ENGINEERING
TOMORROW

Danfoss

Gasketed plate heat exchangers

Next-generation heat transfer solutions

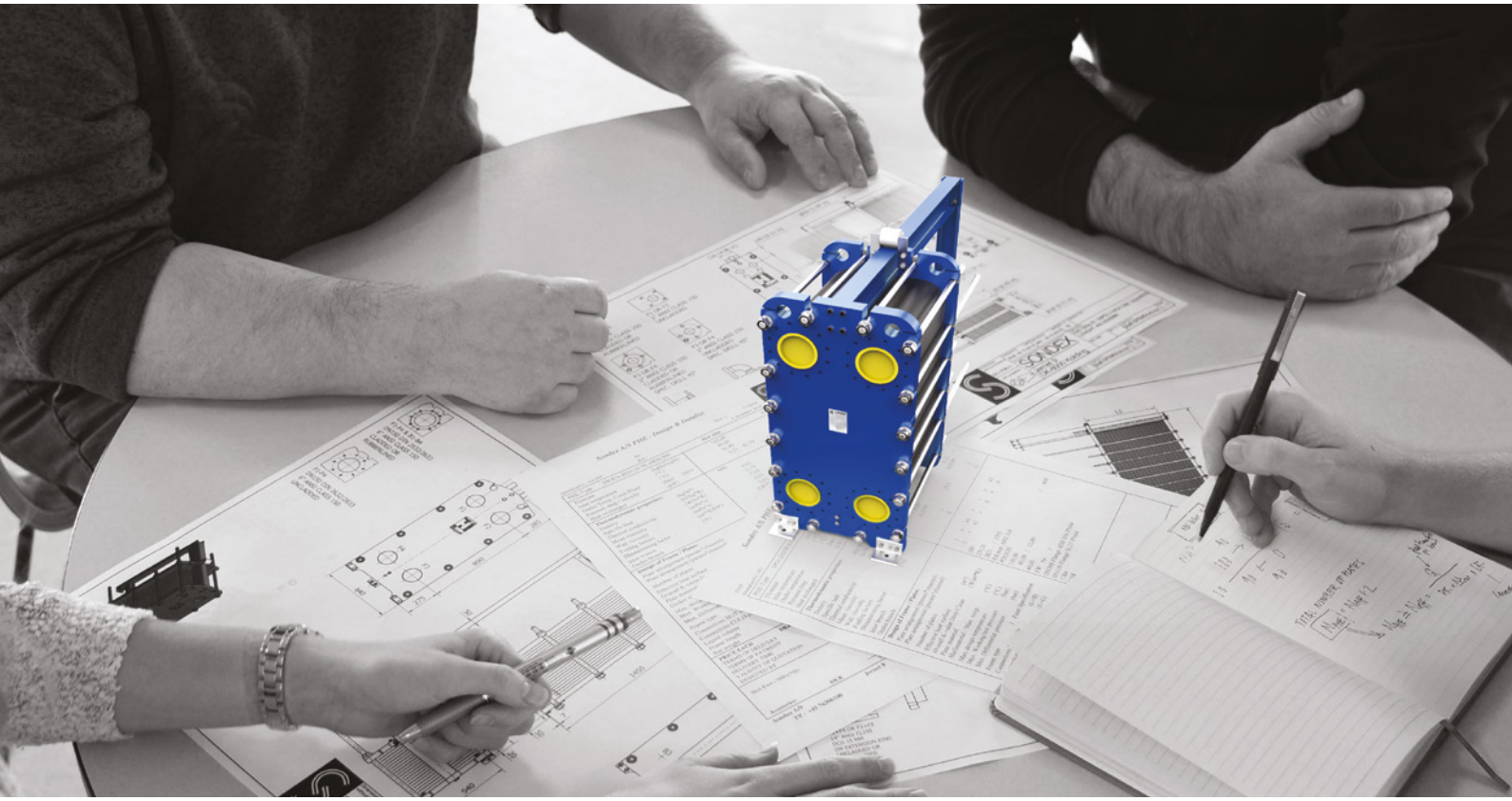
Customized to match your requirements

Featuring the latest in plate and pattern technology, optimized for your business

100%

Customized solutions that match your requirements

www.sondex.net | SONDEX®



Customized solutions that **match your requirements**

Take part in a brighter tomorrow with Danfoss heat transfer solutions. Our next-generation plate heat exchangers meet your individual requirements for energy efficiency and ultra-high performance.

We configure our SONDEX® brand plate heat exchangers to perfectly match your duty. Regardless of application, our second-to-none plate portfolio ensures that we can deliver a powerful gasketed, single-pass solution that exceeds the performance of anything else on the market.

By upgrading to SONDEX® you will receive a service-friendly, easy-to-install solution that provides reliable, unmatched heat transfer while lowering your energy consumption.

Built on knowledge and know-how

Knowledge is the foundation for our innovative plate design, and our passion for expertly engineered solutions drives us to perfectly optimize each of our heat exchangers for you and your business.

Danfoss design engineers are always in direct contact with our customers to ensure that each heat exchanger is designed around your application and the properties of the media. Our many years of hands-on, technical experience across numerous market segments, afford us great knowledge and insight into the industrial processes and their thermal requirements.

At Danfoss we have specialized in the development and manufacturing of heat exchangers. We do all our own tooling as well as hydraulic presses in-house.

The benefit of this specialization is *closed loop production* - it is easier to control and monitor the quality without relying on sub-suppliers. We can execute product development tasks faster than most, as the tooling and engineering know-how is placed internally in Danfoss.

Extensive plate portfolio

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.

Armed with our deep process knowledge and customer input, we have developed an extensive plate portfolio that enables us to cover all duties with powerful solutions that render unoptimized, off-the-shelf products obsolete.

Get in touch today and let Danfoss help you lower your expenses and increase the performance of your entire system.

