

HEAT 4.0: Digital boost for energy efficiency at Brønderslev Varme A/S

Further development of existing IT systems and implementation of new software - as well as better data integration between component and software suppliers - have led to measurable energy savings at Brønderslev Varme.

Brønderslev Varme has participated in the Heat 4.0 project since the start in 2019. The working efforts had focused on optimizing existing systems, implementing new systems and establishing of a safe data sharing method across suppliers completed through the HEAT 4.0's cloud solution at Center Denmark.

In the cloud, new operating data can be continuously exchanged online in a secure and agreed format for the benefit of the HEAT 4.0 suppliers and universities, who can immediately work on the data.

Sub-projects:

1. Further development of the temperature forecast for controlling the flow temperature in the district heating network together with Enfor. Result: The pump power has been reduced and the supply temperature has been lowered.

In addition to this, new software has been developed that analyses data from a few, selected Smart Meters to generate a temperature forecast in a specific district heating area rather than, as today, using data from measuring points established in the district heating network. This has been done with great success with just 15 district heating meters as a reference.

2. Together with EMD, we have planned an on-going production forecast for all our 12 different production sites on an hourly basis. This forecast must be compared with our existing planning tool to demonstrate optimization of the costs of heat production. This application will be implemented within a short time.

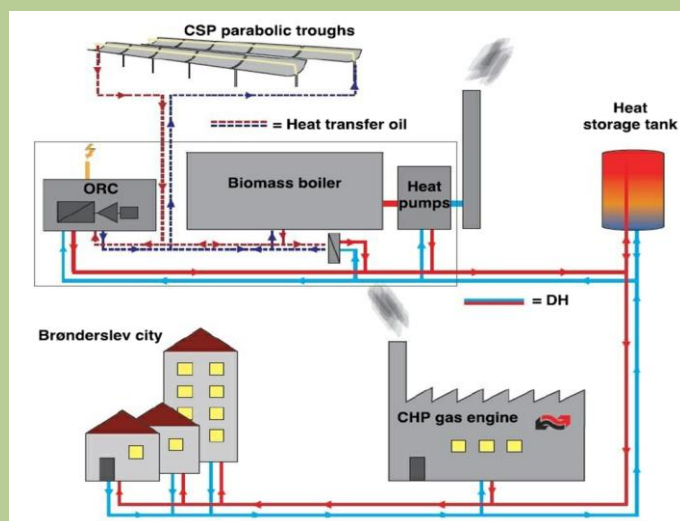
3. With Kamstrup as our collaboration partner, we have been able to analyze, via data from our consumer meters, whether the district heating branch service connections are defected or whether there are errors in the consumers' installations. This information gives a better basis for choosing the right places to renovate the network and may reveal unknown circuits located at consumers.

PARTNERS:

NIRAS (project manager), Dansk Fjernvarme, Brønderslev Forsyning, Trefor Varme, Hillerød Forsyning, Danfoss, Kingspan/Logstor, EMD International, Enfor, Neogrid Technologies, Leanheat (Finland), NorthQ, Kamstrup, DESMI, Center Denmark, DTU, and Aarhus University.

Modern heat supply with digital solutions incorporated

Brønderslev Varme has a state-of-the-art production plant consisting of a new biomass plant with ORC, a CSP solar heating system, a big electric boiler and a large, traditional gas-fired cogeneration plant (CHP) as backup.



More about HEAT 4.0

- Innovation Fund Denmark's investment: DKK 25 million
- Total budget: DKK 36 million
- Duration: 3 years
- Official title of Innovation Fund Denmark's project: HEAT 4.0 – Digitally supported Smart District Heating

Sub-projects (continued):

4. Together with Desmi, we have installed a monitoring system on one of our pumping equipments, which forms the basis for assessing the potential efficiency of the entire pumping system. Through this, we can measure whether the pumps are running optimal and thus most energy efficiently.

5. Together with Logstor, we have thoroughly measured and set up active monitoring system of the

alarm wires embedded in a local district heating network. The purpose is to detect and reveal any faults in the network at an earlier stage in order to prevent major damage.

6. Finally, Brønderslev Varme has benefited greatly from the collaboration with the universities that have participated in HEAT 4.0 project. In this cooperation operational data from our district heating system has been included in research contexts and in several publications.

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