MARIN

Challenging wind and waves

Linking hydrodynamic research to the maritime industry

Nautical Consultant for Consultants

Manoeuvring a ship is the job of an expert who is specifically trained for the task, and this expert is assisted by a pilot when approaching a port or sailing in confined waters. In many countries, a VTS (Vessel Traffic Service) system is used during this phase of the journey. And when berthing, many ships require the additional assistance from tugs. All these measures are necessary to maintain nautical safety and efficiency. However, if the infrastructure is not correctly designed, all this is to no avail. Consequently, the design of access channels, harbour layouts, sluices, bridges, inland waterways etc. requires specific nautical expertise. MARIN's Nautical Centre MSCN has the expertise for nautical consultancy and research.

A nautical analysis can be of great benefit to an infrastructural project, as the overall costs of a project are directly influenced by a decrease in dimensions of a fairway or harbour.
The requirements and positioning of aids to navigation can increase the accessibility of waterways and ports. MSCN's nautical consultancy and research ranges from small practical advice through desk studies to extensive simulator studies. The approach of a study will depend on the specifics of the project. Assessment of nautical aspects of a design may require on-site inspection; sometimes a limited desk study is sufficient whereas in some cases comprehensive simulator study is required. For its nautical consultancy and research MSCN uses not only the practical expertise of its employees, but also some calculation programs.

SHIPMA (SHIP MAnoeuvring) fast-time simulation program

By using this method all hydrodynamic aspects of ships sailing in restricted waters can be investigated. The human factor is not included as the ship is controlled by a track-keeping autopilot. This program is used to assess and objectively compare different situations.

Traffic simulation programs

Both on inland waterways and around bridges and sluices, the effect of changes in the design of waterways can be calculated by using traffic simulation programs. MSCN has the simulation program of Rijkswaterstaat at its disposal.

Full-mission simulation

In complex situations where the influence of human behaviour is important, or when great detail in the representation of the environment is required, full-mission simulations can be used. MSCN has two simulators available, which can interact in the same environment. It is possible to simulate complex traffic situations as more than two ships can operate in the same environment.
MSCN is involved in several projects, which aim at the prevention of ship disasters at sea. We study aspects like the impact of VTS on traffic, the interaction of vessels, the risk of collision between offshore oil rig and a vessel, and the measures to save a disabled ship.

For a conglomerate of oil companies, the optimisation, stationing and the use of tugs in case of a disabled ship were studied in the Alaska region following the Exxon Valdez disaster. For the Dutch North Sea, MSCN has been involved in a project group aiming at the design and implementation of a system to detect disabled ships, to predict the track of the vessel and to assist in deciding which measures are required/most effective to prevent a disaster.

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V. 2009/05/19 MSCN40

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