WÄRTSILÄ ZA40S LFO CONVERSION PACKAGE – OPTIMISE YOUR ENGINE TO OPERATE ON LFO

IMO 2020 rules have established a sulphur cap, but operating on low-sulphur fuels is a viable alternative for vessels where installing large, heavy scrubbers doesn't make sense. Wärtsilä ZA40S engines are designed to operate on heavy fuel oil (HFO), which has a higher viscosity than light fuel oil (LFO). The Wärtsilä ZA40S LFO Conversion Package increases the reliability of the injection system and cylinder cover, reduces specific fuel oil consumption (SFOC) and extends the time between overhauls by modifying the engine to permanently operate on LFO.

Making the switch to LFO

The upgrade package includes modification of the cylinder cover valve configuration, installation of a new injection plunger and barrel, and the addition of a fuel cooling system. It allows the time between overhauls (TBO) to be extended from 12,000 to 18,000 running hours, reducing operating costs over the lifetime of the equipment and increasing engine availability. The fuel cooling system included in the conversion package also increases reliability by reducing the risk of injection pump seizure.

KEY BENEFITS

- Reduce SFOC by a minimum of 1.6 g/kWh in the 85% load range and reduce CO2 emissions due to lower SFOC
- Reduce OPEX due to extended time between overhauls
- Increase cylinder head valve reliability
- Reduce the risk of injection pump seizure

The upgrade also reduces the vessel's SFOC and therefore its CO2 emissions. After the upgrade the minimum expected SFOC reduction is 1.6 g/kWh in the 85% load range (see the table below). The upgrade also reduces injection pump leakage by at least 50% due to the components being optimised for LFO, leading to more reliable and safe operation. Any leakages are free from lubricating oil, allowing the fuel to be reused without any further treatment.

The new valves, materials and rotating mechanism have been designed based on years of data gathered from the field, and the injection pump has been thoroughly tested in Wärtsilä's Validation Centre.

The upgrade does not impact the engine's EIAPP certificate.

Scope of supply

- Injection plunger and barrel
- Uncooled nozzle
- Cylinder cover valves and rotating devices
- Fuel cooling system

The delivery scope can be customised based on the specific needs of your vessel.

Applicability

To secure the best possible return on investment, the upgrade should be performed when the vessel's engine is next scheduled for maintenance, but it can also be performed separately. It is suitable for engines running on low-sulphur fuels within the viscosity range 2-10 cSt. The maximum allowed fuel temperature is 45°C. Please contact your Wärtsilä representative for more details about fuel compatibility.

Why choose Wärtsilä?

Wärtsilä is a leading OEM supplier to the marine industry with a global network providing service and support. The Wärtsilä ZA40S LFO Conversion Package provides an OEM solution to optimise your engine to permanently operate on LFO. The new valve arrangement for the ZA40S is a proven solution that has been used since 2014 with excellent results.

Minimum expected SFOC savings after the upgrade

Engine power (%)	**100**	**85**	**75**	**50**
Minimum fuel saving measured on test engine (g/kWh)	**2.7**	**1.6**	**1.4**	**0.6**