Certificate no.:
TAM00001E6

TYPE APPROVAL CERTIFICATE

This is to certify:

that the Diesel Engine / Dual-Fuel Engine

with type designation(s)
V49/60DF, V49/60

issued to
Everllence SE
Augsburg, **Germany**

is found to comply with
DNV rules for classification – Ships Pt.4 Ch.3 Sec.1 Reciprocating internal combustion engines

Application:

Variable speed mechanical propeller drive (multi engine plant), Constant speed electrical generator drive (multi engine electric propulsion, auxiliary power generation)

Issued at **Hamburg** on **2025-12-09**
This Certificate is valid until **2030-12-08**.
DNV local unit: **Augsburg**

for **DNV**

Approval Engineer: **Jan Sell**

Product description

four stroke, v-engine, non-reversible, trunk-piston, with supercharging (2 stages), with charge air cooling (2 stages), constant-pressure charging system, valve operation by cams

V49/60:	liquid fuel, direct injection, injection operation electronically controlled, HFO, MDO, FAME B40
V49/60DF:	dual fuel, direct injection (main diesel fuel and pilot diesel fuel), port injection (gas fuel), injection operation electronically controlled (main diesel fuel, pilot diesel fuel, gas fuel), HFO, MDO, FAME B40, Natural Gas

Cylinder bore [mm]	490
Piston stroke [mm]	600
No. of cylinders	12, 14

Engine control, alarm and safety system SaCoS5000 (see TAA000038A) is accepted based on Integration Testing.

Application/Limitation

V49/60:

Rated power [kW/cyl.]	1300
Rated speed [rpm]	600
Mean effective pressure [bar]	23.0
Firing pressure [bar]	245

V49/60DF:

Rated power [kW/cyl.]	1300
Rated speed [rpm]	600
Mean effective pressure [bar]	23.0
Firing pressure [bar]	245

For maximum power available in gas mode, the derating diagrams for varying gas quality and environmental conditions shall be considered as specified in the Project Guide.

Installations for mechanical propeller drive shall be fitted with variable pitch propeller and propeller automation system shall be set according to available operating range of the engine (load/speed diagram).

Type Approval documentation

262.1-042967-1

Tests carried out

2025-05-19 – 23, Everllence SE, Augsburg, Germany, Initial Type Approval Test, including Integration Test of SaCoS5000, on 12V49/60DF, S/N 1138000, 1300 kW/cyl. at 600 rpm, DNV ref. 262.1-042967-1

Marking of product

The product is to be marked with manufacturer's name or trademark, the engine model designation, the engine serial no. and the output rating (kW at rpm).

Periodical assessment

Periodical assessment is to be performed after 2 years and after 3.5 years. 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 case 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

1. Engine 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 the applicable type approval certificate TAA000038A for SaCoS5000.
2. For driving of electrical generators, the ship’s electrical system shall be designed and tested for multistep onloading; refer to DNV Ships Pt.4 Ch.2 Sec.5 [1.6]. The load steps shall be selected to meet requirements for transient frequency variations; refer to DNV Ships Pt.4 Ch.2 Sec.5 [1.1].
3. Automatic change-over to diesel mode shall be performed when the actual power demand exceeds the available power in gas mode according to the derating diagrams for varying gas quality and environmental conditions as specified

in the Project Guide. This function is to be demonstrated at workshop testing (e.g. by simulation of gas quality and environmental conditions), see DNV Ships Pt.4 Ch.3 Sec.1 [10.4.3.3].

END OF CERTIFICATE