

## MGO COOLING SYSTEM with Kelvion Plate Heat Exchangers

### Application

The -Revised MARPOL Annex VI- new sulfur limit of 0,1% content in bunkered fuels, renders the low-sulphur Marine Gas Oil (MGO) the most common solution for vessels operating in SECA areas. The main difficulty however is the low viscosity of MGO, the values of which are often lower than the minimum limits recommended by leading engine manufacturers. In order to surpass this obstacle and to achieve a margin for safe engine operation, an efficient MGO cooler is required.



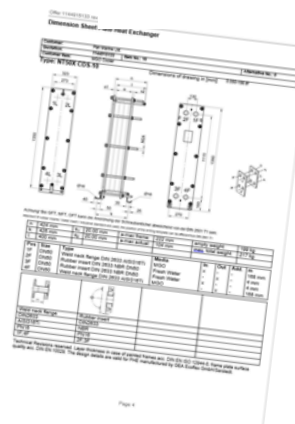
Conforming to this sign, Pantechnic is providing proper solution for cooling efficiently the MGO, using the revolutionary plate heat exchangers of **Kelvion PHE GmbH**, one of the world's largest producers of plate heat exchangers worldwide.

<http://www.kelvion.com/>

**Kelvion**



Using the **myPWT** advanced computational software, developed by **Kelvion PHE GmbH**, we are able to calculate and select in close co-operation with our Principals the right plate heat exchanger based on the heat exchange that is required to be achieved.



### Custom solutions according to customer preferences

In order to provide full flexibility with installation preferences, different delivery options are provided:

- **Standalone delivery**

The plate heat exchanger can be delivered as a standalone unit, directly from Kelvion PHE GmbH headquarters in Germany.

- **Skid-mounted delivery**

Alternatively, the heat exchanger can be integrated into a skid, which additionally includes the necessary piping equipment and instrumentation for manual or automatic regulation of the MGO temperature.

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**Standalone unit**

#### **Standalone unit - Technical Specifications**

- The new **-OptiWave-** design of the plates, ensures efficient MGO cooling down to safe for operation temperatures.
- Options for selecting either titanium plates for seawater duty or AISI316 stainless steel plates for fresh water duty

#### **Skid-mounted unit - Technical Specifications**

- Piping equipment and instrumentation of European origin, including: a three-way diverting valve, strainer, shut-off valves, butterfly valves and thermometers
- UNP 120 steel beam foundations
- Plate/Drip tray of 6mm thickness
- Piping (SCH 40) with DN25, DN32 or DN50 sizes, based on the MGO volume flow rate
- Corrosion protection for C4 Industrial Environment with final coating RAL 5002
- QA\_QC dossier including statement of fact by approved third party



**Skid-mounted unit**

## Principle of Operation

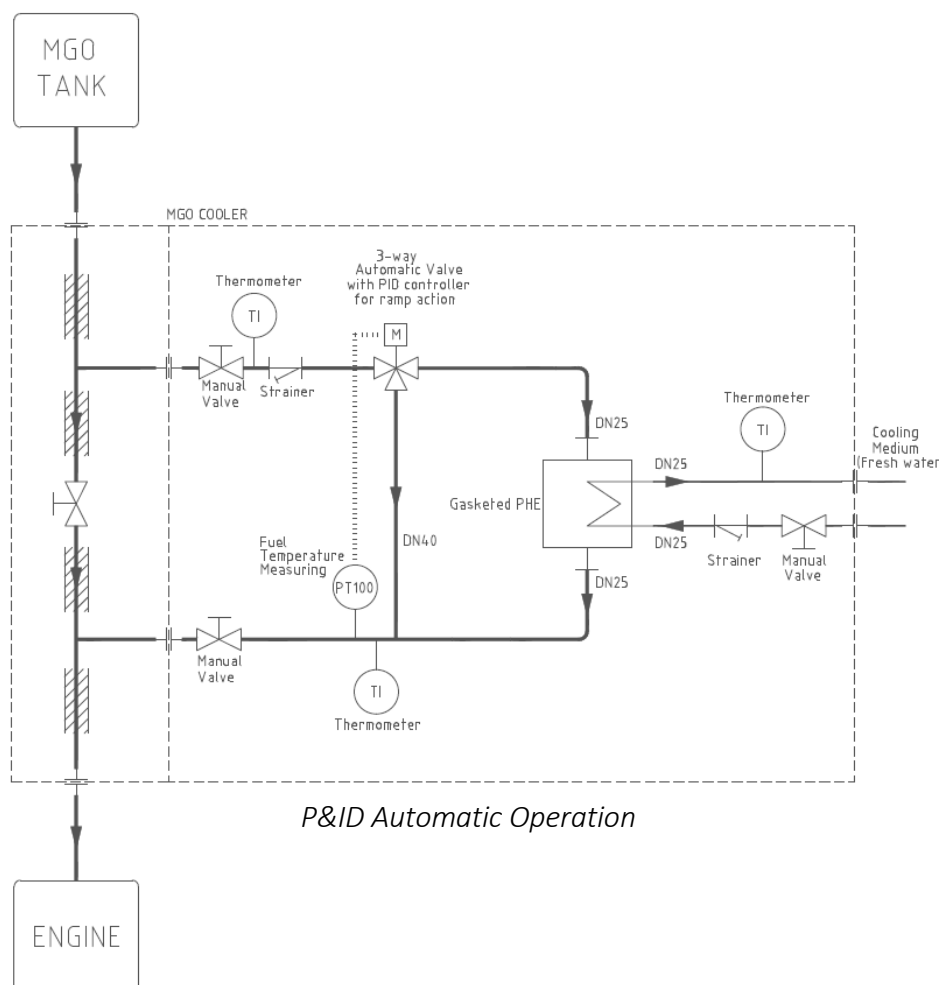
The operation of the MGO cooler can be implemented either manually or automatically.

