HMC - Marine Services

Dutch leading heavy transport engineering company

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HMC delivers transport engineering and offshore installations

The complexity of detailed voyage planning and preparation is growing faster than ever. Due the economy of scale the dimensions of module carriers and motions responses in extreme environmental conditions increase.

Transport engineering encompasses the full scope of assessing the environmental conditions, optimal loading conditions, ballast plans, motions response calculations and fatigue damage calculations. HMC has the expertise and tools to design reliable marine transportations. We can deliver logistics services for project cargo movements and calculations for transport of offshore constructions and offshore module components. It has been brought to our attention that structural damage caused by transport is becoming more and more an issue. In the Oil & Gas sector as it is common practice to assess the fatigue damage if a topside, Jack-up rig or LNG train is being transported for a period which takes longer then 10 days. During the past 10 years, we have gained allot of knowledge on the hydrodynamic and hydromechanic part of heavy transport engineering and developed products and courses to assist in the design for transport. Our team consists of ex- sailors and naval architects who work closely together making the engineering assignments custom-made for each new project. Besides the engineering part of our company we also provide operational guidance during these types of projects. If you are interested in our Transport Engineering projects, please click here for HMC's Picturebook. Inside you will find more detailed information.

"HMC's expertise for every engineering assignment"

Transport operation calculations using coarse assumptions

As experienced naval architects specialized in transport engineering on offshore towing and heavy lift transport operations, we have serious concerns with respect to the continuous application of transport operation calculations using coarse assumptions.

Assumptions are common practice due to the restricted ability of computers and commercially available software to take into account complex forces such as wind and waves on non-box shaped tows. Therefore, commonly assumptions are made to mitigate such influences. Nowadays, computers become increasingly powerful, enabling engineers to take these factors into account to a further extend. Worryingly, this is not entirely the case. Coarse assumptions are still being made, which results into two major problems. These are for instance the unknown effects of wind & wave induced forces. Companies and engineers know large assumptions are being made and therefore blindly take jobs on which their equipment is not sufficiently equipped (not enough BP for station keeping in high waves/winds) since they know there is some slack between the actual forces and the forces provided by upfront engineering manuals. With the increasing size of offshore constructions, the relevance of this problem increases rapidly. Many accidents because of insufficient stability resulting in loss of many lives are also a mainspring to handle the hydrodynamics in waves in a more sophisticated way. We would like to open the discussion as to how rules and regulations should be changed. For more information please contact our office.

"An open discussion about transport operation calculations?"

HMC can perform your risk assessment and security management

Risk can loosely be defined as being the chance, in quantifiable terms, of a hazard occurrence. It therefore combines a probabilistic measure of the occurrence of an event with a measure of the consequence or impact of that event.

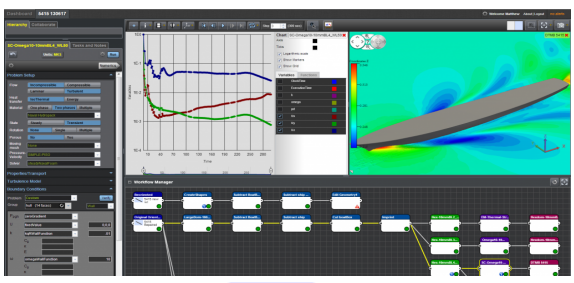
Besides technical engineering work, We are also capable to perform extensive risk studies for offshore related subjects. We have the knowledge and the experience to accurately perform risk studies regarding offshore installations such as wind turbines or oil platforms. An example of these studies is the calculation of the chance of a collision between a ship and a wind turbine field. off HMC conducted a risk analysis for the technical and logical chance of a collision due to captain's error. Risk management is the decision making process whereby actions are taken in view of the outcome of risk assessment. The maritime industry is moving toward a "goal-setting" risk-based regime. This opens the way to safety engineers to explore and exploit flexible and advanced risk modeling and decision-making approaches in the design and operation processes. With decades of experience in warranty surveying and risk analysis HMC is able to perform such studies in an efficient and well trained way.

"HMC performs extensive risk studies for all offshore related subjects"

HMC uses OpenFOAM to simulate maritime structures

Simulating structures in a maritime environment presents a unique challenge to analyzing free surface flows. Effective analysis provides valuable insight to evaluating design decisions. HMC uses OpenFOAM within our projects.

Container ships are constantly becoming larger and are required to carry more loads and travel at faster speeds. Therefore it is vital to the development of these huge structures that accurate methods of obtaining design data are established. Model testing in towing tanks is the past and present way of doing this for container ships. Multiple software packages are available to naval architects to conduct the various aspects involved in ship design. The fast development of inexpensive computational resources promises a future for CFD open source codes. OpenFOAM has an extensive range of features to solve anything from complex fluid flows involving chemical reactions, turbulence and heat transfer, to solid dynamics and electromagnetics. The drag coefficient may be directly obtained by entering the wetted surface area, fluid density and free stream velocity. Alternatively, the pressure and viscous forces can be extracted in order to derive the total resistance.



OpenFOAM

"Effective analyses using OpenFOAM "

"HMC: Passion for Engineering"

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