Modernisation of Vessels for Inland waterway freight Transport

Results in Brief

How to improve inland waterway transport

Over the last few years the pressure to increase the efficiency and sustainability of modern inland waterway transport (IWT) has increased. In response, new research has developed and assessed retrofit options and approaches, sharing on-board information and best practice for vessels sailing the Rhine and other large European rivers.

IWT has been an important economic activity in Europe for centuries and will continue as such. The transport of freight is vital to the industry, especially the container sector. However, new laws and requirements and greater protection of the environment has meant that freight vessels navigating Europe’s rivers and canals must be overhauled to meet modern standards.

The MOVE IT! (Modernisation of vessels for inland waterway freight transport) project was established to develop options for the modernisation of inland ships. The solutions were subjected to an environmental assessment and carried out on five vessels. They comprised a container vessel, three pushers and a motor cargo vessel that was operated together with a lighter.

An overview of selected retrofit options showed that vessel owners expressed little interest in power-related retrofits, because emission abatement techniques such as
filters and catalysts can only lead to very limited fuel savings. In addition, they can sometimes result in an increase in fuel consumption, while there are little to no other economic benefits.

Other solutions like liquefied natural gas, compressed natural gas, fuel cell, diesel electric or all-electric propulsion all require major modifications to the engine room and large investments, which also makes them unattractive business-wise. Also, it appeared from the choices of the shipowners that apparently there is no universal desirable retrofit solution for inland ships.

This showed the importance of studying each existing vessel and its operation individually in order to improve its performance. Since the design and operational profile of each ship is different, there is no single universal solution that is effective for all ships.

Therefore, guidelines were developed that can be used by shipowners when considering vessel improvements and were published in an easily accessible format for ship operators and shipowners. They include hydrodynamic improvements, efficient ship operation, powering the vessel and engines, ship structure and weight, and new scale and service.

MOVE IT! showed that modernisation of inland vessels needs a customised approach, which takes into account both the economic viability and the environmental sustainability of IWT. It also highlighted the need for further development of relative low-cost mathematical tools for the different types of analysis needed in assessing available options.

The project's results will be of value to freight companies, logistics service providers, society and relevant policymakers.

Keywords

Inland waterway transport, retrofit options, container sector, freight vessels, freight transport

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