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ENGINEERING  
TOMORROW

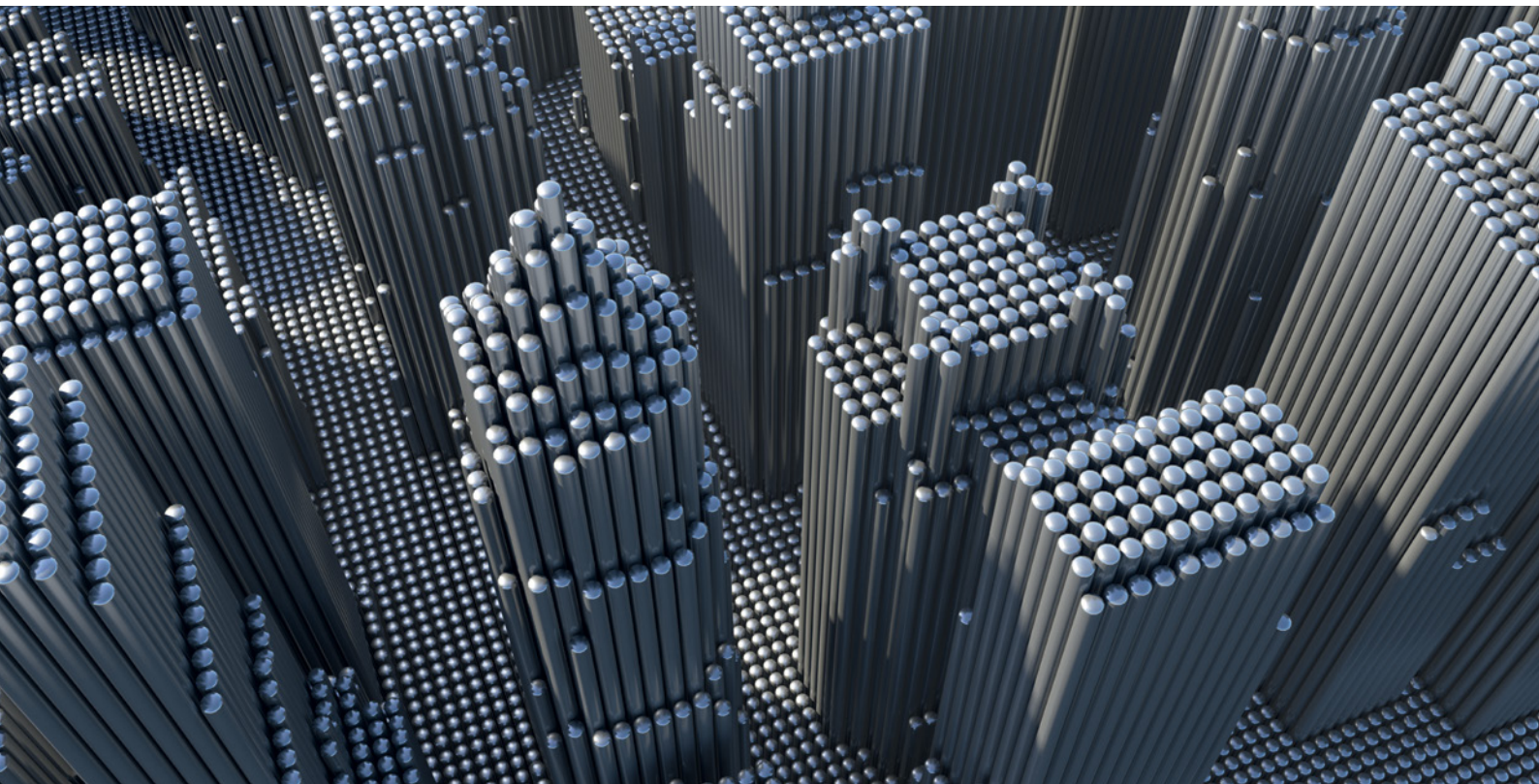
*Danfoss*

Brazed Micro Plate™ and Fishbone heat exchangers

## Ultra-efficient brazed heat exchangers for your applications

Featuring the revolutionary Micro Plate™ technology – innovation transferred

Up to  
**10%**  
better heat transfer

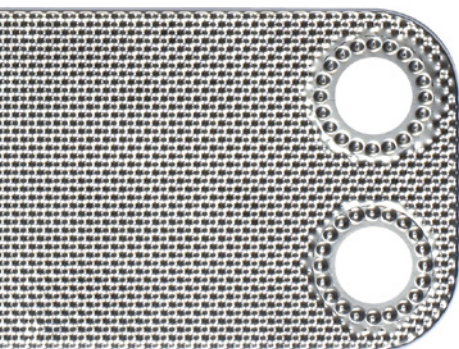


# Adaptable to **you**

At Danfoss we believe in driving innovation to create heating solutions that meet your needs more closely and with greater flexibility. Today, by re-engineering the core technology that makes a real difference to performance, our new range of brazed heat exchangers delivers unmatched heat transfer and energy efficiency.

## 21st century performance

Even though significant improvements have been made across the heat transfer technology, traditional brazed heat exchanger plate design has remained the same for over 40 years. At Danfoss we recognise that times have changed and your needs have grown alongside the demands of your systems and the people they serve.



In order to provide you with better and more flexible heat exchanger solutions, we've developed an entirely new approach to plate design. Our brazed heat exchangers with new state-of-the-art Micro Plate™ technology feature next generation efficiency and performance – giving you more from your liquid-to-liquid applications.

## The Micro Plate™ revolution

Using our Micro Plate™ technology, Danfoss heat exchangers outperform other solutions on the market with better **thermal and hydraulical performance**.

