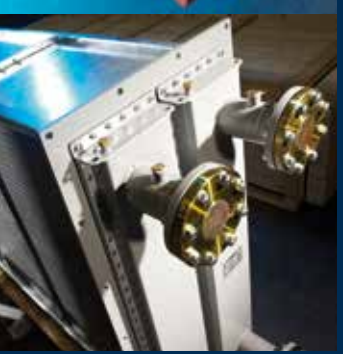


VDL Klima

Marine cooling solutions

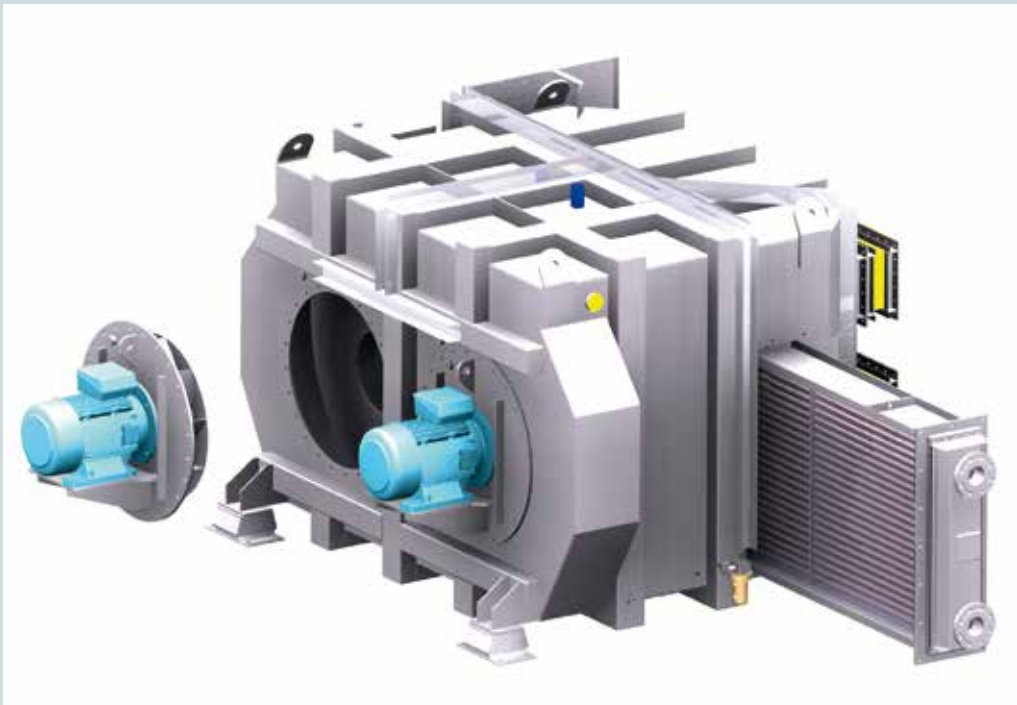
Strength through cooperation

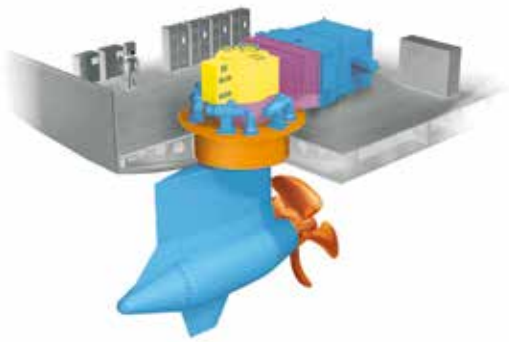
VDL Klima Marine cooling solutions

VDL KLIMA HEAT EXCHANGERS ARE USED ON SHIPS WORLDWIDE FOR DIRECT AND INDIRECT COOLING OF COOLING WATER, LUBRICANT AND HYDRAULIC OIL FROM ENGINES, PODDED ELECTRIC PROPULSION SYSTEMS, GENERATORS, TRANSFORMERS, CONVERTERS AND HYDRAULIC SYSTEMS. IN ADDITION TO TRADITIONAL PLATE-TYPE HEAT EXCHANGERS, DEMAND IS INCREASING FOR VDL KLIMARINE BOX COOLERS FOR COMPLETE ON-BOARD COOLING CIRCUITS OR INDIVIDUAL ENGINES.

