



TYPE APPROVAL CERTIFICATE

Certificate no.:
TAM0000130
Revision No:
1

This is to certify:
that the Stern Tube Seal

with type designation(s)
Vanguard VGA, VGF, VG, VGASG and VGEQ

issued to
CRUG-VERSITEC
Limassol, ON, Cyprus

is found to comply with
DNV rules for classification – Ships
DNV rules for classification – High speed and light craft

Application:

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

Issued at **Høvik** on **2024-02-21**

for **DNV**

This Certificate is valid until **2029-02-20**.

DNV local unit: **Limassol**

Approval Engineer: **Stanislav Avanesov**

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

Seal for oil lubricated propeller shafts. Aft seal is fitted with an air chamber (air type lift) fed by an air control unit and pressure controlled by the VANGUARD Equalizer valve.

Application/Limitation

The seals types VGA, VGF, VG, VGASG and VGEQ satisfies the requirements to sealing boxes for TMON (Tailshaft Condition Monitoring Survey Arrangement).

Shaft survey interval as specified in the Rules Pt.7 Ch.1 Sec.1

The stern tube seal is approved for both, mineral and Environmentally Acceptable Lubricants (EALs) oils. It may only be applied according to the manufacturer list.

Type Approval documentation

Our type approval is issued on the base of the following submitted documentation:

| | | |
|---|-------|---|
| VGA-STD, Rev.B | VGA | Vanguard aft seal assembly |
| VGF-220 PO-218231, Rev.B | VGF | Vanguard forward 220mm assembly |
| VGA-220 PO-218231, Rev.B | VGA | Vanguard aft 220mm assembly |
| VGA-170-S, Rev.A | VGA | Vanguard seals aft, size 170 assembly small |
| VG-330A | VG | Vanguard seals aft, size 330 assembly |
| VGA-300-CSA, Rev.A | VGA | Vanguard seals aft, size 300 assembly |
| VGASG-DWG, Rev.A | VGASG | Vanguard aft safeguard seal assembly |
| VGASG-P1, Rev.A | VGASG | Vanguard safeguard piping |
| Man-VGA/F, Rev. 05/08/16-001 728948-16 | | Vanguard Manual Cambridge Material Testing of the rubber seal Asbestos free declaration |
| Man-VGEQ, Rev.04/25/18-001 | | EQ Manual |

Tests carried out

Cambridge material test

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 surveyor shall perform a survey after 2 and 3,5 years after issue of certificate to verify that the conditions of the Type Approval are complied with.

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.

In cases where the Type Approved product is manufactured at other companies, the Periodical Assessment shall verify that the Type Approval applicant has a quality control system for consistent production at their licensees/subcontractors. Furthermore Periodical Assessment shall be carried out randomly at these companies.

Other conditions

Material test report for sealing rings to be presented to DNV per installation.

END OF CERTIFICATE