BearingMaster

KONGSBERG

A complete standalone alarm and monitoring system for bearings in slow-speed diesel engines

Features

The BearingMaster is built on the large family of Kongsberg temperature sensors. The most important part of the system is the SENTRY Wireless Temperature Sensor used for the moving bearings inside the engines. This sensor is based on a patented radar technology which has proven to be the only reliable technology applied for real-time wireless temperature monitoring.

The BearingMaster provides the following features:

- Crosshead bearing sensors
- Crank./big-end bearing sensors
- Main bearing sensors
- Thrust bearing sensors
- Local and/or remote screen and alarm panel
- CAN-bus output to supervisory engine room automation system
- Suitable for both retrofit installations and for new engines

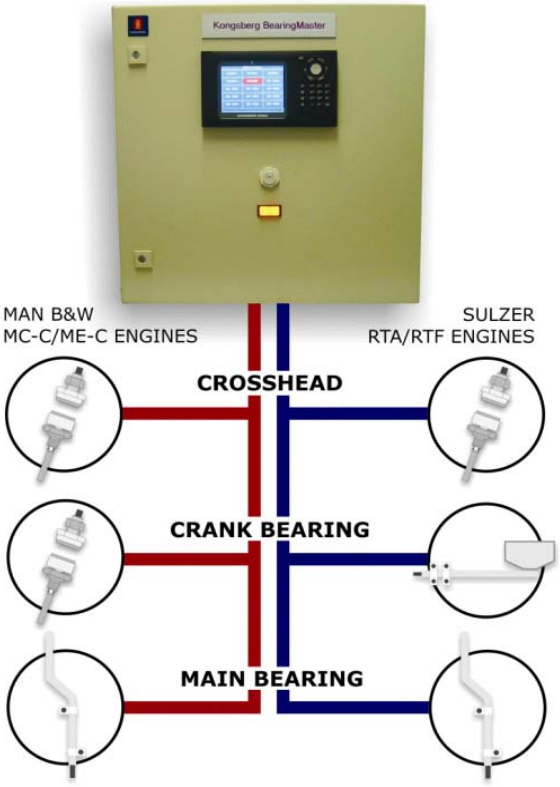


Figure 1: Illustration of the BearingMaster Concept

Description

Application and general description

The Kongsberg BearingMaster is designed to protect slow-speed diesel engines from devastating bearing seizures and crank case explosions.

According to SOLAS regulation II-1-47.2 all marine diesel engines above a certain size (2250 kW or 300 mm cylinder bore) must be equipped with a crank case protection system.

Today most of these engines are equipped with an oil-mist detector to meet these requirements. However, many ship-owners have found that the oil-mist detector might create an atmosphere of false safety. Statistics collected from the classification societies shows that bearing seizures account for approximately 20 % of all recorded damages on slow-speed main engines. By installing the Kongsberg BearingMaster most of this damage could have been avoided.

