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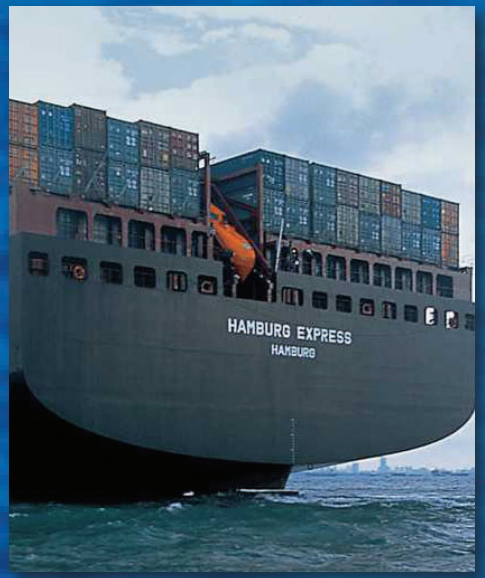


XTS-W+

Bearing Condition Monitor

amot

efficient, cost-effective, relevant **solutions**

AMOT has been a pioneering manufacturer of quality components for marine rotating machinery since 1948 – and innovation is something we've become very good at. AMOT currently has three manufacturing sites and seven sales offices positioned strategically around the world to support new build, ship owners and operators globally.

AMOT recognises the key to your business is keeping your equipment operational and minimising downtime. We continue to work closely alongside the technical teams of our customers to ensure our solutions meet their ever-changing needs.

Our manufacturing plants are ISO 9001 accredited and many of our products have industry standard certification such as LR, ABS, DNV and BV.

We look forward to working with you.

www.bearingwear.com

a proven solution to
maximise revenue and reduce costs

“MAN Diesel considers it feasible to completely omit regular open-up inspections of any of the three crank-train bearings featuring an approved bearing condition monitor system connected to the alarm and slow-down system.”

Source: **MAN Diesel**, Service letter SL08-495 May 2008

The **XTS-W+** is a unique, cost-effective and relevant solution that breaks new ground in marine condition monitoring systems.

Avoid Open-Up Inspections

The major 2-stroke engine maker has stated that if a system such as the XTS-W+ is installed, open-up inspections of all crank train bearings are no longer required, providing **operational cost savings** and **removing the high risk of bearing damage** during such inspections. Exposure of key personnel to potentially hazardous situations is also removed, offering a **safer working environment**.

Cost-effective, planned maintenance

The XTS-W+ Bearing Condition Monitor provides ‘real-time’ data on crank train bearing condition. It displays the rate of degradation, bearing wear and the water-in-oil content to fully protect the crank train bearings. The XTS-W+ provides ‘real time’ information allowing the user to take appropriate corrective action, thus avoiding consequential damage, costly unplanned repairs and loss of revenue.

Maximum Availability

The XTS-W+ continually measures the condition of the bearing, offering an intuitive and reliable **definitive measuring device**. The full life potential of the bearing can be assessed and in-service time maximised. Easily installed, the XTS-W+ is suitable for both new build installations and retrofitting to existing engines.

Proven Product

The XTS-W+ is Type Approved by Lloyd’s Register, American Bureau of Shipping and Bureau Veritas. The technology developed by AMOT is a valuable component of the **condition based maintenance programmes** provided by Classification Societies.

introducing the **XTS-W+**: a major step towards reducing maintenance costs and maximising revenue

The XTS-W+ has been developed by AMOT as a bearing condition monitor for 2-stroke low speed engines. It indicates wear in the crank train: main; crankpin; and crosshead bearings. In addition it can monitor both water in oil content and electrical potential between the propeller shaft and hull, both of which may have an adverse effect on bearing life.

A typical system comprises …

- 2 custom analogue inductive sensors per cylinder mounted on a bracket located on the 'A' frame
- a touch screen pc mounted in the engine control room for long-term data logging and class reporting
- a signal processing unit (SPU) mounted onto the outside of the engine
- a water-in-oil sensor per engine mounted in the main oil feed pipe (optional)
- a shaft line earthing monitor to measure the electrical potential between propeller shaft and hull (optional)

How a typical system works

The XTS-W+ maps the characteristics of your individual engine, ensuring accurate real time measurement of bearing thickness.