ENGINEERING AND R&D

Ever more often VDL Klima is being involved from the earliest stages to develop solutions that perform optimally in a specific situation. This way you benefit from all the expertise in heat transfer solutions, specifically in applications such as electromechanical power and control systems for the maritime industry, that we have amassed since 1908. The added value of VDL Klima shows itself through a clever interplay between sales, R&D, engineering and production. And naturally everything we develop complies fully with strict international quality standards and design codes.



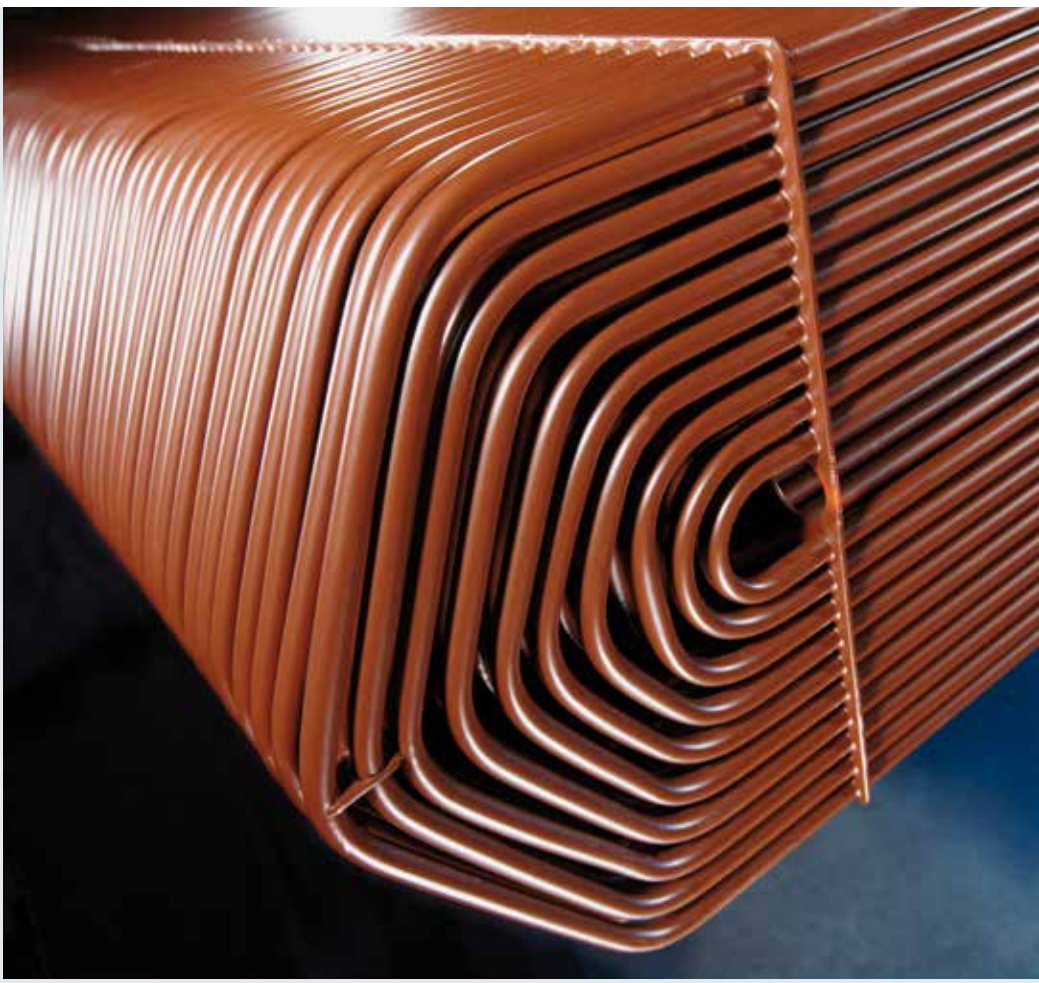


POD COOLER

Modern boats, from inland navigation vessels to the very largest cruise ships and ice breakers, increasingly make use of electric propulsion. VDL Klima works closely with customers to develop both components and complete solutions for the cooling of such drive units.

VDL KLIMARINE BOX COOLER

The VDL Klimarine box cooler, with its compact design and large cooling capacity, is frequently used to cool main engines, auxiliary engines, generator sets and other auxiliary systems on board of ships. The engine coolant is pumped through highly efficient aluminium brass (CuZn20Al) V-shaped tubes. Located inside a sea chest within the vessel's hull, the VDL Klimarine box cooler is protected against damage from underwater hazards. Openings at the top and bottom of the sea chest create a convection current which flows over the tube bundle and transfers heat into the sea.



