

TYPE APPROVAL CERTIFICATE

Certificate No:
TAM0000129**This is to certify:****That the Dual Fuel Engine**with type designation
Wärtsilä 31DF

Issued to

Wärtsilä Finland Oy
Vaasa, Finland

is found to comply with

DNV GL Rules for classification, Ships - DNVGL-RU-SHIP-Pt4 Ch3 Sec1, Reciprocating Internal Combustion Engines**Application :**

Propulsion / auxiliary

The engine type is approved for use in both inherently gas safe and emergency shutdown protected machinery spaces.

Products approved by this certificate is/are accepted for installation on all vessels classed by DNV GL.

This Certificate is valid until **29th April, 2024**.Issued at **Høvik** on **30th April, 2019**DNV GL local station: **Turku**for **DNV GL**Approval Engineer: **Dag Harald Williksen**

Oddvar Deinboll
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.

Product description

Four stroke, v-engine, non-reversible, trunk-piston, with supercharging, with charge air cooling, constant-pressure charging system, direct injection, injection operation electronically controlled, valve operation by cams, dual fuel

Cylinder bore [mm]	310
Piston stroke [mm]	430
No. of cylinders	8, 10, 12, 14 and 16

Application/Limitation

Rated power [kW/cyl.]	530	550
Rated speed [rpm]	720	750
Mean effective pressure [bar]	27.2	27.1
Max. firing pressure [bar]	275	275

Type Approval documentation

Tests carried out

Documentation:

Test report title	W31DF Type approval test report
Place of test	Vaasa, Finland
Date of test	2019-01-23 until 2019-02-27

Test engine:

Model	Wärtsilä 10V31DF
Serial no.	XAAA567523
No. of cylinders	10
Power [kW] @ Speed [rpm]	5500 @ 750

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.

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

Flexible hoses to be type approved by DNV GL.

Engine safety, control and monitoring systems, including sensors and actuators are not covered by this type approval certificate. Documentation for engine safety, control including speed governing and monitoring systems shall be submitted for approval according to the Rules Pt.4 Ch.9 Sec.1 Table 5 and/or as listed in relevant type approval certificates.

Electric cables and installation of this is not covered by this approval and must be verified to comply with the requirement of the Rules Pt.4 Ch.8 - Electrical Installation.

END OF CERTIFICATE