The unique plate design means your application can even be individually recalibrated to match your specifications – so you choose what's best for your system



## Designed for HVAC

Danfoss is known worldwide as an innovation leader within the heating industry, with unrivalled expertise in HVAC.

We have applied this knowledge to our new brazed heat exchangers with a complete range of types suitable for virtually every liquid-to-liquid application and network. Whether your system has varying or constant pressure and large temperature swings, we have the perfect solution for you.



# A world of applications

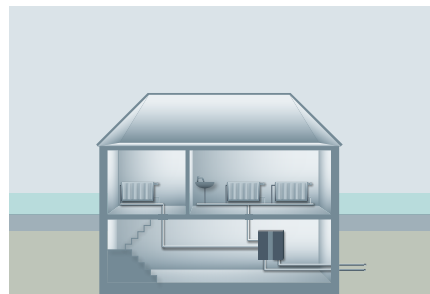
## Enabling efficient heating and cooling systems

Wherever heat is exchanged from one liquid medium to another, Micro Plate™ brazed heat exchangers can dramatically improve system efficiency. Below are four examples of systems, which can be significantly improved by their use:



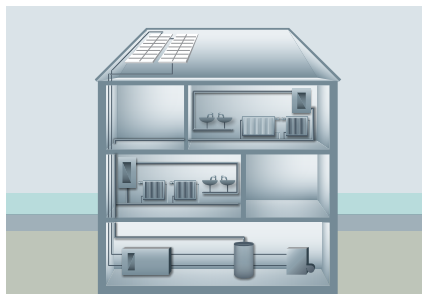
### 1. District heating and cooling

In district heating and cooling systems, Micro Plate™ heat exchangers are used in the hydraulic interface between the distribution network (primary side) and the building application (secondary side) in residential buildings of any size.



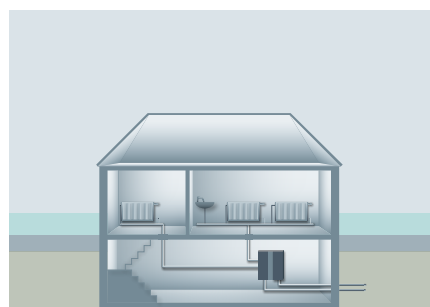
### 2. Decentralised DHW preparation

In multifamily buildings, Micro Plate™ heat exchangers are optimal for use in decentralised systems where each flat has its own hydraulic module, also known as flat stations.