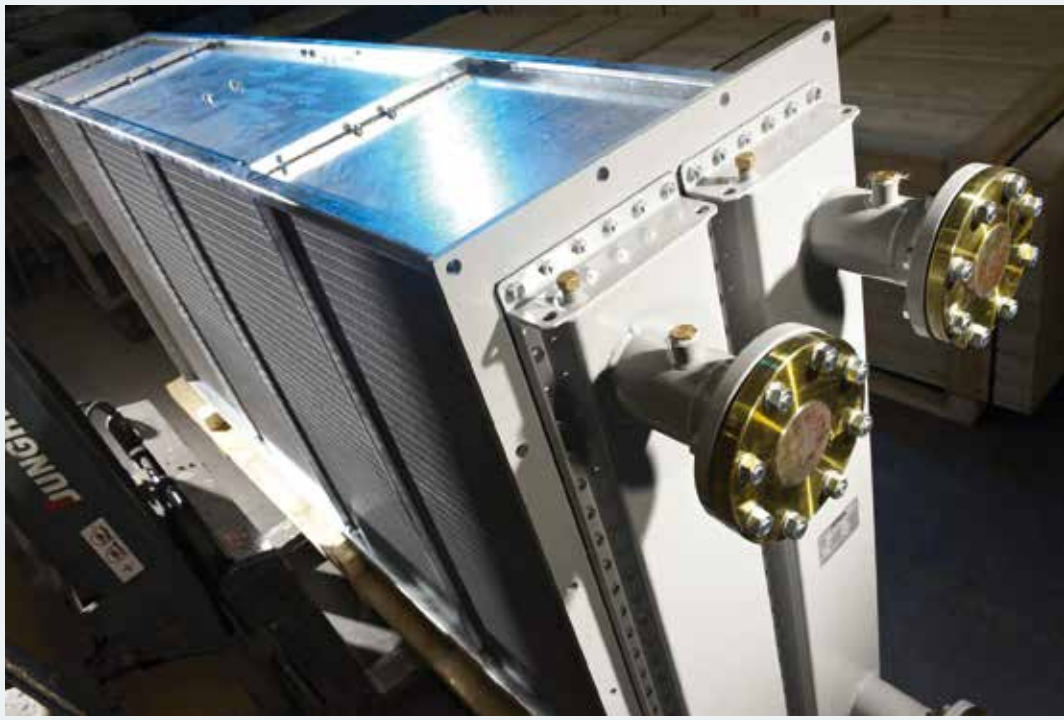
AIR/WATER COOLERS

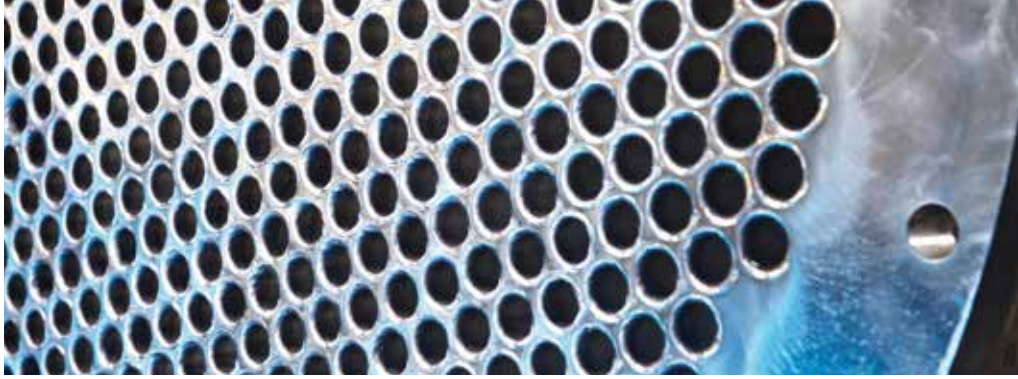
Air/water coolers are steel housings with built-in cooling coils, mainly used in the electromechanical industry for carrying off heat when normal surface cooling is not possible or a specific IP protection class is required. Typical of these systems is the cooling of the machine's primary (closed) air circuit by means of a secondary (fresh or sea) water circuit. The constructions built by VDL Klima are mounted on or against the generator, electric motor or transformer. The capacity, dimensions and provisions for attaching the housings to the machine in question are determined in consultation. An example of VDL Klima's air/water cooler is the POD cooler.

