

Announcement of student research projects and theses *in the framework of the project "GreenSailer"*

Within the framework of the "GreenSailer" project, there is the possibility of preparing project papers on various topics from almost all specialist areas. If you are interested in a topic or have your own ideas for a project, the contact persons listed below will be happy to provide you with further information. Possible subject areas are, for example:

Design:

- ◆ Hull optimization with Friendship Systems (CAESES) or with the potential solver of NAPA regarding loading volume, speed or resistance with the same displacement and stability; U-frame versus V-frame.
- ◆ Design of different generator concepts (engine, solar cells, wind generator, hydrogen generator, fuel cells, etc.); consideration of storage solutions; comparison and evaluation of the concepts from a technical, economic and ecological point of view. Battery design.
- ◆ Drive design, comparison of different drive concepts. Comparison of realised ships.
- ◆ Design of masts and stays. Physically and with FEM.

Construction:

- ◆ Piping in the engine room of the GreenSailer in Siemens NX or Teamcenter
- ◆ Consideration, design and simulation of different cargo handling options. Detailed design of masts and or loading cranes.

Economy:

- ◆ Profitability analysis: Is a large (4x24 m) or a small (3x18 m) rotor on the GreenSailer more economical? A larger rotor means: more costs and weight, more power of the rotor drive electric motor, less cargo space, but higher ship's speed.
- ◆ Market analysis of the need for passenger and freight transport, fair trade, route proposals considering wind conditions, room subdivision based on this. Yield Estimation.
- ◆ Cost breakdown for the equipment / components of the GreenSailer, financing, business model. Elaboration of a business plan, investigation of modern financing and participation possibilities, analysis of existing concepts and reasons for the failure of earlier ideas.

Ship operations:

- ◆ Special training concept for the crew of a ship with additional wind propulsion systems as well as technical and financial consideration of modern technologies and personnel costs.
- ◆ Evaluation of measurement data of the "BBC Hudson": Review of an existing table to determine whether a given trim at a given ship's speed is the most fuel-efficient. To do this, filter the data in the Excel table and, for example, calculate mean values of the fuel consumption plotted over different speeds and trim states.

Safety:

- ◆ Creation of a risk database specifically for the risks associated with the operation of sailing vessels.
- ◆ Creation of a safety management system according to IMO guidelines in a safety management manual.

Depending on previous knowledge and interests, an individual task is formulated together with the supervisors.

Background:

The aim of the "GreenSailer" project is to develop a sailing ship that is as emission-free as possible for commercial passenger and freight transport in coastal traffic.

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