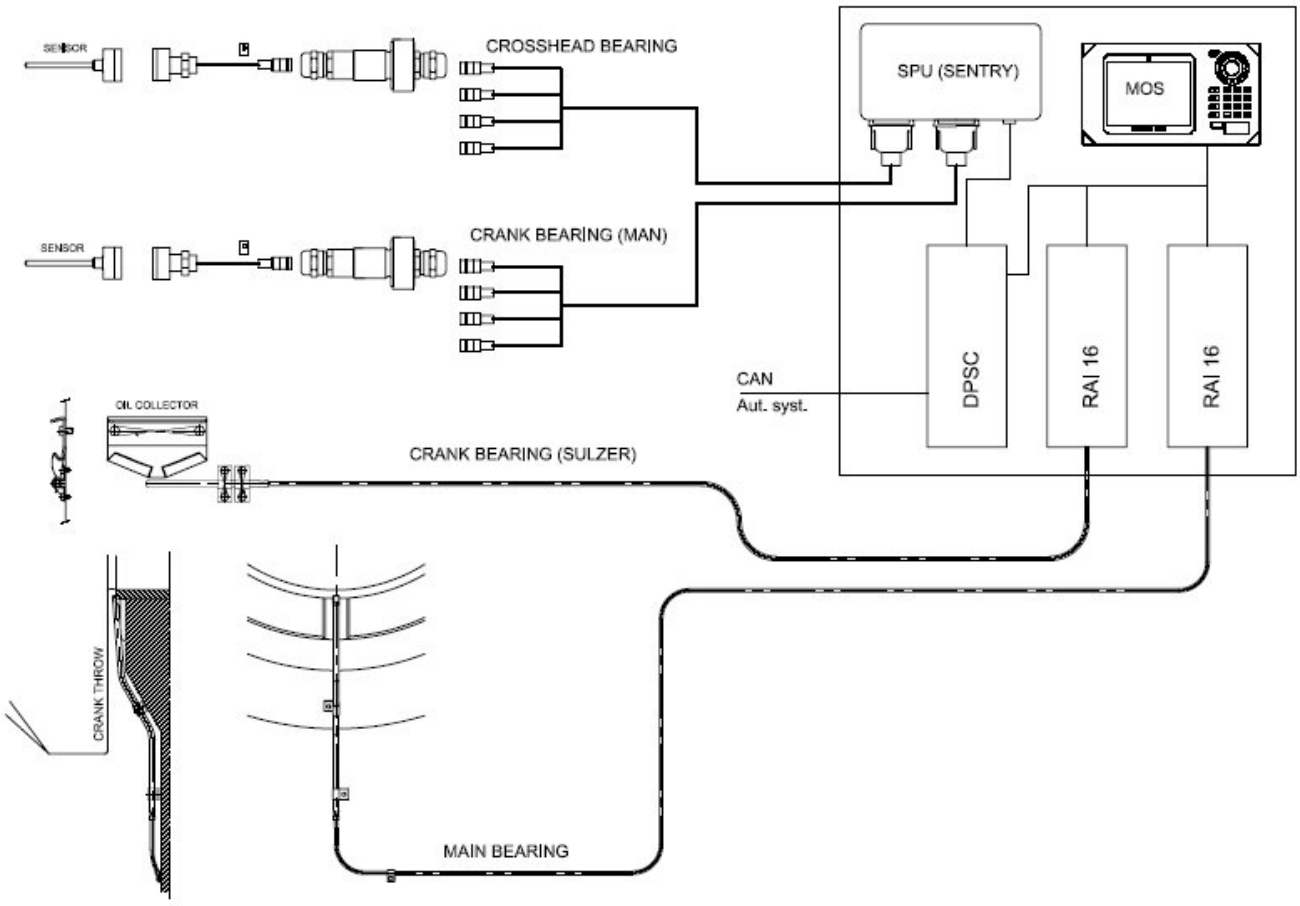


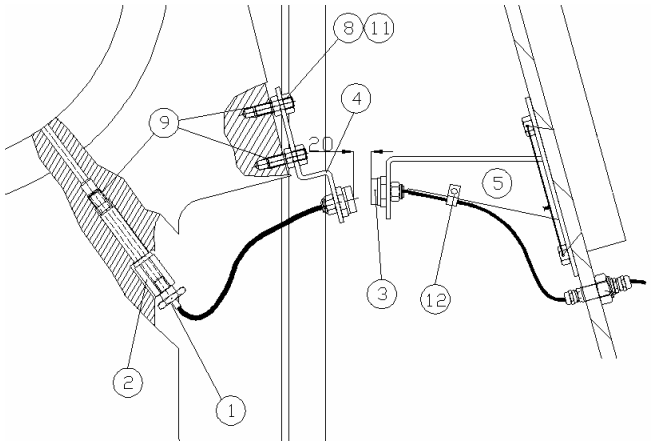
Figure showing the building blocks of the BearingMaster

