

Danfoss | Spiral heat exchanger

The definitive heat transfer solution for challenging media

SONDEX® spiral heat exchangers are the ultimate solution for even the most challenging, high-viscosity media. Designed and custom made to handle sludges, slurries, wastewater, wood pulps, hydrocarbons with high viscosity, and fouling liquids that contain fibers and solids. The spiral heat exchangers use coiled metal sheets instead of tube bundles and can achieve very high thermal performance without sacrificing the plate gap that lets the media flow unimpeded.



Greatly

reduce the risk of fouling with the spiral heat exchanger's self-cleaning channels





Rising to the challenge

Our SONDEX® spiral heat exchangers are compact solutions with a small footprint and minimal space requirements for opening. Despite their small stature, the long, curved flow paths allow for very high heat transfer coefficients up to twice as high as their shell and tube counterparts.

Custom made and robust, they offer numerous benefits such as high thermal performance and virtually non-existent maintenance downtime.

Spacious channels for challenging media

The core of the SONDEX® spiral heat exchangers is the concentric spiral plate coils nested in the shell. The coils form two completely separated channels with a countercurrent flow arrangement that allows the heat exchanger to achieve very close temperature approaches, making our spiral units excellent for heat recovery applications.

The spacer studs welded onto the plate coil maintains the plate gap and greatly contributes to the turbulent flow on in our regular spiral heat exchangers. Our Free Flow option has no studs and trades in a bit of turbulence in exchange for a much larger plate gap for the most challenging media.

These options enable us to efficiently handle any duty and we offer you a choice of regular or Free Flow channels on both sides, or a combination of the two.

Suitable media and processes



Clean liquids



Media containing solids, particles, and fibers



Slurry



Liquid-liquid



Steam/vapor/
gas-liquid

Typical/common industries



Biogas



Food



General industry
*Batch/reactor
temperature control*



Metallurgy



Pulp and paper



Wastewater

Constructed for challenging applications

- Designed to handle a very aggressive temperature program and very challenging media
- Robot-precision ensures uniform, high-quality laser welding of the coil and studs
- No gaskets on the channel side



Reliable performance, very low downtime

- Single-channel design that generates high shear rates which contribute to a self-cleaning effect that prevents clogging of the unit. Spiral heat exchangers are the perfect solution for challenging, high-viscosity media
- Limited need for maintenance and cleaning ensures extended operational uptime. If the need for cleaning arises due to particularly difficult media, the hinged door covers provide easy access to the entire heat transfer surface

Customizable parameters

- C-clamps are available for duties up to 10 bar. For duties above 10 bar, we offer a bolted version.
- No application or duty is the same for a spiral heat exchanger, which is why we customize each of our units according to your specifications within the configurable parameters
- The channel size is selected to fit the flow and qualities of the media. The many variations in diameters and widths of the spiral coil allow for many different combinations, which mean that we can create the optimal solution for every duty



Heat transfer specialists

through and through

At Danfoss, we have specialized in the development and manufacturing of heat exchangers. We do all our own tooling and have our own hydraulic presses in-house for our coil production. This closed-loop production makes it easier to control and monitor the quality.

Developing optimized solutions is a core value of our design philosophy and we use our deep application knowledge and input from customers to create second-to-none heat exchanger solutions.

We can configure our heat exchangers to match the exact requirements of your application, thanks to the versatility of the spiral coils. This allows us to deliver a powerful solution that provides reliable, unmatched heat transfer while lowering the energy consumption of your connected systems.



