

Plate Heat Exchangers for Marine Applications



SONDEX



SONDEX A/S is a Danish company specialized in development, production and global marketing of plate heat exchangers and freshwater distillers. Since the very start in 1984 SONDEX has grown to one of the leading companies on the world market and has developed a big range of plate heat exchangers for any task. Apart from our traditional plate heat exchangers the product range includes copper brazed, semi-welded and all-welded plate heat exchangers as well as freshwater generators based on the plate heat exchanger technology in single- or multistage freshwater distiller.

By means of technological innovation SONDEX has developed and designed a new generation of plate heat exchangers specially for the marine sector.

With this specially designed plate heat exchanger it has appeared that the SONDEX plate heat exchangers can be major player on the marine world market. With technical innovation and a world-wide service net it is our aim to keep and extend our previous market position.

The SONDEX Plate Heat Exchanger

The Sondex plate heat exchanger has today become a standard component in the cooling system of many marine application designs.

Our heat exchanger is designed according to the ship classifications bureaus specifications and rules securing the shipowner that his Sondex plate heat exchanger is designed to meet the high demand for quality which is necessary in order to give a long lifetime and a trouble free use of the plate heat exchanger.

The SONDEX Marine Plate Range

The range of SONDEX Marine plate heat exchangers consists of 18 plate types each with 2 different corrugations (thermal hard and thermal soft).

The range consists of plates with areas from 0.04 m²/pl. to 2.00 m²/plate and from 1" to 14" connections enabling us to handle flow rates up to 2000 m³/hr.

The frame edge clamped with normal industrial painted frame or in coated frame.



SONDEX Advantages of The Plates

PLATE DESIGN

The construction of the inlet part makes a perfect distribution of the liquids across the heating surface. The inlet part is increased and supplied with grooves preventing "dead spots". The inlet with grooves secures a strong inlet part with a minimum of contact points. The inlet parts are constructed with a leakage drained zone. This together with the specially designed double gasket in the area makes the mixing of the two liquids impossible.

The plate pattern is constructed to obtain a high thermal efficiency. The pattern is available in two designs with different angle sizes giving high respectively low turbulent flow. Combining these in a plate pack an optimal plate composition can be calculated.

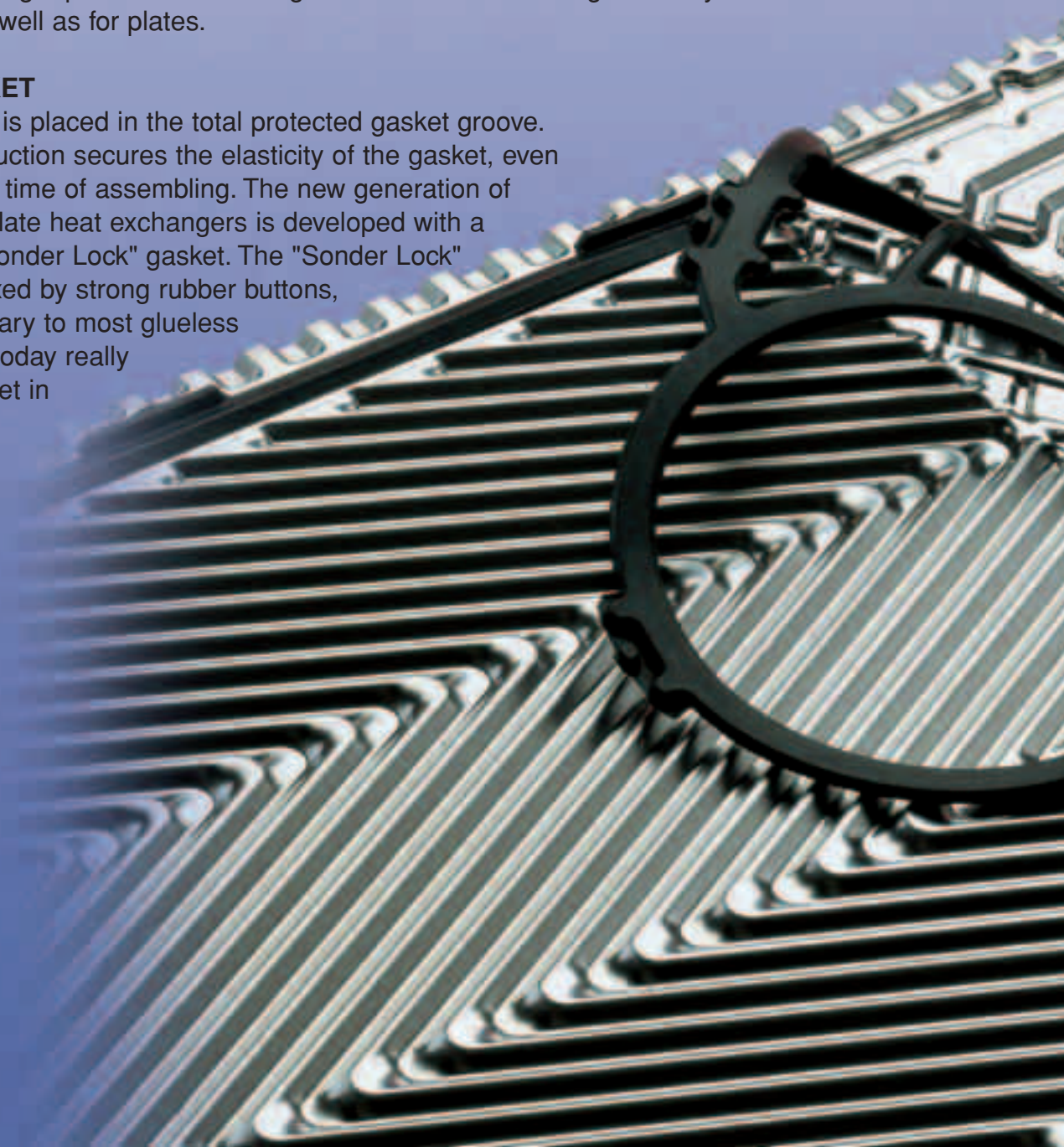
The angle and fishbone pattern has appeared to make the best heat transmission by a given pressure drop.

