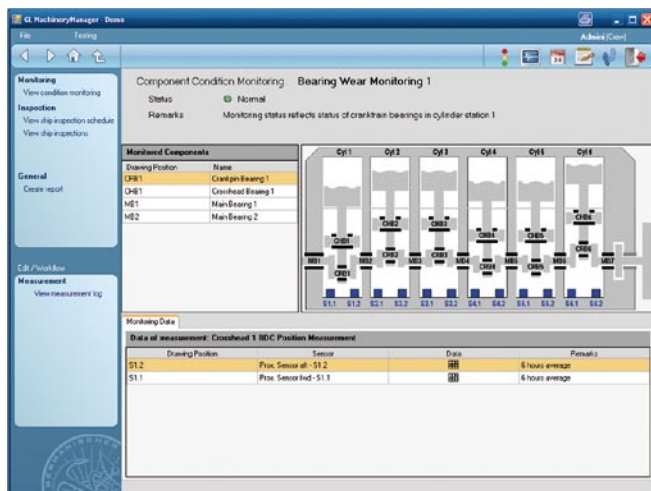


GL MachineryManager

Enables Condition Based Maintenance

The challenge of ship maintenance

Shipping companies wish to maximize the availability of their vessels and to prove to their charterers that their ships are well maintained. At the same time they need to reduce maintenance effort as well as repair costs and dry-docking times. The ideal solution, in theory, is to enhance a planned maintenance scheme - common in the industry for practically all machinery items within a vessel - with a condition-based maintenance (CBM) system. Such a system provides a basis for optimising maintenance efforts and spare parts costs by maintaining an item only when its condition makes this necessary. However, even when shipping companies choose to complement their planned maintenance schemes with CBM, they still face many challenges, such as: how to integrate measured condition data from different equipment suppliers; how to bring visual inspection results into the same framework; how to easily compare sister vessels or the same equipment across a fleet; and how to integrate all of this information into a single maintenance management system.

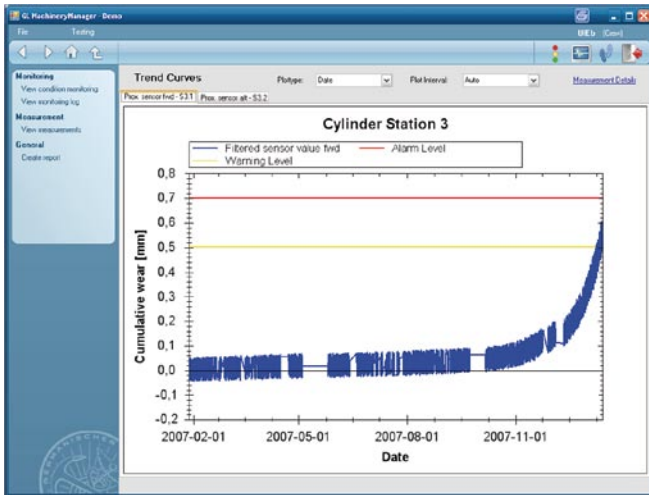


Components and sensor points for online measurements

Software solutions from GL

GL MachineryManager is a software and service package from GL Maritime Software that offers ship owners, managers and operators support for the implementation of a state-of-the-art condition-based maintenance approach. GL MachineryManager combines visual inspection results with online and offline (e.g. from handhelds) condition measurements from different manufacturer's equipment, creating a single monitoring platform that warns you of condition deteriorations across your fleet and allows you to decide when and how to react.

- Software:** GL MachineryManager is an intuitive and easy-to-use software package for crews and onshore technical inspectors. Crews benefit from graphical support of monitored items and guidance for inspection routes and approaches. Measurements and recordings are easily transferred to the central database onshore. Both onshore and onboard, the system informs you if warning or alarm levels for specific equipment items have been reached.
- Guidance:** A compact implementation project brings your condition-based maintenance strategy to life. The measurement and inspection points are set up, the manufacturer signals are integrated, and the crew and superintendents are trained in how to use and benefit from the system. You can also interlink GL MachineryManager with a planned maintenance system such as GL ShipManager, which allows you to manage tasks / jobs from a single location.



Trend curves with warning and alarm levels of manufacturers

- **Support:** Software maintenance & support for GL Machinery-Manager ensure smooth operation over the lifetime of the product and provide regular updates with new features.

What's more, GL classed vessels applying approved condition monitoring systems may additionally qualify for the survey arrangement, Condition Monitoring, which takes measurements, inspection results, and trend curves into account.

GL your best partner

GL Maritime Software is the software provider and system integrator for the maritime industry. We improve our clients' processes and decisions in ship operations and fleet management onboard and onshore.

We develop market leading software products, provide implementation and integration services, training, technical and software support. With decades of experience and stability we offer you the highest investment security in the industry. With continuous efforts in research and development we offer you the latest functionality and technology to improve your competitiveness. With our maritime market focus we offer you the highest level of usability and simplicity to ease implementation and deployment. Being part of GL-Group we offer you close integration with tools and services you know from other parts of the group such as classification, consulting (FutureShip), training (GL Academy) and system certification as well as from other industries (Oil & Gas, Renewables).

How you benefit

Projects across the industry provide a convincing picture of the benefits offered by condition monitoring. Condition monitoring will...

- give you **early warning** before critical / expensive equipment breaks down – this alone can quickly amortize the change to condition monitoring.
- **prevent making equipment conditions worse** due to faulty maintenance or issues during reassembly – trends towards ever greater complexity mean that equipment is often better left untouched.
- help you **avoid unneeded maintenance** and the associated expenses of time and money that occur because the maintenance is planned but not yet necessary.

The GL MachineryManager implements this modern and flexible maintenance strategy by:

- **integrating all information on your equipment status** – including online and offline measurements as well as visual inspections – into one software platform; no need to familiarise with different manufacturers' condition monitoring tools.
- **saving time** for checking data to identify the actual condition of the monitored components.
- **facilitating decisions** based on this information both onboard and onshore into your maintenance management framework through early warnings, alarms and trends.
- **providing a quick overview of your fleet's status** and a comparison of ships with the same equipment – thereby avoiding the repetition of problems in other vessels and allowing the benchmarking of maintenance performance throughout your fleet.
- **including the indicated maintenance jobs** in your planned maintenance software, such as GL ShipManager, making it possible to easily integrate maintenance work into a superintendent's workbench.
- **supporting easy generation of reports** for chief engineers, superintendents, and classification societies or other authorities.

One-stop shopping at GL

GL MachineryManager offers synergies and integration with other GL services and products:

Ship Operational Software

GL ShipManager, GL HullManager, GL FleetAnalyzer

Consulting

Supports in the design and implementation of innovative maintenance concepts.

Training

ISM/TMSA, Maritime regulations



Classification

Survey Arrangement "Condition Monitoring"

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