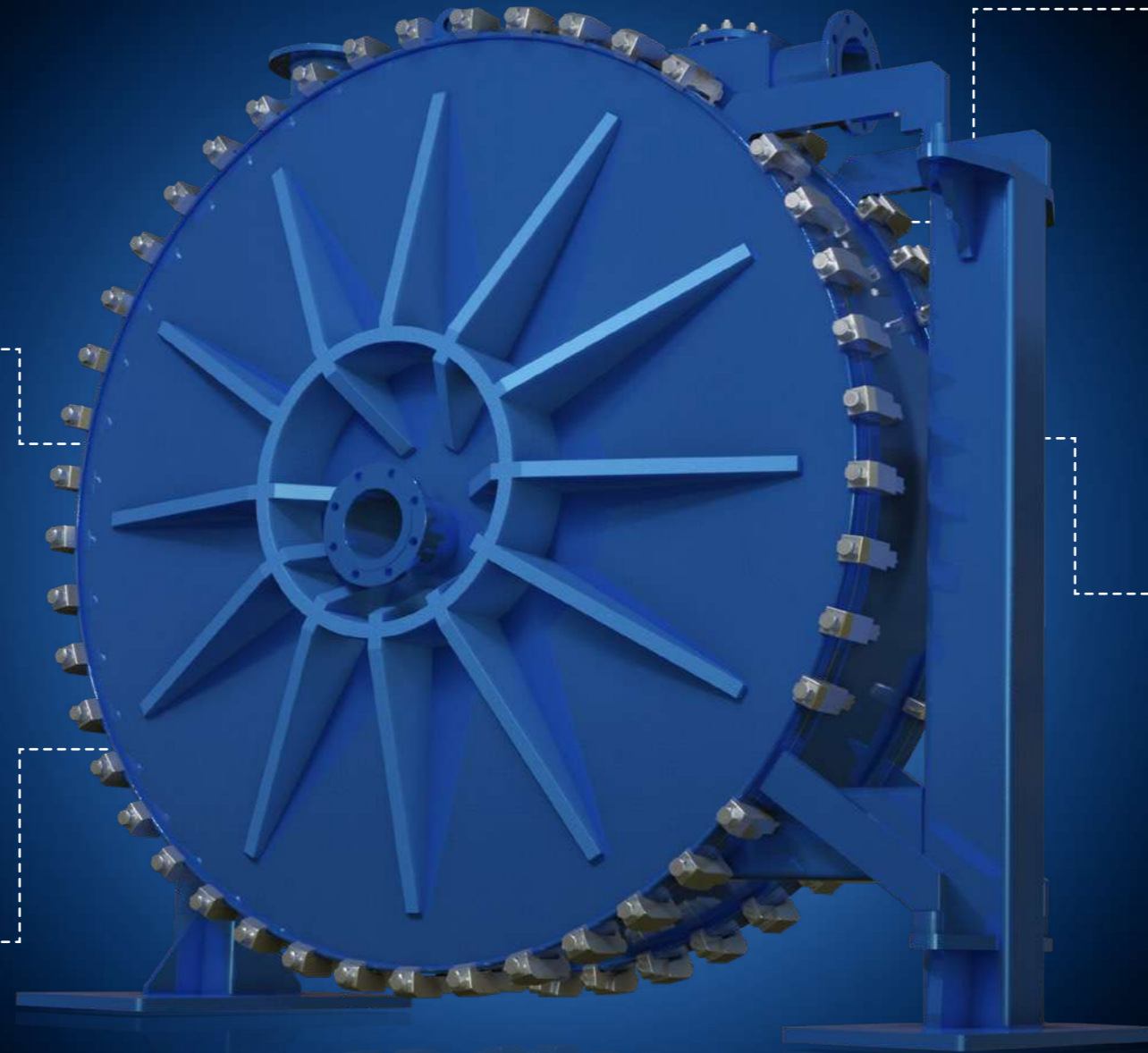
Deep application knowledge

- We use our deep application knowledge to configure each heat transfer solution and match the exact requirements of your application and systems
- We take your data into account when we dimension the heat exchanger to optimize your solution for maximum efficiency and energy utilization



Versatile product portfolio

- We have developed a very versatile product portfolio in close cooperation with our customers, offering solutions for any application
- Each spiral heat exchanger is customized according to your specifications within the configurable parameters
- Our spiral heat exchangers are available in vertical or horizontal positions depending on the demanded process



The most efficient heat transfer

- Plate coil technology provides a high heat transfer coefficient that reduces the needed surface area
- Perfected flow distribution and height and placement of the studs are key in generating the optimal turbulent flow
- Proven thermal performance



Sturdy construction and high quality

- Automated laser cutting and welding with robot-precision produces consistently high quality
- Safe operation with low internal media volume and minimal risk of leakage
- Exit-control to ensure only high quality products reach our customers

