



Passive anti roll tanks

Passive anti roll tanks and hull monitoring

The need for roll stabilization on board is self evident. The roll response of any vessel is highest when she is adrift at zero speed. Under these circumstances, the vessel will assume a position beam to the predominant sea direction and roll violently. Fin type roll stabilization systems are effective only when the ship is under way at or near full speed, they are ineffective at lower speeds.

Passive anti roll tanks ***“reduce the roll by 75%”*** and is highly effective also at zero speed. To ensure effective roll reduction in all sea conditions the passive tank design and calculations are supported by model tests. Passive anti roll tanks are regular tank and no complex U- shape tanks.



The Tank installed on the deck

Passive anti roll tanks as solution to reduce the probability of parametric roll

ABS came in a study to the conclusion that a passive anti roll tank is the most economical solution to prevent parametric roll, formulated as follows:

“One possible solution to this formerly mystifying problem, as confirmed by our research, is simply to install a small anti-roll tank to absorb the surplus energy that you otherwise collect to produce parametric roll. When I say small, I mean it; a properly tuned anti-

roll tank would take the space of two containers. Though they have only been numerically tested, in my opinion they are the best solution, based on what we know at present. We are encouraging the industry to think about this as an option.”

The complete article will be forwarded upon request.



The installation on the bridge

The Passive anti roll tanks can be interfaced with our loading instrument CPC as well as the Hull Monitoring System of HMC. This installation we recently installed on a highly sophisticated research vessel.



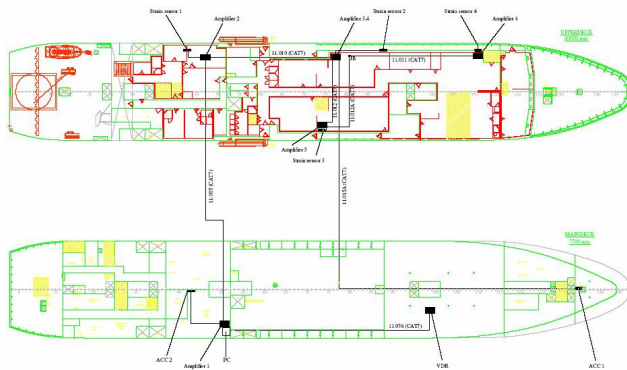
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Real time information on strain, stress and fatigue

The Hull Monitoring System is a real time measuring method. It monitors on line and continuously the on-board stresses and forces in the hull, motion fluctuations of the hull and the wave heights around the ship. The system can be used either as a stand-alone monitoring system, or integrated in a complete bridge information system. The system includes an alarm system for the crew in case the pre-defined design and operational limits are exceeded. The system processes and displays the information to the master of the vessel for operational purposes. The information displayed to the master includes:

The information displayed to the crew includes:

1. Constructional strain, stress and fatigue.
2. Motion Fluctuations.
3. Wave height and impact on the hull and other parts of the structure.
4. Suggestions as to speed and heading in order to minimise motions and optimise safety and comfort.



Location of the sensors

Advantages of HMC's Hull Monitoring System

The system offers the following advantages:

- It reduces hull repairs and reduces the risk of damaging the cargo.
- It provides data to plan ship maintenance, minimising condition-based maintenance and supporting the classification process.
- Implementation of the system may result in the application of lighter constructions and the reduction of costs.
- The system promotes the safety of vessel, cargo, passengers and crew by reducing hull strain and increasing the durability of the hull.
- The system enables the master to operate the vessel prudently.
- The system provides data to estimate the fatigue life of the hull; more over, this data can be used to improve the design of new vessels.
- Finally, the system acts as a recorder, which enables owners to monitor the handling of their vessel.



Read out of sensor

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