

GDMS-PCN13

Gear and Diesel engine Monitoring System
Propulsion Condition System Navy

Preamble

Damages to bearings can be caused by metal particles within the bearing clearance, low oil pressure, overheated oil, etc. The result of such malfunctions is a breaking oil film between the sliding parts.

As soon as the oil film is broken a thermo voltage occurs due to the friction between the different metallic alloys.

Functional description

The GDMS-PCN13 system is an online condition monitoring system which measures and analyzes the thermo voltage. The main parts of the system are the Slip Ring Transmitter, the Evaluator and the specially designed Logger software.

Slip Ring Transmitter (SRT)

The Slip Ring Transmitter (SRT) contains a special slip ring with redundant carbon brushes. It transmits the thermo voltage signal from the crankshaft-engine-system to the measuring circuit.

The integrated incremental encoder that is designed for harsh environments links the measured signal to the rotation of the crankshaft. This allows to draw conclusions which crank shaft bearing (or almost any other moving part of the engine) causes the signal.



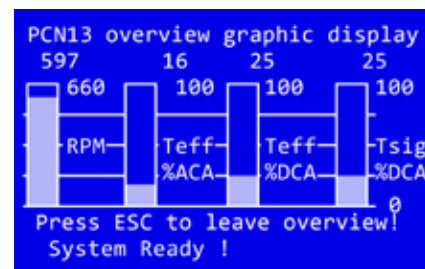
Comparison of the overall length of PCN09 and PCN13



Evaluator

The Evaluator is designed to withstand the environment in the engine room. Its vibration resistance allows an installation near the engine without any special support.

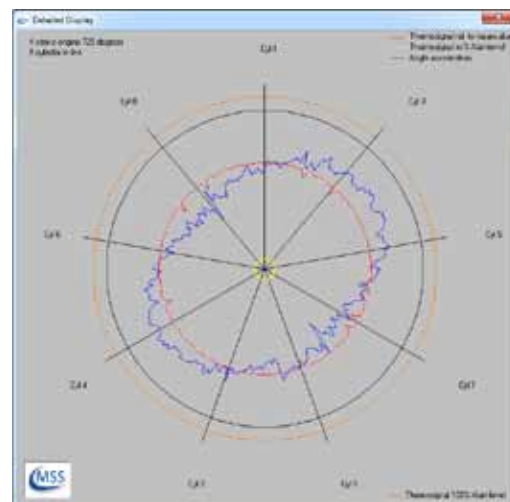
The Evaluator consists of a metallic case, a liquid crystal display, three LEDs indicating the system status and five membrane buttons for user interaction. A powerful processor inside the Evaluator analyzes the measured data continuously, displays the data on the LCD and triggers the alarm relays in case of thermo voltage. The bargraph display makes recognizing the current measurement data easy.



Logger Software

The Logger software is capable of receiving measurement data of up to six connected PCN13 systems simultaneously. It is used to display and store the data for later analyzation.

The Logger software also supports the localization of the damage inside your engine. This is done by additionally using the cylinder firing sequence of the engine and the incremental encoder data of the SRT. The result of the different information is the "Polar Diagram" of the Logger software. It shows the measured thermo voltage over the engine rotation. The diagram also contains the firing sequence of the engine so the operator is able to recognize easily which bearing is affected.



GDMS-PCN13 Benefits

- ✓ Fully redesigned sensor, compatible to existing installations
- ✓ Shorter overall length of sensor and mounting adapter
(compared to a PCN09 installation)
- ✓ Easy installation
- ✓ Online and continuous monitoring
- ✓ Optimization of the availability and reliability of the engine
- ✓ Early and reliable detection of bearing anomalies
- ✓ No unnecessary bearing inspections
- ✓ Minimizing engine maintenance and service costs
- ✓ Maintenance free

Technical Data

| | |
|---------------------|--|
| Power-Supply | 24V DC +30% / -25% |
| Operating current | max. 1.5A |
| Sensitivity | adjustable in 5 steps |
| Outputs | 3 isolated relay contacts: <ul style="list-style-type: none">• System ready• Alarm 1 (usually main alarm)• Alarm 2 (usually pre alarm) |
| Data interface | <ul style="list-style-type: none">• RS485 to PC• Modbus (RS422 or RS485)• CAN Bus (optional) |
| Ambient temperature | 0 - 70°C for Evaluator and SRT |