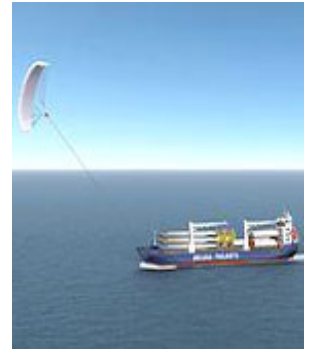




WINTECC - Demonstration of an innovative wind propulsion technology for cargo vessels

LIFE06 ENV/D/000479



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Project description:

Background

Cargo shipping (driven by heavy fuel oil) is regarded as one of the main producers of climate damaging emissions. SkySails-Technology are wind propulsion systems for modern shipping. It is estimated that the market for using this technology consists of around 40 000 ships out of 90 000 on the Lloyd's Register of shipping of the world trade fleet which operate on long-range routes.

Every year large ships consume about 280 million tonnes of cheap and extremely sulphurous heavy fuel oil and, as a result, commercial shipping is the third largest source of climate-affecting toxic substances after road traffic and industrial production. Lloyd's Register Quality Assurance, London, estimates that shipping traffic is responsible for about 7% of the world wide sulphur dioxide (SOX), 11-12% of all nitrogen oxide (NOX) and 4-5% of all CO2 emissions – nearly a billion tonnes of CO2 emissions per year.

Objectives

The WINTECC project aimed to demonstrate an innovative wind propulsion technology for cargo vessels. An automatically controlled towing kite system would be used and tested during the regular operation of a cargo vessel for the first time on a full-scale. The specific objectives were to:

- Demonstrate the energy and greenhouse gas savings achievable by the towing kite system.
- Demonstrate the practicability, profitability and durability of the technology.
- Prove that the towing kite does not exert any negative influences on the ship and its cargo.
- Demonstrate that the kite system works under different meteorological conditions (e.g. rough water).
- Evaluate the influence of the kite technology on the ships movements.
- Evaluate the accuracy of weather forecasts and the local wind situation by using a wave monitoring system to facilitate the control of the towing kite.
- Widely disseminate the project results to launch the technology.

Results

The innovative wind propulsion technology, that was developed with the WINTECC project, achieved 5% fuel savings – corresponding to 165 tonnes/year of fuel and correspondingly 530 tonnes of CO₂ per year for the vessel Beluga Skysails on an average route mix, and 10-12% savings on North Atlantic and North Pacific routes. Larger ‘kites’, which will be available soon, will provide higher savings. For fish trawlers also higher yields are expected due to lower ship speed.

In favourable wind and sea conditions the Skysail kite could pull up to 17 tonnes and nearly account for the complete propulsion power of the vessel.

If the system was applied on a scale of 25 000 ships on 15 main trading routes by the use of 600 m² kites, then fuel consumption would be reduced by between 5.6 and 8.1 million tonnes of fuel per year – this reduction equates to a saving of 17-25 mega tonnes of CO₂, 450-650 kilo tonnes of NO_x, 260-380 kilo tonnes of SO_x and 30-50 kilo tonnes of soot particles. Applying this technology to fishing vessels and other boats slower than 13 knots also offers the same potential savings.

Moreover, the savings can also be considered in economic terms. Fuel savings of 5% or 165 tonnes per year for the Beluga Skysails translates as €135-220 000 per year at bunker oil prices of €430-700. For 10-12% savings on more favourable routes and even more with bigger kites, the benefits rise accordingly.

The estimated selling price of a 320 m² Skysails kite is about €1 million. If the bunker oil price does not drop below €430 per tonne, then with a 10% average fuel savings, the investment will be returned within two to three years.

Further information on the project can be found in the project's layman report and After-LIFE Communication Plan (see "Read more" section).

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Environmental issues addressed:

Themes

Services & Commerce - Transportation - Storage
Energy - Efficiency
Environmental management - Eco-products design

Keywords

emission reduction, pollution prevention, navigation, climate change mitigation

Target EU Legislation

- Industry and Product Policy
- Directive 96/61 - Integrated Pollution Prevention and Control (IPPC) (24.09.1996)
- COM(2001)68 - "Final Green Paper on Integrated Product Policy (IPP)" (07.02.2001)
- Climate Change & Energy efficiency
- "Kyoto Protocol to the United Nations Framework Convention on Climate Change - Declaration Offici ...

Natura 2000 sites

Not applicable

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Beneficiaries:

Coordinator	Beluga Fleet Management GmbH & Co. KG
Type of organisation	SME Small and medium sized enterprise
Description	Beluga Fleet Management GmbH (BS) manages worldwide projects and heavy lift cargo shipments using its own and chartered vessels and container feeder shipping. It is responsible for technical supervision, ship and quality management, maintenance and crewing, and the construction of new vessels. Currently BS manages 30 multipurpose heavy lift project carriers and container feeder vessels.

Partners
Beluga Fleet Management GmbH & Co. KG
Bremen, Germany SkySails GmbH & Co. KG
Hamburg, Germany OceanWaveS GmbH
Lüneburg, Germany ALDEBARAN Marine
Research & Broadcast Hamburg, Germany

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Administrative data:

Project reference	LIFE06 ENV/D/000479
Duration	01-JAN-2006 to 31-DEC -2009
Total budget	4,115,882.00 €
EU contribution	1,212,685.00 €
Project location	Hamburg(Deutschland) Niedersachsen(Deutschland) Bremen(Deutschland)

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Read more:

Leaflet	Title: "Beluga Projects" (377 KB) Editor: WINTECC No of pages: 2
Leaflet	Title: "Beluga projects" (411 KB) Editor: WINTECC No of pages: 2
Publication: After-LIFE Communication Plan	Title: After-LIFE Communication Plan Year: 2009 No of pages: 6
Publication: Layman report	Title: Layman report Year: 2009 No of pages: 18
Publication: Layman report	Title: Laienbericht Year: 2009 No of pages: 18
Video link	Project promotional video(3')

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