

TYPE APPROVAL CERTIFICATE

This is to certify:**That the Plate Heat Exchanger**

with type designation(s)

BH30, BH60, BB100, BB150, BB200, BB250, BB350

Issued to

**Jiangsu Yuanzhuo Equipment Manufacturing Co., Ltd.
Jiangyin, China**

is found to comply with

DNV GL rules for classification – Ships Pt.4 Ch.7 Pressure equipment**Application :****Plate heat exchangers(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV GL.**

Type	Temperature range:	Design pressure:	Operating media:
BH30	0 to 100°C	16bar	Oil, water
BH60	0 to 100°C	16bar	Oil, water
BB100	0 to 100°C	10bar	Oil, water
BB150	0 to 100°C	10bar	Oil, water
BB200	0 to 100°C	10bar	Oil, water
BB250	0 to 100°C	10bar	Oil, water
BB350	0 to 100°C	8bar	Oil, water

Issued at **Hamburg** on **2020-05-07**This Certificate is valid until **2025-01-04**.for **DNV GL**DNV GL local station: **Jiangyin NB & CMC**Approval Engineer: **Astrid Caschube**

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

- 7 types of gasketed plate heat exchangers with tie bolts,
- For details of the plate heat exchangers (e. g. design data, materials, dimensions, temperature limits of the gaskets) see Application/Limitation and Type Approval documentation listed below.

Application/Limitation

Applied rules and design codes:

- Approved according to DNV GL rules ship Pt.4 Ch.7 'Pressure Equipment' (Edition July 2019)

The plate heat exchangers are graded in pressure equipment class II or III according to DNVGL-RU-SHIP Pt.4 Ch.7 Sec.1 Table 2 depending on the actual design conditions and fluids.

All materials used for pressurized parts shall be delivered with material certificates according to DNVGL-RU-SHIP Pt.4 Ch.7 Sec.1 Table 6 or 7 (depending on the governing pressure equipment class of the heat exchanger).

In case of pressure equipment class II the materials used for the main pressure bearing parts (movable and fixed covers as well as the tightening bolts and nuts) shall be delivered by manufacturers holding valid certificates according to DNVGL CP-0346 'DNV GL approval of manufacturing scheme'.

Each plate heat exchanger is to be:

- Subjected to visual and dimensional inspection as well as hydrostatic pressure test (each chamber to be pressure tested separately) upon completion in the presence of a DNVGL Surveyor,
- Certified by DNV GL and to be delivered with a product certificate.

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

For retention of the Type Approval, a DNV GL Surveyor shall perform a periodical assessment every second year and before the expiry date of this certificate. The scope of the periodical assessment is to verify that the conditions stipulated for the Type Approval are complied with and that no alterations are made to the product design or choice of materials.

The main elements of the certificate retention survey are:

- review of Type Approval documentation
- review of possible changes in design, materials and performance
- ensure traceability between manufacturer's product type marking and Type Approval Certificate.

End of Certificate