

Plate Heat Exchangers



Marine

Cool on all the 7 seas of the world



Process Equipment Division
GEA PHE Systems

Concentrating on competence - for your benefit

Within the GEA Process Equipment Division of the international GEA Group, GEA PHE Systems is responsible for plate heat exchanger technology. Strong individual companies: GEA Ecoflex, GEA Ecobraz, GEA WTT, GEA PHE Systems NA and GEA ViEX with production locations in Germany, Sweden, the USA, Canada and India produce gasketed, fully welded and brazed plate heat exchangers for worldwide distribution for use in almost all industrial applications. GEA EcoServe – the GEA PHE Systems service organisation – operates customer service centres in many countries to provide a rapid and competent maintenance and spare parts service, all around the world.

Shipbuilding – a driving force of the global economy

The global economy is more interlinked than ever before. Functioning maritime trade plays a decisive role here, as more than 90% of global goods traffic is handled by sea. Maritime trade has been expanding at a breathtaking rate for some years, by around 25 % between 2002 and 2006 alone. The transportation capacities required for this mean that commercial shipbuilding is currently enjoying unparalleled order books calling for previously unheard-of ship dimensions. The same is true for the cruise industry and in the offshore sector. At the same time the demands placed on ship owners in the field of marine safety and environmental protection (IMO, MARPOL, USCG) are increasing. Coupled with the necessity to use more and more efficient ships (drastic doubling to tripling of fuel costs between 2005 and 2007), the call for state-of-the-art ships will remain at a very high level. Efficient and intelligent refrigeration engineering on board of these modern ships is absolutely essential. GEA PHE Systems can provide you with the necessary support.



LT/HT fresh water/lube oil cooler incl. thermometers,
pressure gauges and drain/vent valves



Safety first is paramount at sea

Where ships manoeuvre in narrow waters or have to keep on course in a storm in the open sea, many things may happen, except the failure of the ship's engine. This can be lethal, cost millions and do irreversible damage to the environment. For this reason, reliable propulsion and auxiliary systems are a must in modern operation on the seas. It is, therefore, only logical that many engine rooms are equipped with plate heat exchangers from GEA PHE Systems – from the container ship to the luxurious cruiseship, from the polar circle to the tropics.

As one of the pioneers in the development of plate heat exchangers, GEA PHE Systems not only offers you units proven at sea, but also in-depth special knowledge. The propulsion systems of the different manufacturers determine the design and dimensions of the cooling systems. In addition to cooling the propulsion systems, plate heat exchangers assume a large number of other tasks. Whatever the case may be: Safety, reliability and low lifetime costs are always on board.



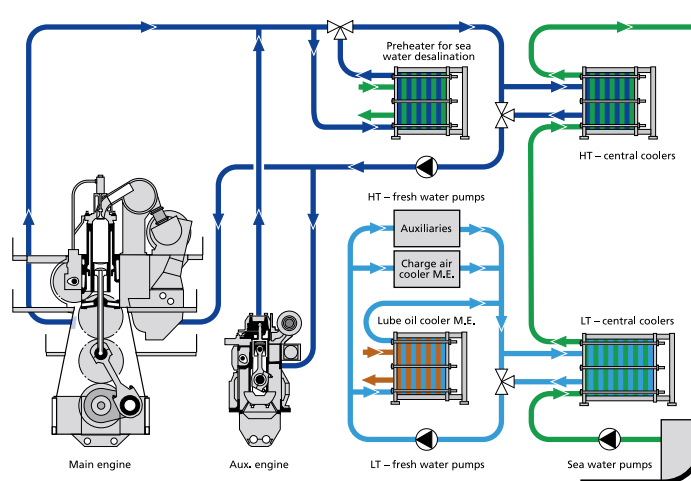
Lube oil cooler module

Efficient cooling for main and auxiliary engines

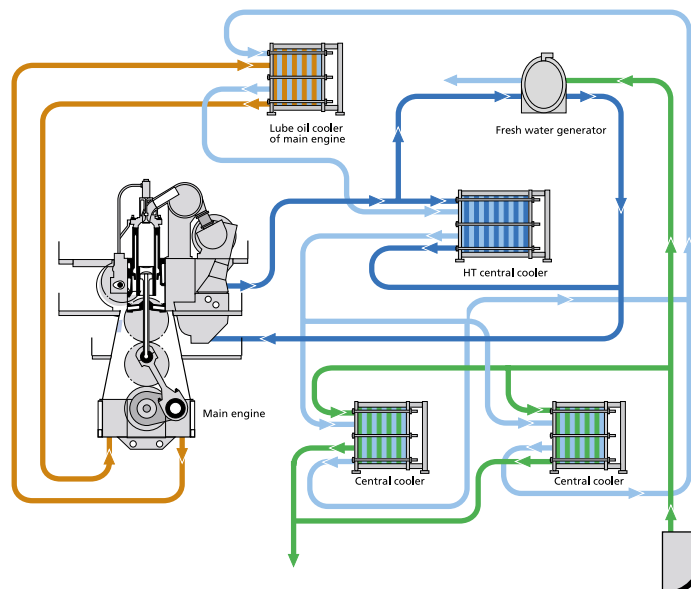
The cooling of ships' engines requires a large number of different components, such as GEA PHE Systems plate heat exchangers. This illustration below shows an example of a propulsion cooling system layout.

