



Certificate No:
TAP00002CM

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Fuel Oil Preheater, Electrically Heated

with type designation(s)
EVIE6

Issued to

Saacke Qingdao Marine Boiler Co., Ltd.
No. 159, Yanhe Road,
Huangdao District, Qingdao, P. R. China

is found to comply with

DNV GL rules for classification – Ships Pt.4 Ch.7 Pressure equipment

Application :

Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV.

Temperature range: 150°C

Design pressure: 10 bar

Operating medium: Heavy fuel oil (Max. IFO 700)

Issued at **Hamburg** on **2021-09-22**

This Certificate is valid until **2026-09-21**.

DNV local station: **Qingdao NB & CMC**

for **DNV**

Approval Engineer: **Arthur Ivombo**

.....
Jonathan Struwe
Head of Section

This Certificate is subject to terms and conditions overleaf. Any significant change in design or construction may render this Certificate invalid.
The validity date relates to the Type Approval Certificate and not to the approval of equipment/systems installed.

LEGAL DISCLAIMER: Unless otherwise stated in the applicable contract with the holder of this document, or following from mandatory law, the liability of DNV AS, its parent companies and their subsidiaries as well as their officers, directors and employees ("DNV") arising from or in connection with the services rendered for the purpose of the issuance of this document or reliance thereon, whether in contract or in tort (including negligence), shall be limited to direct losses and under any circumstance be limited to 300,000 USD.



Form code: TA 251

Revision: 2021-03

www.dnv.com

Page 1 of 3

Product description

Welded pressure vessel made from carbon steel. The heater is of tubular shape, with cylindrical shell made from piping material and welded covers made from welded-neck endplates with relieving groove. The top cover also serves as the support for the electrical heating coils. Outer diameter 89 mm, length 580 mm.

For details of the pressure vessel (e.g. design data, materials or dimensions) see approved drawings as listed below in "Type Approval documentation".

Application/Limitation

- The fuel oil preheater is approved according to DNVGL-RU-SHIP Pt.4 Ch.7 'Pressure equipment' (Edition July 2020, amended August 2020), and graded as pressure equipment class II, refer to Pt.4 Ch.7 Sec.1 [Table 2]. The joint efficiency is $v=1$, the corrosion allowance 1 mm (carbon steel).
- All material used for pressurized parts shall be delivered with material certificates according to DNVGL-RU-SHIP Pt.4 Ch.7 Sec.1 [Table 6].
- Manufacturing, workmanship and testing shall be done according to DNVGL-RU-SHIP Pt.4 Ch.7 Sec.7.
- The manufacturer of the welded fuel oil preheater shall hold a valid Approval of Manufacturer (AOM) certificate according to DNVGL-CP-0261 'Pressure Equipment Manufacturing (PEM)' and DNVGL-CP-0352 'Welding Workshop Approval (WWA)' as well, refer to DNVGL-RU-SHIP Pt.4 Ch.7 Sec. 7 [1.1.1].
- The EVIE6 heater is intended for use in combination with boiler burners and fuel oil racks for heating of heavy fuel oil.
- The present TA deals with the strength of parts of the fuel oil heater subjected to pressure.
- Electrical Systems and Automation Control Systems are not part of this TA. However, having regard to a safe operation of the fuel oil heater unit, following requirements shall be adhered to:
 - Each separate heating element rated more than 16 A is to be considered as a separate consumer, refer to DNVGL-RU-SHIP Pt.4 Ch.8 Sec. 8 [1.3.1],
 - Temperature rise limit for heaters, refer to DNVGL-RU-SHIP Pt.4 Ch.8 Sec. 8 [1.3.2],
 - For specific oil heaters requirements, particularly thermostat and over-temperature thermostat requirements, refer to DNVGL-RU-SHIP Pt.4 Ch.8 Sec. 8 [1.3.7].
- It has been noticed that thermal fuses for single use are installed as safety temperature limiter which are to be replaced after trip.

Type Approval documentation

Production testing

The reported type testing has not been carried out on a fuel oil preheater specimen but rather occurred in the course of approval testing in the extent of constructional check and pressure test including the submitted type testing programme at manufacturer's works.

Each electrically heated fuel oil preheater manufactured to this type approval is to be:

- constructional tested, refer to "Specification of electrical heater incl. type testing programme",
- isolation and high voltage tested, refer to "Specification of electrical heater incl. type testing programme",
- hydraulic pressure tested to minimum 1.5 times design pressure,
- certified by DNV and delivered with a product certificate.

Marking of product

For traceability to this type approval the products are at least to be marked with:

- manufacturer's name and address,
- manufacturer's type designation and serial number,
- year of manufacture,
- maximum allowable working pressure (design pressure),
- design temperature in °C,
- hydrostatic test pressure,

- DNV's identifying mark.

Periodical assessment

The objective of the periodical assessment is to verify that the conditions for the type approval (TA) have not been altered.

The main scope of the periodical assessment will normally include:

- verification of the TA applicant's production and quality system w.r.t. ensuring continued consistent production of the TA products at the TA applicant's own premises and at other companies that are given the responsibility for manufacturing of the products,
- review of TA documentation and that this is still used as basis for the production,
- review of possible changes in the design, the materials and the performance of the product, and
- verification of the product marking.

For retention of the TA certificate in its validity period the periodical assessments will be carried out bi-yearly.

Unscheduled assessments for retention of the certificate may be carried out when there is reason to believe that the type approval applicant has not adhered to the obligations stipulated in the type approval certificate.

End of Certificate