Danfoss District Energy
Domestic Hot Water Systems

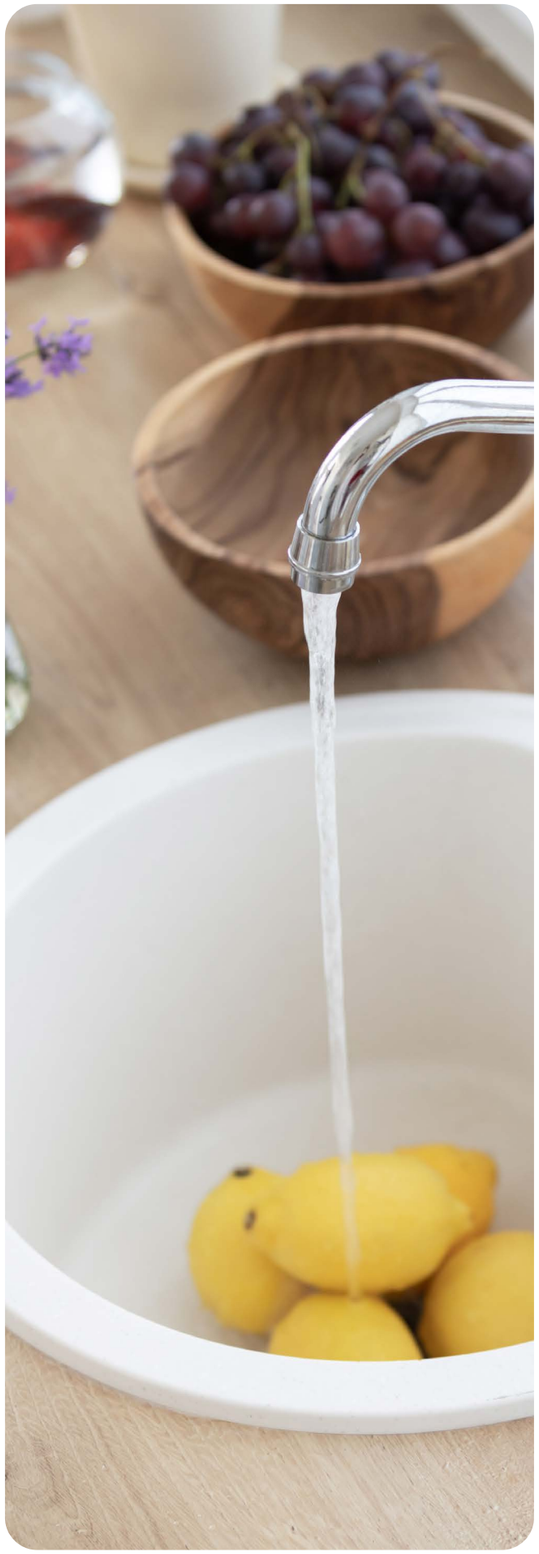
Safe, reliable and efficient domestic hot water solutions

60°C

We help you reach and maintain a safe temperature for your domestic hot water system.

Water is our most important resource

Millions of households across Europe depend on their local municipalities to supply safe drinking and hot water when they need it. Municipalities, local and national authorities set high standards, regulated by law, for the quality of water and the systems used to heat and distribute it. In this brochure, we address how planners, installers and operators of drinking water systems can design and implement safe, high-quality water systems that comply with legislative requirements and ensure their customers' health and safety.



The fight against legionella

According to the European Commission, almost 100% of the drinking water, provided by major suppliers, is safe to drink across the EU.[1] Despite this fact, bacteria such as Legionella, continue to pose a danger to our health. First identified in 1976, Legionella pneumophila is a species of bacteria commonly found in natural environments, such as soil and water. However, when Legionella grows with temperatures between 25-45 °C within water systems inhalable aerosols can be produced in air conditioners, hot tubs and showers that can cause Legionnaires' disease. This severe form of pneumonia poses a significant health risk for vulnerable population groups, such as children, the elderly or individuals with compromised immune systems.

In 2021, there was a significant surge in Legionnaire's disease throughout the EU, with over 10,700 cases reported and 704 known fatalities. Italy, France, Spain and Germany accounted for 75% of all reported cases, with males aged 65 years and above being the most affected group.[2]

Legionella outbreaks are often linked to faulty water systems, where stagnant warm water lets the bacteria grow and spread.