Value throughout the entire project

Product selection

Installation and commissioning

Optimized for your application

Product lifetime

After-sales service

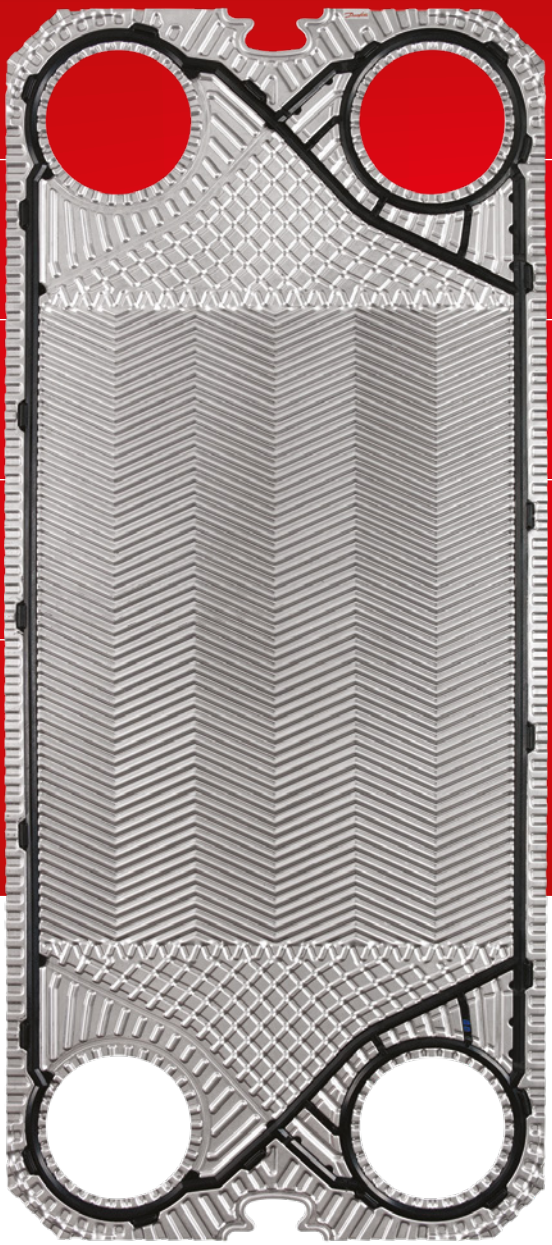
Danfoss is with you every step of the way - from selecting the right product for you, to after-sales service.

DN25 - DN700
porthole connections.

175 mm - 5 m
plate heights.

0.05 m^3/hour - 7,200 m^3/hour
flow rates.

Full-spectrum
NTU coverage.



H, L & M
plates available.

Numerous
pressing depths.

Asymmetric
patterns available.

Fishbone plates

Years of experience inspire innovative upgrades to create the ultimate in Fishbone plate design.

The tried-and-true Fishbone plate pattern is featured in most SONDEX® plate heat exchangers.

Engineered to maximize turbulent flow, even at low flow rates, this pattern achieves unparalleled heat transfer. The pattern has proved its effectiveness through rigorous testing and is the default choice for plate heat exchangers.

Variants of the Fishbone pattern are designed to create different levels of turbulence, use a different pressure drop and meet different thermal requirements. Each variant fills a particular niche, or is aimed at a certain type of duty. This flexibility allows us to optimally cover all your heat transfer needs, no matter the application.

Fishbone plate benefits

Special features include a reinforced hanging system for better suspension, an optimized distribution area that prevents stagnant zones, a maximized heat transmission area for high performance, and the unique SONDEX® Alignment System that ensures proper alignment of the plate pack in the assembled heat exchanger.

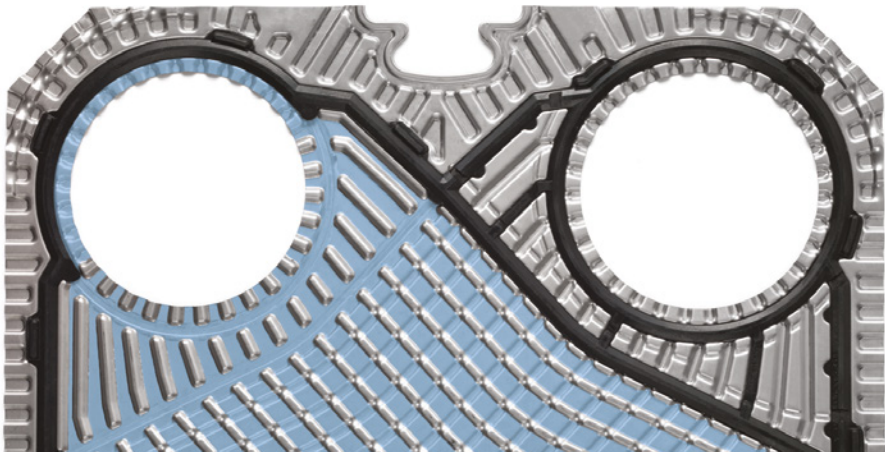
Fishbone plate **highlights**

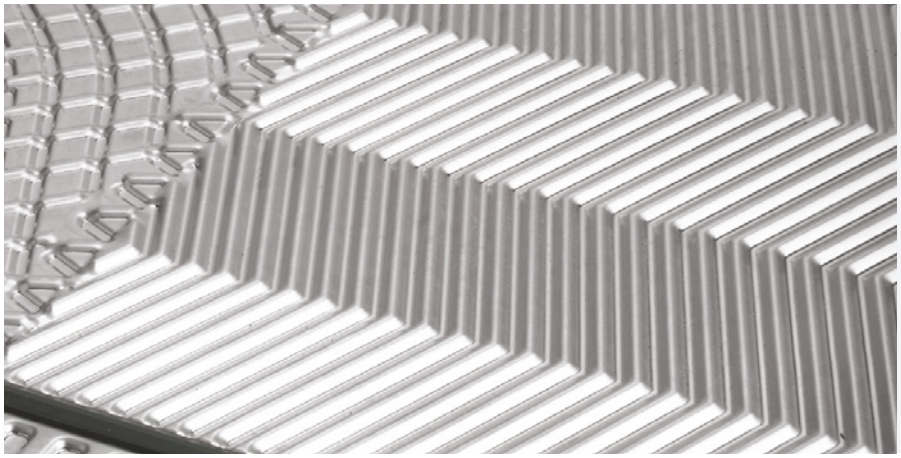
Hanging system
SONDEX® plates feature a reinforced hanging system. The hanging system helps the plates withstand the powerful tightening force, and prevents misalignment and corner collapses.

This makes SONDEX® plates a solid investment, as the lifetime of the plates is increased and service duration is reduced.

Distribution area
The distribution area on SONDEX® plates is designed to prevent stagnant zones, and ensures an even distribution of the media across the entire plate.

Furthermore, the pressure drop in the distribution area is minimal and used on the heat transmission area instead, which results in better heat transmission efficiency.





Heat transmission area
With a maximized heat transmission area, we are able to reduce the total number of plates needed for optimal performance. Our plate patterns are fine-tuned for each application and provide the best possible conditions for heat transfer.

SONDEX® solutions let you dial up your efficiency and dial down your energy consumption.

SONDEX® Alignment System
The SONDEX® Alignment System features stabilizing rubber bricks on the gasket that fit into the back of the adjacent plate, locking them together.

The SONDEX® Alignment System prevents misalignment of the plates and keeps the plate pack securely in place. Assembling the plate pack has never been easier!

Gasket groove
Long-term UV exposure leads to brittle and hardened gaskets, which will eventually result in leakages, as the gaskets can no longer be compressed correctly.

The gasket groove on SONDEX® plates is designed to ensure that the gasket is protected from UV exposure, maintaining its elasticity and prolonging the lifetime.

DN32 - DN50
porthole connections.

