Certificate no.:
TAP0000317

TYPE APPROVAL CERTIFICATE

This is to certify:

that the Exhaust gas cleaning systems for the reduction of NOx

with type designation(s)
SCR Flex Box for S2000M87/97/97L

issued to
Rolls-Royce Solutions GmbH
Friedrichshafen, **Germany**

is found to comply with
DNV rules for classification – Ships Pt.4 Ch.6 Piping systems
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 systems

Application:

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

Design pressure:	**max. 12 bar (reducing agent)**
Pressure drop:	**max. 150 mabr**
Design temperature:	**max. 540 °C**

Issued at **Hamburg** on **2025-08-06**
This Certificate is valid until **2030-08-05**.
DNV local unit: **Augsburg**

for **DNV**

Approval Engineer: **Sven Neddenien**

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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
Exhaust gas aftertreatment system based on selective catalytic reduction (SCR) for a marine Diesel engine.
Components of the exhaust gas aftertreatment system:

- exhaust pipe between engine and SCR system
- mounts
- SCR system, Flex Box design
- reducing agent (urea) dosing system,
  dosing cabinet incl. pre-feed module, supply unit and dosing unit

Application/Limitation
The system is approved for use on the following engines of the MTU 2000 series:
16V2000M87, 16V2000M97 and 16V2000M97L

The type approval is limited to installations where multiple engines plants provide the required redundancy for propulsion or power generation.

Type Approval documentation

Tests carried out
2022-10-24, initial type approval test / integration test, SCR model flex box
SCR EGAT2000M04U, serial no. VS003
test engine 16V2000M97L, serial no. 545102741
Rolls-Royce, Friedrichshafen, Germany

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
For retention of the Type Approval, a DNV 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.
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
The tank and the supply system to the dosing cabinet (pre-feed module) for the reducing agent is not covered by this certificate. Documentation for the tank and the supply system shall be submitted for approval according to DNV Rules Ships Pt.6 Ch.7 Sec.7, table 4.

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 certificate.

END OF CERTIFICATE