### 1. Manual Operation

- The water flow is kept constant, while the temperature of the MGO flow is regulated by the three-way valve, which by-passes partly the flow through the heat exchanger, in order to reduce the temperature gradually and avoid thermal shocks.
- A temperature indicator installed downstream the heat exchanger, indicates the MGO outlet temperature.
- This option offers simplicity and is well suited for almost steady state conditions.

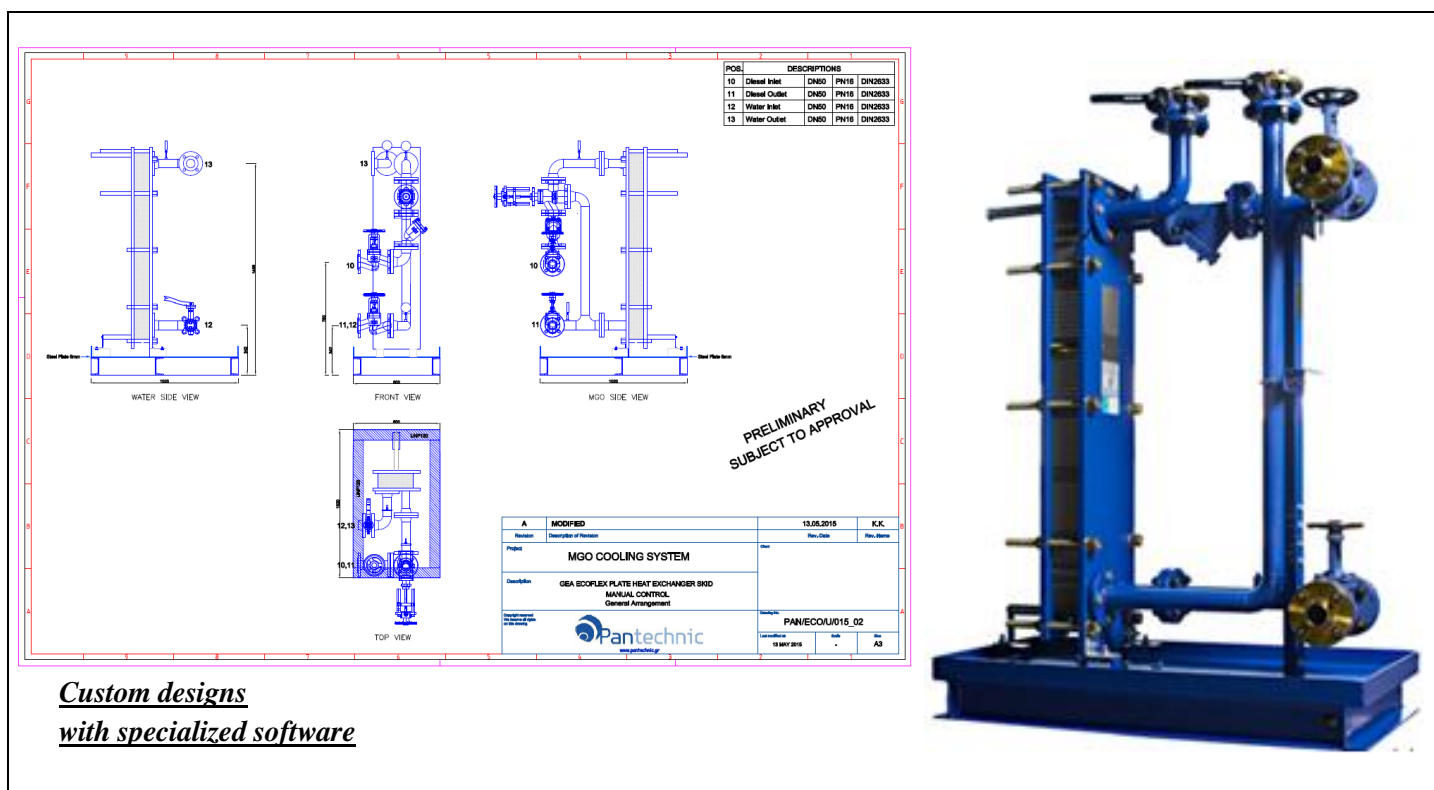
### 2. The Automatic Operation

Instead of a manual three-way valve, an automatic valve is also available including the necessary additional equipment (temperature sensor and electric actuator with intergraded PID controller) for automatic operation. This option is used in order to automatically decrease the temperature of the MGO flow that leaves the MGO cooler skid and follow the rule for smooth cooling of the fuel ( $2^{\circ}\text{C}/\text{min}$ ), as required by the engine makers.



### *A simple and cost-effective solution*

- With the use of modern CAD software, we are able to provide custom designs for our MGO cooler skid, taking into account space or other restrictions of the place of installation.
- As a result, the design of the skid can be done with different pipe arrangements, achieving at the same time the minimum possible dimensions.
- As the skid are manufactured without additional chiller unit, they become an attractive and cost-effective solution. Also the small footprint of the skid allows an easy retrofit installation.



*Pantechnic Ltd. offers first class engineering services & fabrications for the marine, power and industrial applications. With an experience of several turn-key projects and with the passion for perfection, distinguished professionals join forces to provide the highest quality to the projects contracted and added value to our customers.*

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