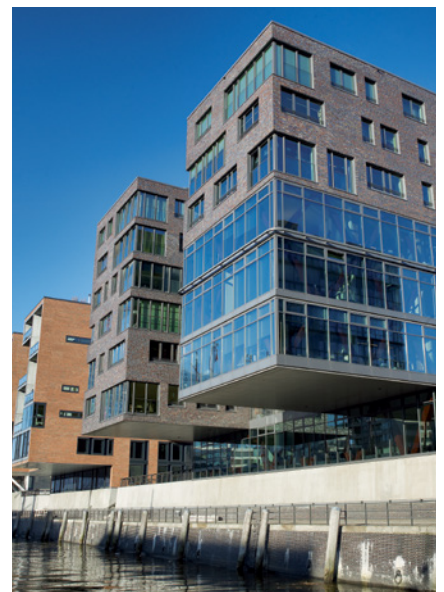
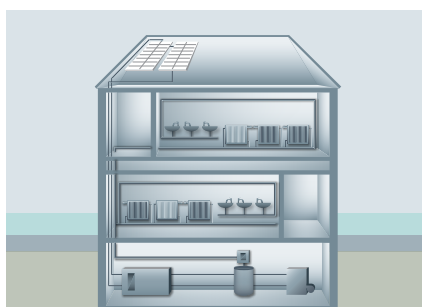
### 3. Biomass micro networks

Micro networks are minor district heating networks often located in rural areas and fuelled by biomass. As with district heating, Micro Plate™ heat exchangers are used in the interface between the micro network and the heating system within buildings.

