

ENGINEERING
TOMORROW

Danfoss

Leanheat® Building

Optimize the indoor climate and cut down the costs

The solution powered by AI and IoT saves money and ensures satisfied residents in multi-family buildings connected to district heating.

Save up to

20%

on energy costs
and up to 30%
on building
maintenance

Next-generation **smart** district heating **solution**

Leanheat® Building is a software solution to optimize the heating system of centrally heated multi-family buildings. Fully automated and selflearning, The system provides real-time optimization, not only for individual buildings, but for entire clusters of apartment buildings.

Leanheat® Building collects data from sources inside and outside the building and enables monitoring, data analysis and remote-controlled adjustment of parameters.

Optimal indoor climate and better economy

By securing an optimal indoor temperature and humidity level, the Leanheat® Building ensures significant improvements in the residents' day-to-day comfort. At the same time, the system ensures up to 20% savings in a building's energy costs by shifting the consumption of energy to the most economical period.

Moreover, Leanheat® Building creates up to 30% savings in a building's technical maintenance costs by providing accurate predictive problem detection. On top of that, the system can also lower your primary-side return temperature.

Easy to install with a healthy return on investment

For the actual heating control, the system will get building owners the most out of the current hardware. The process will also help to find out the most profitable new investments.

Leanheat® Building can be retrofitted into any building without major structural changes. In most cases, the wireless IoT sensors in the individual apartments can work with the existing controller in the substation. And even if a new compatible controller is needed, the structural changes to your heating system are small, allowing the savings from the system to capitalize quickly.

Current
Leanheat® Building
and relevant hardware
installations show an
average **ROI of
3.7 years**

Healthier
and more
comfortable
indoor climate
**at a lower
heating cost**



**Cut down
the costs.**
Increase
the comfort.



Better indoor comfort

Unlike many competing energy-efficiency systems that simply lower temperatures, Leanheat® Building proactively maintains the desired indoor conditions. Apartment sensors send information about high humidity levels and they proactively notify of potential risks to improve your residents' satisfaction and comfort.



Lower maintenance costs

Leanheat® Building creates up to 30% savings in technical maintenance costs by providing accurate predictive problem-detection – all while creating possibilities for new data services and devices to be developed. With the system building owners can send the right team with the right tools to fix a specific problem with no need for extra measurements or analysis.



Lower energy consumption

Building owners can save 10-20% of a typical building's energy costs. The Leanheat® Building solution uses AI to learn the building's thermodynamic behavior and optimally control the heating system. Heating is always optimized regardless of changes in weather conditions or in the building's properties, which change as it ages. Together with proactive fine-tuning, the system provides permanent energy efficiency to all multifamily buildings.



Lower power peaks

Leanheat® Building cuts up to 30% from the peakload demand. The AI-based system learns the consumption profile of domestic hot water and adjusts the heat consumption to either before or after peak hours. This balances the building's power usage and also contributes to a greener world.





A cloud-based solution ensures reliable and data-driven services

AI generates precise and accurate models

Leanheat® Building software utilizes the latest development in artificial intelligence to automatically generate very precise and accurate mathematical thermodynamic models of the controlled buildings.

With a cloud-based solution, the system collects data from:

- Sensors in the apartments
- Substation controllers
- Weather forecasts

Leanheat® Building solution includes:

Peak-load management

Heat source and central hot water production.

Predictive maintenance

Heating imbalance and accurate predictive problem-detection.

Energy efficiency

Predictive, self-learning, and adaptive.

Building monitoring

Controllers, temperatures, relative humidity and absolute humidity.

Mold prevention system

Indoor humidity level compared with outdoor humidity.