MAN B&W MC-engines

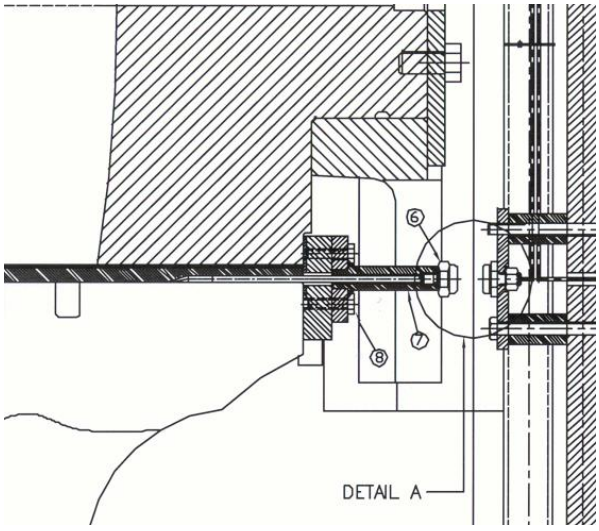
- SENTRY cross-head bearing sensors
- SENTRY crank-bearing sensors
- Pt100 main bearing sensors

SULZER RT-engines

- SENTRY cross-head bearing sensors
- Pt100 splash-oil sensors
- Pt100 main bearing sensors