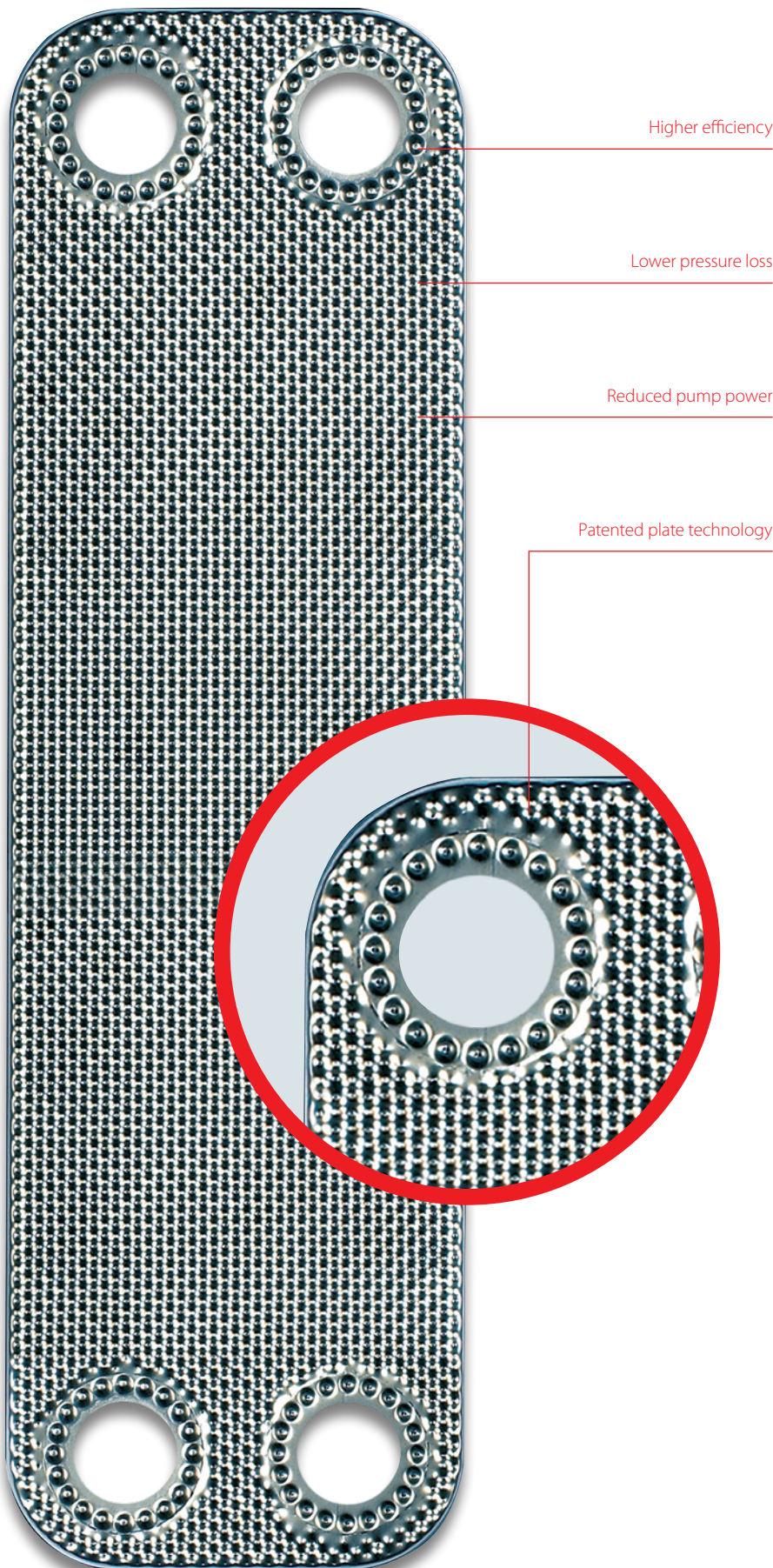


### 4. Solar combi systems

Micro Plate™ heat exchangers are perfect for systems where thermal solar heating is the primary energy source backed up by an auxiliary heat source, such as a gas boiler or district heating.



# Innovative Danfoss Micro Plate™ technology



Brazed Micro Plate™ heat exchangers are a revolutionary technology from Danfoss. Characterized by their unique pattern, our innovative new plate design outperforms other solutions on the market with significantly lower pressure loss and vastly improved heat transfer.

- **Up to 10% enhanced heat transfer rate**
- **Increased lifetime**
- **Substantial cost and energy savings**
- **Better selfcleaning**
- **More flexible and compact design**

## Asymmetric design

Micro Plate™ technology can also offer a great flexibility in designing heat exchangers for applications with highly asymmetric flow-rates on primary and secondary sides.

Using benefits of Micro Plate™ in new **XB05X** with asymmetric plate design allowed up to 15% better heat transfer compared to other asymmetric solutions.



# Designed for **high performance** and **flexibility**



## **XB71**

Designed for district cooling and heating applications, with DN100 portholes can cover higher capacities at maximum operating pressures up to 25 bar

On top of benefits of Micro Plate™ technology XB71 offers additional advantages:

### **Multiple thermal lengths**

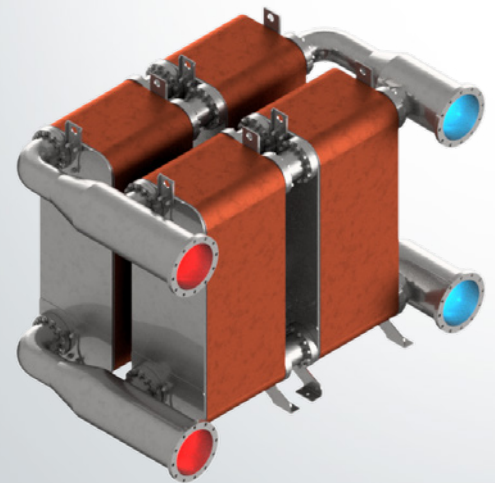
(H/M/L plate corrugations ) on one physical length of the product to suit wide variety of applications.