EDGE REINFORCEMENT

In order to strengthen the gasket groove the plate is supplied with deep steepedged grooves giving a perfect hold of the gasket. This means a long durability for gaskets as well as for plates.

THE GASKET

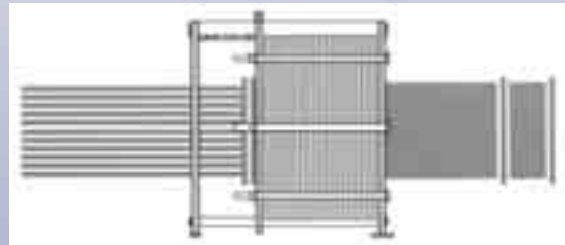
The gasket is placed in the total protected gasket groove. This construction secures the elasticity of the gasket, even after a long time of assembling. The new generation of SONDEX plate heat exchangers is developed with a glueless "Sonder Lock" gasket. The "Sonder Lock" gasket is fixed by strong rubber buttons, which contrary to most glueless gaskets of today really fix the gasket in the groove.



Space and Weight Requirement

The space requirement and weight of the equipment onboard a ship today is more important than ever. Therefore it is very important to choose the right equipment.

The difference between a traditional tubular heat exchanger and a SONDEX plate heat exchanger is major. In space- as well as in weight-requirements there is a lot to save with a SONDEX plate heat exchanger:



- The weight of the plate heat exchanger only has 20%.
- The size is only 30%.
- The K-value is 4-6 times higher.
- Easier to service.
- Longer durability time and less price raising costs.

