

# WinGD Low-speed Generation X-Engines

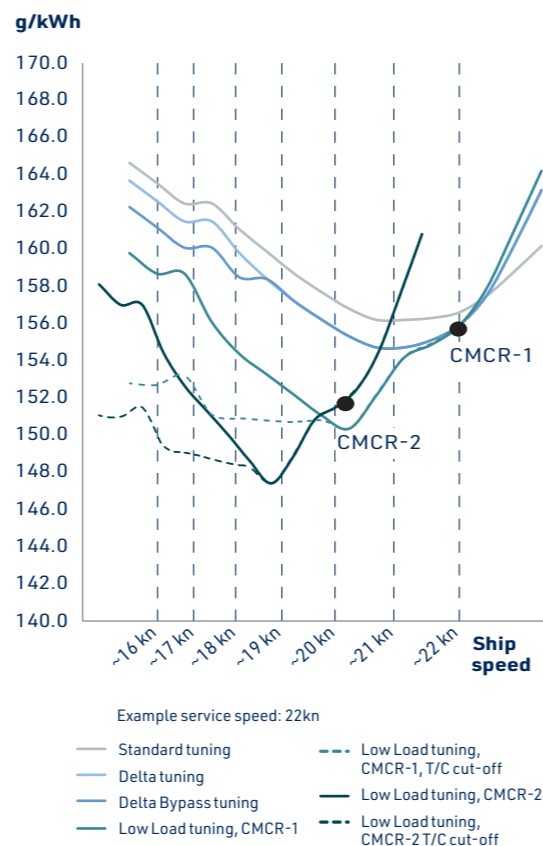
## Tailor-made engines

WinGD X-engines are tailor-made for small tankers and bulkers, Suezmax tankers, Panamax/Capesize bulkers, VLCC/VLOC, ultra-large container vessels, Panamax container vessels and feeder container vessels. High propulsion efficiency, low fuel consumption and full compliance with emission legislation.

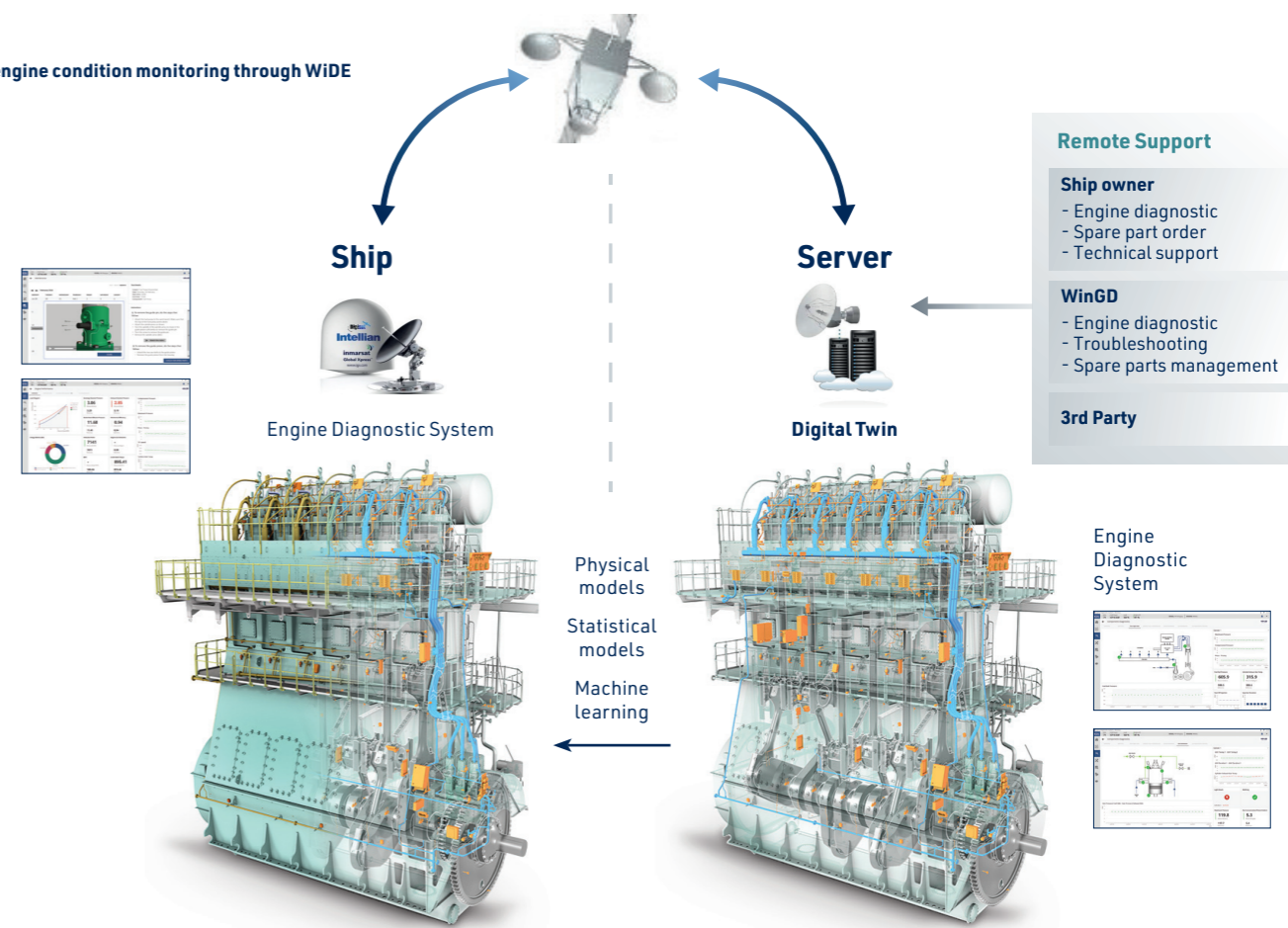
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WinGD X-engines provide ship owners with the best possible option for efficient ship propulsion and regulatory compliance at the lowest overall CAPEX and OPEX. X-engines enable the flexibility necessary to optimise engine performance in the ever changing economic and regulatory environment.