[1] https://environment.ec.europa.eu/topics/water/drinking-water_en
[2] https://www.ecdc.europa.eu/en/news-events/increasing-rates-legionnaires-disease-eueea

How to win the fight

According to the European Centre for Disease Prevention and Control, one of the factors leading to the surge in Legionnaire's disease is "the design, infrastructure and maintenance of water systems used in buildings". So, water system designers, installers and managers play a crucial role in preventing legionnella growth. For more than two decades, Danfoss has worked with water utilities to design safe, efficient Domestic Hot Water (DHW) systems. By using a combination of thermal balancing and disinfection, our solutions effectively reduce the risk of legionella contamination, while improving energy efficiency and user comfort.

We're here to help you – from planning to maintenance

With decades of experience working with drinking water systems, our team of specialists are ready to assist you in selecting and designing your domestic hot water system. Our specialists use the DanAqua planning software—an electronic planning tool that not only addresses the issue of Legionella but also considers overall drinking water hygiene and energy-efficient design.

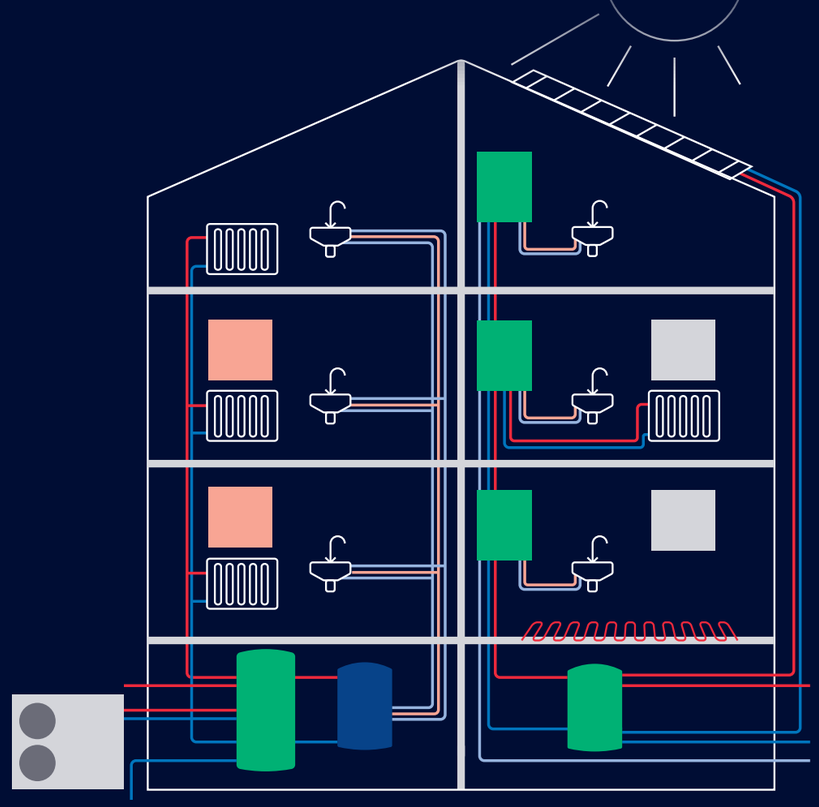
Centralized domestic hot water systems

Centralized domestic hot water systems,- as the ones shown in the following pages of this brochure, can utilize heat from any available energy source. This can be achieved either through a buffer storage tank or by using a dedicated heat exchanger for each energy source.

In addition to the two pipes supplying domestic hot water and cold water to individual apartments, a third pipe circulates water between the apartments and the central system. This circulation ensures the water remains at the correct temperature at the tap, allowing for instant use when needed. All centralized domestic hot water systems are equipped with legionella prevention programs.

Centralized heating and domestic hot water systems

- 5 Supply lines
- Central Heating System
- Central Hot Water preparation
- Connection to solar, heat pump or district heating



Decentralized apartment stations with integrated fresh water system

Decentralized apartment stations with integrated freshwater systems—such as EvoFlat™ and Termix VMTD—can operate using heat from all available energy sources which is accumulated in the buffer storage tank. These systems require only three supply lines from the boiler room to the apartment station, instead of the usual five, to serve both the heating system and domestic hot water consumers.

