DNV·GL

Certificate No:
TAP000004A

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Preheater, Electrically Heated

with type designation(s)
EH 15, 20, 25, 30, 35, 40, EH-U/W 15, 20, 25, 30, 35, 40

Issued to
Alfa Laval Aalborg A/S
Aalborg Nordjylland, Denmark

is found to comply with
DNV GL rules for classification – Ships

Application :

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

Type:	Temperature range:	Design pressure:
EH 15, 20, 25, 30, 35, 40	**0°C to 160°C**	**16 bar (Shell Side)**
EH-U/W 15, 20, 25, 30, 35, 40	**0°C to 95°C**	**10 bar (Shell Side)**

This Certificate is valid until **2020-06-30**.

Issued at **Høvik** on **2015-11-05**

for **DNV GL**

DNV GL local station: **Aalborg**

Approval Engineer: **Adel Samiei**

Marianne Spæren Marveng
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

Electric preheaters for oil or water certified according to DNV GL ship rules Pt.4 Ch.7 with 1 mm corrosion allowance.

The product may also be manufactured by Alfa Laval Qingdao Ltd.

DNV GL pressure Class for shell side: Class II (for oil as operating fluid) and class III (for water as operating fluid)

Material: Shall be in accordance with document 13G4001 revision G dated 2015-06-15

Application/Limitation

This type approval does not cover the electrical installations; it only covers the strength of the mechanical part against internal pressure. Other type of loading (such as cyclic loading, wind, etc.) are not be considered in the design review.

Tube side is not pressurized and is not subject to approval

Extent of non-destructive testing shall be in accordance with DNV GL ship rules pt.4 Ch.7 Sec.7 [4].

Each component shall be hydraulic pressure tested to minimum 1.5 times the calculating pressure. (as defined in DNV GL ship rules Pt.4 Ch.7 Sec.4 - 2.2)

Each heat exchanger shall be certified by DNV GL and delivered with a product certificate when intended for DNV GL classed vessels or required by the purchaser. In this case hydraulic test shall be done in presence of a DNV GL surveyor.

All used material shall be delivered with material certificate according to DNV GL ship rules Pt.4 Ch.7 Sec.2 Table 1. All materials delivered with VL or works (W) certificate shall be made at works approved by the Society for the type, grade and dimensions of steel being supplied and for the relevant steelmaking and processing route, e.g. delivery condition.

Type Approval documentation

Marking of product

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

- Manufacturer's name or trade mark
- Type designation

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 to verify that the conditions for the type approval are complied with.

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.