

Nr. 6 Windship Engineering and Design

Background:

How can ships run in an efficient and environmentally friendly way? One possibility is to use power of the wind to support the main propulsion system – for example with a Flettner rotor. This type of drive uses the wind to create additional thrust for ship propulsion: a Flettner rotor is a high cylinder that stands vertically on a ship and rotates on its own axis. It is driven by an electric motor. The optimum rotational speed depends on the wind speed and direction. The interaction between rotor surface and wind flow creates a lift force so that the ship receives additional thrust. This not only saves fuel but also emissions. The rotors were already developed in the 1920s, but did not prevail at that time due to the low oil price. However, greater environmental awareness and rising fuel prices have made this type of engine interesting again in recent years.

Content:

In initial pilot projects, the basic suitability of wind-supported ship propulsion systems was demonstrated and a prototype of a Flettner rotor was developed and built. Based on measurement data, potential savings were estimated for the test ships. In order to test and evaluate the technology of the Flettner rotor in practice, the Eco-Flettner rotor was installed on the MV Fehn Pollux of the shipping company Fehn Ship Management.



Leadpartner:



Co-partner:



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Results:

A prototype (EcoFlettner) was installed with the following specifications*:

- High: 18 m
- Diameter rotor: 3 m
- Diameter endplate: 6 m
- Weight: 16 t
- RPM max: 280
- Avg. power consumption: 20-30 kW
- Material: GRP
- Largest thrust ever measured on board: approx. 70 kN @ BFT 7
- Expected savings for Fehn Pollux and sailing area: approx. 110 kW (15 % - 20 %)
- Foundation of a company producing and selling the EcoFlettner Rotor



*all details with reservation

Advantages:

- Fuel saving
- Rotor does not affect the manoeuvrability of the ship
- Radar has no shadow sector
- Lateral forces and gyroscopic effects due to rotating mass calm ship movements
- Automation runs without crew intervention



Partners:



Contact:

Ralf Oltmanns, EcoFlettner GmbH

Ralf Oltmanns

Telefon: +49 4 91 9 25 55 23

Email: r.oltmanns@grafik-team.de