, in October 2014, CELSIUS hosted an event at the European Parliament in Brussels to engage participants in a discussion on energy security, the cost of energy and how to finance infrastructure.

Moreover the project is committed to recruiting 50 European cities into the CELSIUS vision, offering them practical support in developing their DHC systems. Even though joining the CELSIUS network is not legally binding in any way, these cities must commit to work closely with CELSIUS in improving their district heating and cooling systems. The support that CELSIUS provides to the CELSIUS Cities includes workshops, interactive toolboxes, specialist expertise and study visits.

The spine of the CELSIUS project comprises 30 replicable demonstrators that set forward innovative technologies, systems and practices, covering the areas of system integration, sustainable production, storage, end-user technologies and infrastructure. They contribute to energy systems within a city that meet the present and future demands of its citizens and businesses.

The Gothenburg demonstrators stem from innovative uses of the existing DHC network. For example, a ship has been connected to the DHC network while it is in the harbour, and it is the first time in history that this is done with a ship in regular service. It is estimated that the switch from bunker oil to district heating in the one ship alone will reduce the CO₂ emissions by as much as 172 tonnes (62%) per year.

Additionally buildings are used for short-term thermal storage: if there is a forecasted drop in the outside temperature, selected buildings are "uploaded" with heat while the overall demand in the system is low, so they do not need to be heated during peak hours.

Finally, washers and dryers are installed that use heat from the district heating system. Electricity is still used for the engines but 70-80% of the electricity consumption of these machines is replaced by district heating.

The CELSIUS project has been running since April 2013 and is scheduled to end in March 2017. Its budget is 26 MEUR (28.79 M USD), of which 14 MEUR (15.57 M USD) is financed by the European Union.

More information (in English)

Celsius project web site: <http://celsiuscity.eu/>

Celsius project description video: <http://celsiuscity.eu/animation/>

New demonstrators in Gothenburg (in English):

- Buildings for short term storage:
<http://celsiuscity.eu/Demonstrator/buildings-for-short-term-storage>
- District heating for ships in harbour:
<http://celsiuscity.eu/Demonstrator/district-heating-for-ships-in-harbour>
- District heating to white goods:
<http://celsiuscity.eu/Demonstrator/district-heating-to-white-goods>