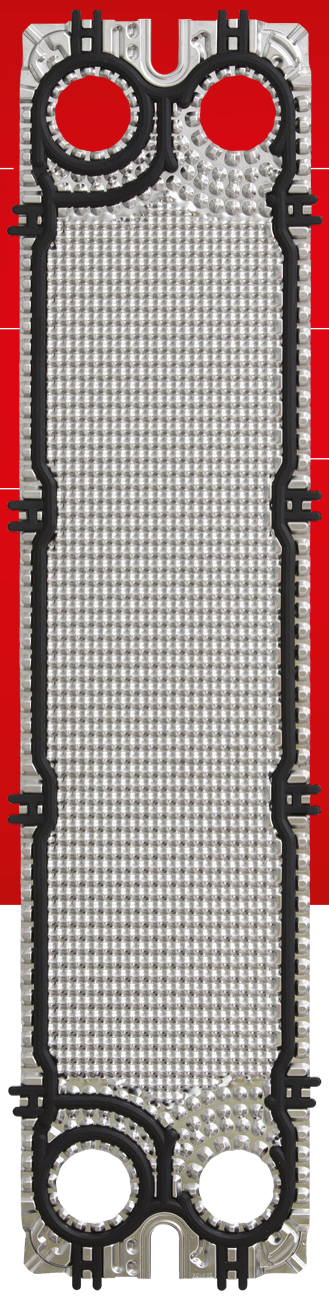
0.5 m - 0.75 m
plate heights.

Up to 20 m³/hour
flow rates.

H, L & M
plates available.

Adaptable plate design.

Compact size.



Micro Plates™

The next step in application focused, high-performance heat exchanger technology.

Micro Plate™ heat exchangers are a revolutionary technology from Danfoss specially designed for district energy.

Characterized by its distinct pattern, our innovative new plate design outperforms everything else in its class with a significantly lower pressure drop and vastly improved heat transfer.

As part of our gasketed heat exchanger portfolio, Micro Plate™ technology is designed for smaller, lower duty applications with relatively constant pressures, temperatures and treated water supplies.

Micro Plate™ benefits

Our Micro Plate™ heat exchangers feature next-generation efficiency and performance – giving you more from your district heating and cooling applications.

Our heat exchangers are suitable for virtually every district heating application and network. Whether your system has varying or constant pressure, large temperature swings, or even an untreated water supply, we have the perfect solution for you.

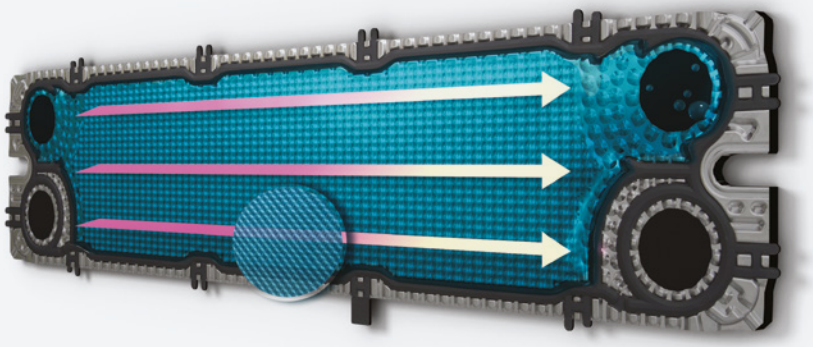
Micro Plate™ **highlights**

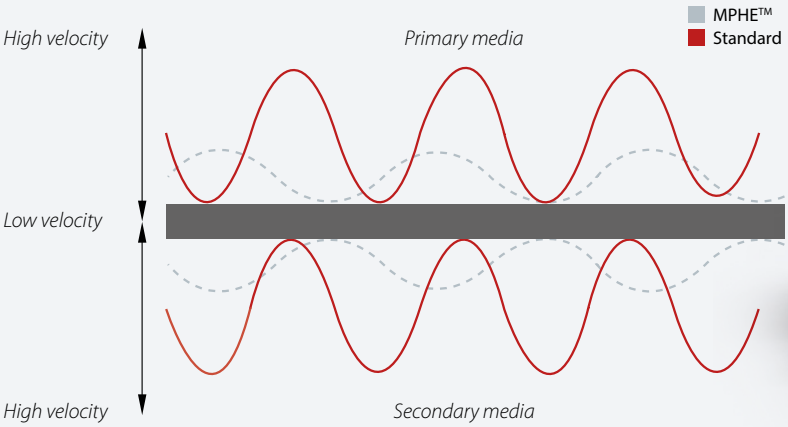
Individually customized
As with all our solutions, we create heat exchangers that are individually customized to meet your requirements.

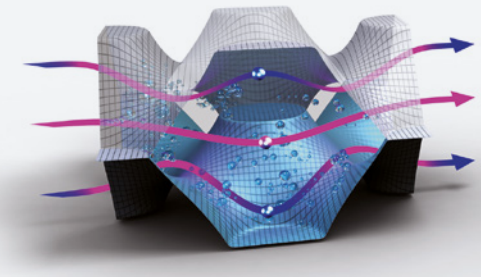
By varying the number, size, and placement of dimples, Micro Plates™ can be adapted for optimal heat transfer and minimal pressure drop – so you decide what is best for your district heating and cooling applications.

Even flow
By allowing water to flow more evenly, the Micro Plates™ make optimal use of their surface area.

Between the fastest and slowest flowing areas, the difference is only x3, as opposed to x10 in older heat exchanger models. This distributes and mixes the media better for maximum heat transfer.







Cost reduction
By increasing the system's efficiency, less energy is required for the same result. The heat exchanger can therefore be housed in a more compact design, with fewer plates, so construction materials are kept to a minimum. Better operational efficiency and a longer lifespan also help to reduce waste, all of which results in significant savings and a lower carbon footprint.