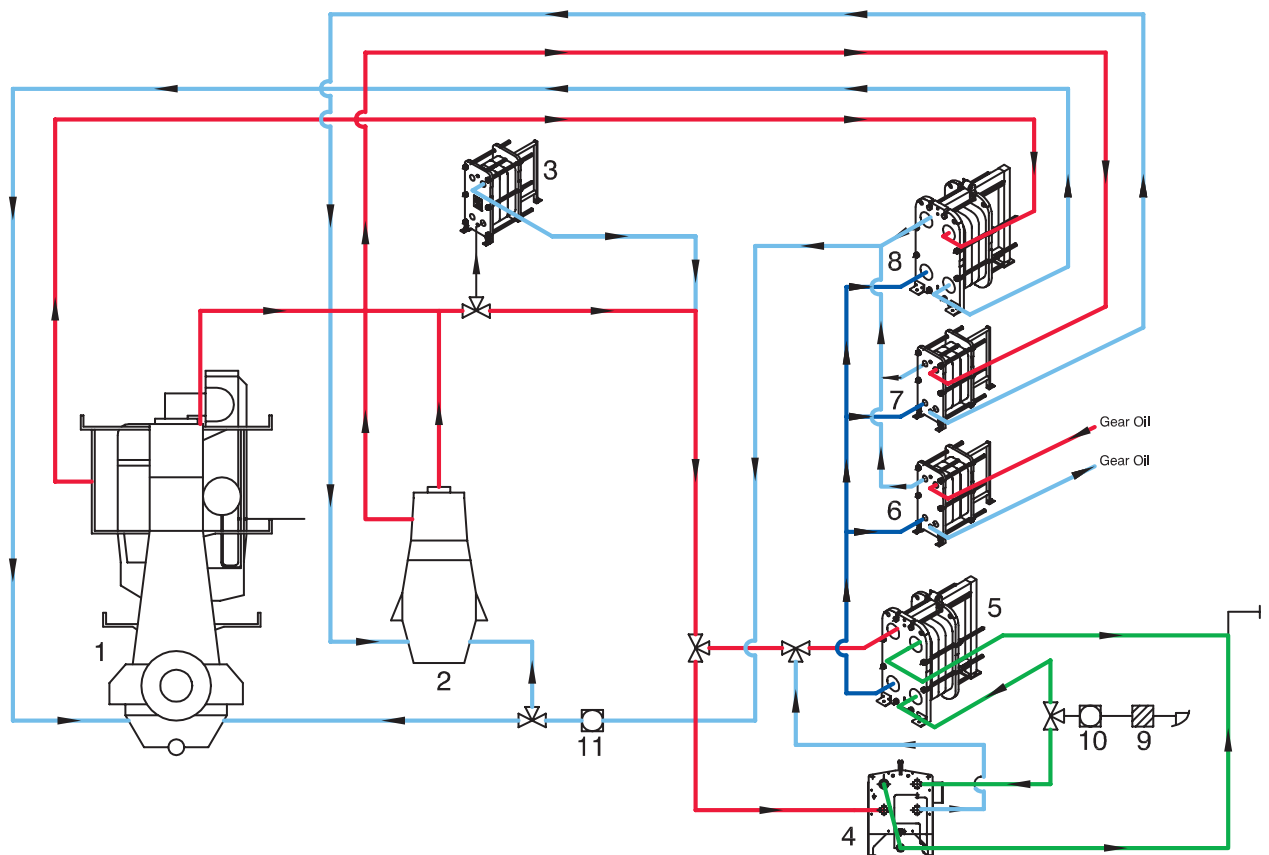


The Cooling System

Most cooling systems are made as central cooling systems, which means that there is only one or two bigger plate heat exchangers equipped with titanium plates. Titanium is the only material that can withstand the aggressive seawater without corrosion damages on the plates in the heat exchanger. This means that the central cooler can operate without problems using seawater as the cooling media for the internal freshwater cooling system.

The advantage of a central cooler is that the use of the corrosive seawater is limited to one or two plate heat exchangers, and thereby the use of exotic material for the plate heat exchanger and the seawater pipeline is limited to a minimum, which will reduce the corrosion damage in the cooling system.

The rest of the plate heat exchangers is normally equipped with stainless steel plates there is no corrosion risk as the heat exchangers work with freshwater.



1. Main Engine
2. Auxiliary Engine
3. Heat exchanger for Central Heating
4. Freshwater Generator
5. Central Cooler
6. Gear Oil Cooler

7. Lubricating Oil Cooler, Auxiliary Engine
8. Lubricating Oil Cooler, Main Engine
9. Seawater Filter
10. Seawater Pump
11. Freshwater Pump

FRESHWATER DISTILLER

The SONDEX freshwater distiller utilizes the heat from diesel engine jacket cooling water to produce pure drinkable water by evaporating sea water under high vacuum, enabling the feed water to evaporate at temperatures below 48°C. Steam can also be used as the heat source instead of the hot jacket water. The SONDEX freshwater distiller is based on two SONDEX titanium plate heat exchangers, acting as an evaporator and a condenser respectively.

CAPACITY 1-150 t/24 h



ALL WELDED AND SHELL HEAT EXCHANGER



Our many years of experience from heat exchangers is placed at your disposal. You will get the right solution at a competitive price.

DESIGN AND FUNCTION OF THE HEAT EXCHANGER

The specially developed Sondex plate and shell heat exchanger "SPS", has proven to be a heavy fuel oil pre-heater in the marine industry. With its unique design and many advantages this type of heat exchanger has now become the standard fuel oil heater on many ships.

This heat exchanger works in the same way as an ordinary tubular unit, however, it is more efficient because plates have been used instead of tubes. The plates are laser/TIG welded in order to form a plate pack, which is then mounted inside a traditional cylindrical shell. Pressure rating: PN16/PN25. Max. temp.: Up to 250°C.

The heat exchanger is produced as an all welded exchanger or with flanges as shown on the photo below. This makes manual cleaning possible.



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