



Certificate no.:
TAM00001EY

TYPE APPROVAL CERTIFICATE

This is to certify:
that the Engine Subsystem

with type designation(s)
iSCR

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
DNV rules for classification – Ships Pt.6 Ch.7 Sec.7 Emission reduction system for NOx or SOx – ER
DNV class programme DNV-CP-0353 – Type Approval – Selective catalytic reduction system

Application:

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

Issued at **Hamburg** on **2025-08-01**

This Certificate is valid until **2030-07-31**.

for **DNV**

DNV local unit: **Augsburg**

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 integrated Selective Catalytic Reduction (iSCR) system is a high-pressure SCR system. The SCR system reduces the level of Nitrogen Oxides in the exhaust gas from the engine by means of catalyst elements and reducing agent. The SCR system is integrated in the engine structure.

Application/Limitation

The system is approved for use on WinGD 2-stroke engines.

The approval consists of the following components:

- SCR reactor box with several chambers, equipped with catalyst elements and dampers
- Urea injection system
- Urea dosing unit
- Soot blowing system

Maximum system pressure drop (design)	100 mbar
Exhaust gas temperature range	310 – 550 °C
Maximum operating pressure of SCR	5.03 bar
Maximum operating pressure of Urea	10 bar

Type Approval documentation

Tests carried out

2025-01-16, Initial type approval test / integration test of iSCR sub-system
Mitsu E&S DU Co. Ltd., Aioi, Japan
test engine 5X52-S2.0, serial no. 3B57
DNV reference 262.1-042662-1

Marking of product

The product shall as a minimum be marked with the manufacturer's name or trademark and the type designation as specified on the first page of this certificate.

Periodical assessment

Meetings on regularly basis and at least every second year shall be arranged with the Type Approval applicant (the designer of the SCR system) 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, if any. 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

1. The control and monitoring system of the SCR system, incl. sensors and actuators, is not covered by this certificate. Documentation for the control and monitoring system shall be submitted for approval according to DNV Rules Ships Pt.6 Ch.7 Sec.7, table 4 and Pt.4 Ch.9 Sec.1 table 5 and/or as listed in relevant Type Approval certificates.
2. The urea service tank, the urea pump unit and the air supply system are not covered by this certificate. Respective documentation shall be submitted for approval according to DNV rules Ships Pt.6 Ch.7 Sec.7, table 4.
3. The emission reduction performance of the SCR system has not been verified.

END OF THE CERTIFICATE