### **Super distribution area;**

A new feature allows us to use areas around porthole for heat transfer plate which is increasing the efficiency of the product.

### **Big capacity coverage**

Possible serial/parallel connection to extend the capacity.



### **Wide range of accessories**

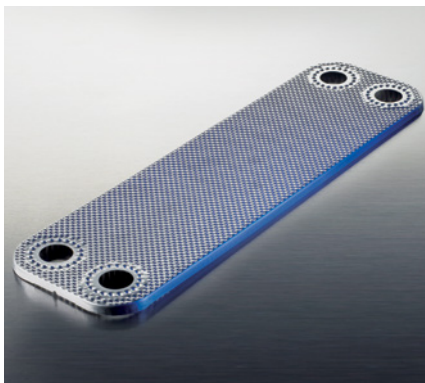
Multiple insulation types (heating and cooling), variety of compac counter flange materials to fit demand of your application

# High performance and **long lifetime**

Compared to traditional heat exchangers, Micro Plate™ technology delivers exceptional performance, efficiency and flexibility.

For the first time, you can now create a system individually suited to your application. By varying the number, size and placement of dimples, Micro Plates can be adapted for optimal heat transfer and minimal pressure drop – so you decide what's best for your needs.


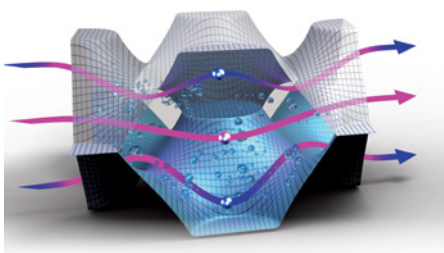
## Micro Plate™ advantages:



### 10% enhanced heat transfer

New type of plate pattern in microplate technology creates completely new type of channel. Dimple pattern makes nozzle-diffuser channel, which has bigger turbulence and less scaling than traditional fishbone channel.

In nozzle velocity of liquid increases, in diffuser it decreases. That leads to local pressure oscillations inside the channel, which helps to thin down boundary level and create bigger turbulence on the surface of heat plate, preventing dirt to stick to HEX plates.



**Longer lifetime**  
In microplate brazed points are flat, which increases the brazing area between the heat plates. This ensures all pressure loads are distributed to bigger area, which decreases the stress in the heat plate.

**Micro Plate™ heat exchangers have a broad, flat brazing surface which adds stability to their construction.**

### Better flow distribution

The improved water flow distribution in microplate leads to even velocity profile of liquid on the plate, decreasing amount of stagnation zones on the plate. Minimising stagnation zones is essential to achieve high efficiency of heat transfer with minimum loss of pressure.

Optimised flow distribution areas allow microplate Heat exchangers to effectively use areas around porthole for heat transfer, which is increasing efficient Heat transfer area of each plate. So heat transfer area is almost equal to physical area of the heat plate.



# Innovation transferred

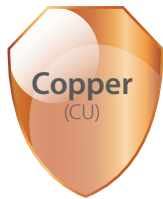
## Safe brazing materials for all your application demands

With arrival of the Micro Plate™ technology, we've been able to re-engineer heat exchanger performance and extend the lifetime of your system with a stronger, more durable design.

With our new brazed XB Micro Plate™ heat exchangers, with alternative brazing you can now get unmatched heat transfer results with high corrosion resistance.