IoT data points

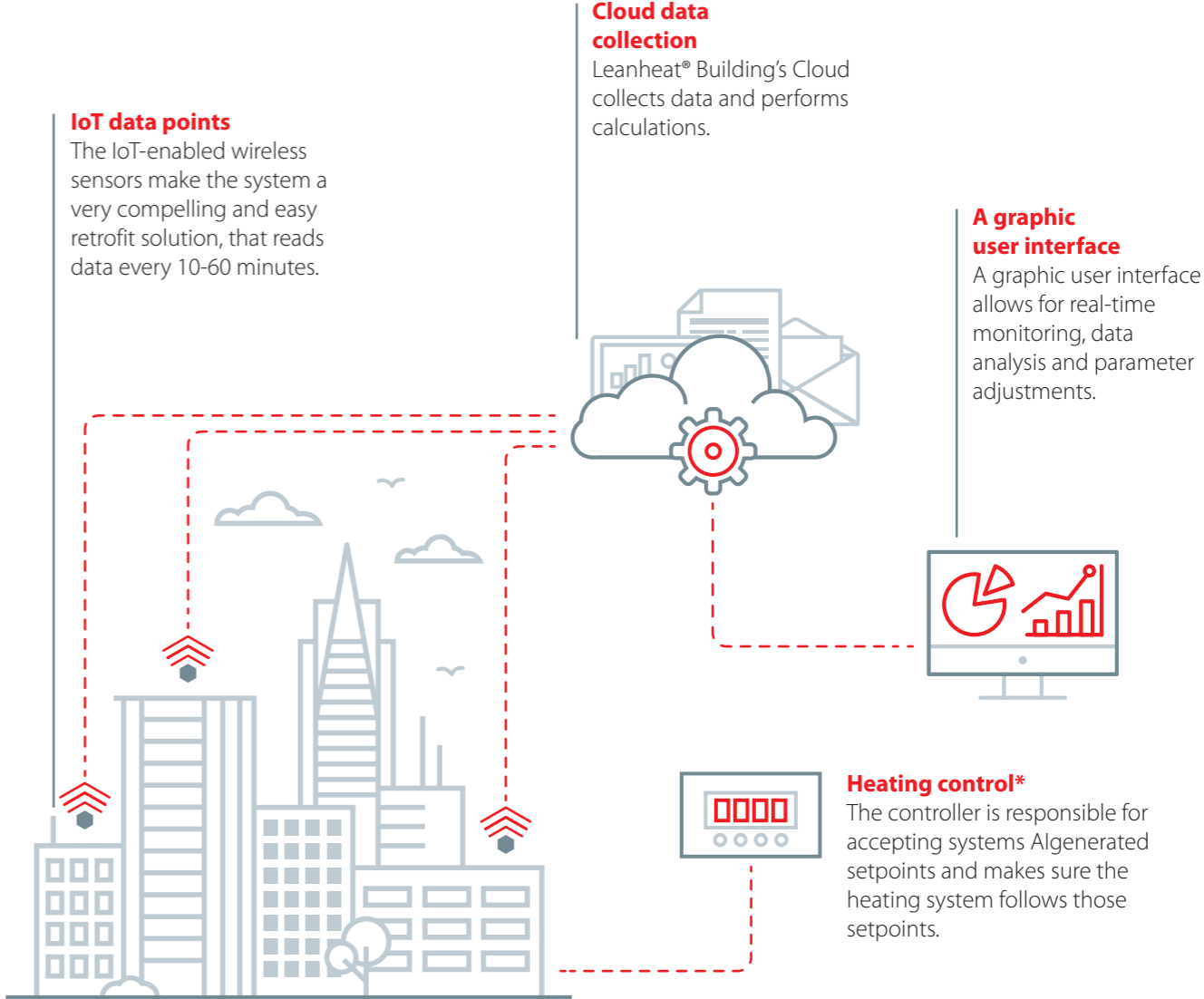
The IoT-enabled wireless sensors make the system a very compelling and easy retrofit solution, that reads data every 10-60 minutes.

Cloud data collection

Leanheat® Building's Cloud collects data and performs calculations.

A graphic user interface

A graphic user interface allows for real-time monitoring, data analysis and parameter adjustments.



* Leanheat® Building is a hardware-independent solution, which can work with most common controllers and indoor sensors. If the substation needs to be upgraded, we can provide one of the most applicable controllers, Danfoss ECL 310.

Case

Espoon Asunnot Housing Company

Result

- 10% lower energy consumption
- 24% lower average peak load
- >12% savings on peak load alone



Customer case

Espoon Asunnot Housing Company owns 15,000 apartments in Espoo, Finland. Espoon Asunnot applies Leanheat® Building software in all their apartment stock at 285 sites.

Target

To rationalize heat consumption and improve the apartments' indoor air quality. By using continuous measurement and AI, Espoon Asunnot wanted to curb the increase in housing costs.

Solution

A two-phase installation. The first phase focused on energy consumption and the second one on peak loads determining the basic fee for district heating.

Next-generation solutions from the leading provider

Danfoss Leanheat® Building's AI based IoT solution monitors, controls and optimizes the indoor temperature and humidity of buildings heated using district heating. Our solution improves the energy efficiency of properties, increases the operational efficiency of district heating companies and creates a healthier indoor climate for residents.

About Danfoss

For more than 75 years, Danfoss has been supplying innovative heating solutions that cover everything from individual components to complete district heating systems. Danfoss engineers technologies that enable the world of tomorrow to do more with less. We employ 28,000 people and serve customers in more than 100 countries. Driven by our customers'

needs, we build on years of experience to be at the forefront of innovation, continually supplying components, expertise and complete systems for climate and energy applications. Today, our advanced, reliable and userfriendly technology help to keep people comfortable and companies competitive across the world. This is how we are Engineering Tomorrow.

Read more online at danfoss.com