

Service Bulletin

RTA-79.1

Technical Information to all Owners / Operators
of RTA and RT-flex Engines

RT-flex-08.1

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Continuous Low Load Operation (Slow Steaming)

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1 INTRODUCTION

Engines are optimised for operation in the load range above approximately 60% CMCR. Continuous running at lower loads is possible, but will influence the operational parameters and engine components.

The engine Operating Manual provides guidelines for low load operation. This service Bulletin is intended to give additional recommendations when running the engine continuously at loads lower than “Normal Load” (See Graph below), so called “Slow Steaming”. The mentioned recommendations assume operating periods exceeding e.g. the lightering period of tankers or channel passages, and are referring to sea voyages in this load range. The recommendations are made assuming that no components are changed nor engine tuning is modified in order to stay within the limitations imposed by IMO emission regulations. Any further measures require re-certification of the engine with new or amended Technical File.

2 CONSIDERATIONS

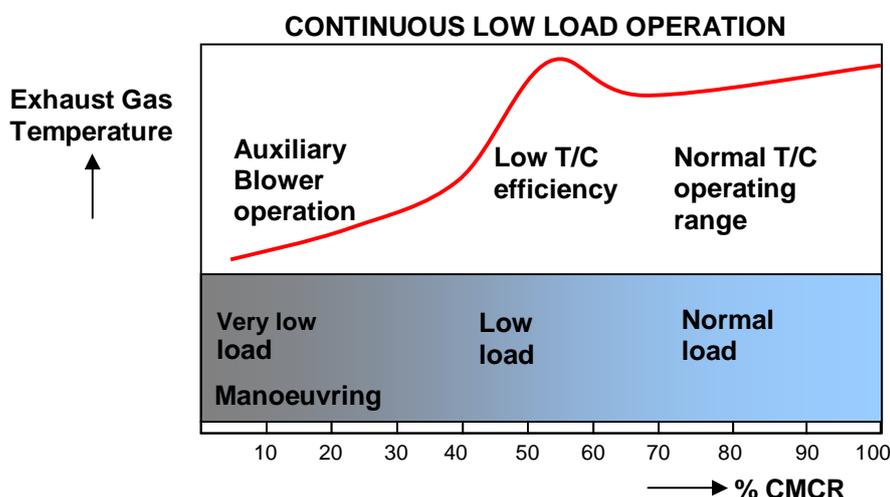
The Turbocharger efficiency in the “Low Load” range is still rather low while the Auxiliary Blower has already cut-off due to the increasing scavenge air pressure. Within this power range the engine operates with a lower air/fuel ratio resulting in higher exhaust gas temperatures.

Continuous operation in the “Very Low Load” range may result in increased cold corrosion due to low combustion chamber temperatures, increased deposit formation, and general engine fouling.

The RT-flex engines are better suited for continuous “Low Load” and “Very Low Load” operation due to their unique electronically controlled common rail injection system. They allow for higher Injection Pressure and selective Fuel Injector cut-off at very low loads, thus preventing excessive Carbon Deposits, Turbocharger- and Exhaust Gas Economiser fouling.

A concern during continuous low load operation is the accumulation of unburned fuel and lubricating oil in the exhaust manifold, as such deposits can ignite after the engine load is increased again. This may result in severe damage to the Turbocharger due to sudden overspeeding.

For continuous operation in the “Very Low Load” range, Wärtsilä Switzerland can be contacted for advice on further optimisation of the engine with regards to Hardware and Software modifications.



3 RECOMMENDATIONS

The following recommendations should be observed in order to limit the adverse effects of continuous low load operation as much as possible.

- The exhaust gas temperature after the cylinders should be kept above 250°C in order to reduce cold corrosion, fouling of exhaust gas receiver and of the Turbocharger Nozzle Ring. If the exhaust gas temperature drops below 250°C the engine load should be increased.
- If the exhaust gas temp becomes too high (>450°C before T/C) the Auxiliary Blower may be switched to “continuous running”. However, it has to be taken into account that not all Auxiliary Blowers and Circuit Breakers may be suitable for continuous running at electrical loads above Nominal Current.
- Repeatedly switching on and off of the Auxiliary Blower must be avoided. If necessary the Auxiliary Blower controls have to be switched to “Manual Operation”.
- Particularly for low load operation the fuel injection equipment should be in optimal condition in order to ensure that each individual injector achieves proper atomisation of the fuel. Trace heating of fuel lines should be in operation.
- The cylinder oil feed rate is load-dependent and re-adjustment is normally not required. However, frequent piston underside inspections are recommended to monitor piston running conditions and signs of over-lubrication. Ensure that the feed rate is set within the Wärtsilä recommended range and not above. Check Service Bulletin RTA-63 for further advice on CLU-3 feed rate settings and RTA-76/ RT-flex-03 for general instruction on this subject.
- The fuel injection viscosity should be maintained at the lower end of the recommended 12 to 17 cSt as specified in the Engine Operating Manual.
- Keep the Jacket Cooling Water temperature at the upper limit. For detailed specifications please refer to the Operating Manual.
- Keep the LT cooling water temperature at 36°C in order to maintain the optimum Scavenge Air temperature.
- Pay attention to the Barred Speed range.
- Periodically increasing the engine load to above 80% MCR for the duration of one hour should be considered in order to burn off accumulated carbon deposits. The load-up has to be done very carefully and in small steps in order to avoid adverse piston running conditions due to carbon that has built up on the crown land, and to avoid possible Exhaust Manifold fire.
- An economiser with closely-spaced fins may require more frequent soot blowing.

For recommendations regarding low load operation of Sulzer RN, RN..M and RL engines, please refer to Service Bulletin RN-7.1 issued 08.02.1993.

For recommendations on cylinder lubricating oil settings please refer to Service Bulletins RTA-63 and RTA-76 / RT-flex-03.

Wärtsilä Switzerland Ltd.

Technical Services