You can select one of three brazing materials to fit your application demands



**Standard corrosion resistance** brazing type for clean liquids and non-corrosive or non-aggressive applications



**Medium corrosion resistance** brazing type for demanding heating and domestic hot water applications



The **ultimate corrosion resistance** brazing type in complete stainless steel for the most challenging applications



XB05



XB06



XB12











XB37



SL140

# Brazed heat exchangers

Connection size: 3/4" - 2"							
							
<b>XB05</b>	<b>XB06</b>	<b>XBDW22</b>	<b>XB25</b>	<b>XB12</b>	<b>XB37</b>	<b>XB52</b>	<b>XB59</b>
312 x 76 [mm]	320 x 95 [mm]	376 x 119 [mm]	491 x 94,5 [mm]	288 x 118 [mm]	525 x 119 [mm]	466 x 256 [mm]	613 x 186 [mm]
3/4"	3/4"	3/4"	3/4"	1" & 5/4"	1"	2"	2"
M, X	H+, H, L	DW*	H	H, M, L	H, M, L	M	M
Cu; StS	Cu; CoResist; StS	Cu; CoResist	Cu; CoResist	Cu; CoResist	Cu; CoResist; StS	Cu	Cu
Cu 25 [bar] StS 10 (X plate) [Bar]	Cu, CoResist 25 [bar] StS 16 [bar]	Cu, CoResist 16 [bar]	Cu, CoResist 25 [bar]	Cu, CoResist 25 [bar]	Cu, CoResist 25 [bar] StS 16 [bar]	Cu 25 [Bar]	Cu 25 [Bar]

Connection size: 2" - DN100"					
					
<b>SL140</b>	<b>XB61</b>	<b>XB66</b>	<b>SL222</b>	<b>XB71</b>	<b>SL333</b>
607 x 237 [mm]	525 x 243 [mm]	706 x 296 [mm]	748 x 324 [mm]	976 x 373 [mm]	1003 x 380 [mm]
2" & 2 1/2"	2"	2 1/2" & DN65	DN80	DN100	DN100
TL, TK, TM, DW*	H, M, L	H, L	TL	H, M, L	TL, TK, TM
Cu; StS	Cu	Cu	Cu	Cu	Cu
Cu 25 [Bar] StS 16 [Bar]	Cu 25 [Bar]	Cu 16 (L plate) [Bar] Cu 25 (H plate) [Bar]	Cu 25 [Bar]	Cu 25 [bar]	Cu 25 [Bar]

\*DW - Double Wall/Sonder Safe





# Dedicated to **your business**

**At Danfoss, we are committed to finding the right heat exchanger solution for your district energy system, whatever your requirements. As a one-stop supplier, you get a dedicated partner who is on-hand 24/7, with offices and trusted service partners close by, worldwide.**

### Supporting your needs

Whether you are providing complete heat transfer systems or involved in the design of low energy applications, partnering with Danfoss is the best way to find the right heat exchanger solution, whatever your requirements.

### Engineering tomorrow

We deliver superior heat exchanger solutions through a combination of best-in-class components, exceptional consultancy services and tailored support. As such we give you the tools and knowledge to deliver the best results for your customers today and to ensure that your business is best placed to meet their needs tomorrow.

### Customized plate heat exchangers

Danfoss is also able to create custom-made plate heat exchangers built to your specifications, including:

- **Sizes and heat exchanger dimensions**
- **Heat transfer capacity and number of plates**
- **Connections: number, types and positions**
- **Packaging method**

Contact us for more information about your customisation options.