AIR COOLING AND HEATING COILS

VDL Klima air cooling and heating coils are available in various models, and can be customized to meet the client's specifications. The technical design, calculations and production are carried out by VDL Klima.

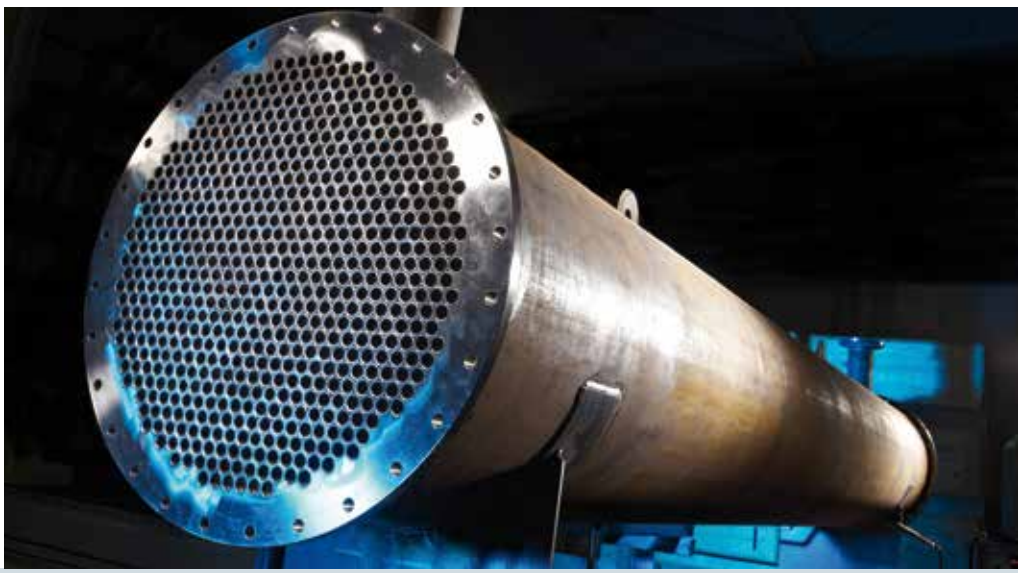
The heat exchanger's thermal capacity is calculated using software developed by VDL Klima, based on years of experience in the area of heat exchange. Furthermore, VDL Klima is a member of HTRI and also uses software produced by this consortium to design heat exchangers. VDL Klima can calculate a heat exchanger for almost all media and/or mixtures. The choice of material depends on the media and circumstances.





SHELL AND TUBE HEAT EXCHANGERS

The VDL Klima shell and tube heat exchangers can be used in almost all installations where heat and cold are exchanged between liquids and-/or gasses. Due to the high fill factor of the casing, the VDL Klima shell and tube heat exchangers have a high level of efficiency. Different models are available for a wide variety of applications. In the marine market they are used for tank cleaning heaters, dump coolers and inter-medium heaters.



QUALITY ASSURANCE

VDL Klima supplies equipment to the electromechanical sector, where customers expect service life guarantees rather than just promises. Both the materials and the construction must meet the highest quality standards. To assure optimum quality of the finished product we have defined quality standards for every step of the production process. VDL Klima works in accordance with international guidelines and respects all current laws and regulations. We also design in accordance with various international codes including AD 2000, EN 13445 and ASME section VIII div.1. A thorough final inspection is conducted by our quality engineers.

VDL Klima

VDL Klima, part of VDL Groep, develops and manufactures ventilation systems and heat exchangers, including air/air, air/water and box coolers as well as shell and tube heat exchangers for various applications such as propulsion systems, power generators, transformers and converters. Engineering and production are fully integrated, and are therefore performed in-house. VDL Klima makes use of the tremendous wealth of knowledge and skill that have been developed within the organization over the past 100 years and its state-of-the-art production technologies to provide every customer with the optimal solution for their requirements, and can provide both custom solutions and mass production.

VDL Klima is active in the following market segments:

- Shipping and maritime industry
- Energy generation and conversion (conventional and renewable)
- Agriculture and industry
- Innovative industries

VDL Klima bv

Meerenakkerweg 30
5652 AV Eindhoven
P.O.Box 300
5600 AH Eindhoven
The Netherlands

Phone +31 (0)40 298 18 18
Fax +31 (0)40 298 18 00

info@vdlklima.com
www.vdlklima.com

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