

# User Group Meeting

9-10 October 2008 in Amsterdam

SPM is inviting users to a meeting in Amsterdam for discussions on the subject Condition Monitoring (CM) for the shipping industry. The objective is to exchange experience and provide information on new developments, new solutions and discussions on best CM practices in shipping.

The meeting is also an opportunity to give feedback on products and services required to run an effective CM program onboard the vessels. The ambition is to make this an annual event, where users can meet and discuss CM related issues in depth in a nice environment away from the daily routines.

We believe it is important to sometimes stand back and reflect on what we are doing and to learn from others to improve our work.

#### *Working smart instead of hard:*

- *Condition Monitoring as part of the new Class from Lloyds and DNV*
- *Changing to a new culture, how management can make it happen*
- *The experience from best CM practices in implementation, organization, selection of staff, deciding on required training and technical support. Issues such as how to involve management, cope with changing of crews, motivating the crew and getting the right CM information into corrective action without double work.*
- *The information platform for working effectively with AMOS and Condmaster*
- *Key Performance Indicators; how do we measure the effect of a CM program?*
- *Case stories from measuring on various applications*
- *New products and services*
- *How does future CM look for vessels?*
- *Discussions and feedback*

#### Latest members of the SPM Team

- RCCL
- Bergshav
- Havila
- Østensjø Rederi
- Volstad Shipping
- DSD Shipping
- Solstad Shipping
- SubSea7
- MO LNG Transport
- Bernard Schulte Ship Management
- Teekay Shipping
- NYK LNG Ship Management
- Allocean
- Golar Management Navigator Gas Transport PLC
- Shell International Trading & Shipping Company



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# Team Marine

update



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## SPM Team Marine – for global support

SPM Team Marine are here for global support, to help you reduce maintenance costs through condition monitoring.

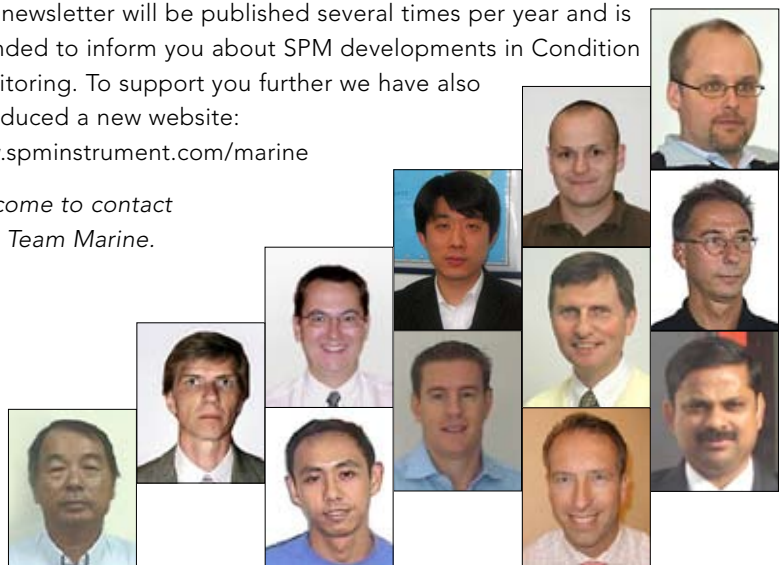
SPM have been involved in shipping for more than 30 years. We have extensive experience in making maintenance more cost effective by supporting Condition Based Maintenance. The SPM Team Marine has been growing over the years and now supports hundreds of vessels in most major ports around the world.

SPM offers a Condition Monitoring (CM) solution involving all the activities that can be used to obtain a CM classification with all its benefits. The SPM solution can include portable and online systems, preparation of measuring points, installation service, auditing, technical support on software and hardware as well as assistance in the evaluation of readings. Training is offered at our international training centre or locally as requested.

This newsletter will be published several times per year and is intended to inform you about SPM developments in Condition Monitoring. To support you further we have also introduced a new website:

[www.spminstrument.com/marine](http://www.spminstrument.com/marine)

Welcome to contact  
SPM Team Marine.



# Condition Based Maintenance

The trend is moving towards larger vessels operated by less crew. Operating large ships with a relatively small crew puts focus on how to use man hours more effectively. We can learn from Condition Based Maintenance strategies implemented by land based industry exposed to international competition and adapt this way of working to the maritime industry.