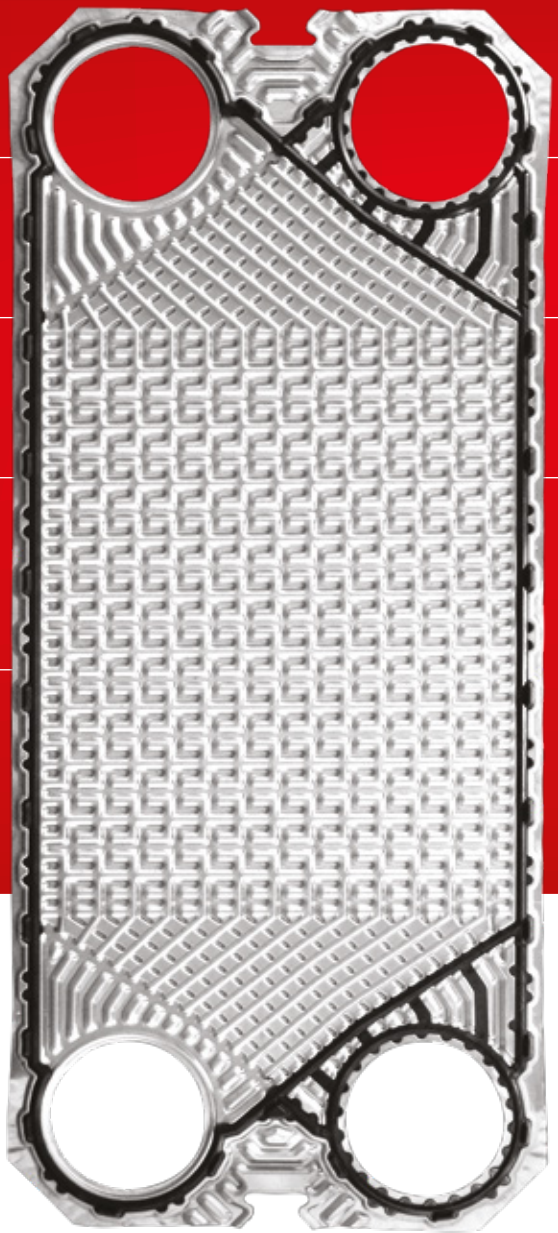
Reduced pressure drop
The improved media flow also means that the pressure drop is kept to a minimum. With less energy required to pump the media around the system, running costs are significantly reduced with less wear and tear on your system.

DN25 - DN300
porthole connections.

1 m - 3.5 m
plate heights.

Up to 1,600 m^3/hour
flow rates.

Designed to handle viscous
or fouling media.



Very few
contact points.

Very deep
pressing depths.

Asymmetric
patterns available.

Free Flow plates

Comprehensive process insight brings about the crowning achievement within treatment of hard-to-handle media.

The spacious SONDEX® Free Flow pattern is designed to treat media that is unsuitable for regular heat exchangers due to high viscosity, fiber and particle contents, or considerable risk of fouling.

The deep and wide channels provide ample room for difficult media to flow effortlessly, ensuring gentle treatment of the output product, leading to sustainable quality improvements.

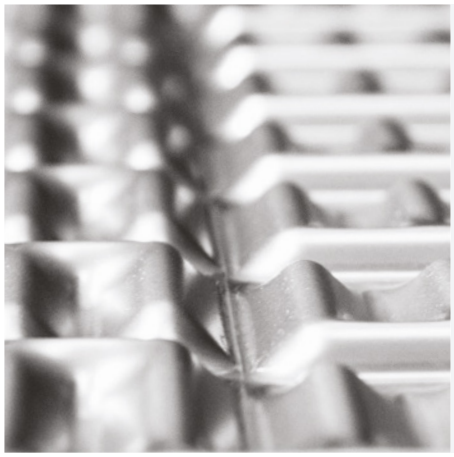
Free Flow plate benefits
Since there is only line contact, even long and sticky particles will not get stuck and clog the heat exchanger.

The Free Flow plates are also well-suited for media that have a tendency to cause fouling, and are designed with the fouling factor in mind.

The plate channels allow for an efficient flow and heat transfer, in spite of the accumulated fouling, deferring the cleaning downtime.

This enables a sugar producer, for example, to operate at full capacity throughout an entire campaign without losing valuable production time and product output.

Free Flow plate **highlights**

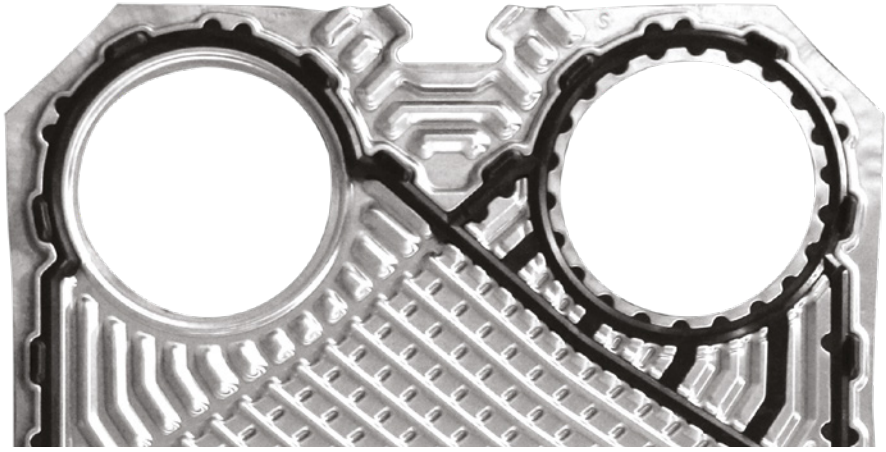


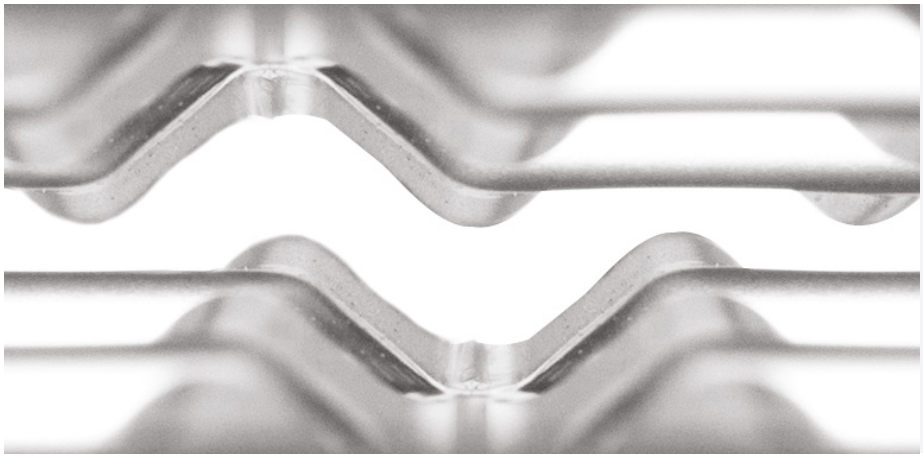
Spacious channels
The SONDEX® Free Flow pattern ensures an unimpeded flow due to the deep channels, and limited contact points between the plates.

With only line-contact, the media has ample room to flow inside the plate channels, benefiting greatly from the increased level of turbulence, compared to tubular heat exchangers.

Contact-free inlets
The design of the SONDEX® Free Flow inlets maintains the sturdy and robust construction of the traditional plate design, while having no contact points at all.

This severely minimizes the risk of clogging the inlets and subsequently decommissioning the heat exchanger for service and maintenance.





Large plate gap
The large plate gap is designed to handle media that would otherwise cause fouling and clog regular heat exchangers.

Our process and application knowledge enables us to design Free Flow plate heat exchangers that perform optimally, regardless of the media's viscosity, fouling tendency, and particle contents.

Line-contact
The Free Flow plates feature very limited contact between each plate. The design forms straight-line contact that maintains the sturdiness of conventional plate design, but allows for an unimpeded flow.

