Case Studies

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ANNEX 57

Flexibility by implementation of heat pumps in multi-vector energy systems and thermal networks

SthlmFlex, Sweden

Sthlmflex is a research project aimed to create and test a flexibility market in ”Storstockholm” (Greater Stockholm)

KEY FACTS

RD&D Status:
Ongoing large-scale demonstration of local flexibility market.

Demand response:
15 MW power reduction from central heat pumps used for production of district heating (winter 22/23)

Type of heat pump:
17 industrial scale central heat pumps

Energy distribution system:
Power grid and district heating

Control for the flexible heat pump operation:
Heat pumps owned and controlled by the district heating company Stockholm Exergi

Summary of the project:

Sthlmflex is an ongoing R&D project that has created and tests a flexibility market in Greater Stockholm. The project aims to release electrical power to the strained capacity situation for electricity supply in the area. Sthlmflex is the only flexibility market in Sweden that, in addition to increased coordination between DSO and TSO, also tests increased coordination and cooperation between DSOs.

Svenska Kraftnät, Ellevio and Vattenfall Eldistribution have chosen to jointly find solutions to the congestion problem and the operating situation in the Stockholm region. The project guarantees the security of delivery for utility customers in the Stockholm region and enables connection of new customers, both by buying flexibility services, but also by increasing capacity with a total regional subscription thanks to increased coordination,

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Flexibility from heat pumps in Stockholm Exergies district heating grid:

Stockholm Exergi participates in the project delivering flexibility in the power consumption from 17 industrial-scale heat pumps using alternative methods to produce district heat when the flexibility is activated. The marketplace handles both short term flexibility bids and bids for long term seasonal availability products.

For the winter season 2021/22 Stockholm Exergi participated with 10MW of power reduction from heat pumps and for 2022/23 Stockholm Exergi has offered 15MW of power reduction. The result for 2022/23 is not ready when this text is written, but in 2021/22 1MW of heat pump resources from Stockholm Exergi was activated twice, in total four hours. The total maximum electricity capacity need of Stockholm Exergi heat pumps in Hammarby and Värtan is 140MW.

Expected results:

- A regional market for electricity capacity
- Reduction of heat generation from large heat pumps can be used as a power capacity resource

FACTS ABOUT THE PROJECT

Place:
Sweden / Stockholm

Time Frame:
2020-2024?

Project owner/leader:
Svenska Kraftnät
Ellevio
Vattenfall Eldistribution

Project participants:
Flexibility service providers, for example Stockholm Exergi

Published articles:

Home page: https://www.svk.se/sthlmflex (in Swedish)

Contact Information/Links

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