

Determining loads on and fatigue of maritime structures

HMC's Marine Quality Kit (MQK) is a mobile version of our Hull Monitoring System. It consists of a mobile box containing an embedded computer, strain sensors and a multi-directional acceleration sensor.

During operation of the structure, measurements can be used to verify the remaining fatigue life. Such measurements should be performed at areas of maximum stress, as predicted in the design and simulation phase. By measuring both local strains and accelerations, the remaining fatigue life can be determined. Using reversed engineering, the characteristics of the structure can be determined. The measured data is stored on a hard disc. In addition, a Wi-Fi transmitter is present to have a direct connection with the bridge. At the end of the project it is possible to remove the kit. You could use the results of analyses of the stresses and fatigue at various locations on the platform, under realistic

loading by waves and wind, to determine the locations at which the highest stress range occurs. Ideally we use the results from a fluidic simulation of the impact of waves on a platform. Information about the actual weather- and wave conditions gathered from a database containing these conditions per geographical area and season should be used as input to such an analysis. With these results you could determine the local fatigue of the platform and verify the predicted accelerations, stresses and fatigue at the location of the sensors. In this way you could determine the quality of the MQK results and determine possible improvement required. You could see a demonstration video at these [link](#) or ask for more information via info@hmc.nl.

“Measurements can be used to verify the remaining fatigue life”



Intact Stability Requirements for Fire Fighting Operations

Each vessel is to have adequate stability for all loading conditions, with all fire fighting nozzles operating at maximum output multiplied by a factor of 1.1 in the direction most unfavourable to the stability of the vessel.

Special conditions are unique conditions of load, trim, heel, and/or applied forces which the vessel is capable or likely to experience as the result of its capabilities or operations. Such loads may be imposed by the environment (weather, ice, waves), by the vessel (crane, fire nozzle, tow loads), or by the vessels use (aground, ice interactions). Our loading conditions include the ship's capability to support the effect of the reaction force of the water jet in the beam direction due to the monitors fitted on board. The fire nozzle heel is a heeling moment imposed by the operation of fire-fighting equipment on board a ship. The total heeling moment is composed of

two parts; the heel force exerted by a directed transverse spray of the ships monitors; and a countering thruster reaction force. For most vessels, an evaluation of monitor heel is sufficient in the transverse direction only. Dedicated fire ships with complex fire fighting arrangements may also have to consider longitudinal forces, and rotational forces, on the hull.



“HMC could deliver FiFi conditions in Stability books and CPC”



New requirements for on-board stability instruments for tankers will be effective from 1st January 2016

Tankers are facing changes in the rules regarding loading computers. The new resolution MEPC.248(66) enters into force on the 1st of January 2016 and from that date each tanker owner has to make sure all vessels comply with the adopted regulations.

During the last meeting of the Marine Environment Protection Committee (MEPC), the committee decided to strengthen the rules for tankers regarding damage stability. For quite some time all new tankers have been fitted with a loading computer that can calculate damage stability. However there is also significant proportion of sailing tonnage that either does not have damage stability or has a damage calculation module that is not approved by Class. Oil tankers, chemical tankers and gas carriers constructed before January 1, 2016 must also comply with the requirements at the first applicable scheduled renewal survey of the ship after January 1,

2016, but not later than January 1, 2021. Owners and operators must ensure their vessels are fitted with compliant stability instruments for intact and damage calculations by the relevant compliance date. The approval of a loading instrument is time consuming and we advise companies to start the procedure of approval. HMC offers with our loading computer CPC the necessary program and support to ensure that your vessel will comply with the new rules and regulations. HMC ensures that all necessary changes are implemented in CPC 2.0. If you have questions please contact our office at info@hmc.nl.

“How to comply with the new resolution MEPC.248(66)”



Guidelines for implementation of container weight verification

One year from today, global containerized maritime commerce will need to comply with new international regulations that require every packed container to have a verified container weight as a condition for vessel loading.

In order to bring long-needed improvements to maritime safety, in November 2014 the International Maritime Organization (IMO) adopted amendments to the International Convention for the Safety of Life at Sea (SOLAS) Chapter VI, Part A, Regulation 2 - Cargo information. The SOLAS convention is mandatory global law. The SOLAS amendments become effective on 1 July 2016 for packed containers to be exported via maritime transportation. The regulations place a requirement on the shipper of a packed container, regardless of who packed the container, to provide the container's gross verified weight to the ocean carrier and port terminal representative sufficiently in advance of vessel loading to be used in the preparation of the ship stowage plan. A verified container weight will be a condition for loading a packed container aboard a vessel

for export. The vessel operator and the terminal operator will be required to use verified container weights in vessel stowage plans, and they will be prohibited from loading a packed container aboard a vessel for export if the container does not have a verified container weight. The World Shipping Council and its member shipping lines have developed guidelines to explain what the implementation of the SOLAS amendments will require of shippers, carriers, and terminal operators. All parties should use the next twelve months to plan for the efficient and effective implementation of this requirement in July 2016. Source: American Journal of Transportation)

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