The pinnacle of design for hard-to-handle media, our Free Flow pattern ensures longer intervals between cleaning and service, maximizing the uptime of your installation.

Traditional plate heat exchangers

SONDEX® offers the largest selection of traditional plate heat exchangers in the world.

Our traditional plate heat exchangers are the go-to choice for standard duties. The versatile design makes the traditional plate heat exchangers adaptable to a wide range of applications.

What does that mean for you?

We have specialized in developing plate heat exchangers in close cooperation with our customers. Because we understand the process behind your applications, each solution is customized and configured to suit you and your business

Our extensive plate portfolio and pattern options ensure that we always have a solution that is exactly right for you.

Always the efficient choice

We design all our plate heat exchangers as single-pass solutions where possible, as they are the preferred choice for almost all duties. The energy consumption is considerably lower, and the number of plates needed for optimal performance is reduced in single-pass solutions.

With all connections on the head of the heat exchanger, installation and maintenance is easier than ever.

Common applications

- Marine applications, such as central and lubrication oil cooling.
- District cooling solutions using seawater and groundwater as a cooling source.
- District heating solutions using, for example, solar and geothermal energy as heating source.
- Food and dairy applications, including pasteurization, heat recovery, and duties that require gentle treatment.
- Chemical applications, for example waste heat recovery from condenser water.

S188

Free Flow plate heat exchangers

When your media requires gentle treatment and sizable plate channels, SONDEX® sets the new standard for improved performance and reliability.

What does that mean for you?
Experience the benefit of maximum uptime and efficiency with SONDEX® Free Flow plate heat exchangers.

Extended production time, and loss of product on account of unscheduled maintenance or cleaning, is an undesirable consequence of operating with hard-to-handle media.

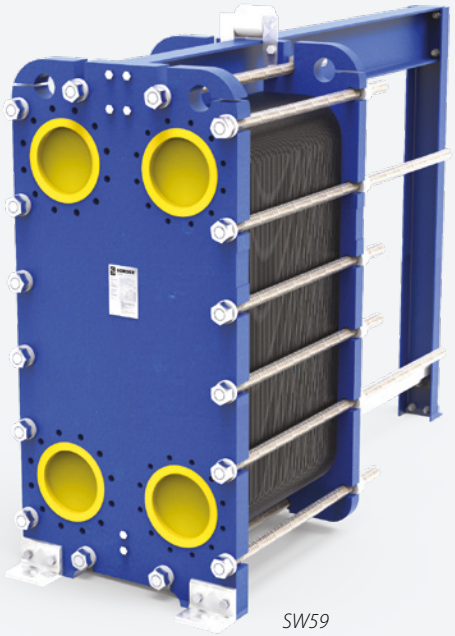
Our engineers have designed the SONDEX® Free Flow solutions to reliably deliver the highest performance and gentle media treatment, while keeping the intervals between service as long as possible. If your media contains solids, fibers, or other particles, service can be postponed even further by regularly backflushing the system.

For media with tendencies to cause fouling, CIP (Cleaning In Place) is the preferred option. The efficient design of the SONDEX® Free Flow ensures a low hold-up volume, which minimizes the amount of chemicals needed for the CIP process, and thus greatly reduces cleaning time, while also safeguarding the environment.

Common applications
- Sugar processing.
- Grain-based ethanol production.
- Cooling/heating of fibrous material, for example juice containing pulp.
- Heat recovery from industrial applications containing impurities like waste water or cellulose, for example.
- Heat recovery from fibrous waste streams in pulp and paper processing.

SF160

Semi-welded plate heat exchangers



SW59

When operating with media such as ammonia, SONDEX® offers durable solutions designed to withstand extreme conditions and minimize risks associated with aggressive media.

What does that mean for you?
The SONDEX® semi-welded plate heat exchanger range is designed to let you operate without worry, when using media unsuitable for fully gasketed heat exchangers.

Instead of regular plates, the semi-welded range uses two plates, laser-welded together to form cassettes. Each cassette features a gasketed side for the non-aggressive media, and a welded side with only a ring gasket, for the aggressive media. The material of the ring gasket is chosen based on its ability to resist the damaging media.

The limited exposure of the resistant gasket ensures a long product lifetime and safe operation.

The efficient design reduces the number of plates required for high performance and consequently lowers the hold-up volume.

Engineered to use smaller amounts of potentially hazardous media, the SONDEX® semi-welded range is a sound and responsible choice for demanding duties.

Common applications
- Industrial refrigeration, including duties that use ammonia as a refrigerant.
- Evaporation and condensing duties.
- High pressure liquid/liquid applications.
- Chemical processing, for instance rich/lean amine treatment.

Evaporators

When your evaporation duties involve temperature sensitive or delicate media, SONDEX® is dedicated to ensure the highest product quality with our specially designed evaporator plates.

What does that mean for you?

The SONDEX® rising film plate evaporator gently treats the media, even if it is highly viscous, leading to improved concentrate quality.

Experience first hand the benefit of using an evaporator with semi-welded plate cassettes instead of a tubular heat exchanger.

Gain maximum efficiency with a plate pattern that creates the optimal turbulent flow, ensuring the best possible heat transfer for your product.

The evaporators feature the Free Flow plate pattern that reduces the risk of fouling considerably and extends the intervals between cleaning.

The increased uptime will have a significant effect on your combined production output.

The low hold-up volume of SONDEX® evaporators shortens the residence time and provides the best evaporation conditions for temperature-sensitive products.

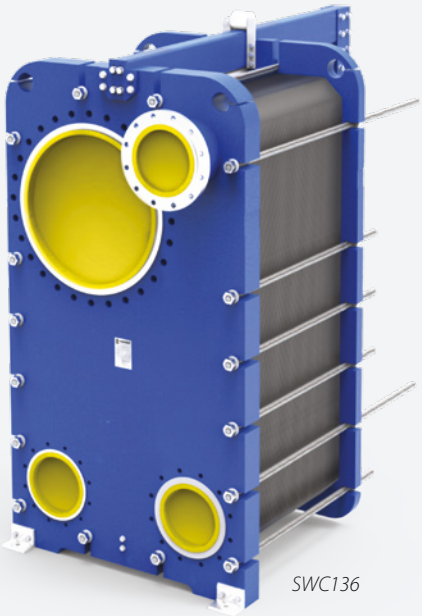
Operating with low hold-up volumes makes faster start-up and shutdown possible, with only minimal waste, which adds to the overall flexibility of your system and process.

Common applications

- Food production, for example juice and alcohol processing.
- Sugar production, for example concentration of sugar content in sugarcane juice.
- Biogas production.
- Pulp and paper industry.
- Chemical industry.

SEC174

Condensers



SWC136

When facing applications that demand flawless condensation conditions, rely on customized SONDEX® condenser solutions that optimize your entire system.

What does that mean for you?

For standard condensation duties, our traditional and semi-welded plate heat exchangers are premium choices. However, our innovative SONDEX® condenser plates are specialized for low-pressure vapor duties.

