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A zero-emission ferry for inland waterways

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Reducing the human environmental impact is one of the most critical issues nowadays: in this perspective the progressive decommissioning of fossil fuels is a significant priority to guarantee a sustainable future for the next generations. This paper proposes a zero-emission ferry for inland waterways and short-sea navigation, focusing on realistic solutions to provide the best trade-off between operational performance and environmental sustainability. In particular, the object of this study is the refitting of a double-ended ferry working in the Lago Maggiore, one of the largest Italian lakes. Systems suitable for the purpose have been selected and integrated on board with a view to maximum efficiency, implementing full-electric propulsion with electric motors, a Li-ion battery storage system and photo-voltaic panels. The benefits and drawbacks of the considered technologies have been evaluated to select the most promising design solution, focusing on both on-board and on-shore impact in terms of compatibility with the existing infrastructures and considering life-cycle sustainability.

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