Fact sheet

Rolls-Royce

# Oil Mist Detection System

for improved engine room safety

IMO recommend oil mist detection in engine rooms

**The QMI Oil Mist Detection System provides improved engine room safety, improved plant and asset management and improved investment protection.**

The build up of oil mist can be extremely sudden, effective monitoring can guard against sudden increases in oil mist levels going unnoticed.

Oil mist is usually due to excessive engine wear which may occur in an engine for a number of reasons including incorrect or extended maintenance intervals, incorrect lubrication or incorrect operation. When worn and poorly lubricated metal surfaces make contact, the abrasive force generates heat. Heat spots occur and when oil hits such hot spots oil mist results. The larger the damaged area, the larger the hot spots and the more oil mist results. When levels of oil mist in a confined space – such as a crankcase – rise to approximately 50mg / litre and the temperature is in excess of 200°C, there is a serious risk of an explosion and / or fire. At the least major component or engine failure will occur.

Such failures have significant consequences, most of which have serious financial repercussions, such as delays, loss of revenue, consequential loss, possible injuries to engine operators and significantly increased insurance premiums.


Cost implications affect all areas of running and maintaining plant, down time must be eradicated whilst at the same time fewer people are supervising engines and plant. It follows, therefore, that there is a significant reliance on automatic systems to deliver a prompt warning of potential oil mist problems. Increasingly, such systems allow operators to monitor when and where engine wear is taking place. Accurate recording of oil mist levels, even well below critical levels, and logging of readings on a regular basis, allows engineers to monitor which measurements are increasing and take timely and effective remedial action. A significant advantage of the system is its ability to self-monitor problems such as a dirty lens or wiring fault thus avoiding unnecessary alarms and shutdowns.

QMI monitoring equipment conforms to the stringent requirements of marine standards agencies, including Lloyds Register, Bureau Veritas, Det Norsk Veritas, Rina, American Bureau of Shipping and Nippon Kaiji Kyokai.

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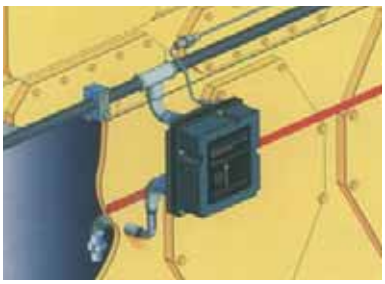
There are two levels of protection provided by the QMI systems:

## QMI Engine Detector

For crankcases, gear and chain cases, pumps, compressors, gearboxes and thrust bearing housings.

- Well proven monitoring solution for marine and land based diesels
- Checks up to 12 detection points simultaneously and continuously and is capable of raising an alarm within half a second – achieved through sensors mounted at source on the crankcase with an independent fan or ram jet designed to circulate crankcase oil mist
- Monitor mounted in control room or bridge well away from any danger zone
- Microprocessor powered monitor shows oil mist density status for each sensor with green / amber / red indicators, supported by digital readout for highest level of oil mist.
- Two stage alarm: early warning and main alarm, together with slow down / shut down facility.



The system does not rely on obscuration measurement, or compressed air which, when dirty, can cause numerous false alarms

- Self-diagnostic instrument faultfinding system differentiates between engine failure and system error thus eliminating false alarms.
- Uses light scatter as the sensing method, allowing monitoring at source. This avoids long pipework and ensures fast and accurate readings. The system works from a true zero and requires no calibration.

It should be noted that compared with the QMI system, alternative monitoring devices such as embedded bearing temperature sensors, although useful for main bearing temperature measurement, cannot be used to monitor the upper part of the crankcase. Early stages of wear / damage are not detected, resulting in more serious situations occurring before remedial action can be taken.

## QMI Atmospheric Detector

For all machine rooms with fuel, lubricating or hydraulic oil lines, engine rooms, purifier rooms, bow thrusters and steering gear.

- New QMI equipment to detect oil mist in the atmosphere can be used in conjunction with QMI engine detector or as a standalone solution in sensitive operating environments.
- Oil mist escaping from injectors and leaking fuel or hydraulic pipes can gather in engine and machine room spares, this can present a fire risk. Ignition can be caused by many factors such as exhaust pipes, turbochargers, non-flameproof motors and static electricity.
- Can provide warning before smoke detectors are activated
- Detector with integral fan is housed in an aluminium case on a universal mounting bracket.

Although QMI detectors can be retrofitted to most of our marks of engine in the Pielstick and Allen ranges and in the majority of applications, it is advised that a site survey be carried out to ensure that the equipment is suitable to fulfill your individual requirements and meet regulations relating to the plant in question. Please contact our Customer Service Department for further information.

Rolls-Royce®

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