Each apartment station features an instantaneous, decentralized water system that heats drinking water on demand, without the need for a storage tank. With optimal planning and placement of the apartment station, the pipe volume between the water heater and the furthest tap can be kept below three liters, significantly reducing the risk of legionella.

To eliminate waiting time for hot water at the tap, a small amount of energy is used to circulate water from the heat source to each apartment station during periods of no consumption.

Check out the solutions here:

EvoFlat™ 4.0

Termix VMTD and AkvaLux II

The EvoFlat 4.0 or Termix VMTD Systems

- Decentralized hot water preparation
- 3 supply lines
- Buffer storage tank for heating water from all available heat sources
- Connection to solar, heat pump or district heating

Centralized domestic hot water systems

The Right System for Every Task

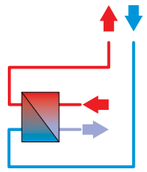
	Termix BV	Termix BL	Thermodual®						
			FLS (Combi/Mini)	CIR	S	CM	Multiheat	Legiomin	ThermoClean
Thermostatic control					●				
Thermostatic hydraulic control									
Electronic control	●	●	●	●	●	●	●	●	●
Domestic hot water heating in flow-through system	●		●	●					
Storage loading system		●			●	●	●	●	●
Thermal barrier								● (60°C)	● (70°C)
Thermal disinfection		●	●	●	●	●	●	●	●
Legionella elimination									●
Drinking water hygiene	●	●	●	●	●	●	●	●	●
Preheating via alternative heat source							●		

Our products adhere to key European standards and regulations, including TrinkwV, ACS, GeG, PZH etc., ensuring comprehensive compliance across multiple regions.

Centralized domestic hot water solutions

Flow-Through System

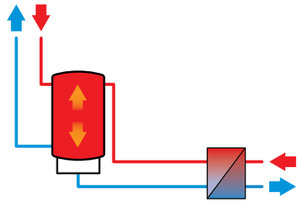
Instantaneous water heaters



Termix BV

If sufficient energy is available for domestic hot water heating, a pure flow-through system is suitable.
The cold drinking water is heated in counterflow to the hot water from the heat source through a heat exchanger. The system continuously regulates drinking water temperature based on demand. It supplies only as much hot water as is currently needed, operates with high efficiency and does not require a drinking water storage tank.

Fresh water modules



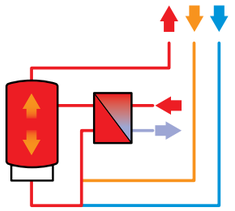
Thermodual® FLS and FLS COMBI/MINI

Fresh water modules provide hot water, based on the instantaneous principle and only as it is needed. The primary side contains a high-efficient pump to control the flow to the heat exchanger and thus obtain the required DHW temperature. The module with the pump can be connected to the accumulation tank. You can use different energy sources to supply the accumulation tank, including solar, boilers, district heating or heat pumps.

The module's secondary side is connected to the domestic cold and hot water and is equipped with a recirculation kit. This side consists of a flow sensor for DHW temperature control.

Storage Charging System

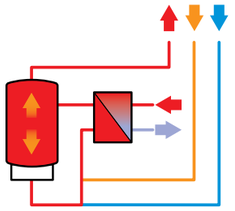
For middle size residential and commercial buildings



Termix BL

Termix BL is a fully insulated, instantaneous water heater with brazed heat exchanger and electronic controls.

The Termix BL is for charging systems with large momentary demands for domestic hot water or in installations with relatively low supply capacity.



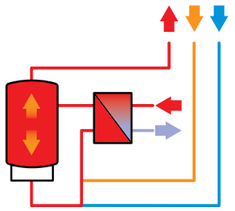
ThermoDual® CM (Charging module)

The ThermoDual® CM provides domestic hot water through an advanced storage charging system, ensuring maximum hygiene and reliability. The system operates according to the principles of thermal disinfection, maintaining a high constant reaction temperature to protect against Legionella bacteria in the domestic hot water system.

When paired with our SE/SES stainless steel tanks, the system delivers a secure hot water supply even during peak demand, while offering energy efficiency, flexibility in energy sources and consistently high-quality water.

