Certificate No.: 24052014263173

TÜRK LOYDU

TYPE APPROVAL CERTIFICATE

This is to certify that the

Cooler for Acoustic Enclosure

TL Project No	**22-1592**
Manufacturer	**KELVION MACHINE Cooling Systems GmbH**
Address	**Südstrasse . 48, 44625 Herne - GERMANY**
Product Type	**I-Class & Ukraine Corvette (Portside) SAP Number: 200153000 & 200165914** **I-Class & Ukraine Corvette (Starbord) SAP Number: 200153001 & 200165915**
Reference Rule	**TL Rules, Part E, Chapter 105 - Naval Ship Technology, Electrical Installations, 01.01.2022** **TL Rules, Part E, Chapter 107 - Naval Ship Technology, Ship Operation Installations and Auxiliary System, 01.01.2022**
Expire Date of Previous Certificate	-
Place and Date	**İSTANBUL / 14.05.2024**

Subject to the conditions referred to in the following pages, this certificate is valid until 13.05.2029.

131124

Emrah SÖĞÜTCÜ
New Building Division Manager

This certificate is subject to terms and conditions described below:

- Any significant change in design or construction may render this Certificate invalid. Type Approval Certificate is not valid for equipment, the design or manufacture of which has been varied or modified from the specimen tested. This certificate is not valid for products without marking above mentioned. The manufacturer should notify TÜRK LOYDU of any modifications or changes to equipment in order to obtain valid certificate. This certificate shows that tested specimens as representative of the product complies of the TÜRK LOYDU rules, and revelant international instruments that apply to it.

Product	: Cooler for Acoustic Enclosure
Type of Product	: I-Class & Ukraine Corvette (Portside) SAP Number: 200153000 & 200165914 I-Class & Ukraine Corvette (Starbord) SAP Number: 200153001 & 200165915
Product Description	: -
Approval No / Date	: PAE/EPAS/013416/22-1592/ŞÜ - 04.08.2022
Serial Number	: -
Volume	: Volume stage 1 : 17 lt.
Design Temperature	: Min. working temperature stl : 10.0 C - Max. working temperature stl : 80.0 C - Min. working temperature gas side : 0.0 C - Max. working temperature gas side : 100.0 C
Design Pressure	: 6.0 Bar
Test Pressure	: 9.0 Bar
Material	: Material specification : 1650/448/64-DSv-S119-32N236 Tubes : CuNi301Fe - C715005230 216S321 Tube plate : CuNi301Fe - D08249 Nozzle header : CuSn10 - ES-12282 Return header : CuSn10 - E3-12280 Side wall : steel
Performed NDT	: -
Performed Tests	: - Visual inspection - Dimension control - Pressure test at : 9.0 Bar - Reviewed of material certificates
Test Place	: KELVION - Südstrasse . 48, 44625 Herne - GERMANY
Last Inspection Date	: 07.03.2024
Surveyor Remarks	: 1- Heat Exchanger must have a shut-off device at their inlets and outlets. 2- Heat exchangers must have a closable pressure gauge, a spring-loaded safety valve, pressure and temperature control devices and the equipment should be suitable for use on board and the safety devices shoud be type approved. 3- Placement of the device on the ship should be in accordance with TL-Part E, Chapter 107 E.7 and the tests after placing it on the ship should comply with F.3.
Others	: -

Approval Conditions : The type approval will be valid for the unit I-Class (200153000+200153001) and the unit Ukraine Corvette (200165914+200165915). Both units have the same drawings. Following, there are the lists for the coolers:

Type Approval I-Class & Ukraine Corvette (Portside)
SAP Number: 200153000 & 200165914
CCC drawing: WEK10000076921 Rev.2
Plate with two axial fans: WEK10000078277 Rev.1
CCC: WEK10000076922 Rev.1
Flange F65: WEK10000052110 Rev.0
Plug G3/8 With Vent Hole: WEK10000053303 Rev.3
Tube Plate: WEK10000069735 Rev.0

Surveyor Name : Hasan HABİBOĞLU

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Nozzle Header: WEK10000069736 Rev.0
Return Header: WEK10000069737 Rev.0
Gasket: WEK10000076870 Rev.0

Type Approval I-Class & Ukraine Corvette (Starbord)
SAP Number: 200153001 & 200165915
CCC drawing: WEK10000076830 Rev.2
Plate with two axial fans: WEK10000078277 Rev. 1
CCC: WEK10000076831 Rev. 1
Flange F65: WEK10000052110 Rev.0
Plug G3/8 With Vent Hole: WEK10000053303 Rev.3
Tube Plate: WEK10000069735 Rev.0
Nozzle Header: WEK10000069736 Rev.0
Return Header: WEK10000069737 Rev.0
Gasket: WEK10000076870 Rev.0

Surveyor Name : Hasan HABİBOĞLU

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