



# Voyage Planner in RISING success

MARIN was tasked with modelling the hydrodynamics of an inland waterway vessel for the EU-backed RISING project, which Report highlights here.

The River Information Services for Transport & Logistics (RISING) project aims to increase the efficiency of co-modal transport logistics using inland waterway transport by using River Information Services (RIS). This project is co-financed by the European Commission (DG TREN) within the 7th Framework Programme for Research and Technological Development.

Within the project MARIN has developed the Voyage Planner module, along with partners CETLE and PERISKAL. Voyage Planner calculates ETAs and the cost of transport in the pre-planning and planning mode for organisers and skippers.

The task of MARIN was to model the hydrodynamics of an inland waterway vessel so its speed could be calculated taking the environment, such as wind and waterway parameters, into account. To this end, an adapted Holtrop and Mennen method was coupled to the Schlichting theory for shallow water speed loss. Based on a series of systematic model tests, this method was also extended to give usable speed losses for small under-keel clearances. Furthermore, the option of sailing in a channel with a

restricted width was added. Together with a series of open water polynomials, estimates of the propulsive efficiency and speed at a certain power could be made.

**Optimising fuel** In addition to the powering performance, a module was developed for optimising fuel consumption given a fixed voyage consisting of different fairway segments. The project addressed the issue of the minimum required path widths in case of beam wind. It is then possible to give advice on the required speeds in narrow channels, which is important for empty barge trains or container vessels for instance.

Results of the calculations are made available through so-called web services using the SOAP protocol for the communication between the web servers and the QUAESTOR knowledge system for executing the computational models. A successful demonstration was held in April in Rotterdam, where different scenarios for cargo transport were shown. The scenarios included voyages with motor vessels, motor vessel/barge combinations and push trains suitable for rivers such as the Rhine/Scheldt, Danube, Mosel, Elbe and European canals. ▢

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