



SAFETY OF LIFE AT SEA SOLUTIONS FOR 4-STROKE ENGINE ROOMS

The Safety of Life at Sea (SOLAS) convention in its successive forms is generally regarded as the most important of all international treaties concerning the safety of merchant ships. The main objective of the SOLAS convention is to specify minimum standards for the construction, equipment and operation of ships, related to their safety.



SOLAS related systems on engines:

- High pressure fuel injection pipe
- Leak oil piping system
- Exhaust gas piping and heat insulation
- Turbocharger
- Low pressure fuel pipes and/or hoses
- Low pressure lubricating oil pipes
- Oil mist detector, flexible fuel and lube oil lines, crankcase explosion valves

Benefits of SOLAS upgrade

Wärtsilä SOLAS solutions are designed to prevent the unexpected in regard to injuries, engine room fire, material and capital damages or off-hire.

Further reasons for SOLAS upgrades:

- Meeting the requirements of classification societies, flag administrations and port authorities

- Increasing safety and avoiding near miss cases
- Increased attention to safety and fire prevention

SOLAS FIRE PROTECTION*

Surfaces with temperatures above 220 °C which may be impinged as a result of a fuel system failure shall be properly insulated. Hot surfaces (<220 °C), electrical installations or other sources of ignition shall be screened or otherwise suitably protected to avoid oil spray or oil leakage onto the sources of ignition. Spray shields around joints of flanged joints fitted in fuel or lubricating oil lines should be fitted to avoid oil spray or oil leakage into hot surfaces.

The ship's construction date determines the application of SOLAS.

WÄRTSILÄ SOLAS SOLUTION OPTIONS

The maintenance, improvement and upgrading solutions can be delivered as parts only, or as a package including both parts and installation. For old engines with widely deteriorated insulation, in most cases improvement and/or upgrading packages are recommended.

SOLAS MAINTENANCE

With the basic SOLAS maintenance sets the original engine SOLAS configurations can be restored with spare parts. i.e. fuel line covers, tightening bands, insulation blankets, sheets, steel plates, pads etc. ■ ■ ■

* SOLAS version 8.3: Chapter II-2B Regulation 4 -prevention of fire and explosion / Probability of ignition

SOLAS IMPROVEMENT

The SOLAS improvements include improved versions of splash guard solutions.

Splash guard solution examples:

- Jacketed fuel injection pipes
- Different protection plates for pipes
- Screening of pipe flanges
- Improved fuel oil line connections
- OptiLine leakage free pumps
- Spray protection products

The splash guard solutions can be customized according to the engine's condition.

SOLAS UPGRADE

The SOLAS upgrades are extensive upgrades for hot surfaces protection solutions.

The SOLAS upgrade solutions can be customized according to the engine's condition. Some examples of SOLAS upgrades:

Wärtsilä Exhaust Manifold Insulation

Wärtsilä Exhaust Manifold Insulation is an extensive upgrade with an insulating module system, which increases safety thanks to the low surface temperatures of exhaust manifold and exhaust gas piping.

The Wärtsilä Exhaust Manifold Insulation is already a well-proven solution for Wärtsilä Vasa 32, Wärtsilä 32, Wärtsilä 46 and ZA40S engines, but it can also be extended to GMT230, GMT320, Wärtsilä 26 and Wärtsilä 38 with full SOLAS compliance.

Wärtsilä Bellow and connection insulation

The Wärtsilä Bellow and connection insulation is an easy-to-install, low weight, insulation module system for bellows and connecting pieces after the turbocharger.

The Wärtsilä Bellow and connection insulation is available for Wärtsilä Vasa 32, Wärtsilä 32 and ZA40S engines but it can also be extended to GMT230, GMT320, Wärtsilä 46, Wärtsilä 26 and Wärtsilä 38 with full SOLAS compliance.

Wärtsilä Hot Box

The Hot Box is an economic, low weight, module system that covers the fuel equipment. The Hot Box solution is available for ZA40S, GMT230 and GMT320.

Updated design for insulation shields behind cylinder head and the backside of exhaust pipe

The aim of retrofit designs is to fulfill all actual requirements in terms of hot spot propagation and fire prevention. The updated designs are available for Wärtsilä 46 both inline and V-engines.

Updated design for integrated insulation box and turbocharger end insulation

The integrated insulation box and turbocharger end insulation is an optimized mating with the retrofit design of insulation box and Wärtsilä Bellow and connection insulation. The aim of the retrofit design is to fulfill all actual requirements in terms of hot spot propagation

and fire prevention. The updated design is available for Wärtsilä 46 both inline and V-engines.

SOLAS AUDIT

In the SOLAS compliance audit the current condition of your SOLAS related systems is checked and the spray risk areas, and hot surfaces subject to leakage or further oil spill jeopardizing fire safety, are observed. The SOLAS compliance audit is to be performed by an expert qualified to do hot spot measurements. The SOLAS compliance auditors at Wärtsilä Services have a vast experience of auditing the condition of several systems.

The Wärtsilä SOLAS compliance audit report includes:

- Thermal images and photographs of the suspected hot spots
- Reading of contact thermometers
- Comments of the findings
- Potential recommendations for corrections
- Calibration certificate of the used contact thermometer

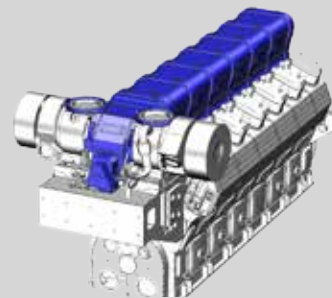
In SOLAS compliance audits, hot spots are traced by using a thermo scanner. Thermo scanning gives the best overall view of temperatures in the entire engine room. Thermo scanning helps you make quick judgments of potential needs for updates/upgrades in order to comply with SOLAS regulations.



Wärtsilä Bellow and connection insulation



Integrated insulation box and turbocharger end insulation



Wärtsilä Exhaust Manifold Insulation