WÄRTSILÄ 25 – THE POWER TO TARGET NET-ZERO
The Wärtsilä 25 is a new medium-speed 4-stroke marine engine based on the reliable and proven Wärtsilä 31 modular technology platform. The engine is available in 6-9L cylinder configurations, with a power output ranging from 1.9–3.1 MW as a dual-fuel engine and 2.0–3.4 MW as a diesel engine.

The objective of the Wärtsilä 25’s development has been to future-proof the engine and its fuel supply and exhaust treatment systems as one holistic solution. This means that whatever future fuel emerges as the most appropriate option for your operations, the Wärtsilä 25 will be able to use it thanks to its modular and upgradeable design.

Wärtsilä can deliver the full project – from feasibility studies to execution planning and implementation – for both newbuilds and retrofits. Our adaptable approach ensures the optimal engine and genset selection and the most efficient overall solution. For newbuilds, Wärtsilä can assess the impact of engine and genset selection on vessel design and operation as well as the financial and compliance implications.

The Wärtsilä 25 provides reliable performance as both a robust main propulsion engine in mechanical, diesel-electric and hybrid installations and as a cost-efficient auxiliary engine. It is perfect for use as a main engine onboard smaller merchant vessels, fishing boats, tugs, dredgers and offshore support vessels. It is optimised for running either at constant speed or along a propeller curve according to your requirements.

Decarbonising shipping the Wärtsilä way
The maritime industry is facing increasingly tough decarbonisation targets and legislation. Ship owners and operators need engines with higher efficiency, lower emissions, increased fuel flexibility and lower operating costs. Fuel-flexible engines capable of burning cleaner future fuels allow customers to make the investments needed today with the target to reach their long-term decarbonisation targets.

The Wärtsilä 25 is ready to run on carbon-neutral biofuels today and makes it easier than ever to reach beyond today’s emission reduction targets towards net-zero thanks to its future-proof, upgradeable modular structure. Far from replacing the entire engine, with this modular structure transitioning to greener fuels only involves replacing a minimal number of parts instead. This shortens the overhaul time and complexity significantly.

KEY BENEFITS
- Best-in-class efficiency and emission levels
- Cost efficient, with high power output per cylinder
- Improved total lifecycle cost compared to previous-generation engines, with prolonged component lifetime enabling time between overhauls (TBO) to be extended by a minimum of 30% depending on the engine type
- Modular design enables faster, easier upgrades and conversions to future fuels
- Suitable for mechanical, diesel-electric and hybrid installations
Cutting-edge modularity for faster, easier future fuel adoption

The Wärtsilä 25 features a robust and highly efficient turbocharging system with a high pressure ratio. This enables unparalleled power density and efficiency across the full operating range. The fully electronic Wärtsilä common rail fuel injection system maximises efficiency and enables smoke-free operations at all loads – even in diesel mode.

The Wärtsilä 25’s intrinsically modular design allows vessel owners and operators to reduce fuel consumption and emissions today while providing the readiness to run on alternative fuels tomorrow – all without compromising performance.

Lifecycle cost optimisation

The Wärtsilä 25 has been designed to operate reliably on a wide range of fuels. The engine is designed for long periods of maintenance-free operation and has a TBO of up to 32,000 hours, which matches well with the dry-docking schedule of many different vessels. This reduces downtime and operating costs and also simplifies maintenance scheduling. With data-driven dynamic maintenance planning and predictive maintenance services, as part of a Wärtsilä Lifecycle Agreement, you can further increase uptime and maximise vessel revenue-earning capability.

Technical features

- **Common rail fuel injection – New-generation, high-pressure fuel injection technology optimises combustion and fuel-injection settings at all loads and enables smoke-free operation.**
- **Gas operation with minimum MN 70 without compromising performance.**
- **Variable valve timing options – Both stepless and on-off type inlet and exhaust valve timing options are available. Valve timing flexibility is an enabler for future fuels and emission optimisation.**
- **Fuel gas system (Wärtsilä 25DF) –** The fuel gas system of the Wärtsilä 25DF shares common parts with the successful Wärtsilä 31DF, meaning ensured system validation and better spare parts availability. The system features high-accuracy pressure-balanced gas valves, and the proven port injection concept provides rapid response for dynamic load control and operational flexibility.
- **Higher power per cylinder available with two-stage turbocharging –** Two-stage turbocharging further increases efficiency and reduces emissions accordingly without compromising performance.
- **Enhanced combustion (Wärtsilä 25DF) –** Wärtsilä’s latest combustion technology, a first for the industry, reduces emissions to the same level as a pure gas (SG) engine.
- **Tier III compliant –** Meets IMO Tier III regulations when operating on gas and, with an integrated Wärtsilä NOx Reducer, when operating on diesel.
Smart fuel flexibility with sophisticated automation
The Wärtsilä 25DF features sophisticated automation to enable optimum combustion of gaseous and liquid fuels as well as fuel blends. Closed-loop combustion control with automatic combustion phasing diagnostics increases the robustness against varying fuel quality. Improved monitoring of maximum firing pressure and misfire protection increases engine safety and reliability. The engine’s dynamic capability is improved with transient detection diagnostics.

In order to maximise gas operation and minimise emissions, the Wärtsilä 25DF uses cylinder-wise gas trip functionality. In case of a disturbance, only the affected cylinder(s) will trip to diesel mode, with no impact on engine power output.

Improved usability
The calibration needs of Wärtsilä 25 engines are reduced thanks to adaptive, self-learning PID control. Modules can be replaced on the fly, which eliminates the need for separate software downloads. The Wärtsilä Expert Insight service can be used to gather critical engine data for predictive maintenance, reporting and analysis purposes. Lastly, the engine features an intuitive multi-language user interface for increased safety.
WÄRTSILÄ MARINE POWER LEADS THE INDUSTRY IN ITS JOURNEY TOWARDS A DECARBONISED AND SUSTAINABLE FUTURE.

Our broad portfolio of engines, propulsion systems, hybrid technology and integrated powertrain systems delivers the efficiency, reliability, safety and environmental performance needed to support our customers to be successful.

Our offering includes performance-based agreements, lifecycle solutions and an unrivalled global network of maritime expertise.

www.wartsila.com/marine