Like our evaporators and semi-welded plate heat exchangers, the condenser uses plate cassettes. The plate cassettes feature asymmetric pattern designs for improved condensing and efficiency.

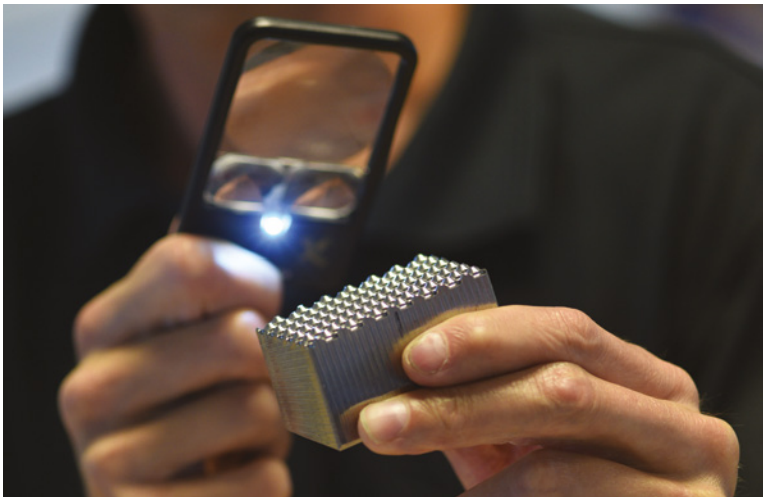
Consequently, the pressure drop on the welded side can be kept to a minimum while still maintaining a high level of turbulence on the gasketed side.

This design maximizes the heat transfer coefficient and optimizes your performance while reducing the load on your pumps, lowering the energy consumption for your entire system.

Our unique Multi-Gap plates are specially designed for condensation duties with a big difference between the two flow volumes. With this solution you will be able to run large vapor volumes on the welded side and smaller liquid volumes on the gasketed side. This allows for the most effective use of the pressure drop.

Common applications

- Vapor condensation of fruit juice, for example, and pasteurization and cooling of soft drinks.
- Vacuum condensation duties, for example in sugar refineries.
- Biogas production.
- Pulp and paper industry.
- Chemical and petrochemical industries.



Service and maintenance

Our service department offers repairs, upgrades, and on-site cleaning of your plate heat exchanger installations of all brands.

We can help you avoid problems before they arise with a customized program, ranging from full maintenance support to ad hoc servicing. We will work out the most suitable schedule with you to carry out performance diagnostics, plate cleaning and inspections, fault checking with quick replacements, and repairs as required.

Our skilled technicians will swiftly dismantle your heat exchangers and expertly clean each plate using economic, environmentally-friendly methods. We will have your installation up and running at full capacity again in no time. We are fully equipped to perform CIP (Cleaning in Place) where possible.

If your plate heat exchanger is faulty or under-performing, our repair services will restore your installation to working order in an instant. We substitute defective or worn gaskets, as well as damaged or leaking plates, with originals or high-quality replacements that perfectly match the specifications of your installation.

We can also analyze your current setup to determine if the installation can be optimized, for example by increasing the number of plates in the heat exchanger. This is an upgrade for your entire system, as more efficient heat exchangers improve the overall performance while lowering the energy costs.

Whatever your needs, our dedicated service teams are standing by to help.

Quality control

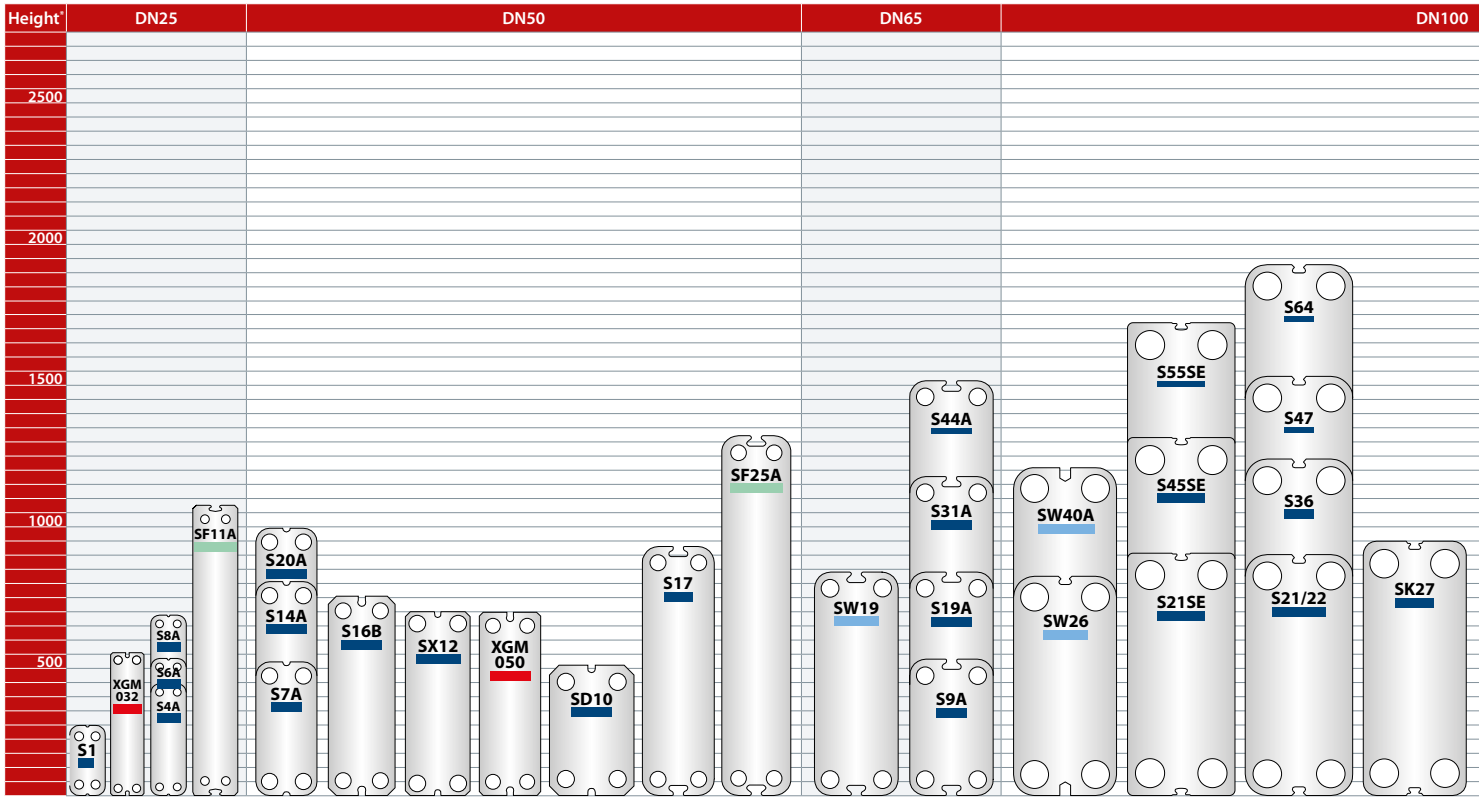
Our customer devotion and passion for creating high-performance solutions require dedication to maintaining high quality standards.

