

# Inland navigation plays an increasingly important role

Inland navigation has recently taken on a more prominent role within the MARIN organisation. This partly follows on from MARIN taking over a specialist inland waterway firm, Dutch Logistic Development (DLD), at the end of 2008 but also because there is more demand for inland waterway transport. Report outlines MARIN's new focus on the sector.

The Cleanest Ship Project, carried out on the m.v. Victoria, shows how inland navigation can improve its environmental performance. [www.cleanestship.nl](http://www.cleanestship.nl)

Henk Blaauw  
h.blaauw@marin.nl

**R**oad congestion and the need to reduce emissions such as CO<sub>2</sub>, means that there is increasing public and governmental pressure to get traffic off the roads and on to barges. Transport can be improved by strengthening the position of inland navigation in the market by making it more competitive and at the same time, by minimising its environmental impact.

Three main fields of work are currently under study. MARIN is conducting feasibility studies looking into integrating inland ships in door-to-door transport chains. This means looking at both the design of transport chains and at the conceptual design of ships. MARIN is also working on the reduction of the environmental impact of inland ships through better design, as well as examining nautical safety issues.

**Transport chains** One important question being addressed by MARIN is whether it is financially feasible to integrate inland ships into transport chains. The types of cargo and the possibilities, as well as the restrictions, of the available wet infrastructure are important issues here. Vessels can be self-propelled ships, coupled, or pushing units. When it does seem feasible, the next step involves considering the conceptual designs of the ships.

During this phase, MARIN's Inland Ship Exploitation Model is used to calculate alternative solutions. As well as costs, the environmental impact is becoming a more important issue. Although ships are not the worst offenders when it comes to CO<sub>2</sub> emissions, shipping does lag behind road transport when it comes to other gasses and particles. Having the most environmentally-friendly vessel possible is also important commercially because many shippers consider this before rewarding transport contracts.

A good example of projects to stimulate the use of smaller waterways is the introduction of a new concept called the Barge Truck. This project aims to determine whether the smaller vessels navigating smaller canals can be replaced by a system of push boats and push barges. One advantage is that cargo is uncoupled from the pushing unit. Cargo can be handled when needed and barges can be

used as floating stock, while the most costly unit, the pushing boat, is fully-utilised because there is hardly any waiting time.

**Reducing fuel and emissions** MARIN is also focusing on reducing fuel consumption and consequently, CO<sub>2</sub> production by improving the form of the fore ship and aft ship by CFD calculations and by making sure the most efficient propeller is selected. MARIN also tries to reduce CO<sub>2</sub> emissions by reducing fuel consumption through the development of a voyage planner in combination with a fuel economiser. Exhaust emissions, as well as costs are taken into account in MARIN's model.

MARIN is the co-developer of the Economy Planner. This encompasses a voyage planner integrated with a fuel economiser and it focuses on reducing fuel by taking the restrictions of the waterway into account. Navigating ships can use each other's experience to select the optimal sailing route.

**Safety first** Nautical safety and efficiency are of course, vitally important operational aspects for inland ships. MARIN's experts are looking very closely at manoeuvrability issues. Manoeuvring models, both in fast time and real time are used to assess the dimensions of the infrastructure and the

Nautical manoeuvre at dock Lith, river Meuse, Netherlands



manoeuvring capabilities of new vessel designs in the nautical simulators. Additional training to inland barge skippers is also given to increase manoeuvring skills and to optimise fuel consumption.

MARIN is involved in the Automatic Identification System (AIS) pilot in the port of Rotterdam. In this project 75 inland ships are equipped with certified AIS to obtain experience with the system. This system enhances safety but it also plays an important role in the future as it can be used to plan locks and terminals.

By being far more active in the field of inland navigation MARIN helps to increase mobility on the roads and consequently, to reduce greenhouse gas emissions. ▢



Barge truck, a system of push boats and push barges