Storage Charging System

For large volumes of hot water with fluctuating demand

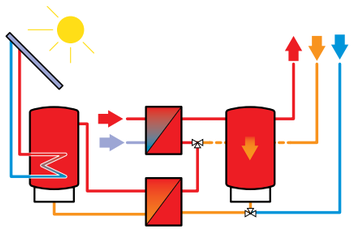


ThermoDual® S

In hotels, restaurants, sports halls, schools and nursing homes, varying amounts of domestic hot water are required at different times. A storage charging system is well-suited for these situations.

The ThermoDual® S storage charging system consists of a flow-through water heater combined with one or more storage tanks. While the heat exchanger provides a continuous basic supply, the storage tanks cover peak demand. The entire system is designed so that the available heating energy and storage volume fully meet the total hot water demand.

Multivalent charging systems for integrating renewable energy sources

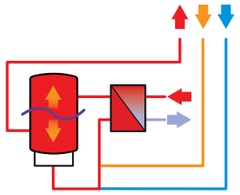


ThermoDual® MultiHeat

ThermoDual® MultiHeat is designed for use in systems with renewable energy sources, such as heat recovery, solar or geothermal energy. Since these energy sources do not provide a constant temperature or heat supply, you need a storage unit to supplement their heating energy. The storage tank is the main heating source for the production of 60 °C drinking water. If there isn't enough renewable energy available, the control system activates a secondary energy source (e.g. district heating or a boiler) to achieve the desired temperature.

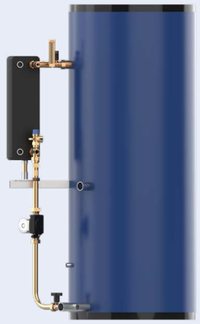
Storage Charging System

For reduced Legionella growth through defined retention time

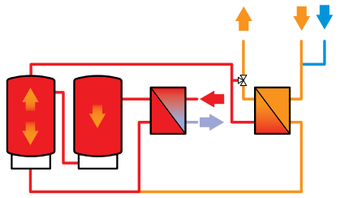


ThermoDual® Legiomin S

Standard storage charging systems, even when operated at high temperatures, do not provide reliable protection against Legionella. That's why the Legiomin® storage tank features a special reaction chamber that ensures a defined retention time of the water heated to at least 60 °C, thereby preventing Legionella growth.



Anti-Legionella system with thermal disinfection

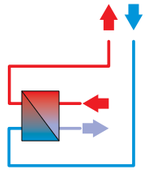


ThermoClean®

Unlike conventional storage charging systems, the ThermoClean® features a combined storage tank with a reaction chamber or a separate reaction vessel in which the heated drinking water remains at 70 °C for at least 5 minutes. These systems are available in standard sizes for all common performance ranges, with connection capacities up to 536 kW and circulation water volumes of up to 11,700 l/h.

Storage Charging System

Reheat or maintain the temperature of the building domestic hot water loop

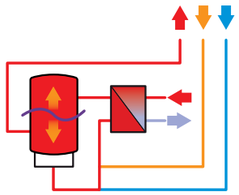


ThermoDual® CIR

The ThermoDual® CIR system ensures hygienic domestic hot water production by maintaining sufficient temperatures throughout potable water networks, effectively preventing Legionella growth. It features optimized circulation management, efficient cooling of the heat transfer fluid, and optimal energy utilization. The system allows independent selection of the primary energy source while keeping the network temperature constant, even in large installations.

Tanks

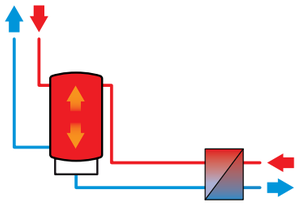
Drinking Water Storage Tank



Type SE, SES, SEK-LK, SE-RG

Stainless steel drinking water storage tanks and storage water heaters of potable domestic hot water to ensure enough water during the pick load in the buildings.

Heating Buffer Storage Tank



Type PSS

Carbon steel heating water storage tank ensuring the pick load for the instantaneous water heaters.

