



UPGRADE KIT SLOW STEAMING RTA, RT-flex



CUT FUEL BILLS FOR WÄRTSILÄ LOW-SPEED ENGINES

For ships with RTA and RT-flex low-speed engines, Wärtsilä has introduced Upgrade Kit Slow Steaming to enable ship owners and operators to make major savings in fuel costs through slow steaming their ships.

The Kit both extends the load range of the engine for continuous operation and gives a major reduction in BSFC in the low-load range.

Low-speed two-stroke engines are normally operated at loads greater than 60% CMCR. The Kit allows Wärtsilä low-speed marine engines to be operated continuously at any power in the range of 10% to 100% of the contracted maximum continuous rated (CMCR) power without additional operating restrictions.

When slow steaming without modification with this Kit, there is an increased risk of engine fouling and excessive component

temperatures in both RTA and RT-flex engine types when they are operated continuously below 50% engine load. The Kit overcomes such problems, enabling the engines to operate continuously at powers down to 10% of their full installed power. The modified engine is not permanently derated but can operate at any time up to its full installed power for full sea speed.

The Upgrade Kit is available for all RTA and RT-flex engines with multiple turbochargers.

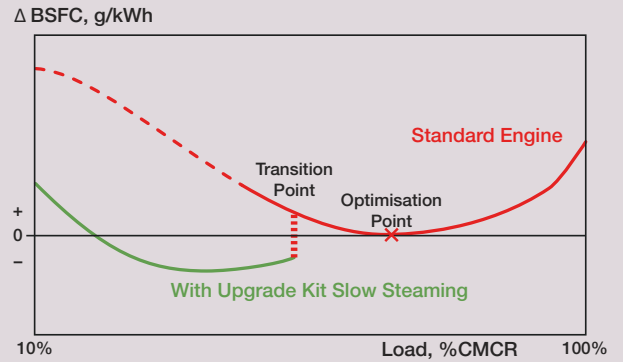
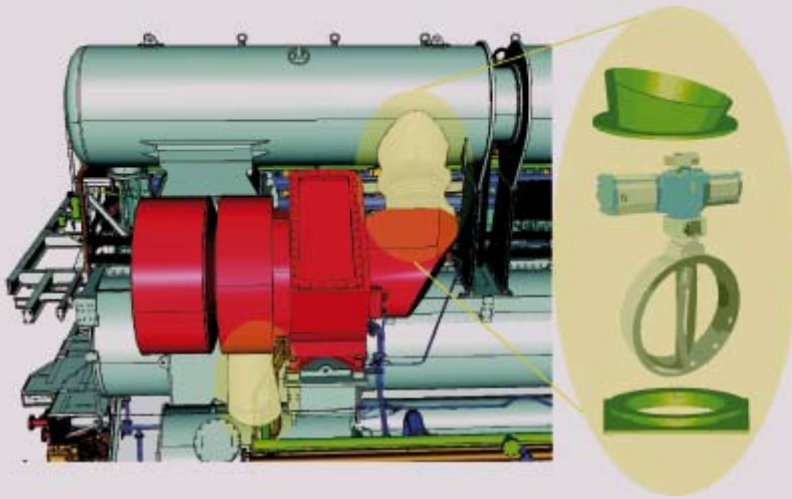
The achievable BSFC figures are strongly dependent on the final NO_x emission balances over the whole load range. For ships that must comply with the IMO NO_x emissions regulations, the restrictions imposed by the emissions limits will be evaluated in each case and a customised turn-key package may be offered.

Example of fuel cost savings

Engine type	12RTA96C
CMCR power, 100%	68,640 kW at 102 rpm
Annual running hours	7000

Slow steaming scenario

Comparison when running at same engine load of 45%	
Saving in BSFC	8.8 g/kWh at same speed
Saving in hourly fuel consumption	0.272 t/h
Total annual fuel savings with the Upgrade Kit modification	1903 t/year



Typical brake specific fuel consumption (BSFC) curves for RTA and RT-flex engines, as standard and with the Upgrade Kit Slow Steaming. Note that it is not desirable to operate engines continuously at less than 50% load without modification.

CONCEPT OF UPGRADE KIT

The Kit involves cutting out a turbocharger when the engine is to be operated at low load. This increases the scavenge air delivery at low load for better combustion and more optimum temperatures of engine components. The cut-out point depends upon the engine configuration. The Kit involves fitting shut-off valves in the exhaust duct before the turbocharger turbine and in the scavenge air duct after the compressor. The valves are remotely controlled and the Kit includes fitting a control system to operate the valves.

The installation and commissioning of the Upgrade Kit can be completed during normal commercial operation of the ship and during normal port calls for the majority of engine types.

PACKAGE OPTIONS

UGKSS FULL

Wärtsilä is managing and executing everything from pre-inspection until sea-trial and guarantees a fully functional UGKSS system. This package is ideal when you have limited resources available and you expect a turn-key installation.

Scope by Wärtsilä	Basic	Full
Pre-inspection	✓	✓
All parts and deliverables	✓	✓
Supervision of the installation work	✓	✓
Full installation work		✓
AMS/Safety system update		✓
Commissioning and sea trial	✓	✓
Delivery of material		✓
NO _x emissions measurement	✓	✓
Torsional vibration analysis	✓	✓

UGKSS BASIC

Wärtsilä is delivering all material, supervising the installation and makes commissioning and sea-trial of the system.

This package is ideal when you have skilled resources available and by that want to save on investment costs to shorten pay-back time.

OPTIONAL SUPPLY

RPLS

It is highly recommended that the engine is equipped with Pulse Lubricating System (PLS) to ensure reliable engine operation during prolonged slow steaming.

MAPEX-PR

This performance monitoring system detects piston running problems by collecting and analyzing engine data.

SHAFT POWER METER

If the required Shaft power signal is not available Wärtsilä delivers a Shaft Power meter with the Slow Steaming package.

WÄRTSILÄ® is a registered trademark. Copyright © 2009 Wärtsilä Corporation. Specifications are subject to change without prior notice.

Wärtsilä Switzerland Ltd

Phone: +41 52 262 24 50 • Fax: +41 52 262 07 22

• E-mail: service.sales.ch@wartsila.com



WARTSILA.COM