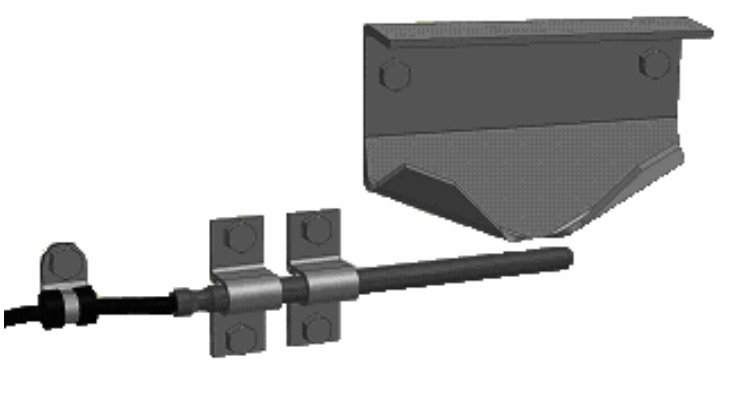


SENTRY detail from MAN MC X-head installation

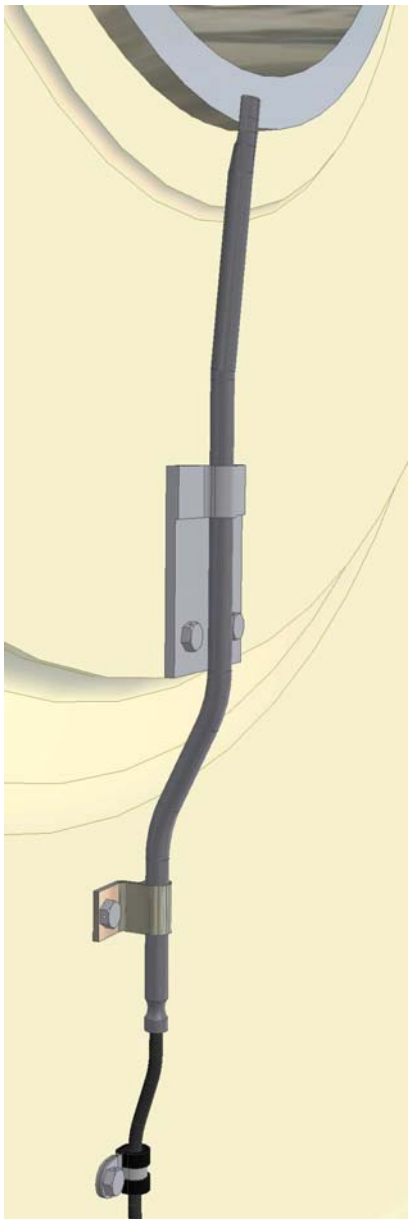


SENTRY detail from SULZER RT X-head installation

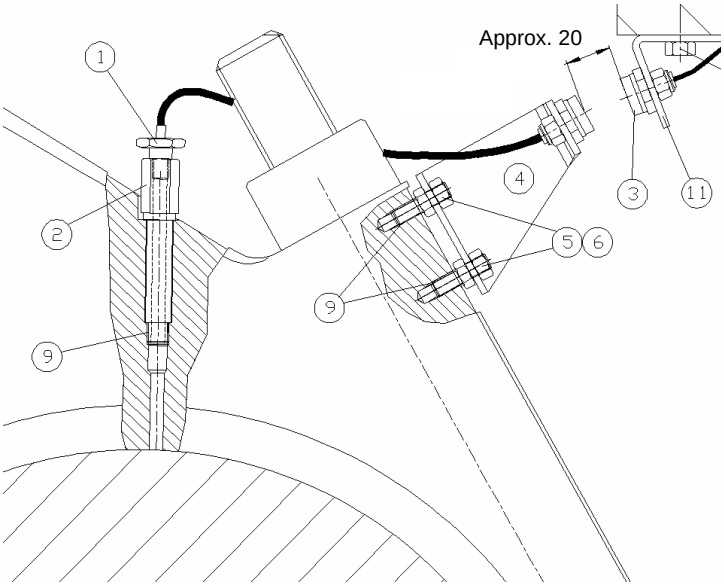
Drawings



Splash-oil for SULZER crank bearing

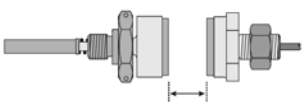


Main bearing sensor for MAN & SULZER



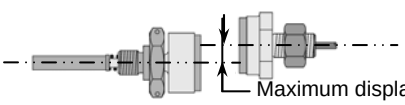
SENTRY detail from MAN MC crank installation

Gap between antennas:



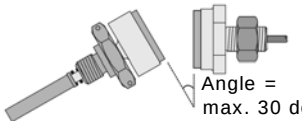
Standard gap = 5 to 25 mm
(can be up to 40 mm if short cable)

Lateral position between antennas:



Maximum displacement ±5 mm

Angle between antennas:



Angle =
max. 30 deg.

*The installation of the stationary antenna relative to the internal antenna of the wireless temperature sensor is extremely flexible and non-critical. The figures above illustrate the unique installation flexibility of the **SENTRY** system.*

Operator Panel MOS 33

Supply voltage:	18 to 32 VDC, ±5 % ripple
Power consumption:	10 W
Operating temperature:	-15 °C to + 70 °C
Storage temperature:	-25 °C to + 70 °C
Maximum humidity:	96 % no condensation
Display:	TFT colour, power backlight: 5.7” 320 x 240 pixels
Weight of unit:	1.5 kg
Dimensions:	Outline: 252 x 144 x 70 mm Cut-out: 242 x 134 mm
Mounting:	Bracket for table, ceiling and wall. Flush mount with removable corners
Shock and vibration:	DnV Class B IACS E10
EMC properties:	According to IACS E10, IEC 60945

I/O Modules

Supply voltage:	18 to 32 VDC
Power consumption:	7.5 to 10 W
Operating temperature:	-15 °C to + 70 °C
Storage temperature:	-25 °C to + 70 °C
Maximum humidity:	96 % no condensation
Amount of I/O each unit:	Analogue input unit: RAI 16: 16 AI Combination units: RiO-C2: 8 DI, 8 DO (relay)
Weight of unit:	1.5 to 2.0 kg each unit
Dimensions:	Outline: 341 x ≈150 x 90 mm
Mounting:	Screws, 4 pcs M5. To be mounted in cabinet
Shock and vibration:	DnV Class B IACS E10 - Direct mount on engines, compressors etc.
EMC properties:	According to IACS E10, IEC 60945
Serial interfaces:	2 CAN ports for communication with MOS 33 or ROS (PC) 1 serial interface RS 422 (dPSC) (option)

The Sentry (GBP100) Signal Processing Unit

Power Supply:	24 VDC (18 to 36 VDC)
Power consumption:	Maximum 350 mA (without 4 to 20 mA output)
Maximum no. of input channels:	16 pcs
Output signal:	RS 485 (optional RS 232C, CAN, 4 to 20 mA)
Digital alarm output:	Slow down, shut down
Size housing:	260 x 160 x 90 mm
Material housing:	Aluminium alloy
Protection:	IP66

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