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The study of an innovative propulsion plant for a High-Speed Catamaran Ferry for decarbonisation in the marine industry

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This paper supports decarbonisation in the marine industry by illustrating that a proper design methodology and state of the art technologies can significantly reduce greenhouse gas emissions.

In particular the paper aims to demonstrate the possibility of reducing the environmental footprint of Marine High-Speed passenger transportation with an innovative propulsion plant design. The challenging solutions to designing a high-speed hybrid catamaran ferry, that satisfy design criteria and requirements, are presented and applied to a realistic case study. The design process takes several aspects of the design spiral into consideration and investigates the potential electrification of the vessel to reduce its carbon footprint without compromising function and performance. Furthermore, the optimal selection of the propulsion system and components, along with the preliminary design of the vessel are outlined and justified. To conclude, the environmental benefits of the proposed propulsion plant design are presented and discussed: a comparison with a conventional propulsion system is carried out by using measurable parameters similar to those of the EEDI.

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