The sensors convert any physical displacement due to bearing wear into a pulsed electrical signal, which is sent to the signal processing unit. Each microprocessor based SPU generates continuous signals proportional to the wear detected, compensating for environmental and engine load conditions.

The calibrated SPU communicates wear data to the HMI which provides a clear graphic display of bearing wear. Each sensor can be calibrated individually or simultaneously.

The SPU calibration is fully automatic with engine protection only 30 minutes from start-up.

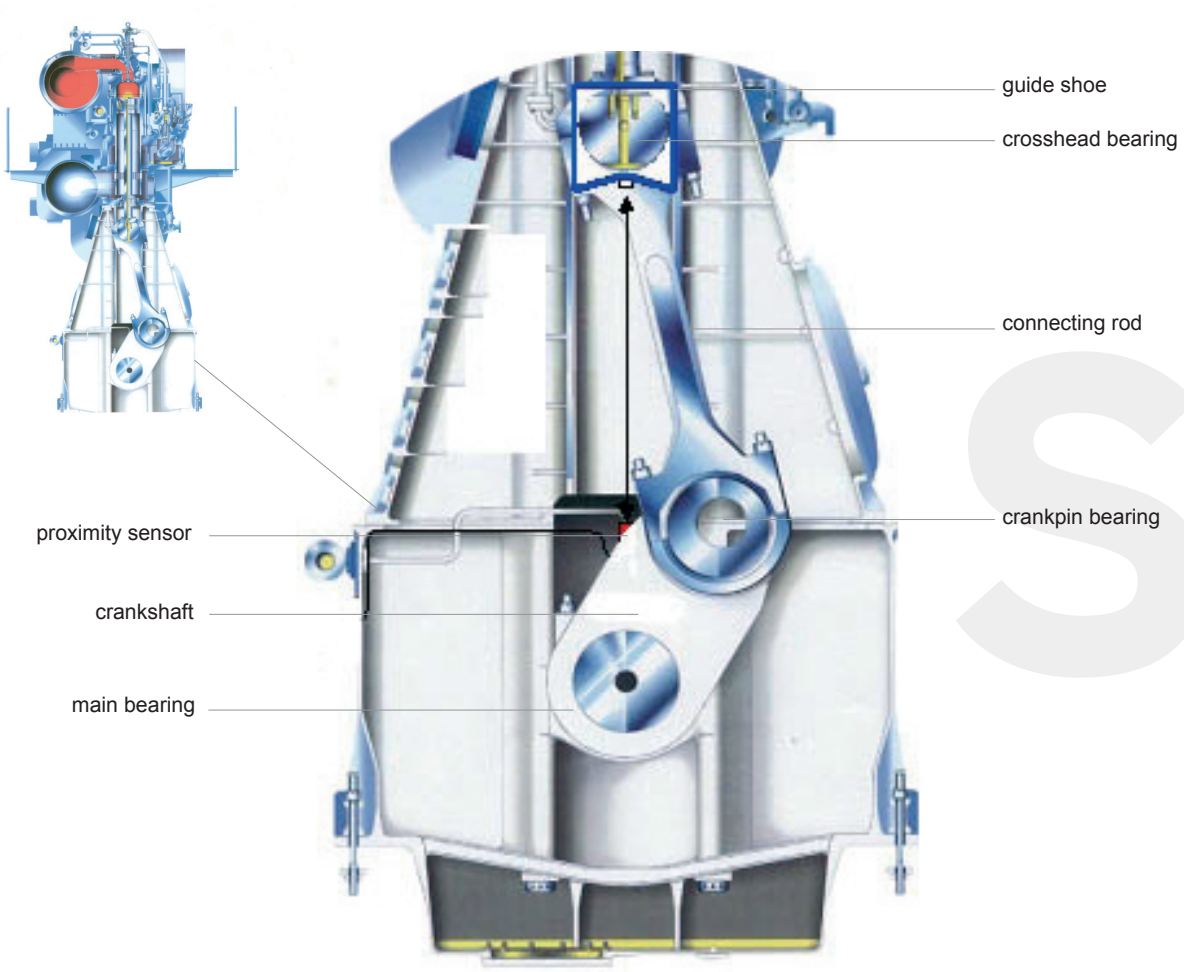
touch screen pc

proximity sensor

shaft line earthing monitor (SLEM)