Full **value chain** ownership



**Committed** to quality



**Widest** plate portfolio



**Flexible** solutions



**One Danfoss** synergies

# Dedicated to **you**

## A simplified, one-source solution

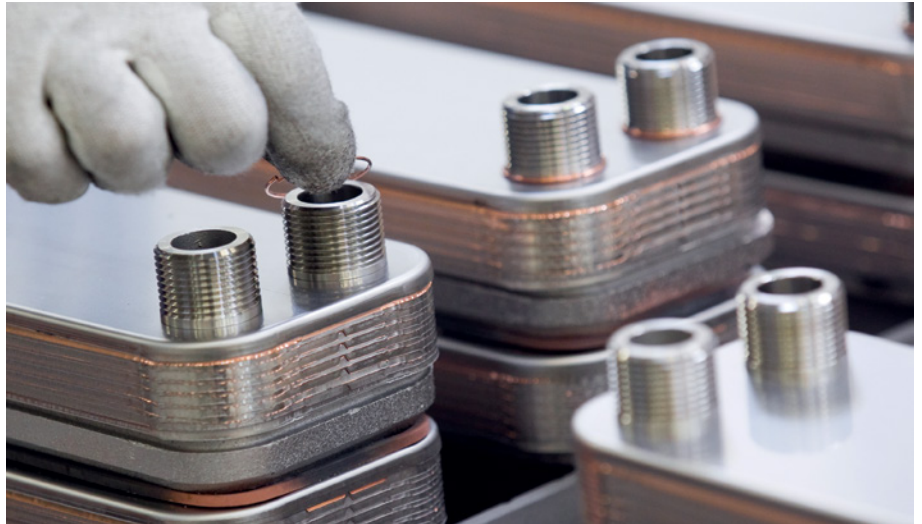
Keeping suppliers to a minimum means simpler processes and less costs. That's why we've created a comprehensive service solution where you only deal with us. And thanks to our full product range and tailored support programmes, you get all the options and choice you could want.

## A full spectrum of support

Not only do we provide the very best products in their categories, we also offer technical pre-sales support to help you to design the most efficient system for your heating network before you commit to any investment outlay.

Our comprehensive product range complies with international standards and our one-stop service means you receive value through dedicated customer care at every stage.

By integrating our processes into one solution, you get what you need, when you need it, with less time, money and management required.



### Quality first

Danfoss products are manufactured to the highest standards. Our facilities have been awarded all necessary certifications, and all our heat exchangers are performance-tested before shipment. Should you be unsatisfied with any purchase, we offer a full warranty service.

### Our quality management system certifications and compliances

- ✓ ISO 9001
- ✓ IATF 16949
- ✓ ISO 14001
- ✓ PED

Along with full compliance with EU directives and product approvals.

## Other solutions for **your applications**

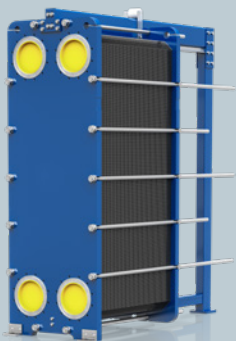
### Gasketed plate heat exchangers

#### Standard heat exchangers

##### Common applications:

- Marine applications
- District heating and cooling solutions
- Chemical applications

**Pressure rating:** Up to 25 Bar  
**Temperature:** -20°C to 180°C

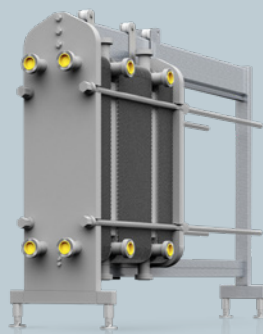


#### Sanitary heat exchangers

##### Common applications

- Dairy/food/beverage applications  
- e.g. regenerative pasteurization applications
- Industries with sanitary requirements

**Pressure rating:** Up to 25 Bar  
**Temperature:** -20°C to 180°C

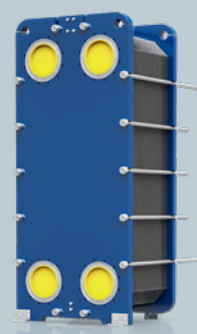


#### Free Flow heat exchangers

##### Common applications:

- Sugar processing
- Grain-based ethanol production
- Cooling/heating of fibrous materials
- Heat recovery

**Pressure rating:** Up to 10 Bar  
**Temperature:** -20°C to 180°C



## Welded heat exchangers

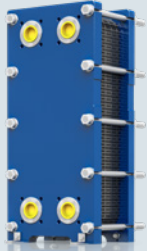
### Fully welded heat exchangers

#### Common applications:

- Heavy industry
- Mining industry
- Chemical and petrochemical industry

**Pressure rating:** Up to 25 Bar

**Temperature:** -30°C to 300°C



### Spiral heat exchangers

#### Common applications:

- Biogas industry
- Wastewater industry
- Chemical and petrochemical industry

**Pressure rating:** Up to 16 Bar

**Temperature:** -20°C to 200°C



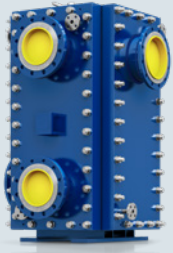
### SondBlock heat exchangers

#### Common applications:

- Oil and gas production
- Steam heaters and boilers
- Chemical and petrochemical industry

