

HMC provides services for towing companies

For towing operations, HMC can provide services like bollard pull calculations. Besides using conventional software for calculating on engineering issues, HMC developed her own software to support towing companies. HMC is able to efficiently revert a question for a bollard pull calculation with a minimum of required information of the towing vessel and the towed object. This enables HMC to quickly react to technical feasibility questions of towage companies in the tender phase of a project.

Basically there are two approaches for calculating the required Bollard Pull for towing projects. HMC uses the Holtrop Mennen method which is embedded in a fairing program. After modeling the tow into the fairing program the calculations will be made. Our second method is the use of our Marine Services Tool. This tool encompasses a calculation that is validated with data from actual towages. The calculations take into account the dimensions of the towed object such as area's, beam,

draught, weight and protrusions. Also taken into account is the behavior of the tow such as yaw. Yaw results in added resistances in waves and wind. The environmental conditions are based upon I.M.O. guidelines for ocean towing. In these conditions tugs must be able to keep the towed object in position. Nowadays there is a variety of different types of propulsion systems which provide different amounts of Bollard Pull defiant of equal engine performance. More information via our office at info@hmc.nl

“MS-Tool encompasses calculations that are validated with data from actual towages”



Determining loads on and fatigue of maritime structures

Interaction with waves and wind results in cyclic mechanical loads on maritime structures. Even for mechanical loading far below the yield stress, cyclic loads can result in fatigue. A sufficient fatigue life therefore has to be guaranteed during the design of the structure. This requires accurate knowledge of the environmental load cycles.

During operation of structures, the 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. This will assure that repairs are being performed before the fatigue damage results in material failure which also guarantees more safety for crew and the environment. Such measurements can be performed using either our Hull Monitoring System or our Marine

Quality Kit system, both offered by HMC. These systems have been tested on ships and should be equally suitable to measure the fatigue life of platforms/rigs at sea. In the past, our Hull Monitoring System was placed on various ships. The system performs “real-time”, online and continuous measurements of mechanical stresses in the hull of the vessel. In addition, fluctuations in movements of the hull and wave heights around the ship are being measured. For more information please contact our office at info@hmc.nl

“sufficient fatigue life has to be guaranteed during design of structures”

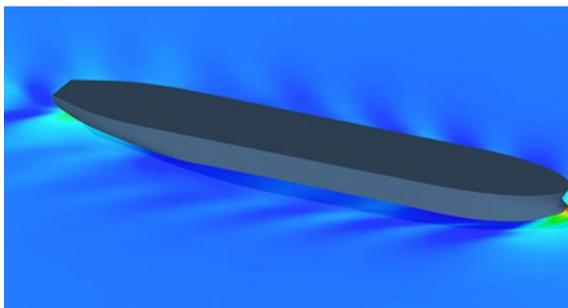


Modern hull forms can be optimized through the impact of CFD

Computational Fluid Dynamics (CFD) is used to support a wide range of maritime applications from resistance prediction to slamming loads calculation. HMC has expanded their services with these kinds of simulations.

Computational Fluid Dynamics (CFD) simulation software allows companies to predict, with confidence, the impact of fluid flows on their structures. Companies can calculate this impact throughout the design and manufacturing moments as well as during end use. The software's fluid flow analysis capabilities can be used to design and optimize new equipment and to troubleshoot already existing. CFD could provide important insights and offers an economic way to investigate the different design options. The need to represent this fluid interface accurately presents a considerable challenge and as a function of hull form and speed. Research and development work is still ongoing to enhance

the stability, accuracy, computational speed and to integrate CFD into the overall design process. All modern hull forms could be optimized through the impact of CFD. For more information please contact our office at info@hmc.nl



“CFD becomes increasingly important during the design phase”

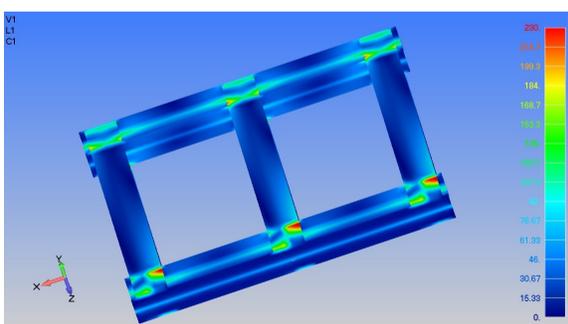


HMC uses FEMAP for advanced engineering

As maritime engineers, HMC demands software with the power to model the toughest problem. We use FEMAP (a Siemens product) for our advanced engineering finite element analysis which we can do for our clients. With the use of FEMAP, HMC can provide comprehensive functionality for modeling and simulations.

Usually, designing a ship or structure requires the creation of numerous of analysis models. You have to design everything from the structure as a whole down to individual equipment racks. Mr Borkus, transport engineer, explains "Finite Element tools like FEMAP meet most of our simulation analysis requirements". He further explains "Simulation software is increasingly important. Any modifications after a ship is completed will lead to additional manufacturing and personnel costs. Our team has a thorough understanding of the hull's structural features. In this way we can avoid design failures". It is essential to maintain the safety and reliability of structures. FEMAP covers numerous items requiring structural analysis and verifications.

Design with empirical formulae and theoretical computation methods are simply not enough to fulfill current standards. We have to be highly efficient if we want to deliver designs within the specified time while guaranteeing safety, reliability and quality." For more information you can contact our office at info@hmc.nl



“HMC engineering team uses FEMAP for advanced engineering”

“HMC: Passion for Engineering”

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