Solutions deviating from this are feasible without problems, thanks to the variety of sizes and the flexibility of the plate heat exchangers. We would be pleased to give advice or to show you other individual solutions.

Centralised cooling system with separate low temperature (LT) and high temperature (HT) circuits



Central cooling system with two central coolers



Two principles having the same effect

There are two optional principles available for cooling high-power engines with plate heat exchangers:

- The plate heat exchangers are placed separately next to the engine
- The plate heat exchangers are directly built-on to the engine block to save space

GEA PHE Systems closely co-operates with leading engine manufacturers and is involved in the development of new engine generations. This results in complete high-performance and economic propulsion systems.

International classification: Plate heat exchangers manufactured by GEA PHE Systems are readily approved by the leading international ship classification bodies.



Astilleros Balenciaga S.A.



LT central fresh water cooler installed on a ferry

Designing the suitable cooling system

At the time of the installation of the ship's engine, the GEA PHE Systems plate heat exchangers are also installed. Depending on the design, the system can assume many tasks in cooling and/or heating of all types of fluids.

Typical applications include:

- Central cooling of the main or auxiliary engines or turbines
- Lubrication oil cooling
- Recooling of circulated water for cooling cylinders, pistons, injection nozzles, valves and generators
- Cooling of gear oil, compressor oil and other lubricants
- Preheating of lubrication oil and heavy fuel oil
- Preheating of seawater for fresh water production
- Heat recovery
- Heat exchange to air-condition the passengers' cabins and freight spaces

Queen Mary 2 sails with GEA Ecoflex



Photo provided with courtesy of Alstom / France

Even the engine room of the Queen Mary 2, the most prestigious cruise liner of the world, built at ALSTOM Marine, Saint Nazaire, France, is equipped with GEA PHE Systems plate heat exchangers, in this case with our NT 150 units.

In use for long and short voyages

For marine applications, GEA PHE Systems offers a range of plate heat exchangers that has proven itself over many years. The NT Series launched on the market in 2000 rounds off the Varitherm range which has been established for a long time. Due to the high quality materials and their special gap geometry, all our units feature a long service life and high performance.

NT plate heat exchanger

- Optimum design due to variable lengths and profiles
- Low investment due to maximum heat transfer
- High corrosion resistance due to a suitable material selection:
titanium for seawater, stainless steel for oil and closed-circuit water systems
- Self-positioning plate package (anti-waving)

Varitherm

- Extremely variable in its capacity, profile and material selection
- Heat exchanger surfaces from 0.1 up to 2,000 m² per unit
- Flow rates of up to 3,600 m³/h per unit
- Space- and weight-saving due to a particularly compact design

Complete solution

When requested by the customer, GEA PHE Systems equips the cooling units with a full range of control components (thermometers, pressure gauges etc.).

Clean plate heat exchangers

The “inline filters” protect the system from contamination contained in the seawater, such as seaweed, sludge and mussel shells – they can be easily cleaned and quickly re-installed.

Economic gaskets

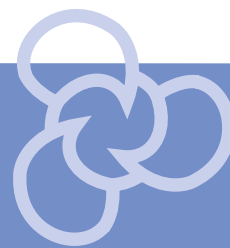
Here GEA PHE Systems offers the non-adhesive EcoLoc or LocIn systems which enable short downtimes, thus reducing your maintenance costs. On request, these gaskets are, of course, also available as adhesive versions.

For technical details on all product groups, please refer to our separate leaflets.



GEA PHE Systems Competence in Heat Transfer

With emphasis on the highest quality standards and constant innovations, GEA PHE Systems continues to expand its market position: Within the GEA Process Equipment Division, GEA Ecoflex together with GEA Ecobraze, GEA WTT, GEA PHE Systems NA, GEA ViEX and GEA EcoServe forms GEA PHE Systems, the Center of Competence and Service Center for gasketed, fully welded and brazed plate heat exchangers of GEA Group:



- HVAC
- Refrigeration
- Sugar
- Chemical
- Paper
- Food
- Power
- Marine
- General Industry
- Renewable Energy



Contact details at:
www.gea-phe.com

The specifications contained in this printing unit are intended only to serve the non-binding description of our products and services and are not subject to guarantee. Binding specifications, especially pertaining to performance data and suitability for specific operating purposes, are dependent upon the individual circumstances at the operation location and can, therefore, only be made in terms of precise requests.

Your contact:



GEA Ecoflex GmbH

Karl-Schiller-Str. 1-3 · 31157 Sarstedt · Germany
Phone +49 5066 601-0 · Fax +49 5066 601-104
info@gea-ecoflex.com · www.gea-phe.com