

ENGINEERING
TOMORROW

Danfoss

Discover an evolution in apartment heating and hot water

Danfoss EvoFlat™ application – Heating evolved

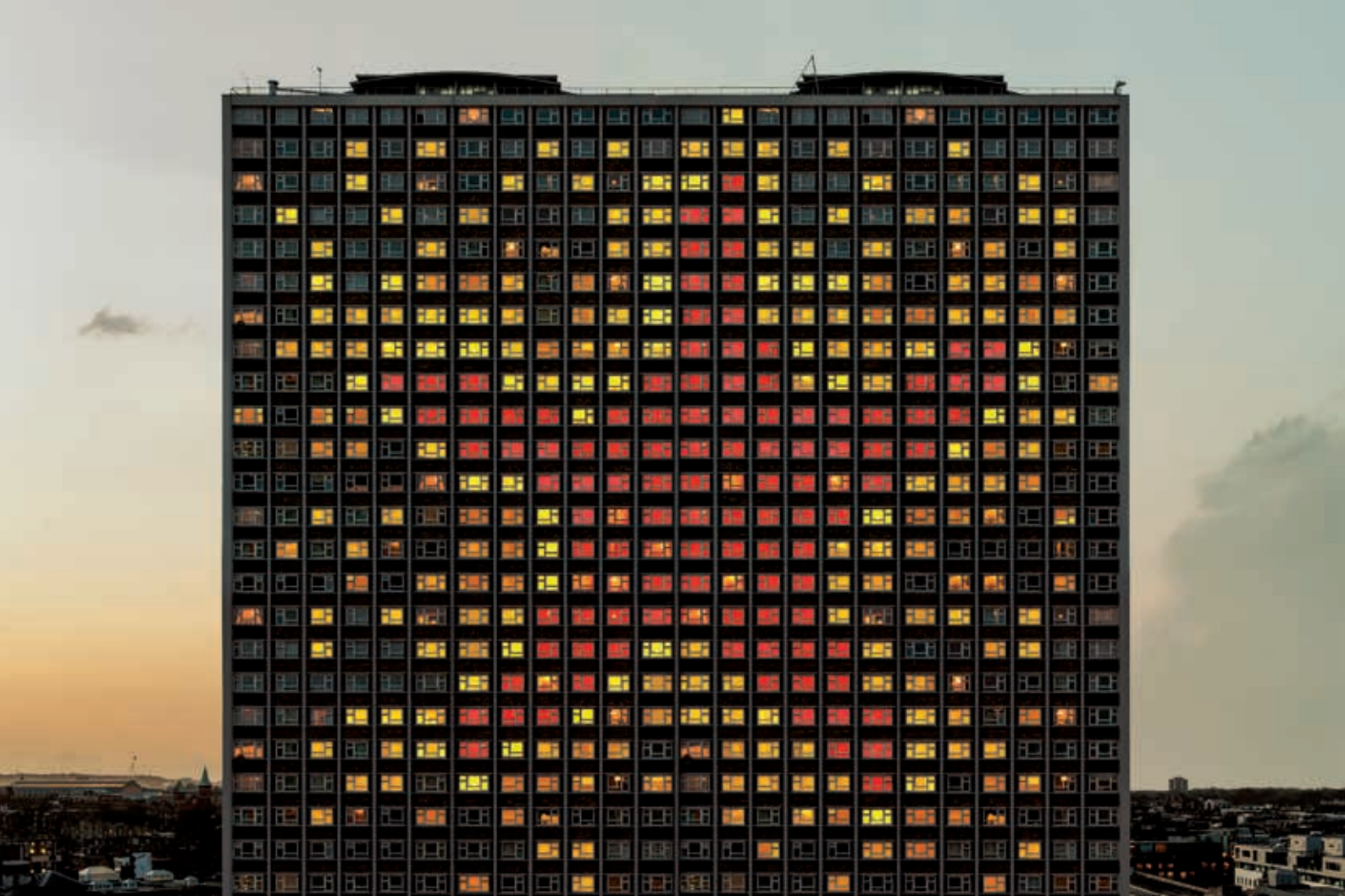


30%

lower energy consumption

Individual metering in each
apartment increases heat usage
awareness and dramatically
reduces energy consumption.

www.evoflat.danfoss.com



Innovation to help evolve your business

Rising energy costs and increasing demands for better comfort have made it difficult for housing associations, building owners and consultants to stay competitive.

At Danfoss, we understand these issues and have completely re-engineered the way domestic heating and hot water is produced, delivered and controlled.

Our new range of innovative products is a major leap forward in helping businesses like yours adapt to evolving needs, reduce costs and lower your carbon footprint.

The decentralized alternative

Apartment owners risk losing tenants when alternative accommodation becomes more attractive. The answer is to make sure your property is set up for optimal energy efficiency, hygiene and individual control.

Traditionally, buildings have relied on inefficient, expensive and inflexible central heating systems. By contrast, decentralized heating has proven a highly attractive alternative, with significantly better return on investment, greater safety and a reduced environmental impact.

- **Buildings use more than 40% of Europe's energy and are responsible for 40% of CO₂ emissions**
- **Heating fuel accounts for 57% of the EU's domestic energy consumption, while water heating accounts for 25%**
- **Renovation, insulation and energy efficient systems can reduce the energy consumption of a building by as much as 83%**

EvoFlat from Danfoss

EvoFlat helps you translate the advantages of decentralized heating into tangible benefits for your customers - and your business.

The EvoFlat station is a complete heat transfer unit for domestic hot water and heating in flats and multi-family apartment buildings. Using a decentralized network, the system can be fuelled by all heat sources, including renewables, to provide instantaneous hot water, differential pressure control of the heating and DHW system and full energy consumption metering.

For the end-user, this means that the EvoFlat station can be adjusted to suit their individual needs and can control the amount of energy used, which results in lower heating bills.

For building owners, it means more satisfied tenants, a lower carbon footprint and a more secure and profitable bottom line.

EvoFlat - next generation heating for renovations and new builds



The new EvoFlat solution from Danfoss offers a wide array of advantages for your building, your customers and your business.

Efficiency, energy and the environment

- Highest energy efficiency from a central heat source
- Easy renewable energy source integration
- Revolutionary Micro Plate™ heat exchanger performance
- Optimum boiler operation with longer burner run times
- Higher utilization of solar and condensing systems
- No CO₂ emissions when connected to district heating
- No additional pump energy used

Installation and commissioning

- Low space requirements with in-wall and shaft installation
- Lower installation costs with only 3 ascending pipes
- Easier hydronic balance with integrated differential pressure for DHW
- Step-by-step renovation in occupied flats (flat-by-flat conversion)
- No need for connections re-tightening

"We aim at bringing the full benefits of decentralized heating systems to all those involved with apartment block living.

This means better return on investment, lower overall costs, greater comfort and safety and reduced environmental impact."

Ana Perasic
Danfoss District Energy Division



Safety and hygiene

- No open fire source in apartment (gas boiler)
- No gas leakage in apartment
- No legionella bacteria growth*
- Do not need any regular hygienic approvals due to decentralized water heating

* Meeting requirements from the German Trinkwasserverordnung



Convenience and cost transparency

- Continuous heating comfort throughout entire year
- Better domestic hot water supply with individual "fresh" water systems
- High tapping capacity with respected flat stations sizes
- Accurate billing with meters in every station
- Easy recording and billing per unit with remote read-out systems

Maintenance and service

- Just one or none (depending on source) chimney sweep visit
- Easy service and maintenance
- Faults usually affect one system only
- Suitable for both renovation and new build



83%
reduction

of energy consumption can be achieved by renovation, insulation and installation of energy efficient systems in a building.

From a traditional vertical mindset...

Energy efficient with full control

An EvoFlat system consists of hydraulic interface units and horizontal pipes in each apartment, supplied with hot water from a highly efficient central boiler in the basement.

A decentralized heating system incorporates a buffer tank that can be supplied by any heat source available. The system remains equally efficient regardless of any subsequent changes and updates to the building's heat supply.

Flat stations applied in an EvoFlat system typically incorporate a compact heat exchanger for instantaneous domestic hot water and a multi-functional control valve to ensure a continuous supply.

