Fossil-Free Energy District (FED) in Gothenburg, Sweden

Good Practice example for ICT Tools for energy efficiency

Johanneberg Science Park, Gothenburg, Sweden

City of Gothenburg, Johanneberg Science Park, Göteborg Energi, Business Region Göteborg, Ericsson, RISE Research Institute, Akademiska Hus Housing Association, Chalmersfastigheter, Chalmers University

2017-2019

Background

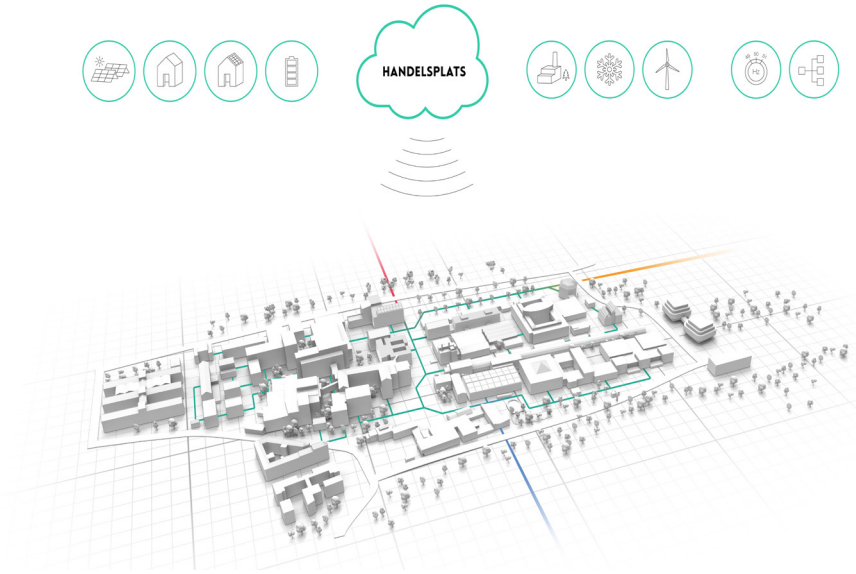
The City of Gothenburg has partnered with local institutions, businesses and energy suppliers to demonstrate a Fossil-Free Energy District (FED) in Johanneberg Science Park, Gothenburg. The initiative integrates electric power, heating and cooling using renewable energy, pumps and storages. The approach seeks to reduce peak energy loads and fossil primary energy that could be replicated and deployed at a city scale to make Gothenburg a carbon neutral city.

Key Challenge

An energy transition is needed in cities, and smart energy management systems play an important role in the process. However technical solutions are often reliant on the involvement of stakeholders and their perceived value of the energy market transition. To address and secure interest of stakeholders, the FED approach aims to test example solutions to showcase an energy transition and its business benefits.

Initiative

The FED supports energy efficiency and smart energy management by utilizing a demonstration area at Johanneberg Science Park. The demonstration aims to act as a localized marketplace for electricity, district heating and cooling by harnessing and sharing surplus secondary energy supplies from other buildings, to reduce the need for primary energy. Since implementation, the area has achieved a local heating system which is connected to the general district heating network and all roofs are covered with solar panels, which will serve as 30% of the base load of electricity demand. The marketplace for electricity is connected to a variety of data, including weather forecasts of different production sites to optimize energy production.



FED demonstration site in the City's university area
© Johanneberg Science Park

Success Factors

The location of the FED demonstration in Gothenburg city's University area provides an important research synergy to support innovation. The Johanneberg Science Park benefits from a law concession for electricity distribution enabling the testing and validation of a local energy market, and the area services 15,000 end users including a mixed group of property owners, energy infrastructure, prosumers as well as buildings with different needs and usage profiles. This user group is representative of challenges in an energy transition that could be experienced at the city level. The FED approach is assisted by co-finance from the EU European Regional and Development Fund, through the Urban Innovative Actions Initiative.

Further Information

Read more about the FED demonstration here.