

Ships are traditionally an environmentally-friendly mode of transport, but emissions can be reduced even further if engines are improved, filter systems are installed and alternative drive concepts like the SkySails system are used.



The “eco flagship” of the Rhenus Group: “Willi Raab”

The “eco flagship” of the Rhenus Group is called “Willi Raab”: This 100 meter long inland waterways vessel, which was built in 1976, is being brought right up to date with the latest environmental technology – and this involves a lot of work. “The boat is being given a new engine and will serve as an experimental vessel for testing a particulate filter,” says Georg Hötte, Managing Director of PartnerShip.

The new drive unit will provide more power with lower emissions. The “Willi Raab” currently generates 736 kilowatts of power, but the new engine will produce 1,320 kilowatts. As a result, the boat will be able to move the same load at a lower engine speed and will therefore consume less fuel. The “Willi Raab” is used to supply the Mehrum coal-fired power station near Hanover with imported coal from the port of Hamburg. When coupled with a barge, the boat can transport approx. 3,720 tons of fuel for generating power during each trip.

Purification of Exhaust Gases – a Challenge for Engineers

The particulate filter is initially being tested on the vessel for a period of three years. The project is part of a German government research program. The technical challenges are formidable: “Inland waterway ships’ engines are often what are known as medium speed maritime diesel units and their rpm is between 800 and 900. But the engine temperature is not as high as in automobiles and cannot be used to burn up the particulate matter,” Hötte explains. Despite this, the European Union introduced thresholds for the emissions of particulate matter from inland waterway vessels in 2006 and they are due to be tightened in the near future. The thresholds in the next stages will force companies to use fast running engines and particulate filters. So the new engine being inserted in the “Willi Raab” will have a maximum speed of 1,800 rpm. The Federal Ministry of Transport admits: “Particulate filters have not yet been tested for

use in inland waterway vessels.” So now tests are taking place as part of a research and development project to establish whether and under which circumstances particulate filters can be used on inland waterway vessels. Rhenus is taking part in this project with the “Willi Raab.”

Towing Kite Uses Wind Power

While the technology for purifying exhaust emissions on inland waterway vessels still has to be developed, the Hamburg shipping company Beluga Shipping is carrying out tests on oceangoing vessels with a tried and tested power source: wind. A towing kite has been affixed to the multi-purpose heavy goods freighter “MS Beluga SkySails”, which was officially named in Hamburg in December 2007, and this is designed to relieve the main engine and save up to 15 percent of fuel – and emissions. If the 160 square meter kite does the job, the owner plans to replace it with a “sky sail” that is twice as large – that means up to 30 percent savings are possible. This relieves the environment and reduces costs. The designers believe that this additional source of power is also one way of combating constant increases in fuel prices.

The first practical experiments with the kite have been successful. The 132 meter long freighter set out on its maiden voyage to Venezuela in January 2008 and wind power was used almost immediately for the first time in the German Bight. The kite was unfurled from the telescopic mast so that it could rise to a height of up to 300 meters, where the wind is relatively strong and constant. The freighter took a traditional windjammer route south of the Azores when crossing the Atlantic so as to use the strong easterly wind there and use the towing kite as often as possible.