

RENSEA II



Fact sheet

Charging batteries while sailing

The goal of RENSEA II is to develop, design, integrate and test regenerative plugin hybrid-electric propulsion (RPHP) for sail boats.

Opal, a whale watching boat owned by North Sailing, used for shorter trips as well as for expeditions at the coast of Iceland and in the arctic region is the test bed. A RPHP system can dramatically improve the environmental footprint of the boat operation, the economy as well as the experience during sailing of boats that operate by both motor and by sail. A modular hybrid-electric system combines the strengths of an electric drive system, a modern battery system and propeller specially designed for electric propulsion while running on batteries. In addition, when wind is used for sailing in good wind conditions the propeller will be adjusted for electricity generation to recharge the batteries.

RENSEA I

Although a number of technologies and components are commercially available, the design of each component critically influences the efficiency and overall performance of the propulsion system. Little know-how exists in this field for maritime applications which needs innovative and environmental friendly solutions. Making this technology available to the large market requires innovative research, development and full scale demonstration. An extensive pre-study called "RENSEA phase I" was carried out, funded by NORA, an Icelandic fund and Transnova, where a RPHP system was outlined, dimensioned and performance was estimated. Potential for optimisation was identified and innovative research and development tasks defined. The results indicated large potential, both in economic terms as well as from an environmental perspective.



PARTNERS

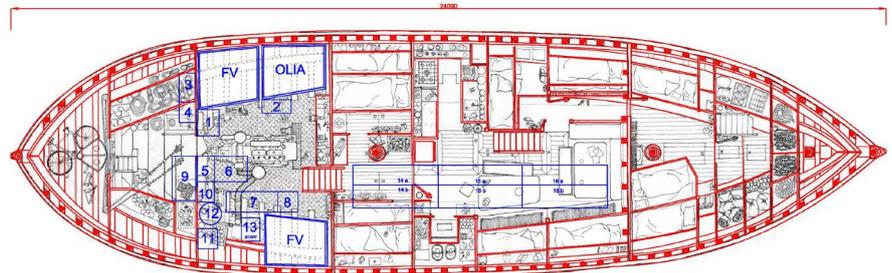


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Innovative design for reduced CO₂ emissions

The system developed in this project will be used to gain maximum energy efficiency and minimize environmental impact through integration of individual components, software and control system for the RPHP system. The energy sources are wind power (while sailing), electricity (land grid) and biodiesel (back-up). This project will establish the innovative design and develop individual system components like propeller, batteries and control system. Funding for acquisition and installation of components like batteries, battery management system, electric motor, propeller etc. in Opal is obtained from Icelandic funds supporting measures to reduce CO₂ emissions. Bellona is seeking similar support in Norway for installing a RPHP system in their sail boat Kallinika, where Bellona will benefit from the lessons learnt in designing and installing the RPHP system in Opal. The results of this project will enable other sailboat operators to effectively design and install an environmentally friendly RPHP system in their boats.



- 1) Baumüller cabin
- 2) DC Distribution, DC/DC converter 24V
- 3) 4 X Charger
- 4) 400 AC Inverter
- 5) AC cabin (the old one)
- 6) Baumüller motor
- 7) Scania - Diesel motor
- 8) Generator Scania
- 9) Gen
- 10) Victron quattro (will be removed??)
- 11) Transformer 400 / 400V / 230
- 12) Hot water tank
- 13) Start battery p. No 7
- 14-16) Main Battery

For further info see: <http://newenergy.is/en/reusea/>