

TOP TEN

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Category: **Waterborne**

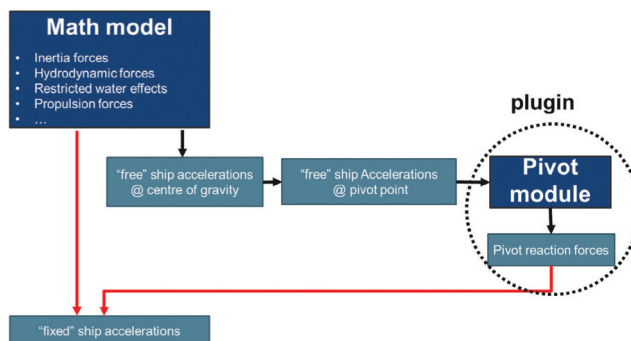
Country: **Belgium**

Research Area 7: **Technology and Engineering**

Idea Number: **47**

A new solution for turning an inland navigation ship on a very narrow waterway

When inland navigation ships leave or arrive at their berth, they often need to turn around to change direction. In narrow canals and rivers a wider area, called turning basin, allows for this swinging manoeuvre. The diameter of this basin, recommended by international guidelines, is often larger than physically possible, due to environmental and geotechnical restrictions. Real-time ship maneuvering simulations should be used for specific fairway designs, with aforementioned constraints, defining the strict minimum dimensions for safely completing this maneuver. The dimensions of the turning basin can be further reduced by using a fixed point in the form of a dolphin to which the ship attaches (at bow or stern) with a mooring line. The ship turns around this fixed point. However, this maneuver is unusual and the manipulation of the mooring ropes by the crew is dangerous. A fixed connection using an automatic rigid vacuum or magnetic pad, replacing a mooring rope, would greatly optimise this technique, eliminating the risk and further reducing the needed turning area. The study focuses on investigating the technical feasibility of this system as well as dimensioning the system. A comparison between the three approaches (without fixation, fixation with mooring lines, and fixation with rigid connection) will be part of the project. Such a solution will lead to an optimal use and increased capacity of the waterway network, which is also beneficial for decreasing greenhouse gases as inland navigation is the most environmentally friendly way of transporting goods.



Key Characteristics

Inland navigation ships • Real-time ship maneuvering simulations