Professional installation and commissioning

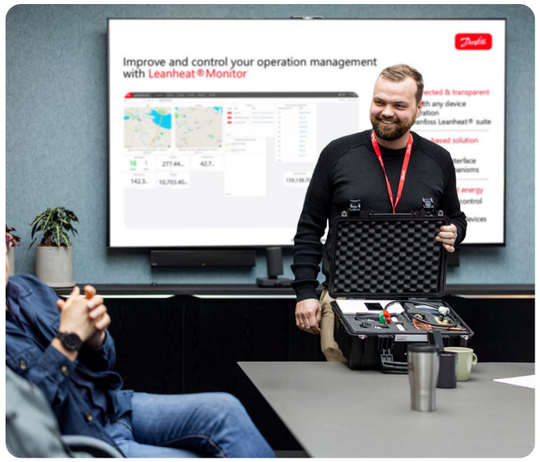
Once you've selected the system that meets your needs, our team of experts is here to help you commission, maintain and, if necessary, repair your system. That way, we ensure that you have a safe, reliable domestic hot water system that complies, and continues to live up to, local, national and international regulations.

Leanheat® Monitor boosts network and building efficiency

Real-time monitoring of controllers is one of the keys to optimizing your district energy system and improving operational efficiency. Leanheat® Monitor enables you to connect devices within your district energy system, such as substations, controllers, production units, meters, network measurements, as well as third-party sources (e.g. weather forecasts), into one secure system.

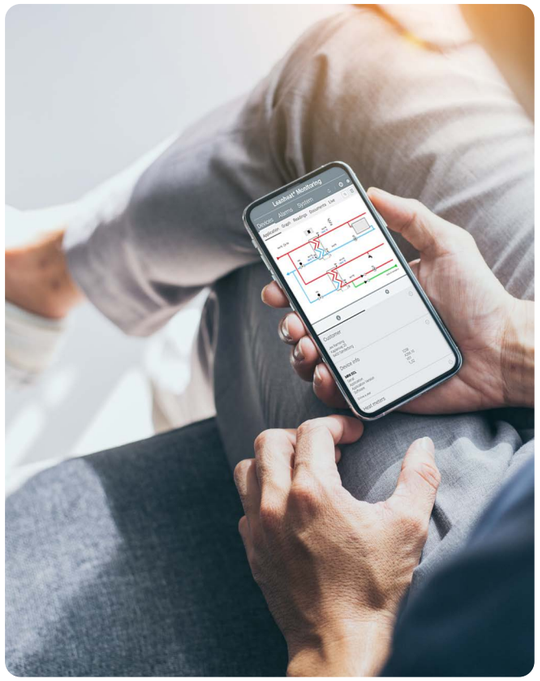
Use Leanheat® Monitor to lower your operation costs, improve efficiency and manage your operations, all while complying with GDPR and other legislative requirements.

You can also pair it with Leanheat® Network, Danfoss' thermo-hydraulic modeling tool, to further plan, visualize and optimize your entire district energy distribution system.



Remote system management

Purpose-designed for Danfoss substations, the Danfoss ECL Comfort 310 controller provides a simple and effective way to control your heating and hot water system in one or several buildings. You can manage your system either directly from your smartphone, via Leanheat® Monitor or by using the ECL controller's highly intuitive interface.



Try it today >

Go online and create your user account now:
https://app.lhm.danfoss.com/

3 good reasons to choose Danfoss

Danfoss has been at the frontier of defining district heating engineering for almost 50 years.
Adding to our leading product portfolio, you get:

01

Application experts

Access to application experts with deep understanding of your challenges.

02

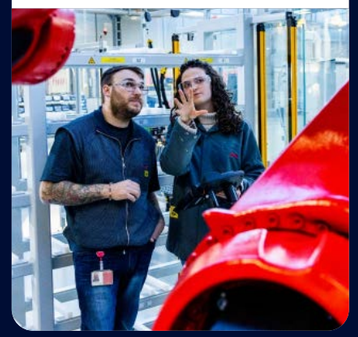
Quality first!

Manufacturing to the highest standards, including ISO 9001/14001 and ISO/TS16949 certifications.

03

Dedicated partner

A full-service, reliable, and dedicated business partner for you with more than 50 years of experience in the district heating business.



Explore our solutions
districtenergy.danfoss.com

Your decarbonization partner

Improving energy efficiency – one building at a time

As we've highlighted in this brochure, Danfoss offers a range of reliable, efficient and safe domestic hot water systems for residential and commercial buildings of all sizes. But our expertise goes beyond heating drinking water. For more than 75 years, we've worked with building owners to improve the way their buildings use energy, from optimizing the way the energy flows through the building, to connecting buildings to more sustainable energy sources through district heating, to using digtal technology to make buildings smarter. Let's talk about how we can meet your building's energy needs in the safest, most efficient manner possible. Get in touch.

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