

There is an increased risk of damage to a healthy bearing after a regular unnecessary open-up inspection – as statistics prove! Experience also shows that main bearings are particularly vulnerable to mis-assembly, dirt and scratches during such inspections. All this while they increase operational costs and expose key staff to potential hazards. Importantly, **MAN Diesel & Turbo** does not recommend unnecessary opening up of the crank train bearings on its 2-stroke low speed engines.

Furthermore, open-up inspections can be avoided, according to the class societies, if there is a reassurance that the bearings are in good condition and an early warning system is in place if a bearing starts to fail. An auditable reporting process is also essential.

**Germanischer Lloyd** says that open-up inspections can be omitted if the following **MAN Diesel & Turbo** approved equipment is fitted:

- Bearing Wear Monitor (BWM)
- Water in Oil Monitor (WIO)
- Shaft Line Earth Monitor (SLEM)

Once an engine has the above monitoring systems installed and provided the vessel has a computerised Planned Maintenance System (PMS), the owner may apply for Survey Arrangement Condition Monitoring (SACM).

The XTS-W+ from AMOT is a bearing condition monitor for 2-stroke low speed engines. It indicates wear in the primary crank train bearings: main; crankpin; and crosshead. In addition it monitors 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.

As the XTS-W+ maps the characteristics of your individual engine, it provides 'real time' information allowing the user to take appropriate corrective action, thus avoiding high cost consequential damage, costly unplanned repairs and loss of revenue.

The XTS-W+ is approved by **MAN Diesel & Turbo** as compliant with its latest BWM Specification No: 3091686-8. The XTS-W+ is also approved by **Germanischer Lloyd** (GL Certificate no.: 94 134-10 HH) as a system both compliant and suitable to monitor cranktrain bearing wear in accordance with the installation, functionality and reporting requirements necessary for the avoidance of open-up inspections.

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!

### Typical XTS-W+ display screens

- 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



To learn more about how the XTS-W+ Bearing Condition Monitor can help you avoid open-up inspections visit [www.bearingwear.com](http://www.bearingwear.com)

## Open-up inspections and bearing failure

According to MAN Diesel & Turbo:

*“Less than 1% of bearing problems are found during open-up inspection, but more than 2% of bearing problems are caused by open-up inspections.” \**

- More than 7,000 ships have open-up inspections every year
- More than 2% have crank train bearing failures caused by open-up inspections - that's more than 140 vessels and 11 every month

\* Source: MAN Diesel & Turbo

### Americas

AMOT USA  
8824 Fallbrook Dr  
Houston  
TX 77064  
USA

Tel +1 (281) 940 1800  
Fax +1 (713) 559 9419  
Email info@amotusa.com

### Asia Pacific

AMOT Singapore  
10 Eunos Road 8 #12-06  
Singapore Post Centre  
Singapore 408600

Tel +65 6408 6265  
Fax +65 6293 3307  
Email singapore@amot.com

### China

AMOT Shanghai  
Rm 308, Building No. A8  
Jiahua Business Center  
808 Hongqiao Road  
Shanghai 200030, China

Tel +86 (0) 21 6447 9708  
Fax +86 (0) 21 6447 9718  
Email shanghai@amot.com

### Europe, Middle East and Africa

AMOT  
Western Way  
Bury St Edmunds  
Suffolk, IP33 3SZ, UK

Tel +44 (0) 1284 762222  
Fax +44 (0) 1284 760256  
Email info@amot.com

## Avoid open-up inspections & protect the heart of your engine with the XTS-W+



**Better to avoid open-up inspections and eliminate the risk of bearing failure.**

**Better to fit an XTS-W+.**

[www.bearingwear.com](http://www.bearingwear.com)