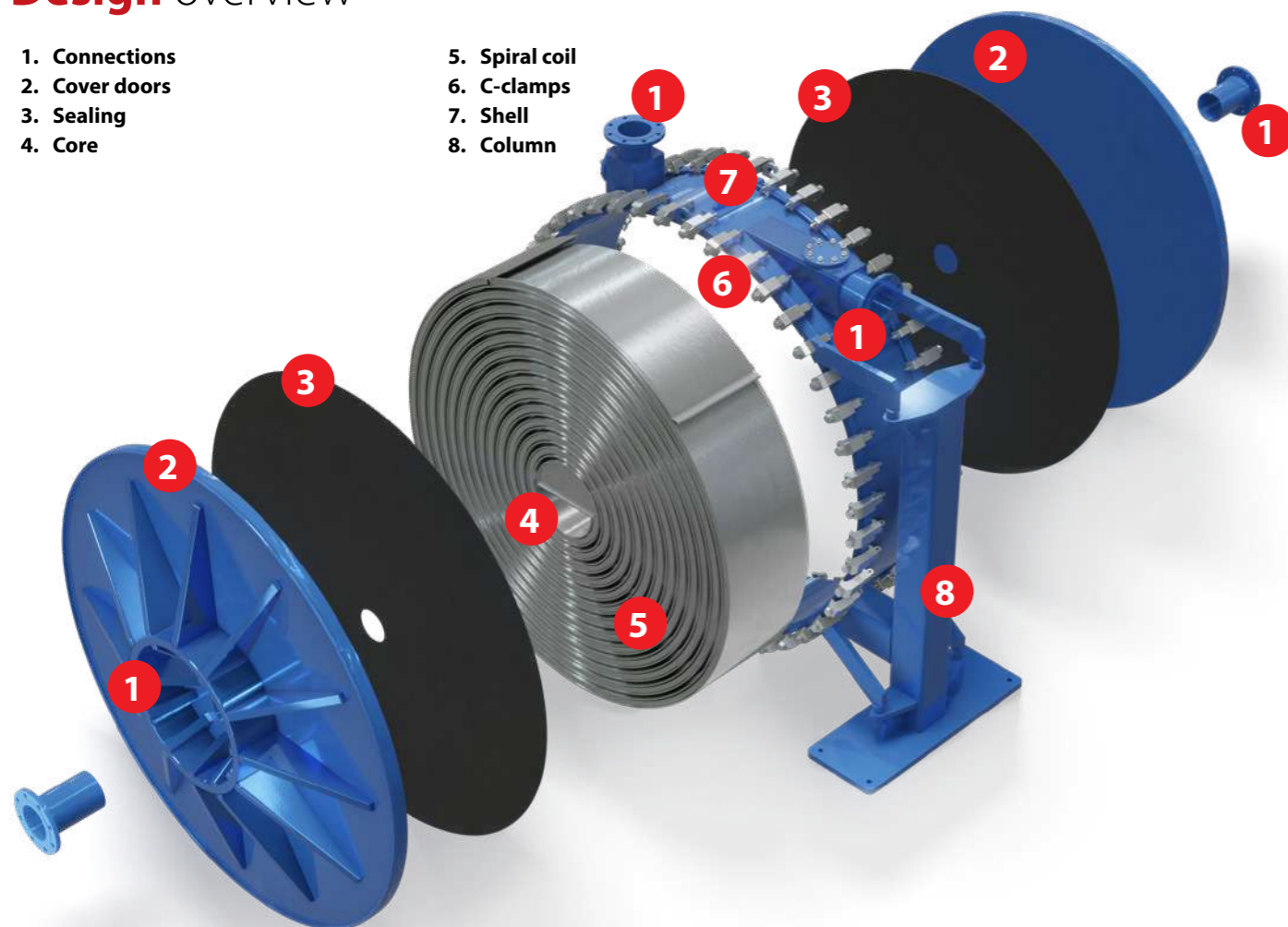
Technical overview

Spiral heat exchanger	
Area	From 1 to 500 m ² (From 10 to 5380 ft ²)
Diameter	From 600 to 2140 mm (From 23,6" to 84,5"). Other sizes available on request
Width	250, 500, 750, 1000, 1250, 1500 mm (From 10", 20", 30", 40", 50", 60"). Other sizes available on request
Max. working pressure	10 bar by default (145 psi). Higher pressures available on request
Max. operating temperature	200 °C (392 °F). Higher temperatures available on request
Min. operating temperature	-20 °C (-4 °F). Lower temperatures available on request
Position	Vertical or horizontal
Connections	From DN32 to DN300 (From 1" to 12")
Connection types	According to all known standards
Spiral material	Stainless steel EN 1.4404 (AISI 316L), Stainless steel EN 1.4401 (AISI 304L), Stainless steel EN 1.4539 (AISI 904L), Carbon steel (P355GH). Other materials available on request
Shell material	Stainless steel EN 1.4404 (AISI 316L), Carbon steel (P355GH), Stainless steel EN 1.4401 (AISI 304L). Other materials available on request
Sealing material	NBR, EPDM, PTFE, Graphite. Other materials available on request
Channel design	Studded / Studded Studded / Free Flow Free Flow / Free Flow
Channel accessibility	Accessible through cover doors or inaccessible (welded channel)
Frame painting specification	Painting available for common categories C2L, C4M, C5M
