



WÄRTSILÄ FUEL EFFICIENCY BOOST

Fuel costs represent the largest share of operational costs for ship owners and charterers. The fall in freight rates in recent years has increased cost pressures for vessel operators considerably. Furthermore, growing concerns about air pollution have resulted in the introduction of increasingly strict emission limits, which can lead to significantly higher fuel costs. The Wärtsilä Fuel efficiency boost provides substantial fuel savings while controlling NO_x emissions.

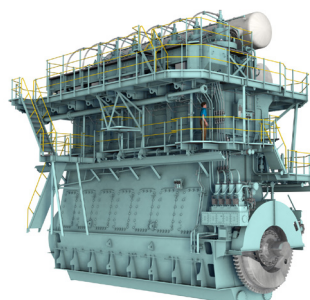
SOLUTION DESCRIPTION

The Wärtsilä Fuel efficiency boost reduces fuel consumption while keeping NO_x emissions within Tier II regulation limits. The solution comprises the following modifications to the engine:

- An increased compression ratio and firing pressure via a higher compression shim
- Bigger bores for the injector nozzle to shorten injection duration
- Onboard engine optimisation (engine tuning)

KEY BENEFITS

- Reduce fuel consumption by up to 4% depending on engine load, rating and certified NO_x emission level
- Green house gas generation is reduced and NO_x levels remain within Tier II regulation limits



POTENTIAL FUEL AND CO₂ CALCULATIONS FOR FEB*

FUEL SAVING:

670

TON/YEAR

500'000

USD/YEAR

6

g/kWh

CO₂ SAVING:

2'100

TON/YEAR

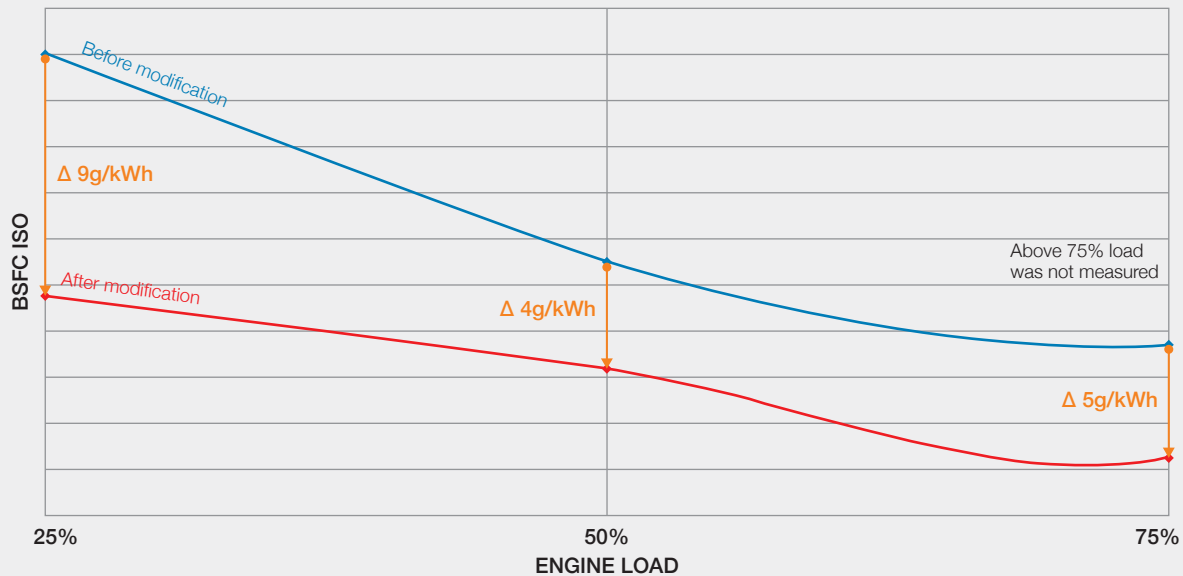
CO₂ SAVING WITH APPLICABLE CARBON TAX:

126'000

USD/YEAR

*Example calculation for 9X82 (50% avg. load, 250 days/year). Estimated fuel prices: HFO at 600 USD/Ton and MGO at 1'200 USD/Ton. Estimated carbon tax of 60 USD/Ton

Fuel consumption measurement from pilot installation to a 8RT-flex82T engine



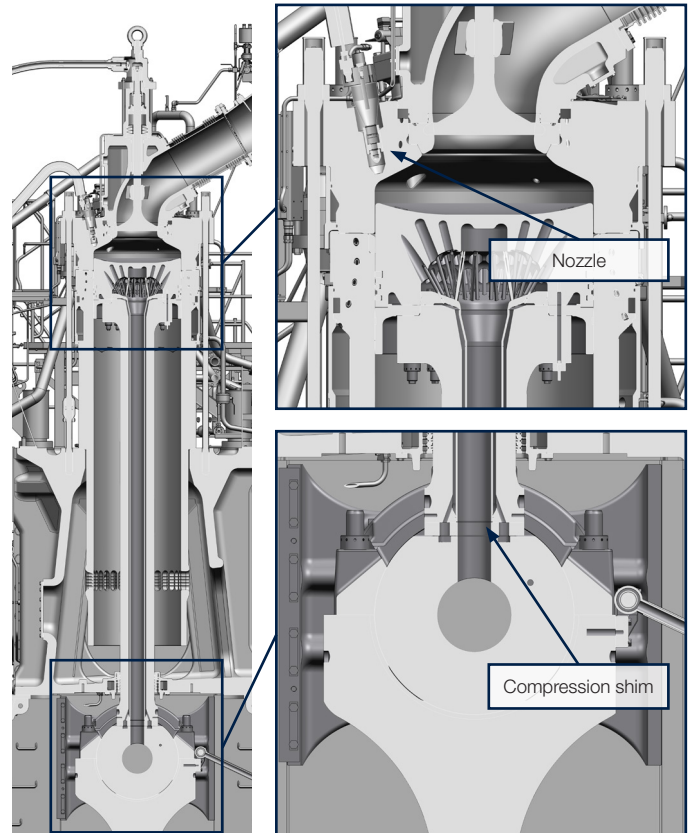
SCOPE OF SUPPLY

The solution is available for vessels with Wärtsilä RT-flex82T, RT-flex82C, RT-flex58T-D, RT-flex58T-E, X82 and X72 engines. The scope of supply covers engineering, part supply, modification, engine tuning and sea trials. The engineering work includes new nozzle geometry, torsional vibrational calculations and engine performance calculations.

Modifications include in-situ machining for cylinder liner wear ridge removal, compression shim replacement, nozzle tip replacement and WECS software installation. Tuning and sea trials include one day of sailing prior to the start of modification work and four full days of sailing after the work is complete, combined with NO_x measurement for the first vessel modified in the fleet. The remaining vessels will undergo one day of sailing following the completion of the modification work.

WHY CHOOSE WÄRTSILÄ?

The Wärtsilä Fuel efficiency boost has been successfully validated in a pilot installation. Continuous research and development, as well as professional support from Wärtsilä's global network, ensure that you always get the latest technologies and ensured reliability.



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