



## Optimised control and monitoring for building heating systems

To achieve a successful transition to the next generation district heating systems, with lower supply temperatures and with efficient operation based upon renewable heat production, the active engagement of buildings is a required step.

### Neogrid's digital services for buildings

As an actor within the district heating value chain, Neogrid focuses on service provision to support building energy efficiency and flexibility. On the one hand, online monitoring of ventilation, space and water heating installations automatically identifies irregularities in operation. On the other hand, optimised control reduces energy waste and decreases return temperatures, together with promoting heat consumption at the right time given the needs of the district heat network and production.

Neogrid's systems support different buildings types:

- Single and multi family houses
- Multi-family apartment blocks
- Office buildings
- Institutions and schools
- Shopping centres

### Key results within HEAT 4.0

In HEAT 4.0, the following capabilities of the system were demonstrated:

- Reduction of the return temperature to the district heating system (by up to 6 K at times in a low-energy house)
- Reduction of the contribution of buildings to the system peak load (by more than 50% demand reduction for an institutional building within the evening peak period)
- Reduction of the peak demand of an aggregate of buildings in the same area (by over 15% for a group of 36 apartment blocks)

Neogrid's control and monitoring system interfaces to the HEAT 4.0 cloud, which allows active coordination of the buildings with the HEAT 4.0-ready network and production optimization tools. This has been partially demonstrated within the HEAT 4.0 project, together with Enfor (network side), EMD International (production side) as part of the cross-system optimization initiative. However, due to the limited amount of buildings equipped with the system within the project, full-scale demonstration of cross-system optimization remained out of reach in the demonstrations.

### PARTNERS:

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

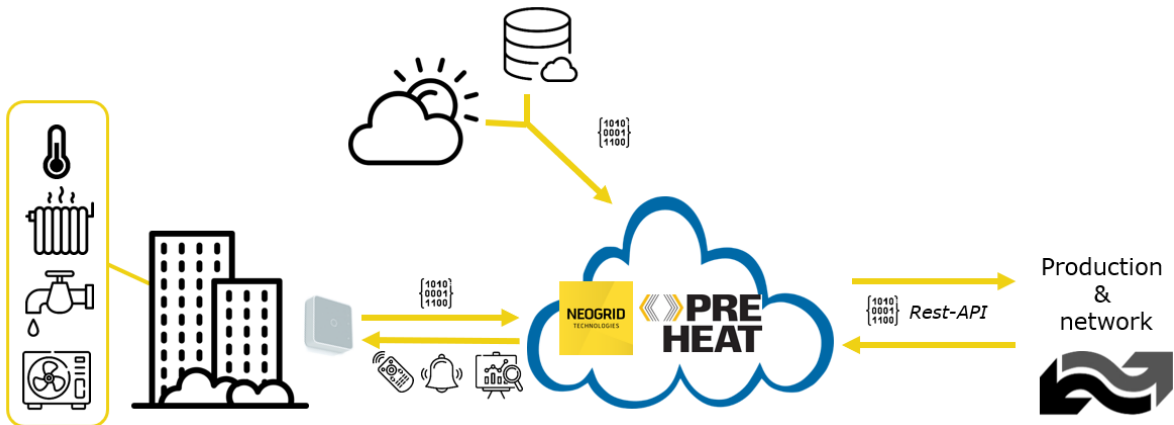
## Supporting district heating by improving building operation

The PreHEAT cloud energy management solution has been improved significantly through participation to HEAT 4.0. Its back-end now uses a state-of-art online analytics framework which is ready to interface to third parties - thanks to cross-inspiration between data-focused partners.

Moreover, open interfaces for data exchanges (such as the PreHEAT open API) and data exporters have been improved to facilitate interconnection to other actors, as the project has highlighted the need for greater openness and interoperability between systems in order to create value for buildings and

district heating systems. A notable example is the participation to the cross-system optimization initiative, which has sparked the development of innovative interfaces to production and network management tools.

Despite having only few buildings to demonstrate upon within this project, the technology developed in combination with Neogrid's experience is ready to scale up and unlock significant contribution to district-heating operation in the years to come, based upon the learnings from HEAT 4.0.



Neogrid Technologies is a small cleantech company based in Aalborg (Denmark) working with intelligent cloud-based energy visualization, monitoring and control, utilizing knowhow within wireless communication technology to develop energy solutions for both consumers, energy companies and 3rd party actors. For more than a decade, the company has actively contributed to technological innovation within the energy sector.

For more details about Neogrid and the PreHEAT solution, check : [www.neogrid.dk](http://www.neogrid.dk)

### More about PreHEAT

- Cloud-based solution for energy management in buildings operating 24/7 in in over 400 buildings
- Improves energy efficiency while securing heat comfort
- Enables energy flexibility
- Monitors operation and performance of heating installations

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