

TYPE APPROVAL CERTIFICATE

This is to certify:**That the Stern Tube Seal**

with type designation(s)

WFS1R-F, WFS1R-P (Formerly known as Maneguard FSE/PSE & Ecosafe FSE/PSE), WFS1H-P-L (Formerly known as Enviroguard)

Issued to

Wartsila UK Ltd.**Havant HAMPSHIRE, United Kingdom**

is found to comply with

DNV GL rules for classification – High speed and light craft**DNV GL rules for classification – Ships****Application :****The sterntube seals are approved for shafting arrangements with water lubricated sterntube bearings. Survey interval for the propeller shaft: See page 2 of the certificate.****Products approved by this certificate are accepted for installation on all vessels classed by DNV GL.**Issued at **Høvik** on **2017-03-07**This Certificate is valid until **2021-12-31**.for **DNV GL**DNV GL local station: **London**Approval Engineer: **Nadine Grace Mosteiro Halvorsen**

Oddvar Deinboll
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.



Product description

Sterntube seal for shafting arrangements with water lubricated sterntube bearings.

Application/Limitation

Survey interval for the propeller shaft to be according to the Rules Pt.7, Ch.1, Sec.1 [1.6.6].

Type Approval documentation

Tests carried out

Ecosafe Validation Trials – Report TD-12067
Ecosafe Support Finger Validation – Report TD-12535
460mm Prototype Maneguard 4 Validation Trials – Report TD-14039
Maneguard 4 – 800mm Prototype Seal Trials – Report TD-14049

Marking of product

The product to be marked with manufacturer's name or trademark and type number identification.

Periodical assessment

For retention of the Type Approval, a DNV GL surveyor shall perform an assessment after 2 years and after 3.5 years to verify that the conditions of the type approval are complied with. A renewal assessment will be performed at renewal of the certificate.

The objective of the Periodical Assessment is to verify that the conditions for the Type Approval are not altered since the Type Approval Certificate was issued. The main scope of the Periodical Assessment will normally include:

- Verification of the Type Approval applicant's production and quality system w.r.t. ensuring continued consistent production of the Type Approved products at the Type Approval applicant's own premises and at other companies that are given the responsibility for manufacturing of the products.
- Review of the Type Approval documentation and that this is still used as basis for the production
- Review of possible changes to the design, the material and the performance of the product
- Verification of the product marking.

END OF CERTIFICATE