

VDL Klima

V-shaped VDL Klimarine box cooler



Strength through cooperation





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THE VDL KLIMARINE BOX COOLER, WITH ITS COMPACT DESIGN AND LARGE COOLING CAPACITY, IS FREQUENTLY USED TO COOL MAIN ENGINES, AUXILIARY ENGINES AND GENERATOR SETS 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 ALLOW RAW WATER TO FLOW THROUGH THIS TUBE BUNDLE, TRANSFERRING HEAT FROM THE VESSEL'S ENGINE TO THE OUTSIDE WATER. CIRCULATION IS THE RESULT OF THE PHYSICAL PRINCIPLE THAT HOT WATER RISES AND COLD WATER SINKS, CALLED THERMAL SIPHONING.

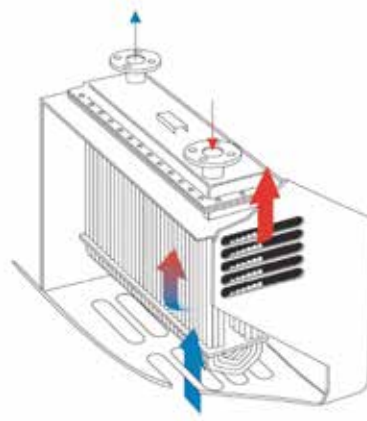
IMPRESSED CURRENT ANTI-FOULING SYSTEM (ICAF)

While VDL Klimarine box coolers require very little maintenance, the tube bundle is exposed to seawater and can potentially become fouled with algae, mussels, barnacles and other shellfish. The rate of heat transfer can be adversely affected by this build-up of biological marine growth, and the ICAF system is designed to prevent this.

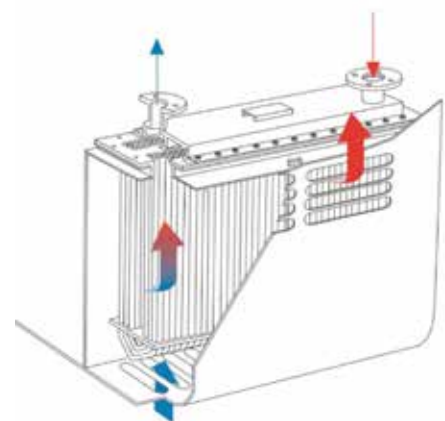


HOW THE ICAF SYSTEM WORKS

The system uses an artificially-triggered voltage differential between the copper anodes and the cathodes. A small electrical current causes the copper anodes to slowly dissolve, producing copper ions that mix with the seawater in the sea chest, creating an environment that prevents the build-up of marine growth. The copper anodes are sized to match the vessel's dry docking cycle, which is usually once every 3 to 5 years. The steel frame carrying the copper anodes and the cathode plates is welded in place inside the sea chest, while the cables from each anode are connected to the power supply unit.



transverse installation



longitudinal installation

MOUNTING POSITION

Most customers choose a transverse installation: the VDL Klimarine box cooler is mounted between the existing frames of the vessel. Less common, but also possible, is the longitudinal installation. For this option the frame must be cut open to install the sea chest.

NAUTICAL CLASSIFICATION

VDL Klimarine box coolers can be made to virtually any specifications, including those of classification societies such as BV, DNV and GL.

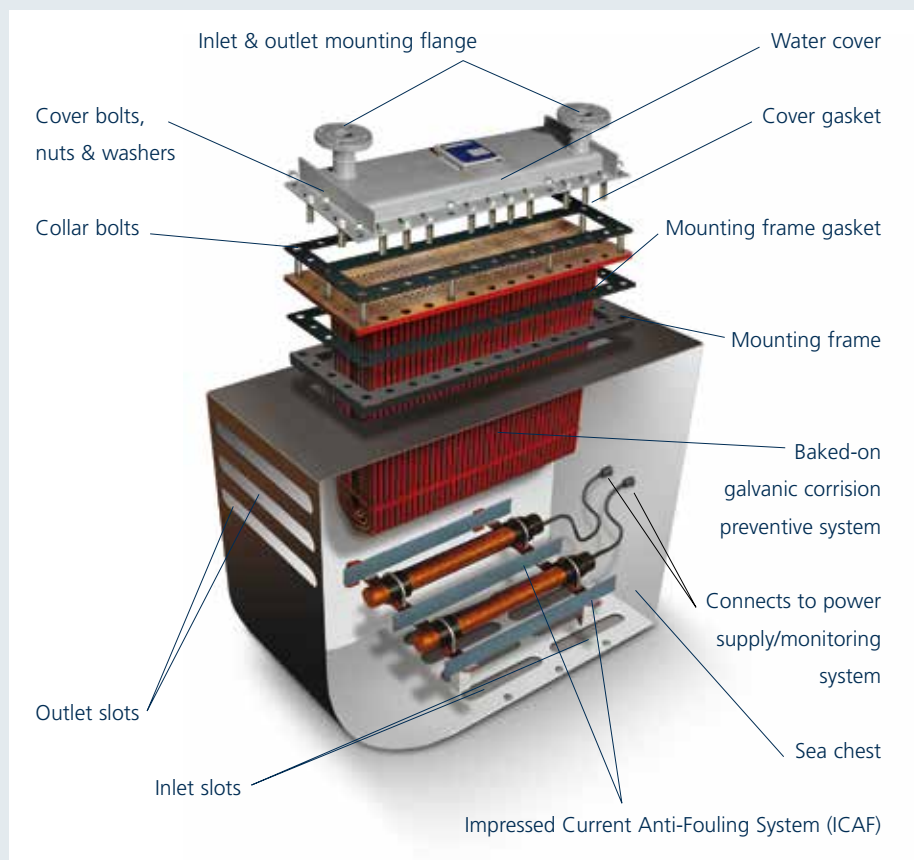
DESIGN OF THE VDL KLIMARINE BOX COOLER

Our compact design allows flexibility in sizing, occupying less space in your vessel. VDL Klima has incorporated the following features to extend the service life of the VDL Klimarine box cooler:

- V-shaped tube design to break the force of the incoming water
- reinforcement strip to reduce vibration
- support plates that tie the tubes together, providing reinforcement and preventing vibration
- special baked-on synthetic coating that improves the heat transfer rate, protects the unit from galvanic corrosion and is resistant to saltwater, floating debris and chemicals (is not affected by stray electric currents)

OTHER SUBSTANTIAL BENEFITS OF THE VDL KLIMARINE BOX COOLER DESIGN

The cooling capacity is guaranteed, even in foul or partly frozen water. This design also eliminates the entire secondary raw water cooling system, resulting in improved reliability and considerable cost savings.



- Reduced installation costs
- Reduced maintenance costs (easy to clean, no regular replacement of pumps and ductwork, no spare parts required, no need for seawater strainers or filters, repairs without dry-docking)
- Lower fuel consumption by auxiliaries
- Fewer components for nautical classification

VDL Klima, part of the 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

SHIPPING AND MARITIME INDUSTRY

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.



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

Your dealer: