

HOT STUFF

► TEXT: LENA BARNER-RASMUSSEN PHOTO AND ILLUSTRATION: WÄRTSILÄ

SOME ENGINE SURFACES onboard a vessel can heat up to more than 600 degrees celsius. That is, if you don't protect them. With the right equipment, however, the engine room is a safe place to work.

The sailor's profession used to be a hazardous one. Thousands of wrecks scattered all around the seabed of our oceans testify that in the old days, sailors who ventured out to sea did not always return. Luckily today seafarers can go to work and rely on returning home. But that doesn't mean you can overlook safety issues. These days, a fire in the engine room is the most serious safety risk.

Things get hot in an engine room: some parts can have temperatures exceeding 600 degrees celsius. These parts must be properly covered.

The SOLAS (Safety of Life at Sea) convention, ratified by the IMO, aims to keep merchant ships safe. The treaty has several chapters, but in short it limits how hot the surfaces of certain engine components are allowed to be, in order to cut the risk of fire. It also defines what kind of spray or splash protection should be used near flammable liquid systems such as the fuel and lubricating oil system.

PREVENTING THE UNEXPECTED

By installing SOLAS solutions on turbochargers, exhaust gas pipes and fuel and oil spray/splash protection, engine room surface temperatures can be kept below 220 degrees celsius, in line with SOLAS regulations.

"A fire in the engine room typically originates in a

failure in the fuel and lubricating oil system, which is then followed by impingement of oil onto a high temperature surface," explains **Jyrki Salo**, Product Manager for Large Bore and 4-stroke solutions.

Wärtsilä's SOLAS solutions keep the fuel and the heat away from each other, as the hot surfaces are lined. Wärtsilä's SOLAS offering includes the exhaust manifold insulation that ensures low surface temperature. Wärtsilä ADI-XP is an easy-to-install, low-weight, insulation module system for bellows and connecting pieces after the turbocharger. Wärtsilä Hot Box is an economical, low-weight, module system that covers the fuel equipment.

WHY NOW?

The SOLAS convention has been in force for over 10 years, and awareness of engine room safety is now at an all-time high. The trend has also materialised in the order book for Wärtsilä's SOLAS solutions. It's partly due to the fact that the average installation base is reaching the age when safety upgrades are being considered. But a big driver is the overall raised level of safety awareness (we all ride a bike with a helmet these days, right?). It has stirred up the shipping industry as well, with owners and operators getting on trend. News of near-misses and engine room fires spread like digital wildfire in these times of social media, too.



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New ships are built to be SOLAS-compliant. A fire down in the engine room tends to have a paralysing effect on the whole vessel. Why dual engine rooms are becoming increasingly common on modern ships – should a fire occur in one of the engine rooms, the other one is still operable.

MODULAR DESIGN GIVES FLEXIBILITY

Retrofitting older vessels with SOLAS-compliant equipment is also often done. The process takes about three months and starts with a SOLAS compliance audit to find out what needs to be done. Spray risk areas and hot surfaces subject to leakage or further oil spill jeopardising fire safety are observed.

“More often than not, this audit entails the use of a heat camera to identify spots that run the risk of becoming overheated when the engines are running at full speed,” explains Salo. “If a certain area is identified as risky, we run additional diagnosis.”

Wärtsilä offers a turnkey concept for SOLAS compliance, entailing everything from the initial status analysis to delivery and after-sales service. The SOLAS Compliance audit is performed by an expert qualified to do hot spot measurements. The audit report includes thermal images and photographs of the suspected hot spots, reading of contact thermometers, comments on the findings and possible recommendations for corrections.

The audit is followed by design of the needed SOLAS solution. After the solution has been installed, it is piloted to ensure that things work the way they should.

“This piloting phase is also an important springboard for further R&D efforts,” says Salo.

Ensuring a vessel’s full SOLAS compliance is a significant investment, but an important one too. Accidents come with a lot of bad will. A fire in an engine room can mean the vessel will be off-hired for several months. And last but not least: compliance ensures peace of mind for the crew.

“You sleep better in your bunk if you know that safety issues are taken seriously and that the equipment is state-of-the-art,” says Salo. ●

SOLAS – SAVING LIVES AT SEA

SOLAS is generally regarded as the most important international treaty concerning the safety of merchant ships. The convention sets minimum standards for the construction, equipment and operation of vessels. SOLAS-related systems on engines include high-pressure fuel injection pipes, leak oil piping systems, exhaust gas piping and heat insulation, turbochargers and oil mist detectors.

SOLAS states that parts with temperatures above 220 degrees celsius that may be impinged as a result of a fuel system failure must be properly insulated. Hot surfaces, electrical installations and other sources of ignition must be screened and suitably protected to avoid oil spray or oil leakage onto them.

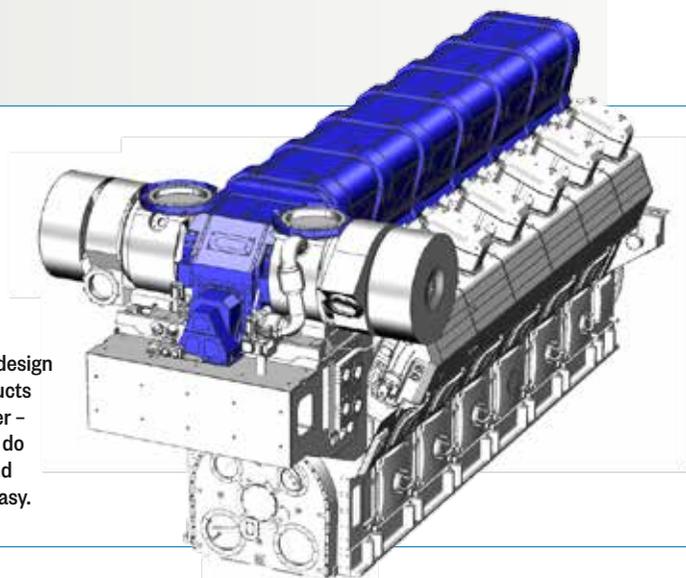
METICULOUS MAINTENANCE

One of the characteristics of Wärtsilä’s SOLAS products is the modular design, enabling upgrades without having to renew the whole package. And whenever new features become available or a paragraph in the SOLAS convention is ratified, the system can be upgraded easily. For Services’ customers, SOLAS maintenance and upgrades are a standard part of the offering.

This comes in handy, as studies show that the highest risk for engine room fires is during and immediately after maintenance operations. Some SOLAS solutions must be removed and reinstalled during maintenance work, and sometimes human error leads to details being overlooked during reinstallation. Wärtsilä’s SOLAS solutions are designed for easy, safe maintenance. Training for the crew is also part of the offering.

An accident tends to happen without warning. In these situations Wärtsilä is ready to act promptly, thanks to its worldwide service network. If the local authorities – on whose shoulders the responsibility for monitoring SOLAS compliance lies – make a spot check and identify a potential hazard, ship owners are usually just given a few months to put things right.

“THIS PILOTING PHASE IS ALSO AN IMPORTANT SPRINGBOARD FOR FURTHER R&D EFFORTS.”



The modular design of Solas Products makes it easier – and safer – to do retrofitting and maintenance easy.