Case Studies

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ANNEX 57

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

Jouw Energie Moment (JEM) 2.0 Breda, the Netherlands

Key Facts

RD&D Status: applied research on pilot

Type of heat pump:
Decentralized flexible heat pumps

Building description:
Residental

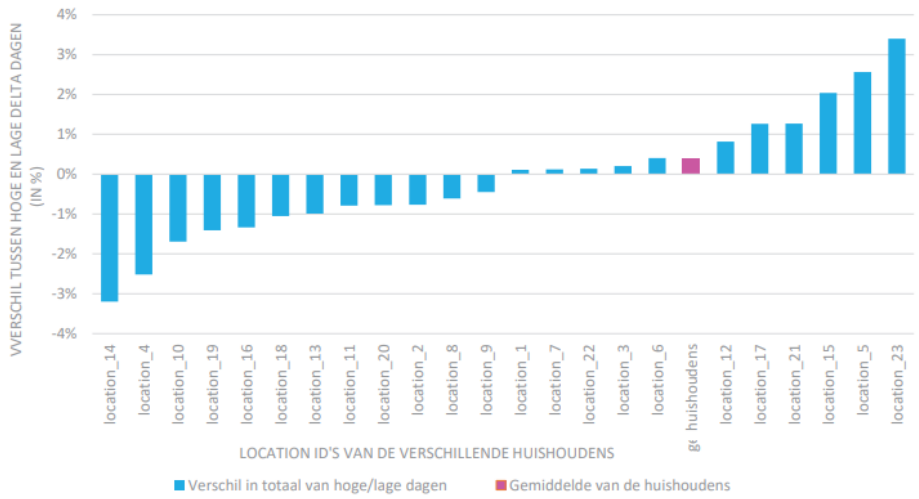
Energy distribution System:
Electric infrastructure

Energy Storage:
battery

Control for the flexible heat pump operation:

General description:
Acceptance flexible heat pumps in
39 households

Heat Source:
Electricity



Summary of the project

Flexible heat pump pilot 39 households.

- the development of a clearing system based on dynamic tariffs
- the development of a profitable business model for energy flexibility services
- the integration of storage options into the business model and settlement system demonstration in a realistic test environment

JEM 2.0 offered the opportunity to see on a small scale whether the business model for more energy flexibility in households works and is profitable. It was decided to implement two variants of the proposition in the pilot. A variant in which equipment (heat pump and battery) is smartly controlled (automatic demand management) and a variant in which residents could respond to the rates themselves based on insight into the dynamic rates (manual demand management). This made the pilot a good basis for solutions on a larger scale. The results of JEM 2.0 should ultimately contribute to the development of new services in the field of dynamic electricity tariffs

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Tariffs and informative bill

For this pilot, a settlement system and a settlement process have been designed that make it possible to provide attractive price incentives. In addition, the design makes it possible to distribute the proceeds fairly between all parties involved. During the pilot, the settlement system was partially implemented. Households received a settlement based on the dynamic rates. The settlement between parties in the chain has not yet been realized, because this was not yet an issue within the pilot context.

Results

The interviews showed that the heat pump as a heating system in a well-insulated home still takes some getting used to, despite the fact that many residents have had one in their home for a few years. It is sometimes too hot or too cold. On the one hand, because the system reacts slowly to weather changes. On the other hand, because the temperature sometimes ended up just outside the comfortable bandwidth due to the smart control. Participants did not gain insight into the consumption and control of the heat pump via the (web) app. Only the total consumption of the house was displayed. Several participants indicated that they wanted to know more and to have insight into the extent to which the smart control also led to savings. The response to the questionnaires also showed that participants generally consider it important to have control over the control of the heat pump. Finally, they expected benefits from the smart control of the heat pump

Recommendations: Provide consumers with clear information about how the smart heat pump works, how they can influence the operation of the heat pump and what the consequences are. Make that information available through a display or app, too. This way you also have the opportunity to support participants in case of problems or questions after the installation of equipment. Give residents feedback on the savings achieved with smart control. Advise participants on how best to ventilate the house to avoid dissatisfaction with their heat pump and to ensure that they can make optimal use of the heat pump. Also, give participants advice on what to do best in the event of a weather change or if the seasons change. (Opening a window, buying an electric heater, smartly choosing which rooms to heat.) Offer them alternatives and mention what effect they have on the comfort in the house.

FACTS ABOUT THE PROJECT

Place: the Netherlands

Time Frame: finalisation 2016

Participating organisations

Enexis Netbeheer B.V.

Capacity Energy Storage B.V.

Hezelaer Energy Services

Technolution B.V.

TNO

Vandebron Energie B.V.

Contact Information/Links

Your Energy Moment 2.0. - Top Sector Energy

Published articles:

Digitale Aggregatie en Collectieve Sturing van Hybride Warmtepompen - Topsector Energie

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