EvoFlat systems are the modern replacement for traditional centralized heating and hot water solutions, such as:

- Central heating and central domestic hot water supply using central boilers fuelled by oil, gas, pellets, etc.
- Gas-fired combi-boilers installed in each apartment to produce heat and domestic hot water
- Central heating using a gas or oil-fired boiler complemented by an electrical water heater in each apartment for domestic hot water

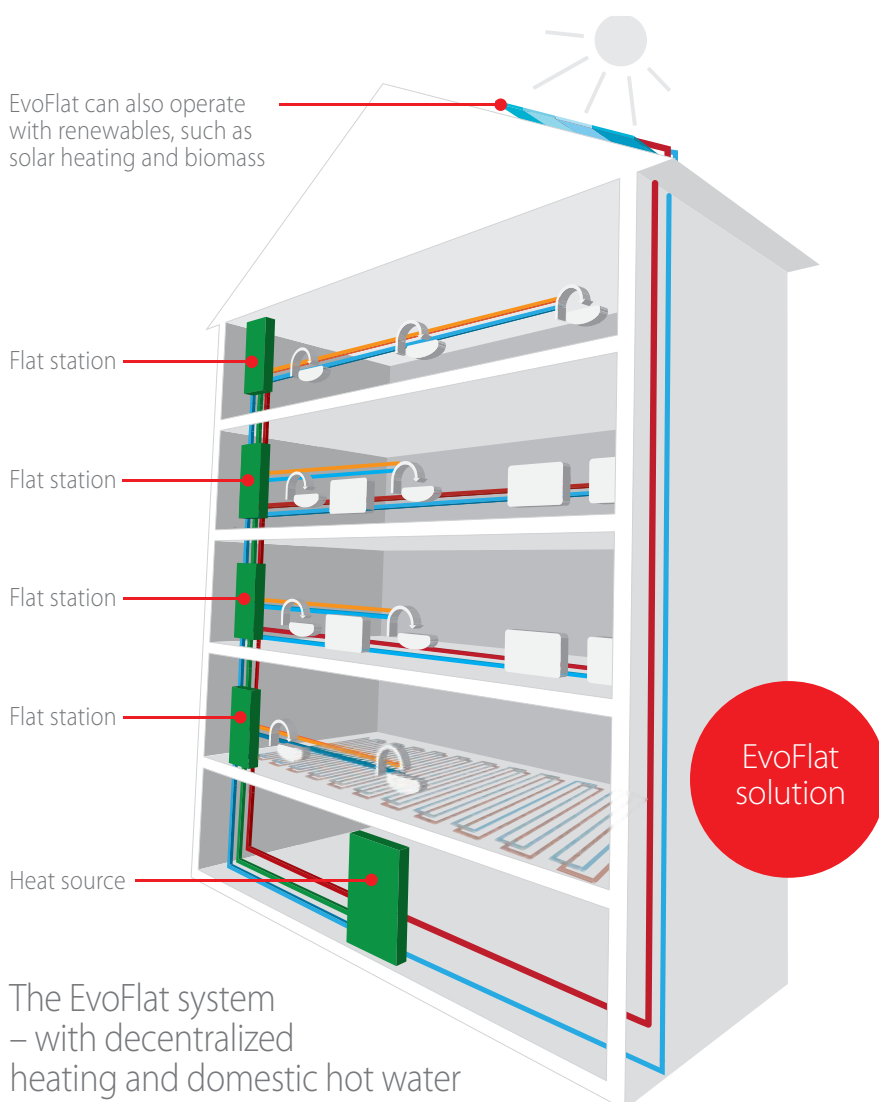


Traditional solution

Traditional centralized heating and hot water system



...to modern horizontal solutions



EvoFlat benefits

During planning and installation

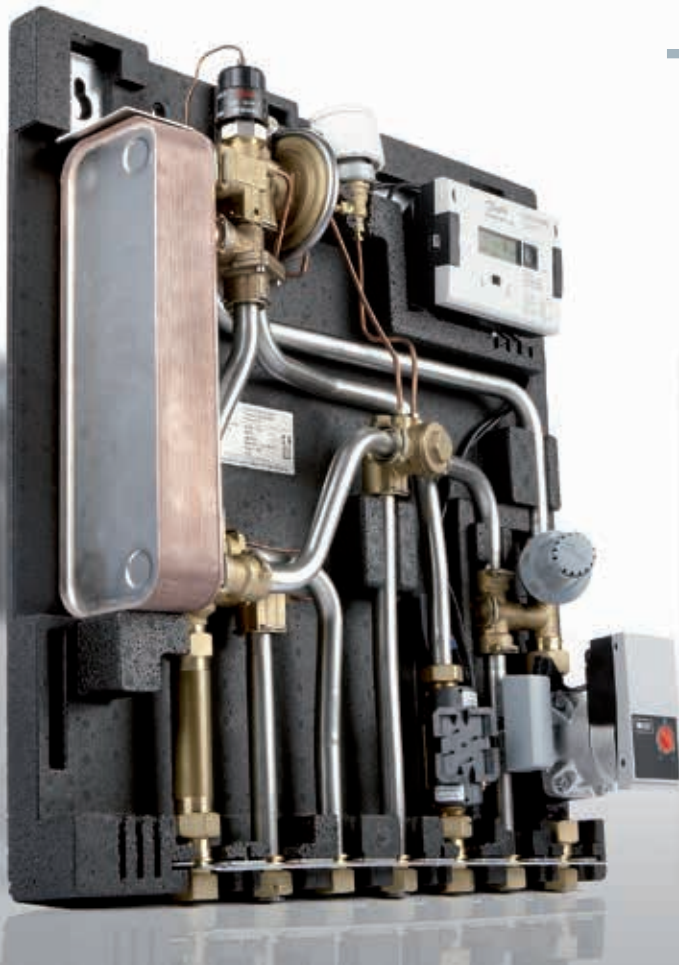
- Cost-effective for new installations as well as refurbishment / renovation
- Compact, space-saving design can be built into walls, stairwells or shafts
- Easy to install with only 3 ascending pipes and no floor slab penetration

During use

- Low operating temperatures reduce energy loss and operating costs
- Accurate, reliable metering and billing for each apartment
- Faults and consumption can be monitored and recorded
- Individual temperature control
- Individual instantaneous production of domestic hot water
- Minimal risk of bacteria growth
- Exceptionally low service and maintenance costs
- Requires less hardware than centralized solutions
- Reduces energy wastage through large circulation pipes



The right solution for you



