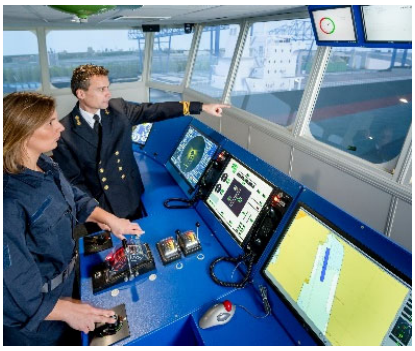
Port and waterway design studies

For safe, smart and sustainable infrastructures

The design of a port or a waterway encompasses a wide number of disciplines including ship handling and maritime engineering. For safe, smart and sustainable operations ports and waterways have to be designed to a desired level of navigability and safety. This requires the assessment of a number of key elements, including vessel size and behaviour, human factors in ship handling and the effects of the physical environment. MARIN's nautical expertise enables port designers as well as ship handlers to optimise port and waterway designs, where manoeuvres can be conducted safely and efficiently.

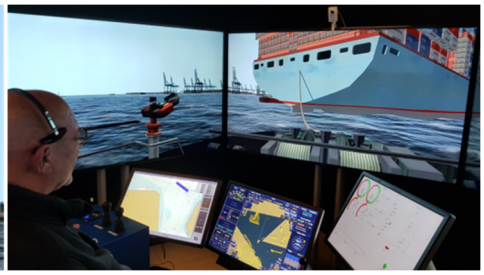
We provide services for

- Vessel operators
- Port authorities
- Engineering/Consulting companies
- Pilot associations

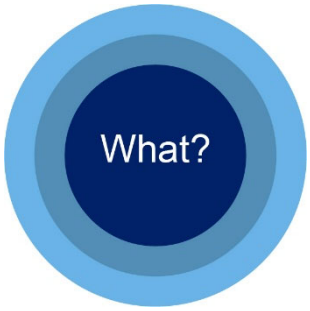


MARINs expertise

From the first sketches of a port master plan up to a pilot training for existing operations, MARIN can contribute to each design phase, for either a green field or a brown field port. Our services vary from high-level expert judgement, initial fast-time ship manoeuvring simulations up to a verification of the design including human operators (captains, pilots and tug masters) on MARIN's Full Mission Bridge simulators.



As an independent service provider MARIN has been conducting port and fairway design studies for more than 30 years.



What MARIN can offer your organisation

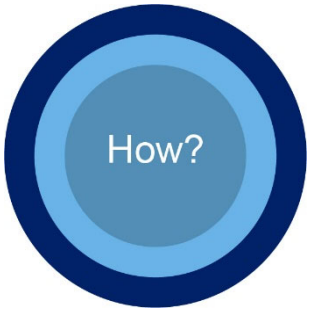
MARIN provides integrated nautical services for port and waterways studies covering each life cycle stage. The diagram gives an insight in our services during the concept, design and operational phase.

Concept
- Desk Studies
- Fast-time ship simulations
- Real time ship simulations

Design
- Fast-time ship simulations
- Real time ship simulations
- Under Keel Clearance
- Dynamic Mooring Analysis
- Passing Ship Studies
- Down-time analysis

Operations
- Pilot training
- Tug Captain training
- Establish operational procedures, weather limits, tug requirements

Related products
- Safety assessments
- Capacity studies
- Operational analysis and human factors

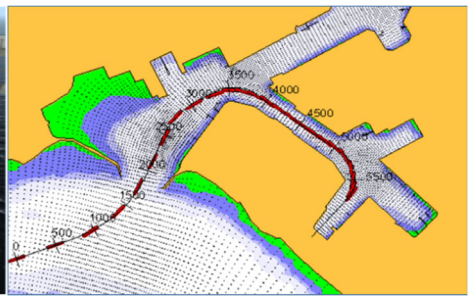


How we do it

MARIN has several experts ready to support you, like maritime operation specialists, hydrodynamic specialists and data analysts. We also use sophisticated tools which we can apply during each design step, including simulators and numerical models which are all developed and maintained in-house. The models take into account data available from either physical model tests, CFD calculations or full-scale measurements. When entering the more detailed design phase, our models and facilities become more sophisticated and complex.

Why MARIN

As one of the world's leading maritime institutes MARIN provides advanced expertise and independent research. We combine software, model test facilities, simulators, and full-scale monitoring capabilities to assist our clients and make ships and operations cleaner, safer and smarter during each phase of the lifecycle. Through this we aim to bridge the gap between design and operation. We have conducted over 85 years of research in which we continued to further develop our facilities, knowledge and activities. MARIN studies have been proven to be robust, efficient and accurate.



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