Certificate no.:
TAM00001EG

TYPE APPROVAL CERTIFICATE

This is to certify:

that the Engine Subsystem

with type designation(s)
VCR

issued to
WinGD Ltd.
Winterthur, ZH, **Switzerland**

is found to comply with

DNV rules for classification – Ships Pt.4 Ch.3 Sec.1 Reciprocating internal combustion engines

Application:

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

Issued at **Høvik** on **2025-03-14**
This Certificate is valid until **2030-03-13**.
DNV local unit: **Augsburg**

for **DNV**

Approval Engineer: **Sven Neddenien**

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 USD 300 000.

Product description
The Variable Compression Ratio (VCR) system adjusts the compression ratio (CR) continuously by a hydraulic cylinder located in the crosshead pin, by moving the piston rod in vertical direction. The CR can be adjusted during the normal engine running according to the fuel mode and operational conditions.

Application/Limitation
WinGD DF 2-stroke engines

Type Approval documentation

Tests carried out
2025-01-08, Mitsui E&S DU Co. Ltd., Aioi Plant, Japan, Initial type approval test
Test engine DU WinGD 6X62DF-2.1, serial no. 3B48
WinGD test report CL-24-167-1, DNV reference 262.1-042536-1

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

Periodical assessment
Meetings on regularly basis and at least every second year with the Type Approval applicant (hereof: the Engine Designer) shall be arranged with the objective to verify that the conditions for the Type Approval are not altered since the Type Approval Certificate was issued, and to keep DNV updated with regard to:

- The latest development status and design as covered by the Type Approval certificate.
- Damages and failures of products certified by DNV leading to break down or other malfunctions in service. The causes and reasons for the failure and results from investigations are to be made available to DNV upon request. Failure to inform DNV may lead to suspension of this Type Approval certificate.

In cases where the Type Approved design is manufactured at other companies, DNV shall verify that the Type Approval applicant has a quality control system for consistent production at their licensees/subcontractors.

Other Conditions
The safety, control and monitoring systems, including sensors and actuators, are not covered by this certificate. Documentation for engine safety, control (including speed governing), and monitoring systems shall be submitted for approval according to DNV Rules Ships Pt.4 Ch.9 Sec.1 Table 5 and/or as listed in relevant Type Approval certificate.

END OF CERTIFICATE