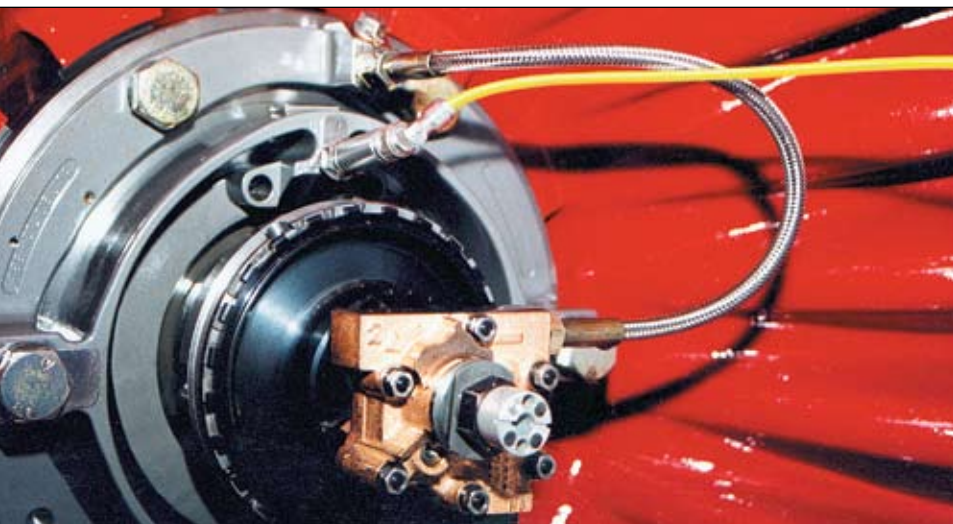
A large part of the maintenance work based on inspections onboard vessels is in fact unnecessary and a product of tradition and previous demands by the Class.

The combination of unskilled labour and time based inspections by Classification Societies of machines have contributed to the extreme work load. Redundant machines are installed for safety, but are used to compensate for the problems incurred by this maintenance approach.

CBM is based on routine measurements and inspections, carried out by selected crew trained to evaluate the results and determine possible corrective maintenance. Redundant equipment is included in the inspection to ensure they work when needed for safety reasons.

The CM software can be connected to the maintenance management system to issue work orders and get the action reported back into the CM system automatically. The machines are prepared with adapters and transducers to ensure quality readings. Critical equipment like turbochargers can be equipped with online systems for extra protection. The condition information is used to get early warning to replace parts before failure. Readings can also be used for Class inspection as an alternative to opening up machines for inspections.

CBM increases reliability. It requires fewer man hours by eliminating unnecessary maintenance caused by time based inspections and the extra work that catastrophic failures occur. Instead, the work can be planned, giving the crew stable working hours. In addition, a reduction in spare part consumption allowing a smaller stock makes the number crunchers happy.



## Prevents bearing failures and allows for longer periods between bearing overhauls

Shock pulse transducers installed in the bearing housings, both on the turbine and the compressor side, monitor the bearing condition. A vibration transducer monitors the overall movement. The readings can be captured with a portable instrument or by continuous monitoring. You get condition information with long pre-warning presented in green – yellow – red.

# Royal Caribbean Cruise Lines use Leonova™ Infinity and Condmaster® Nova



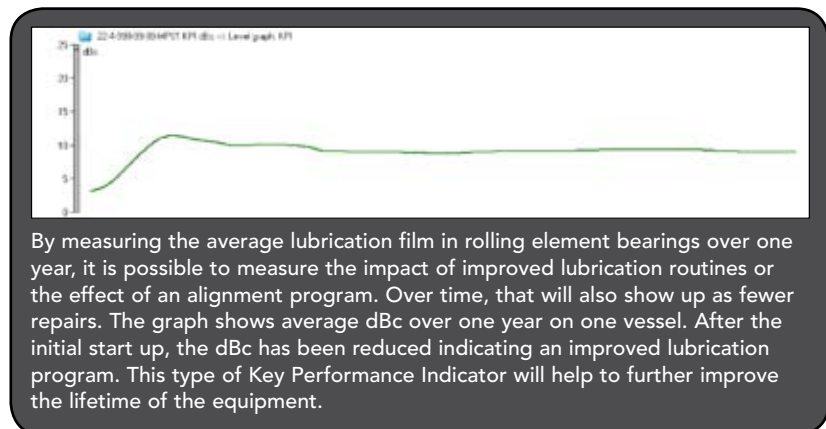
James Galloway, I.Eng., FIET Marine Electrical Superintendent with Royal Caribbean Cruise Lines (RCCL) "Vision Class", presented their experiences at the Marine Conference in Gothenburg on April 2<sup>nd</sup>, 2008.

"Condition Monitoring challenges old maintenance routines. To be successful, management needs to be committed and the crew properly trained. This presentation covers three years of our experience from implementing Condition Monitoring (CM)."

RCCL has implemented Condition Monitoring using Leonova™ Infinity and Condmaster on 22 ships. The decision has been to use adapters with CondID to ensure that correct readings are entered into the database.

The program has now been running for two years and the results have started to show. More than a hundred crew members have been trained to support the CM program.

James stated that "Inspection or handling of equipment are the cause of 60% of marine machinery failures according to UK Government Marine Investigation Branch, MAIB". This proves the point that leaving the machines running until Condition Monitoring reveals actual problems is the most effective approach. In other words, an old-



fashioned maintenance policy was the underlying cause of most of the failures. The present CM program will therefore continue to reduce the corrective maintenance work and free the crew up to do more productive work.

The biggest challenge has been changing the existing maintenance culture and achieve an understanding of the benefits of changing to CM, thereby also the motivation of the officers and the crew.

A natural first reaction may be that condition based maintenance is

additional work to all other tasks that the crew is required to perform. The fact that it reduces repair work and increases the possibility to plan the work must be understood in order to become widely accepted. Some ships appointed as champions have already shown success and it is now important to share this experience with others.

The future for RCCL is to go further and further into continuous monitoring on the important machines.