TRITON BTM
Bearing Temperature Monitoring

- Engine protection
- Easy to install
- Simple principle
- Fast reaction time
- High measuring accuracy
- Very low false alarm probability
- No maintenance required
- Retrofittable
TRITON BTM

Bearing temperature monitoring

Avoiding engine downtimes

One of the most common causes of downtimes in modern low and medium-speed combustion engines is the failure of the main or connecting rod bearing.

In the monitoring systems sector, HEINZMANN constantly strives to develop solutions for optimising the availability and reliability of engines. The result of this research is the TRITON BTM system, which makes an important contribution to preventing damage and ensuring high availability.

The better way of bearing monitoring

The BTM system is more stable than other systems and helps to monitor, optimise and protect the engine.

In addition to monitoring all the relevant bearing temperatures, the system indirectly supervises the thermal load of the cylinders via splash oil monitoring.

This ensures a quick reaction in order to avoid damaging the engine.

TRITON BTM Benefits

- Early prediction of severe damages
- Easy installation without modifying major engine parts
- Fast reaction time to avoid major damages
- Simple principle without interference
- Very low false alarm probability
- High measuring accuracy
- No maintenance
- Retrofittable

Simple principle

The BTM system continuously monitors the temperature of the lubricating oil in the crankcase assembly, with a temperature sensing function for each individual main and connecting rod bearing. The high heat transfer coefficient of the lubricating oil correlates directly with the increase in temperature of the splash oil.

The HEINZMANN TRITON BTM system detects temperature increases at three different positions:

- Direct temperature measurement of the main bearing and thus detection of the condition of the lubricating oil.
- Temperature measurement of the rod bearing splash oil by a temperature sensor placed in an oil tray.
- Temperature measurement of the splash oil from piston rings in the cylinder. This also provides indirect measurement of the cylinder’s thermal load.

It is also possible to monitor the temperature of the camshaft and the turbocharger bearing.

Thanks to this precise method of measuring the splash oil temperature, the system can react very quickly. It immediately detects insufficient lubrication and triggers an alarm in order to prevent damage to the engine.
**Early damage prediction**

The characteristics of TRITON BTM help to detect impending damage in the main and connecting rod bearing and cylinder before it occurs. Monitoring the thermal overload of the cylinders allows proactive countermeasures to be taken. This enables the risk of costly repairs and downtimes to be identified, thereby optimising life cycle costs (LCC) and engine availability.

**Easy installation**

The TRITON BTM system is easy to install and convinces with a robust and user-friendly design.

**Fast reaction time**

Although measuring the temperature seems very simple, it in fact comprises the complete measurement chain - starting with very precise temperature sensors, extremely fast and highly accurate data acquisition, and a robust and self-monitoring software design that enables temperatures to be measured with such high accuracy. The system thus ensures a fast reaction time for detecting engine damage.

**Very low false alarm probability**

The system has been given the necessary classification approvals to meet the SOLAS II-1 regulations in full, which means that the BTM is a fully adequate crankcase protection system with a very low false alarm probability.

**High measuring accuracy**

Thanks to its measurement principle, the system can provide highly accurate measuring data.

**No maintenance**

The TRITON Bearing Temperature Monitoring system does not require maintenance. The system is calibrated automatically.

**Retrofit solution**

In addition to its use in collaborations with our OEM customers, the system also provides a retrofit solution. For system design and project planning, HEINZMANN offers its customers a skilled team of experienced engine specialists.

**TRITON BTM PRINCIPLES**

- Direct measurement of main bearing temperature
- Direct indication of splash oil temperature
- Measuring of the lubrication oil temperature of each connecting rod bearing
- Building the temperature average
- Calculating temperature deviation for each compartment
- Alarm if smaller deviations
- Shut down in case of bigger deviations

![TRITON BTM Control Unit IP 6K/9K](image)

![Crankcase cover](image)

![Oil tray collecting splash oil](image)

![Temperature sensor](image)
**TRITON BTM SYSTEM OVERVIEW**

Bearing Temperature Monitoring

- Inputs temperature sensors, pick-up sensor
- Alarm system Safety system
- Oil temperature sensor
- Pick-up
- Splash oil temperature sensors
- Main bearing temperature sensors

**TRITON BEARING TEMPERATURE MONITORING APPLICATIONS**

- Diesel engines
- Gas engines
- Dual fuel engines
- Compressors
**TRITON BTM SYSTEM COMPONENTS**

The system consists of a control unit and temperature sensors mounted in specially made oil trays. These oil trays are mounted on the crankcase covers and collect the circulating lube oil.

**BTM control unit**

**BTM oil tray mounted on crankcase cover**

**Screen display (optional)**

**TRITON BTM FEATURES**

- Splash oil temperature monitoring from the large moving bearings
- Display of the current lubrication oil temperature in the crankcase for each cylinder
- Alarm and shutdown functions
- Bearing failure detection
- Engine shut down before serious damage occurs
- Monitoring of system functions
- Non redundant or redundant version (double thermo element)
- Stand alone system or fully integrated in the existing safety and alarm system
- Including main bearing monitoring or add-on system to an oil mist detection monitoring system
- Together with main bearing monitoring it can be used as an crankcase monitoring system following the rules of all major classification societies
- Can detect also some kind of piston seizures
Quality & Precision since 1897

Head Office:
Heinzmann GmbH & Co. KG
Am Haselbach 1
D-79677 Schönau/Germany
Phone: +49 7673 8208 - 0
Fax: +49 7673 8208 - 188
Email: info@heinzmann.de