

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Cooler

with type designation(s)

RKK Gr.034.1, RKK Gr.034.Z, RKK Gr.034.Z - Typ II, RKK Gr.034.Z - Typ III LARZW 35-330, RKK Gr.038

Issued to

**Hans-Hermann Pareidt Kupferschmiede GmbH
Pattensen, Germany**

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 GL.

Type:	Temperature range:	Design pressure:	Operating media:
RKK Gr.034.1	0°C - 95°C	50 bar	Water (tubeside)
RKK Gr.034.Z	0°C - 95°C	50 bar	Water (tubeside)
RKK Gr.034.Z - Typ II	0°C - 95°C	50 bar	Water (tubeside)
RKK Gr.034.Z - Typ III LARZW 35-330	0°C - 95°C	50 bar	Water (tubeside)
RKK Gr.038	0°C - 95°C	50 bar	Water (tubeside)

Issued at **Hamburg** on **2021-02-01**

This Certificate is valid until **2026-01-31**.

for **DNV GL**

DNV GL local station: **Hamburg – CMC North/East**

Approval Engineer: **Astrid Caschube**

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Harald Pauli
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 GL AS, its parent companies and subsidiaries as well as their officers, directors and employees ("DNV GL") 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.



Product description

Five types of oil coolers build as tube bundle heat exchangers with external dimensions of 610*190*270mm (L*H*W).

For technical details of the coolers (e.g. design data, materials, dimensions, etc.) see section Application/Limitation and Type Approval documentation listed below.

Application/Limitation

Applied rules and design code is DNVGL-RU-SHIP Pt.4 Ch.7 'Pressure Equipment' (Edition July 2020, amended August 2020).

The tube side of the heat exchangers are graded in pressure equipment class I according to DNVGL-RU-SHIP Pt.4 Ch.7 Sec.1 Table 2. The shell side of the heat exchanger is unpressurized because it will be used as box cooler. The corrosion allowance is 0 mm.

The components of the heat exchanger subject to pressure shall be delivered by manufacturers holding a valid certificate according to DNV GL CP-0346 'DNV GL approval of manufacturing scheme'.

All material used for pressurized parts shall be delivered with material certificates according to DNVGL-RU-SHIP Pt.4 Ch.7 Sec.1 Table 5.

The oil coolers must be properly installed on board e.g. by suitable screw connections. No welding work at any pressure parts shall be performed after pressure test and final inspection.

Manufacturing, workmanship and testing shall be done according to DNVGL-RU-SHIP Pt.4 Ch.7 Sec.7. Each pressure vessel is to be:

- subjected to visual and dimensional inspection as well as hydrostatic pressure test with a test pressure of 75 bar (= 1.5 times the design pressure) upon completion in the presence of a DNVGL surveyor,
- certified by DNVGL and to be delivered with a product certificate.



Job Id: **262.1-034031-1**
Certificate No: **TAP00002A1**

Type Approval documentation

Marking of product

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

- the name and domicile of the manufacturer,
- the manufacturer's type designation and serial number,
- the year of manufacture,
- the design pressure,
- the design temperature in °C,
- the hydraulic test pressure, and
- DNV GL'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 every two years.

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