

CARGO SAIL

**MARITIME CARGO TRANSPORT
POWERED BY RENEWABLE ENERGY**



RADICAL TIMES DEMAND RADICAL DIFFERENT APPROACHES IN MARITIME CARGO TRANSPORT

VISION

The environmental impact of using wind as the main driving force for commercial cargo transportation is evident and technical feasibility of modern medium sized cargo sailing ships has already been demonstrated.

More than 90% of world trade involves sea transport. Long-term social demands to become less dependent on fossil fuels and to implement environmentally friendly shipping modes seem incompatible with short-term economic interests.

The commitment to the profitability and complexity of the transport chain as well as infrastructure restrictions are a major hurdle for the development of radically new concepts towards clean and renewable-energy based commercial shipping.

Virtually all-current research is therefore restricted to gradual improvements or upgrades of existing technology, e.g. emission control systems, or wind-/solar-assisted motor shipping, which avoids interoperability conflicts and promises rapid return of investment.

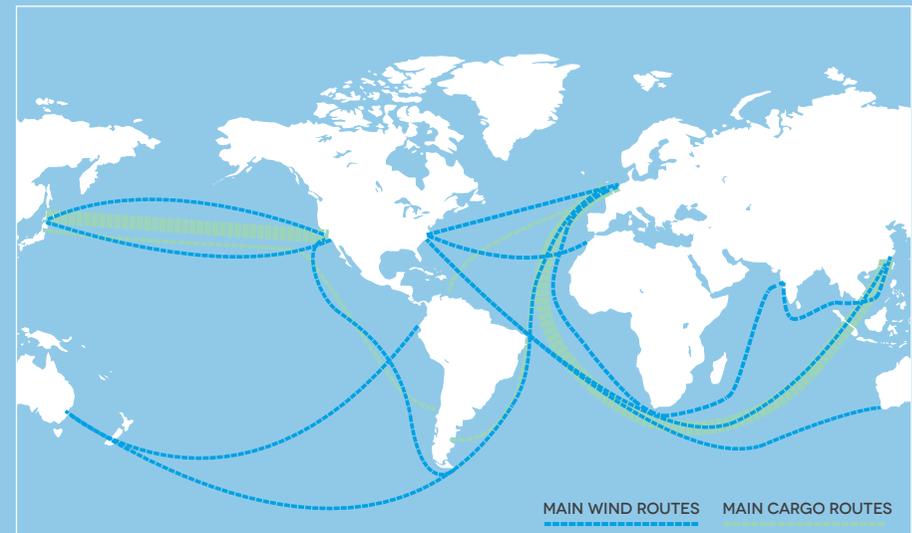
Based on the research and design study "CargoSail" from Fritjof Giese and the numerical investigation "Hydrodynamic Analysis of Driftforces on Hulls for commercial sailing vessels" by Siegfried Wagner, the "CargoSail Concept" was developed. The central issue of this project is the research and development of wind-powered and engine-assisted commercial sailing-ship concepts, optimized for specific cargo demands and routes that can compete and outpace existing engine-driven shipping solutions from an economic view point.

CONCEPT

The essential advance of CargoSail is to focus on the separation of the sail-carrying part of the vessel from the cargo-holding part for interaction with port infrastructure. This separation makes the concept interesting in many ways.

The variety of routes requires different sail configurations. By disconnecting the cargo from the sailing system a rapid redistribution to other (rigging) ship types is possible.

Different approaches on how and to what extend the separation of the sail-carrying system from the cargo-holding system can be achieved, will be investigated and evaluated.



BENEFITS

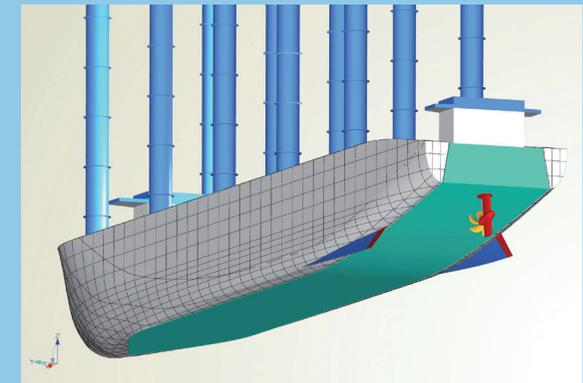
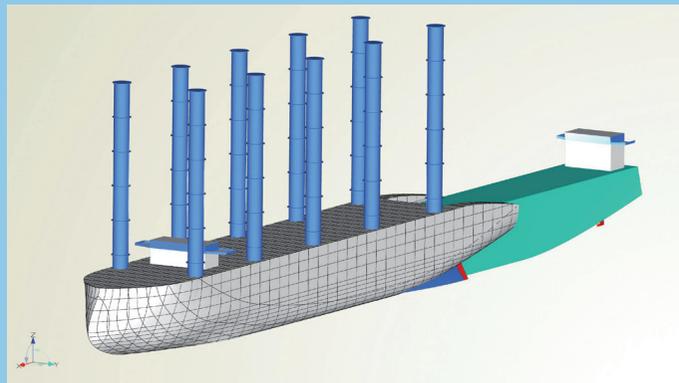
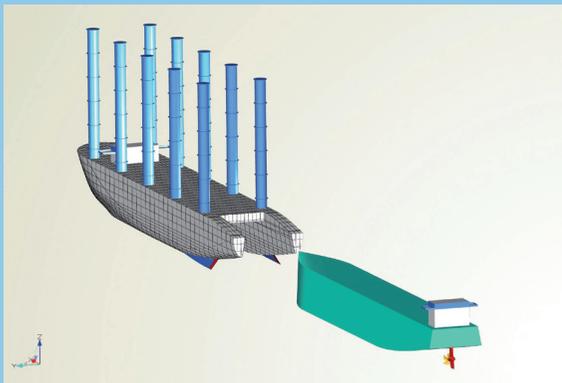
The benefits of this concept are manifold:

The sailing part of the vessel does not need to obey to port-infrastructure restrictions concerning the rigging system, since this part will stay outside of the quayside.

Moreover, the aerodynamic quality of the rigging system as well as its straightforward design, which are of importance for economic and robustness reasons, can be optimized without compromising on portside related cargo handling aspects.

Near the harbor, the system will disembark the cargo-holding part, which will move on into the harbor where the cargo is processed in a conventional manner.

Further benefits come along with the additional operational opportunities of this concept. The barges can be prepared in advance and will just be exchanged outside the port, which leads to short stops for the actual sailing vessel that operates in parallel to the harbor operations performed by the barges.



Concept example of a Flettner-powered cargo-sailing-vessel with 250m cargo-carrier

RESEARCH PURPOSE

The aim is to scrutinize the idea of separating the cargo holding part from the sail-carrying system and at the same time identify the most promising related solutions and associated needs for detailed follow-up research and finally the development of commercially attractive shipping solutions for sea-trade in a zero emission world.



WWW.CARGOSAILS.COM/CS

CONCEPT DEVELOPED BY



INDUSTRIAL & NAVAL DESIGNER

MAG.DES.IND. FRITJOF GIESE

phone: +49 173 2729418

mail: office@fritjofgiese.com



NAVAL ARCHITECT

M.SC.-ING. SIEGFRIED WAGNER

phone: +49 179 6254434

mail: CSG.Wagner@gmx.de