

TYPE APPROVAL CERTIFICATE

This is to certify:**That the Dual-Fuel Engine (Gas)**with type designation(s)
Wärtsilä 34DF

Issued to

Wärtsilä Finland Oy
Vaasa, Finlandis found to comply with
DNV GL rules for classification – Ships**Application :****The approval is valid for propulsion and auxiliary duty.**
The engine series is approved for use in both inherently gas safe and emergency shutdown protected machinery spaces.**Products approved by this certificate are accepted for installation on all vessels classed by DNV GL.****Rating see page two**This Certificate is valid until **2021-07-03**.Issued at **Høvik** on **2016-07-04**DNV GL local station: **Helsinki**for **DNV GL**Approval Engineer: **Tage Olav Alexander Strøm**-----
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 dual-fuel engine running on natural gas and diesel, MDO and HFO.

Cylinder bore: 340 mm
Piston stroke: 400 mm
No. of cyl: 6, and 9 in-line
12, 16 and 20 in-V.

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

Application/Limitation

The approval is valid for propulsion and auxiliary duty and is based on the following data:

	Wärtsilä 34DF		Wärtsilä 34DFB	
Mean effective pressure, [bar]:	20	19,8	22	22
Max. cylinder pressure, [bar]):	160	160	170	170
Rated cont. output, [kW/cyl.]:	435	450	500	480
Corresponding to, [RPM]:	720	750	750	720

Marking of product

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

Periodical assessment

For retention of the Type Approval, a DNV GL surveyor shall perform a survey every second year and before the expiry date of this certificate to verify that the conditions of the type approval are complied with.

If 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

Foundation arrangement to be submitted for each installation according to the Rules Pt. Ch.3 Sec.1 [1.4]
– Documentation of arrangement.



Job Id: **262.1-007365-4**
Certificate No: **TAM000002F**

Torsional vibration calculations to be submitted for each installation according to the Rules Pt.4 Ch.2 Sec.2 – Torsional Vibration.

Signboards according to the Rules Pt.4 Ch.3 Sec.1 [2.3.6] – Warning Notice.
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