Design standards	PED, ASME, TR TS. Other approvals available on request

Design overview

1. Connections
2. Cover doors
3. Sealing
4. Core

5. Spiral coil
6. C-clamps
7. Shell
8. Column



SONDEX® - a quality heat exchanger brand from Danfoss

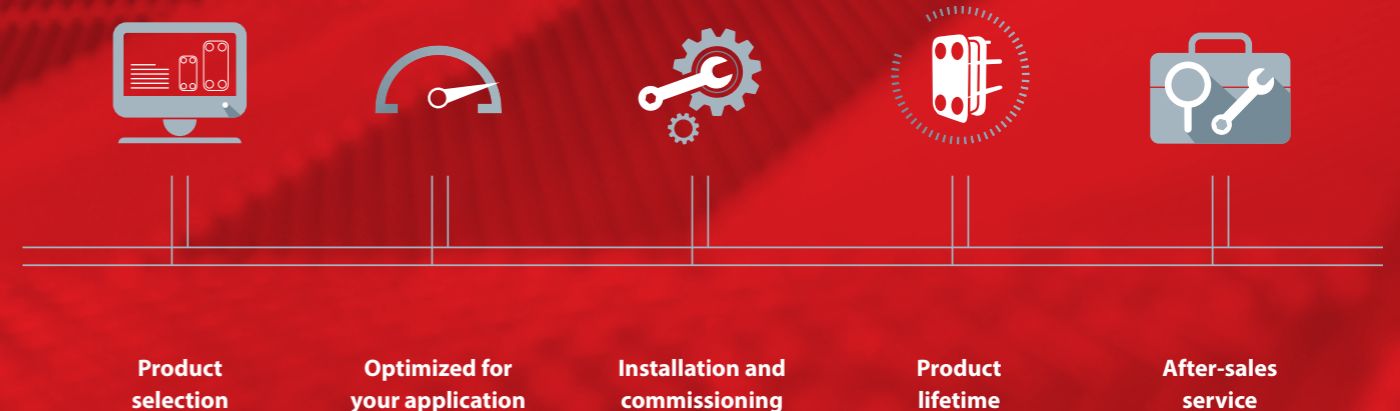
Sondex and Danfoss join forces

In July 2016, Danfoss acquired full ownership of Sondex. This step marked the merger of two strong players creating an even more powerful and agile heat exchanger partner.

Transition into a product brand

In 2018, Sondex became SONDEX® - a quality heat exchanger brand of Danfoss. Customers can now benefit from one-stop shopping and the powerful infrastructure of Danfoss, as well as the heat transfer expertise of SONDEX®.

Value throughout the entire project



Danfoss is with you every step of the way - from selecting the right product for you, to after-sales service.

A partnership based on extensive application knowledge

Working with Danfoss means more. It means that you do not only get highly reliable, efficient, and innovative solutions – you also get a partner that is a world-leading supplier in a wide range of applications.

Our partnership gives you access to a wide range of benefits. From extensive application knowledge to a wide range of solutions and tools.

Do you want to discover more? Visit heatexchangers.danfoss.com to learn more about our heat exchanger solutions.

