



DNV

TYPE APPROVAL CERTIFICATE

Certificate No:
TAM00001B6

This is to certify:

That the Dual Fuel Engine

with type designation(s)
W46TS-DF

Issued to

Wärtsilä Italia S.p.A.
34018 San Dorligo della Valle, Trieste, Italy

is found to comply with

DNV Rules for classification, Ships - DNV-RU-SHIP-Pt4 Ch3 Sec1, Reciprocating Internal Combustion Engines

Application :

electrical propulsion, multi engine plant

Issued at **Hamburg** on **02nd June, 2023**

This Certificate is valid until **01st June, 2028**.

DNV local station: **Venice**

for **DNV**

Approval Engineer: **Jan Sell**

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Olaf Drews
Head of Section

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

four stroke, in-line engine or v-engine, non-reversible, trunk-piston, with supercharging, with charge air cooling, constant-pressure charging system, direct injection (main fuel oil and pilot fuel oil), port injection (gas fuel), injection operation electronically controlled, valve operation by cams, dual fuel

Cylinder bore [mm]	460	
Piston stroke [mm]	580	
No. of cylinders	in-line: 6, 7, 8, 9,	v-engine: 12, 14, 16

Place of production

Wärtsilä Finland Oy - Smart Technology Hub, Vaasa, Finland

Production at Wärtsilä Italia S.p.A., 34018 San Dorligo della Valle, Trieste, Italy is not covered by this certificate.

Application/Limitation

Rated power [kW/cyl.]	1300
Rated speed [rpm]	600
Mean effective pressure [bar]	26.97
Max. firing pressure [bar]	250

Gas start has not been tested and is not covered by this certificate.

Type Approval documentation

Tests carried out

Documentation:

Test report title	W46TSDF - TAT Report DMTA00066926 rev.A
Place of test	Wärtsilä Finland, Sustainable Technology Hub, Vaasa, Finland
Date of test	2022-09-28 until 2022-09-29

Test engine:

Model	Wärtsilä 12V46TS-DF
Serial no.	XAAC389551
No. of cylinders	12
Power [kW/cyl.]	1300
Speed [rpm]	600

Marking of product

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

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 DNV Rules Ships Pt.4 Ch.9 Sec.1 Table 5 and/or as listed in relevant Type Approval certificates (e.g. TAA0000264).
2. The efficiency of the ventilation inside the secondary enclosure of the gas pipe (double wall area) shall be verified during commissioning (pending item from type approval testing, see DNV Rules Ships Pt.4 Ch.3 Sec.1 [10.2.11.5]).
3. A power management system should be in place and adjusted according to the load step capability of the engine as specified by the engine manufacturer.
4. For engines produced at Wärtsilä Italia S.p.A., 34018 San Dorligo della Valle, Trieste, Italy, the pending initial assessment of the production plant shall be carried out by a DNV surveyor.



Job Id: **262.1-036151-1**
Certificate No: **TAM00001B6**

END OF CERTIFICATE