water in oil sensor (WIO)

signal processing unit

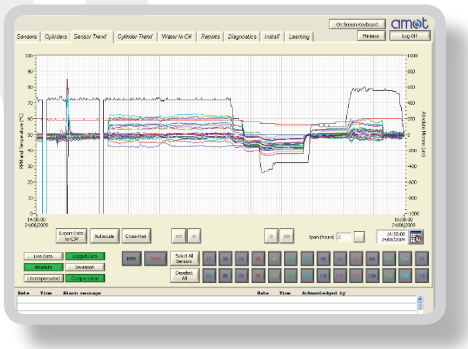


The XTS-W+ uses custom proximity sensors to measure the relative position of each guide shoe, at Bottom Dead Centre (BDC), with respect to the crankcase. Any significant wear in the bearing surfaces results in a shift in this measurement, thus facilitating early detection of a failure. This measurement technique is used to detect wear in the main, crank-pin and crosshead bearings.

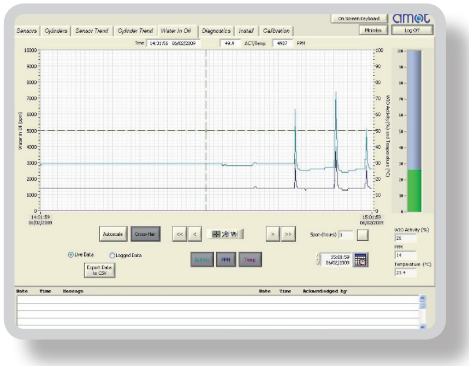
Typical display screens
The XTS-W+ displays include:

- Bar chart showing 'real time' wear, 3 alarm conditions: green = good, yellow = warning red = alarm, flashing red = engine slow down

- Trend chart showing long-term wear trends



- Water-in-oil displaying water activity (aW), parts per million (ppm) and lubrication oil temperature



a minor investment for
major asset protection

Test bed trials

The XTS-W has undergone rigorous test bed trials to confirm that it will operate successfully under real bearing failure conditions.

To put the XTS-W through its paces, an accelerated bearing failure was created on the MAN Diesel test bed engine. The XTS-W clearly indicated a main bearing problem, with the level of wear detected correlating to the actual value **within 0.05mm**. No significant long-term rise in temperature was recorded during the test, temperature alarms were not triggered.

Sea trials

To fully test and validate the operation and functionality of the XTS-W, three systems have been on test with AP Møller, Hapag Lloyd and Wallenius Wilhelmsen since 2004. These systems are installed on 50, 68 and 98 cm bore engines to ensure that the system is tested under a variety of operating conditions and vessel types.

With over 200 vessels specified by 30 different ship owners, combined operation time exceeds 50 years - making the XTS-W the most proven bearing condition monitor!

protection
you cannot afford to be without

The XTS-W+ has many benefits.

- Avoids open-up inspections providing operational cost savings and removing the risk of damage during such inspections
- Open-up inspections can be avoided by installing the following monitoring equipment:
  - Bearing Wear Monitor (BWM)
  - Water in Oil Monitor (WIO)
  - Shaft Line Earthing Monitor (SLEM)
- Provides real-time information on bearing condition allowing effective operating decisions to be made - maximum uptime, minimum cost
- The XTS-W+ is simple to install on both new build and existing vessels

Better to eliminate the risk of bearing failure.

Better to fit an XTS-W+.

XTS-W+

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