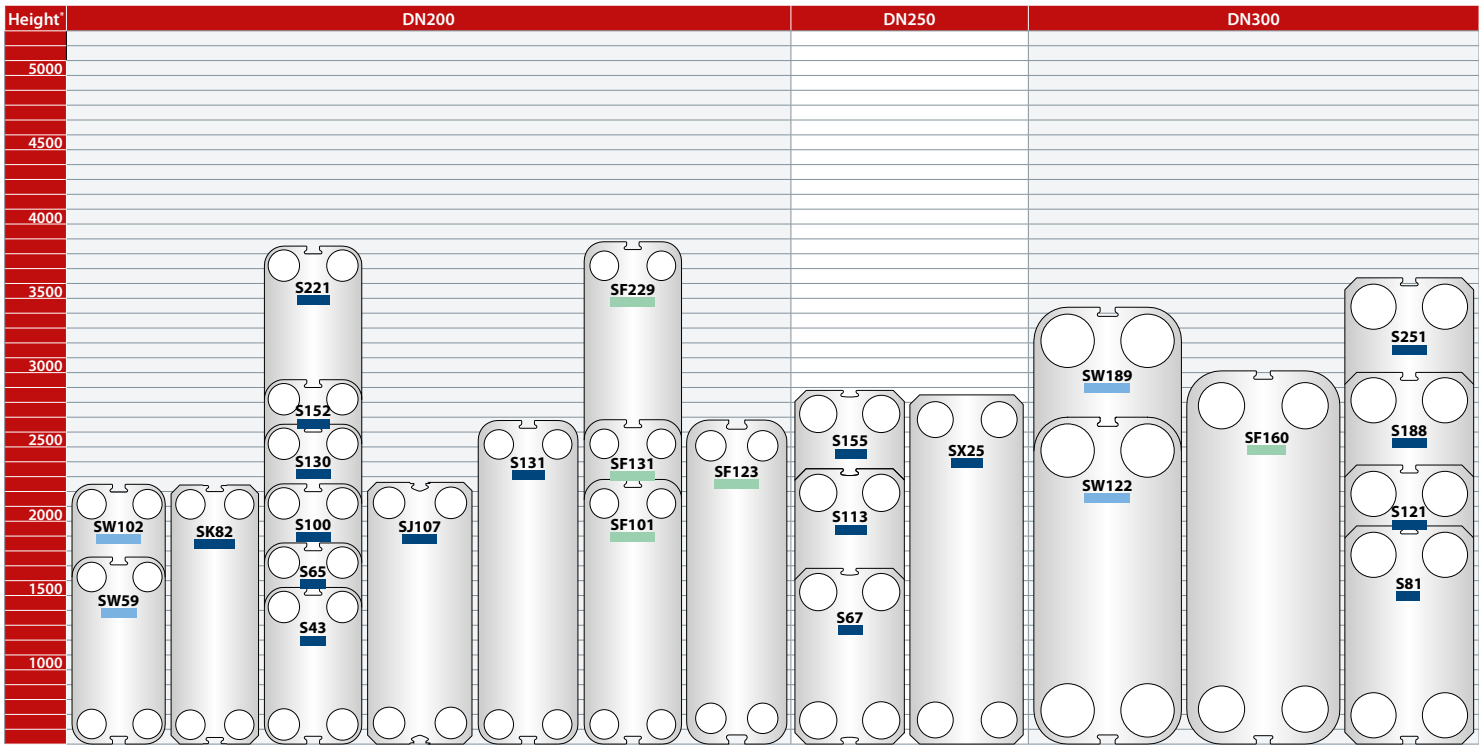
Our quality control inspectors meticulously examine the plates for defects. We conduct dye tests to discover potential leaks in the plates, and perform gas tests for ammonia based plate heat exchangers.

Every plate must meet our strict quality demands before being shipped to our customers, to ensure a durable solution with a long lifetime.

We are also able to perform diagnostics on-site. If we uncover leaking plates in your current installation, we can replace them with high-performance SONDEX® plates that increase the reliability and efficiency of your system.

SONDEX® and Danfoss gasketed heat exchanger portfolio





With our extensive plate portfolio, we are confident that we can provide you with an optimal solution for your business and applications.

Design pressure:
PN 10, 16, 25 bar.

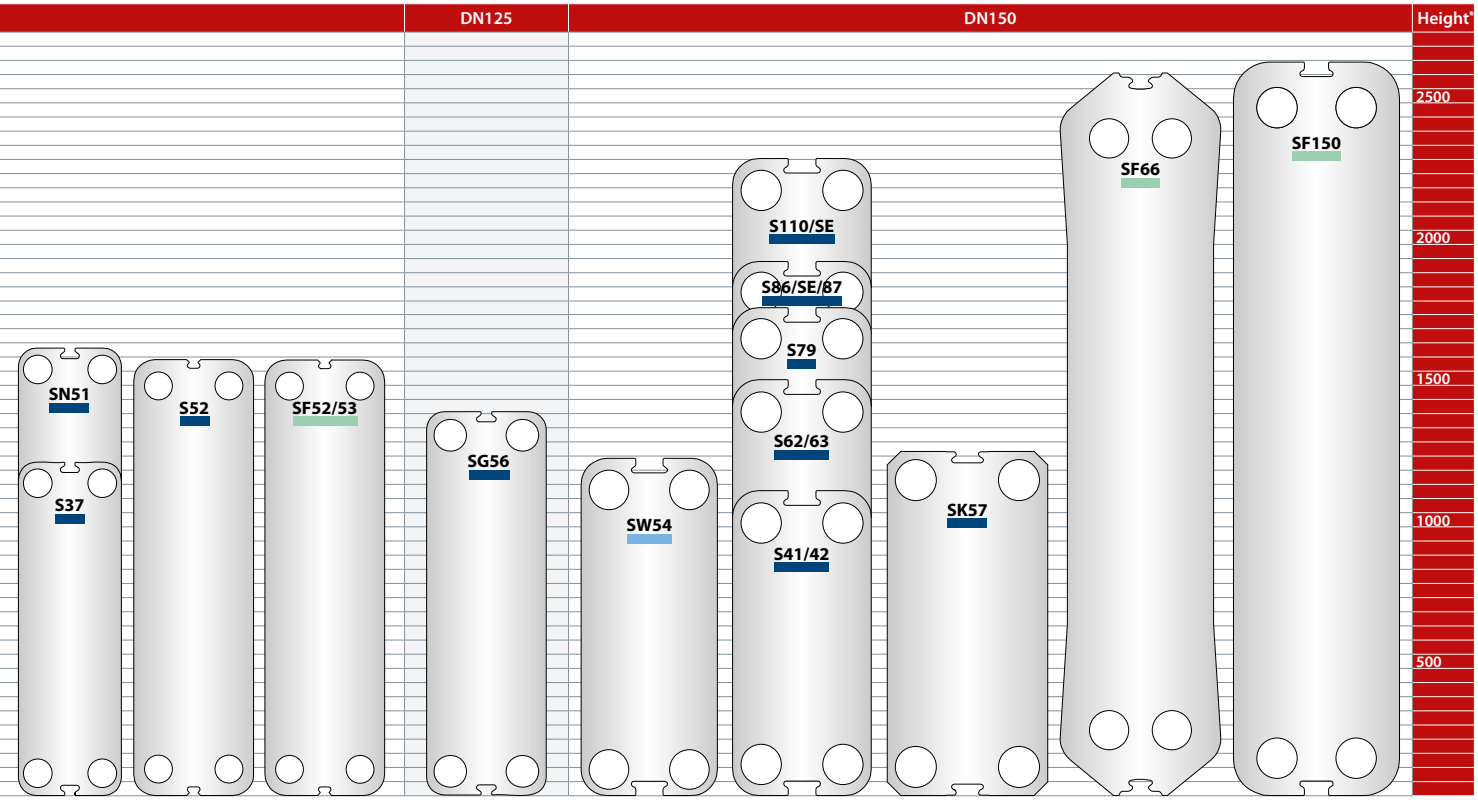
Min. working temperature:
-20°C (depending on gasket material selected).

