DNV·GL

Certificate No:
TAP00001BV

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Plate Heat Exchanger

with type designation(s)
P25, P60, P60A, P70, P100B, P100D, P100E, P150, P200, P300

Issued to
Luoyang Sunrui Ti Precision Casting Co., Ltd.
Luoyang, Henan, China

is found to comply with
DNV GL rules for classification – Ships Pt.4 Ch.7 Pressure equipment

Application :

Plate heat exchanger(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV GL.
Temperature range: **5° C to 95° C or 165°C, see page 2**
Design pressure: **7,5 bar or 10 bar, see page 2**
Operating media: **Fresh water, sea water / lubrication oil**

Issued at **Hamburg** on **2018-05-14**
This Certificate is valid until **2023-05-13**.
DNV GL local station: **Nanjing**

Approval Engineer: **Stefan Wiemer**

for **DNV GL**

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.

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Product description

9 types of plate heat exchangers with tie bolted frame plates, dimensions:

Type	Design pressure (bar)	Temperature range (°C)	Thickness of base plate (mm) Q235	Thickness of base plate (mm) Q345R	Bolt diameter (mm)
P25	10	5 to 95	17	15	12
P60	10	5 to 95	32	26	16
P60A	7,5	5 to 165	20	---	16
P70	10	5 to 95	32	27	16
P100B	10	5 to 95	44	37	30
P100D	10	5 to 95	55	46	30
P100E	10	5 to 95	55	46	30
P150	10	5 to 95	61	51	30
P200	10	5 to 95	76	64	30
P300	10	5 to 95	112	100	42

For further details of the plate heat exchangers (e. g. design data, materials or dimensions) see Approved Drawings (listed below in "Type Approval documentation")

Application/Limitation

The plate heat exchangers are approved according to DNV GL rules ship Pt.4 Ch.7 (edition January 2018), and had been designed according to ASME VIII, Div. 1, 2015 edition.

They are graded as pressure equipment class II / III for the oil side / water side (DNV GL rules ship Pt.4 Ch.7 Sec.1 table 2).

All material used for pressurized parts shall be delivered with material certificates according to DNV GL rules ship Pt.4 Ch.7 Sec.1 Table 6 or Table 7 (depending on the governing pressure equipment class of the heat exchanger).

The materials used for pressurized parts shall conform DNV GL Rules Pt.2 Ch.2 Sec.3, including e.g. impact testing according to the minimum design temperature. Therefore material qualities Q235A and Q235B according to GB/T 3274 – 2007 / GB/T 700 – 2006 shall not be used for the fix plates and pressure plates.

It is the responsibility of the manufacturer to choose a gasket material suitable for the design temperature and the intended medium, as well as the material of the heat transfer plates. Traditional stainless steels, including types 304 or 316L, are generally not considered suitable in contact with seawater. Steel components in direct contact with seawater shall be protected against corrosion.

Each plate heat exchanger is to be:

- Hydraulic pressure tested to minimum 1.5 x design pressure,
- Certified by DNV GL and to be delivered with a product certificate when required by DNV GL Rules or by the purchaser.

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 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