Gasketed HEX

- Standard plate HEX
- Semi-welded plate HEX
- Free Flow plate HEX
- Sanitary plate HEX
- Evaporators
- Condensers

Welded HEX

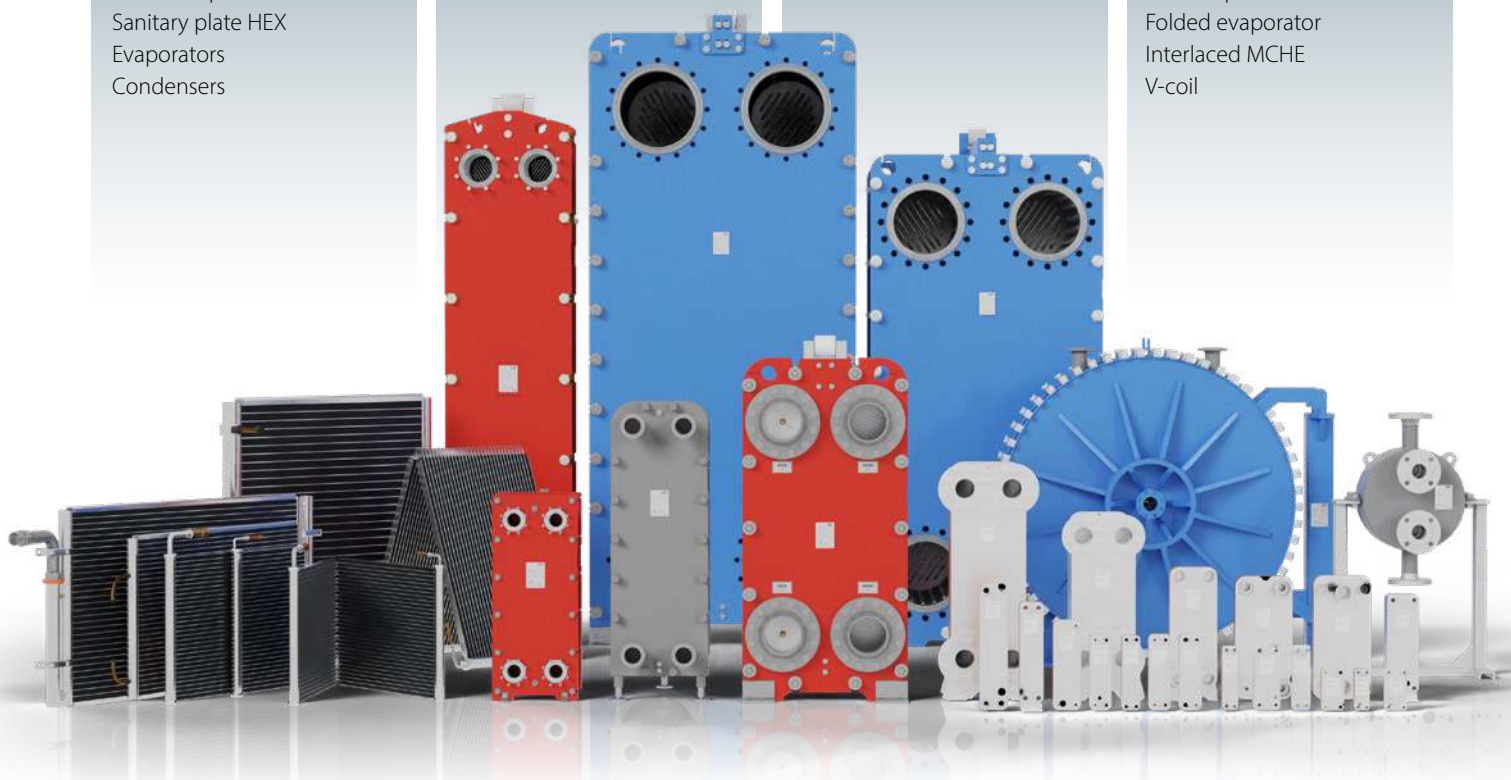
- Plate and shell HEX
- Spiral HEX

Brazed HEX

- Fishbone brazed HEX
- Micro Plate™ brazed HEX

Micro channel

- Flat condenser
- Formed condenser
- Slab evaporator
- Folded evaporator
- Interlaced MCHE
- V-coil



Danfoss A/S

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