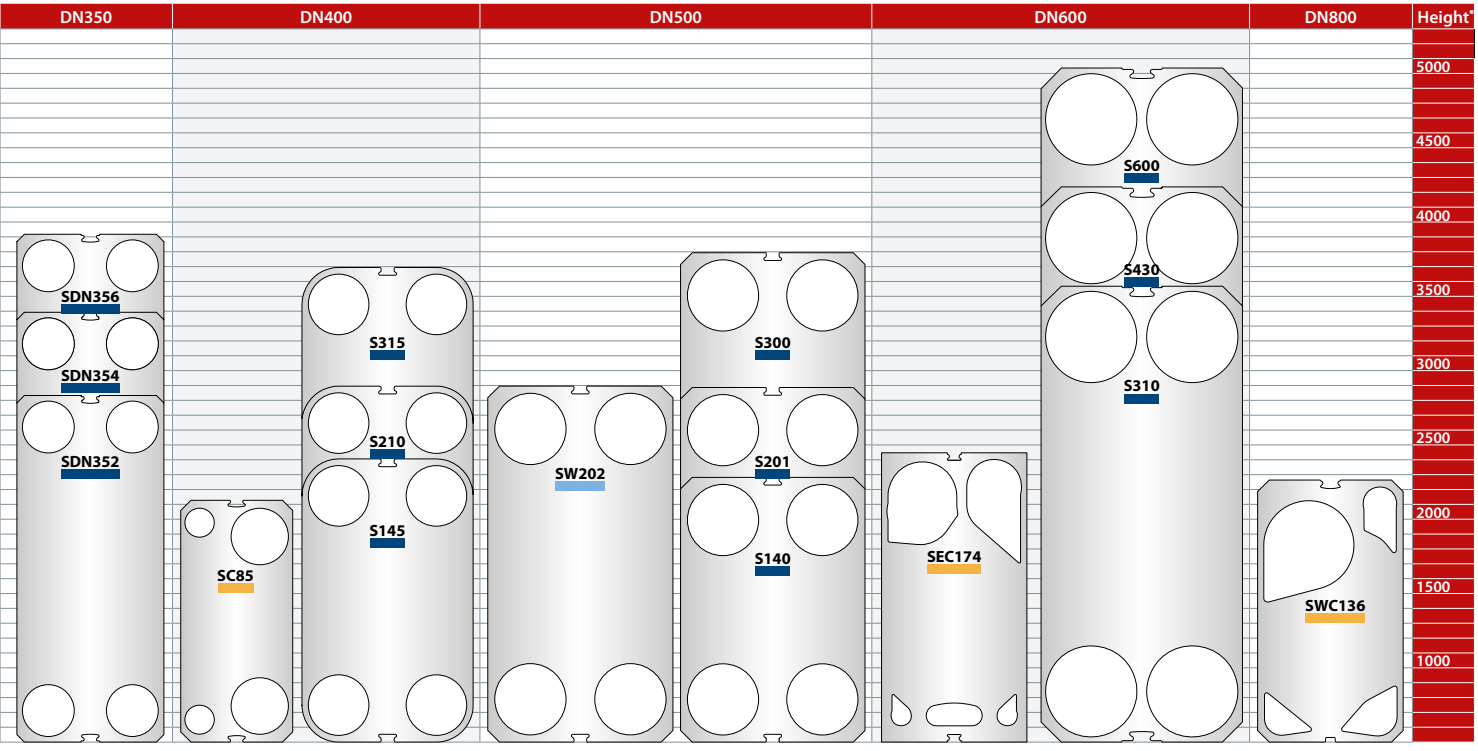
Max. working temperature:
180°C (depending on gasket material selected).

Frame (head and follower) materials:
Mild steel, painted in RAL 5010.
Other colors are available upon request.

Plate materials:
AISI 304, AISI 316 and titanium.
Other materials are available upon request.

Traditional Fishbone plates
Micro Plate™ plates
Free Flow plates
Semi-welded Fishbone plates
Evaporator and condenser plates





Mesaurements in mm

Gasket materials:
NBR, EPDM and Viton.
Other materials are available upon request.

Construction standard:
PED 2014/68/EU (EN13445)
ASME sec VIII, Div. 1 (In select countries).

Classification societies:
Our plate heat exchangers fulfill international standards, such as:
ABS / BV / CCS / DNV-GL / LRS / NKK / RINA / RMRS / CR / CSC BPV, as well as other certificates for marine applications.

Performance certificates:
AHRI (LLHE).

ENGINEERING
TOMORROW

Next-generation heat transfer solutions

Customized to match your requirements

Customized solutions

We have many years of experience designing high-efficiency gasketed plate heat exchangers for all applications across the entire world.

We customize our plate heat exchangers according to your specifications, and we will provide you with energy-optimized solutions for your applications that yield a considerable return of investment in the long run.

Sondex and Danfoss join forces

The merger of Sondex and Danfoss sees the emergence of a global leader in heat transfer solutions.

By joining forces, we are able to offer you a broader, even more competitive and innovative product and service portfolio within heat transfer.

Together, we continue to improve and elevate our products to new heights in terms of quality and performance.

Global presence

We are constantly expanding our market share, and we are globally present with numerous sales and production companies worldwide.

We are very excited to welcome you to a world of high-efficiency heat transfer solutions.

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