We offer a complete range of EvoFlat stations that are compatible with all types of new apartment blocks and suitable for the refurbishment and renovation of existing buildings.

Parameter	EvoFlat system with flat stations	Individual gas boiler	Decentralized domestic hot water	Centralized boiler and domestic hot water	Solar powered domestic hot water
Individual metering and billing	✓	✓	÷	÷	÷
Efficient exploitation of heat energy	✓	÷	÷	÷	✓
Eliminate risk of bacteria growth	✓	✓	✓	÷	÷
Individual comfort	✓	÷	÷	✓	✓
Full flexibility of heat source	✓	÷	÷	✓	÷
Space-saving system installation	✓	÷	÷	÷	÷
Reduced service requirements	✓	÷	÷	÷	÷
Installation safety and convenience	✓	÷	✓	✓	✓
Reduced complexity of piping	✓	✓	✓	÷	÷
Shorter piping runs	✓	✓	✓	÷	÷
Individual water storage tank saving	✓	✓	✓	÷	÷
Central boiler saving	÷	✓	÷	÷	÷

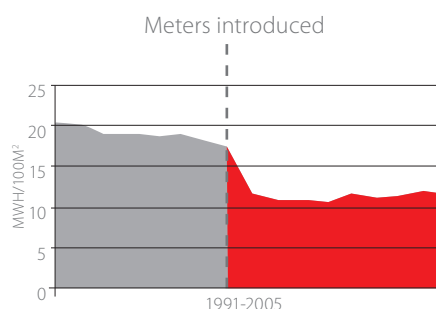
The evaluation shown above is based on application complexity, total system costs, building ownership and end-user living comfort.

Documented benefits of EvoFlat systems

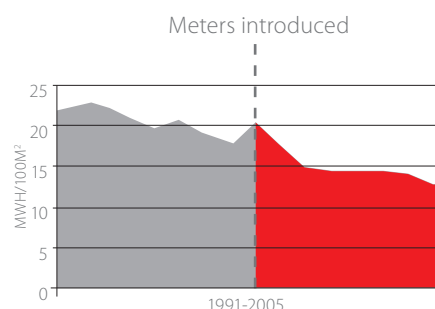
The idea behind the decentralized system for heating and domestic hot water is not new and the benefits of such systems are well documented.

Better value for tenants

When residents pay for what they use, they tend to keep a critical eye on their energy consumption. A study carried out in Denmark in 1991-2005 examined the actual energy consumption before and after individual meters were installed. The results clearly showed that individual metering significantly reduces energy consumption per square meter by as much as 15-30%.



