

Wireless big-end bearing temperature monitoring system

PRODUCT LEAFLET



This state-of-the-art wireless system improves operational safety by continuously monitoring the temperature of the bearings.

Any uncharacteristic deviation in the bearing temperature results in an immediate warning signal.

The engine can then be stopped in an orderly fashion and troubleshooting carried out in good time before actual damage occurs.

The system gives real-time, first-hand data, preventing damage to the big-end bearings of the connecting rod, which is one of the most common reasons for engine breakdown among four-stroke, medium-speed engines.

When a bearing is damaged, it always happens unexpectedly and quickly.

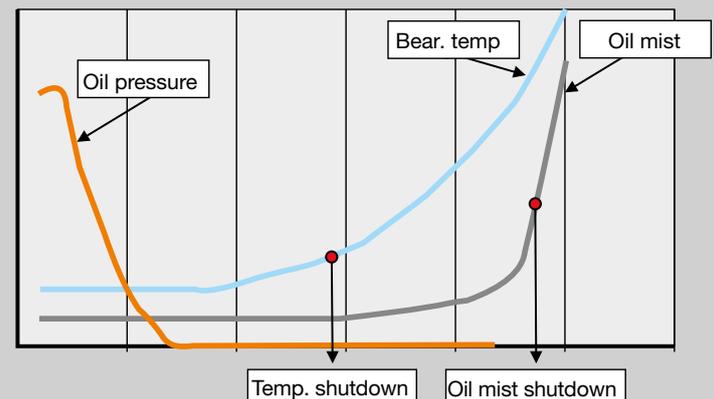
APPLICATION FIELD

A wireless temperature sensor system for continuous monitoring of big end bearing temperature in diesel and gas engines. The system can be fitted on installations with the following engine types:

- Wärtsilä Vasa 32, Wärtsilä Vasa 32LN, Wärtsilä Vasa 32GD, Wärtsilä Vasa 32LNGD, Wärtsilä 32DF
- Wärtsilä 32, Wärtsilä 32GD, Wärtsilä 34DF, Wärtsilä 34SG, Wärtsilä 38A, Wärtsilä 38B, Wärtsilä 38C, Wärtsilä 46, Wärtsilä 46GD, Wärtsilä 50DF, Wärtsilä 50SG
- Sulzer Z40, Sulzer ZA40, Sulzer ZA40S

TECHNICAL DATA

Signal Processing Unit (SPU)	
Power supply	24 V DC
Number of input channels	10 pcs / SPU
Output signal	CAN, RS 485 MODBUS and 4 to 20 mA, three relay outputs
Protection	IP66



SYSTEM COMPONENTS

COMPONENT AND SYSTEM DESCRIPTION

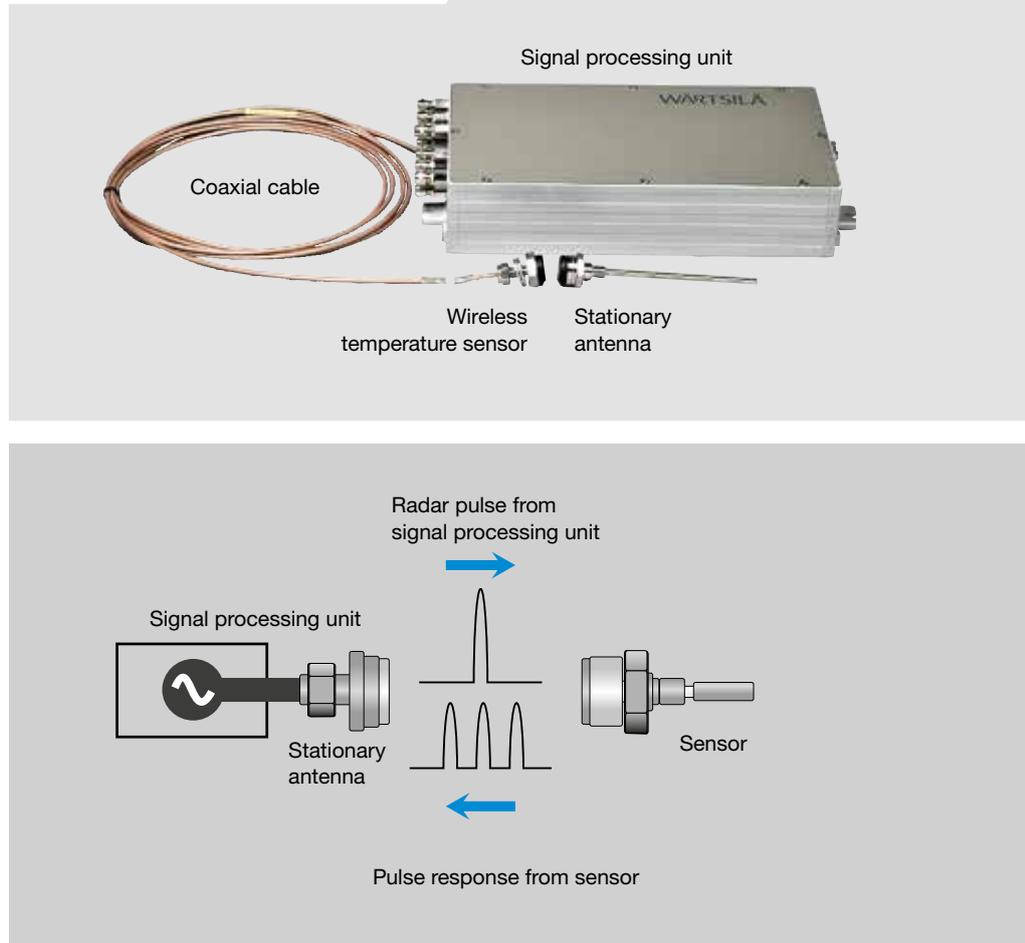
The complete system consists of a wireless temperature sensor with one stationary antenna per cylinder and one or more signal processing units. The core of the system is based on advanced radar technology, which makes it possible to use high quality, wireless passive sensors which require no external power sources. The technology gives great flexibility in arranging the sensors and antennas with respect to the gap, angle and lateral position between the units. The wireless temperature sensor is mounted on the moving part with the tip close to the bearing that is to be measured. The signal processing unit generates a low energy, high frequency radar pulse, which is transmitted to the wireless sensor via the stationary antenna.

When the wireless sensor passes the stationary antenna, the radar pulse is reflected back to the signal processing unit. The shape and characteristics of the received signal are then used to uniquely determine the temperature of the sensor. This information is communicated to the alarm and monitoring system, (4-20 mA / sensor, RS485 or CAN). The unit also has three adjustable free contacts for safety functions (NO-contacts for alarm, slow down/shutdown and hardware watchdog).

MECHANICAL DESIGN AND INSTALLATION

The wireless temperature sensor is installed in the connecting rod, using a special tool to drill the hole.

The stationary antenna is installed in a suitable place inside the engine so that the wireless temperature sensor passes it at the required distance. A coaxial cable connects to the



signal processing unit. A screened multi-cable providing a power supply of 24 V DC IN and a signal OUT (4-20 mA, RS485) is plugged into the signal processing unit.

The cable can be connected to a standalone alarm and monitoring system or to the engine or plant automation system (depending on engine and plant type).

It is recommended that the sensors and cabling are installed during engine overhaul. The complete monitoring system should be installed by authorised Wärtsilä personnel. Installation-specific engine manuals and spare part catalogues must be updated after the upgrade.

CERTIFICATIONS

This product is approved by classification societies (DNV, GL, NKK, RR, BV, ABS, RINA, KR, CCS, LR).