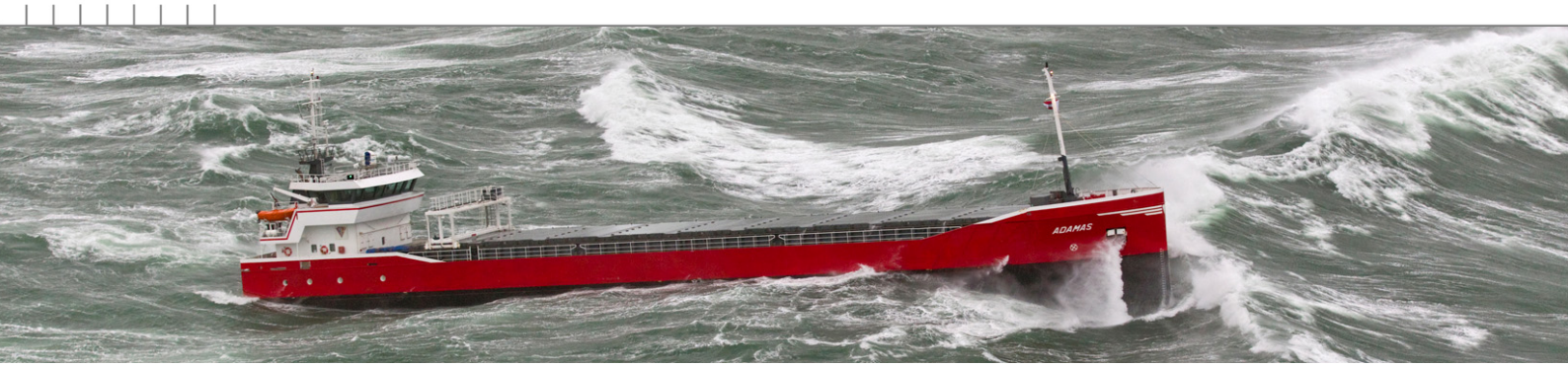


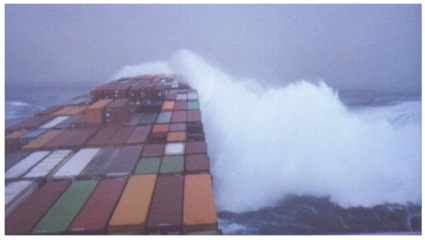
Monitoring ship and platform motions

Real-time, real-world answers for your operations

For ships and floating offshore structures, the experienced motions are of paramount importance to the safety and performance of operations. For this MARIN offers first-class support in monitoring services. Our high-fidelity equipment, combined with hydrodynamic expertise ensures insight into the motions aspect of your operation.

Services for motions during operations:

- Cargo transit monitoring
- Heavy lift operations
- Offshore transfers
- Helicopter operations
- High speed craft operability
- Free fall life boat evaluation



Deceptively simple?

With the uptake of portable electronic devices such as smartphones, low-cost, small motion sensors are increasingly available off the shelf. However, capturing the motion characteristics typical to ships and offshore structures puts its own requirements on both hardware and processing.

Expertise and experience

With over 85 years of experience in hydrodynamics as well as over 25 years in full-scale testing, MARIN has built up expertise and know-how in the field of ship motions and how to measure these at best. MARIN is continuously developing techniques for accurate measurement and processing of ship motions for a broad range of applications. Both low-frequent, low amplitude motions as well as violent impacts can be resolved with increasing accuracy.

State-of-the-art tools

MARIN uses a range of sensors to capture ship or platform motions, varying from compact models for an elaborate network of sensors to state-of-the-art inertial navigation systems using techniques such as fibre-optic gyroscopes and fusion with other sensors such as RTK-GPS. This allows us to select the appropriate sensor for the job. IP-rated housings are available for demanding environments. Using MARIN's data acquisition hardware and software, synchronised measurements of other parameters offer valuable insights.

Related products:

- Wave measurements
- Vibration measurements
- Operability viewer
- Decision support tools
- Performance monitoring

For more information contact MARIN:
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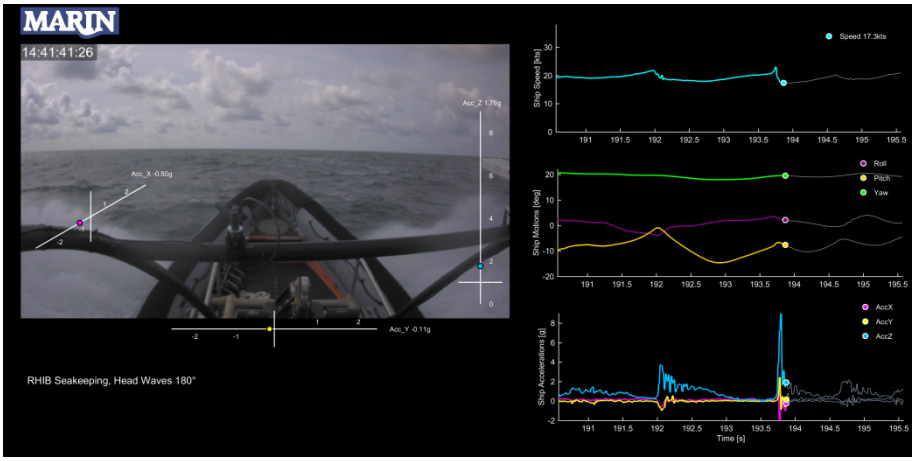
Applications

MARIN's services include long-term measurement and analysis of motions, possibly combined with other parameters such as wind, waves and fuel consumption. Monitoring motions together with the loads on special cargo and its lashings helps prevent dangerous situations.

Furthermore, MARIN's motions services can be used in on-board advice tools. Offshore operations such as heavy-lifting can increase their operability if such tools can advise suitable windows in time for an operation. Measured motions can serve as input for on-board simulation tools offering more insight than measurements alone. For example mooring line tension from time-domain simulations running real-time on board with position and motion measurements as input values.

For high-speed craft, assessing and understanding the violent motions improves the understanding and design process of these craft. Using the monitoring results, critical design choices can be made with confidence and the safety and operability of the craft can be increased.



About MARIN

Research institute MARIN is a provider of advanced expertise and independent research to the maritime industry. Using the newest test facilities and simulators and working together with an extensive innovation and research network we achieve our goal: the development of cleaner, safer and smarter ships and sustainable use of the sea.