

MEMBER ALERT



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SHIPBOARD THERMAL IMAGING INSPECTIONS

Components of machinery and electrical circuits can cause fires onboard vessels, especially when they become overheated or where fuel or oil leak or spray onto hot surfaces. Members should accordingly do their utmost to prevent fires by eliminating their potential sources, and generally by improving the fire risk profile of their vessels.

Thermal imaging inspections are of value in detecting early signs of heat caused by electrical faults which may develop into fires. Such fires are generally attributable to three things: electrical system failures, machinery failures and/or human error.

While the probability of a fire might be low, it can, for example, be caused by a defect in the thermal insulation of a hot surface in conjunction with a local fuel or oil leak. Moreover, the potential for electrical fires is exacerbated by the multitude of electrical connections onboard a vessel, many of which cannot be easily monitored during routine inspections.

Members should exercise due diligence through proactive maintenance and regular inspections of relevant components on board their vessels as an integral part of each vessel's planned maintenance system. Specifically, this should include:

1. Implementation of a detailed shipboard maintenance plan based on the manufacturer's recommendations, operation and maintenance specifications.
2. Availability of specialized instruments, testing equipment, guidance and the upkeep of adequate spare parts.
3. Crew training to ensure the proper use of equipment and implementation of the shipboard maintenance plan.
4. Ship management's commitment to the support and follow-up of the maintenance plan and timely arrangements of shore-based service.
5. Regular inspections of critical components and logging results using traditional testing tools and visual inspections, or preferably by using thermal imaging instruments.

In reference to item 5 above, important indicators of potential fire hazards can be gained by the results of thermographic inspections to facilitate detection and subsequent elimination of hot spots to avoid very high risks.

Therefore, Members are encouraged to utilize thermographic inspection techniques as may be applicable to relevant fire safety requirements as set forth in Chapter II-2 of the SOLAS Convention.

By way of example, an engine room's electrical switchboard inspection procedure might proceed as follows. The engines are started and the electrical systems put under load in

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excess of 40%. Energized systems are scanned for thermal anomalies captured against all possible power sources. The data is then analyzed by crew or third-party surveyors and a report is generated that identifies key hot spots that can lead to switchboard fires. Additional inspections can be employed to identify missing or deteriorating exhaust insulation to prevent hot surfaces in excess of 220°C (428°F) that are at risk of igniting engine room fuel-oil leaks.

Thermal imaging is cost-effective, as infrared cameras can identify areas of abnormal temperature without interrupting regular vessel operations or dismantling/disassembling equipment. It helps to diagnose issues and determine the severity of potential electrical and mechanical failures that can lead to shutdowns, property losses and continued increases in operating costs.

Ultrasonic testing can also be used along with infrared imaging to identify critical issues such as internal and external tracking/arcing problems in high voltage equipment that are invisible to infrared imaging alone. Members should consider equipping their vessels with thermal imaging equipment/instruments to be used by the crew on a regular basis following appropriate familiarization and training.

Various thermal imaging equipment can be obtained by contacting a manufacturer, such as: [FLIR](#) or [FLUKE](#) or [SEEK](#) or [VEVOR](#) or [Milwaukee](#) or other similar instruments.

Your Managers recommend that Members take note of this information and be guided accordingly.