Housing association "Hyldebjerg"
Individual metering since 01.1998

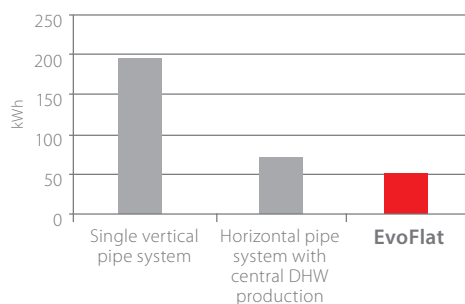


Housing association "Morbærhaven"
Individual metering since 01.2000

Reduce energy wastage

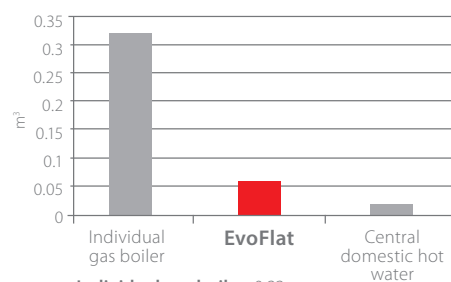
A 2008 study compared the different distribution systems available for apartment blocks and multi-family houses by comparing an EvoFlat solution with a single vertical riser pipe system and a horizontal riser pipe system with centralized production of domestic hot water.

The study revealed that compared to modern centralized domestic hot water solutions, EvoFlat reduces heat loss from the pipes by more than 40% and by as much as 80% compared to traditional one-pipe solutions.



Fit more into less space

Compared to individual gas-fuelled boilers, which are often combined with a storage tank, an EvoFlat station takes up about 80% less space and can be mounted in a wall or small cupboard. It is true that flat stations take up a little more space than centralized domestic hot water systems, however they are still very unobtrusive and free up considerable space in basement areas.

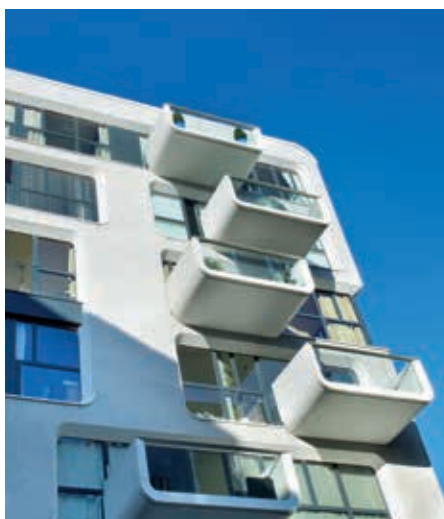


Individual gas boiler: 0.32.
Boiler (0.15 m³) + chimney (0.17 m³)

EvoFlat: 0.062. Flat station (0.062 m³)

Central domestic hot water: 0.02.
Water meter (0.01 m³) + heat meter (0.01 m³)

* Storage tank in basement will take up significantly more space than in a EvoFlat solution



Renewable energy flexibility

EvoFlat makes full use of alternative energy sources via a buffer tank which collects the heated water and distributes it to individual apartments. Individual flat stations ensure that the heated water is distributed to radiators at the desired temperature. Each of these flat stations are also fitted with a fresh water system, which sufficiently heats the domestic water only when needed and keeps the supply bacteria-free.

Learn more about how EvoFlat can heat up your business

For over 75 years, Danfoss has been supplying innovative heating solutions that cover everything from individual components to complete district heating systems.

Today, our advanced, reliable and

user-friendly technology is helping to keep people comfortable and companies competitive on every continent, worldwide.

To find out more about how EvoFlat can heat up your business, please visit us at:

www.evoflat.danfoss.com



Location:	Sonderborg, Denmark
Project name:	SAB housing association
Project period:	2009-2010
Customer:	SAB
Application/purpose:	Fulfill low return temperature requirements, reduce energy loss and revise billing system
Scope of Danfoss delivery:	324 pcs. Danfoss flat stations



Location:	London Docklands, UK
Project name:	Indecon Court
Project period:	2008-2009
Customer:	SAV Systems
Application/purpose:	364 new luxury apartments required state-of-the-art heating efficiency
Scope of Danfoss delivery:	364 pcs. Danfoss flat stations



Location:	Cologne, Germany
Project name:	FORD Siedlung
Project period:	2009-2010
Customer:	LEG Wohnen GmbH
Application/purpose:	Refurbishment of 300 flats with the purpose to reduce energy consumption by > 80%
Scope of Danfoss delivery:	300 pcs. Danfoss flat stations



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