**Pressure rating:** Up to 25 Bar

**Temperature:** -20°C to 300°C



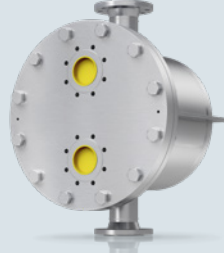
### Plate & Shell heat exchangers

#### Common applications:

- Marine industry
- Condensation duties
- Gas heaters/coolers

**Pressure rating:** Up to 40 Bar

**Temperature:** -10°C to 250/400°C



## Fresh water distiller

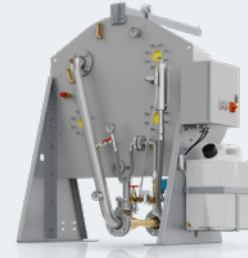
### Fresh water distillers

#### Common applications:

- Marine/offshore industry
- Drinkable water production
- Process and domestic water production

**Pressure rating:** Up to 16 Bar

**Temperature:** -20°C to 200°C



### Heat transfer solutions that match your requirements.

Next-generation SONDEX® heat exchangers from Danfoss are designed with a single purpose in mind - to create optimal heat transfer.

Developing optimized solutions is a core value of our design philosophy and we have used our deep process knowledge and input from customers to create a second-to-none product portfolio.

### Efficiency is key

The secret ingredient to an efficient installation is how closely your heat exchanger matches the thermal requirements of the duty.

If the heat exchanger is oversized, you will have paid too much for it. If it is undersized, you will either need additional heat exchangers, or you will have to add extra (expensive, non-regenerative) energy elsewhere in the process to reach the desired media temperatures.

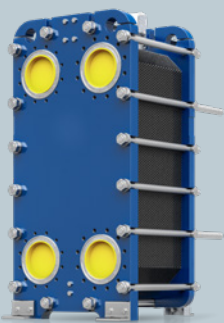
### Semi-welded heat exchangers

#### Common applications:

- Industrial refrigeration
- Evaporation and condensing duties
- High pressure liquid/liquid applications
- Chemical processing

**Pressure rating:** Up to 25 Bar

**Temperature:** -20°C to 180°C



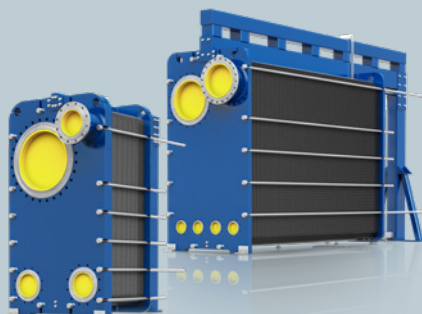
### Evaporator and condenser

#### Common applications:

- Biogas production
- Pulp and paper industry
- Chemical industry
- Sugar production

**Pressure rating:** Up to 16 Bar

**Temperature:** -20°C to 180°C



# Find the perfect match with our 5<sup>th</sup> generation selection software

Now the user-friendly selection software, makes it faster and easier than ever to find the right Danfoss heat exchanger for your needs.

Our intelligent software will help you to discover the most appropriate and competitive solution for your applications. A range of new features will allow you to significantly save time on big amount of calculations.

Simply follow the step-by-step guide and the selection software does the rest.

- Quick and easy to use
- Online updates
- Revolutionary Multicalc mode (500 HEX selections in 15 minutes)
- Wide list of HEX performance analysis tools
- Wide range of print options, including Datasheets, Drawing, Punch List, BOM and tender text