Specific fuel consumption for different tunings



Enhanced engine condition monitoring through WiDE



## The X-engine range

Our X-engines are available with bore sizes from 35cm to 92cm, in a power range of 2,450kW to 77,400kW and speed range from 58rpm to 167rpm.

## Engine features

- Optimised bore-to-stroke ratio enables lower engine speeds for better propulsion efficiency.
- Large rating fields for optimum selection of contracted power and rpm.
- Well proven common rail technology for flexible injection and exhaust valve control.

## Efficiency

- With the latest upgrades, a thermal efficiency of up to 56% can be reached at part-load with Low Load Tuning.
- Four different tuning variants allow for flexibility in selection of optimum fuel consumption within the vessel speed range.
- For engines with more than one Turbocharger, an automatic T/C cut-off system is available for lower fuel consumption when slow steaming.
- Dual tuning and dual rating possibility for even more flexibility in case of significant changes in vessel operating profile.
- For flexibility in steam production, a Steam Production Control (SPC) system can be added to create as much steam as possible from main engine exhaust gas energy.

## Operation

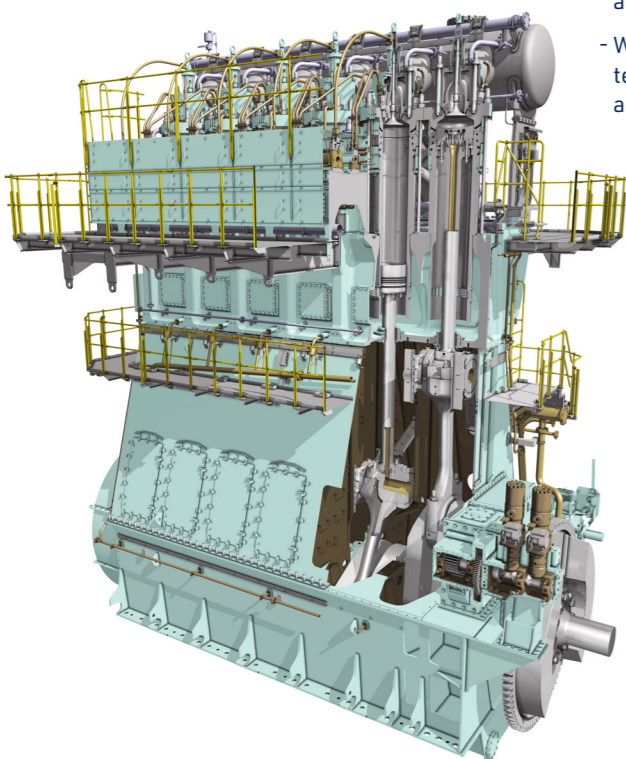
- Engine design optimised for extended low-load operation.
- Automatic adjustment of injection - and exhaust valve timing by Intelligent Combustion Control (ICC) for optimised engine performance under different ambient conditions and varying fuel properties.
- User-friendly interface of engine control system for operating parameter adjustments and engine status monitoring.
- Enhanced engine condition monitoring, maintenance planning and troubleshooting with WiDE (WinGD Integrated Digital Expert), including remote monitoring and support options.

## Emissions

- Tier-III compliance achieved with engine external systems (SCR), without compromising engine reliability and durability.
- Tier-III-ready design possible with interfaces prepared for low-pressure or high-pressure SCR.
- DF-ready design for upgrading to operation with gas/LNG, fulfilling requirements for gas-ready notations from Classification Societies.
- Reduced particle emissions at low-loads through single injector control.
- Reduction of CO<sub>2</sub> emissions through lowest specific fuel consumptions in the industry.


## Maintenance

- Based on service experiences with the well-proven and mature design of X-engines, time between overhaul is extended.
- For piston overhaul, the time between overhaul is extended to 36,000 running hours based on the excellent performance of the latest design of piston, cylinder liner, cooling water and lubricating systems.
- Engine design is optimised for easy replacement of parts, with only few mechanical re-adjustments.
- WiDE assists in maintenance planning and extending overhaul intervals by detecting unfavourable engine conditions as early as possible.



Power range for WinGD X-Engines

WinGD GENERATION X ENGINES	Power (MW)	Speed
X35-B	3 - 4	118-167
X40-B	4 - 6	104-146
X52	6 - 8	79-105
X62/-B	8 - 10	77-103
X72/-B	10 - 15	66-89
X82-B	15 - 20	58-84
X82-D	20 - 30	58-84
X92/-B	30 - 80	70-80



WinGD (Winterthur Gas & Diesel Ltd.) is a leading developer of two-stroke low-speed gas and diesel engines used for propulsion power in merchant shipping.

WinGD sets the industry standard for reliability, efficiency and environmental sustainability. WinGD provides designs, training and technical support to engine manufacturers, ship builders, ship operators and owners worldwide.

WinGD is headquartered in Winterthur, Switzerland, where, as one of the earliest developers of diesel technology, it started the design of large internal combustion engines in 1893 under the "Sulzer" name.

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