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## The evolution of large pleasure vessel towards a green future

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The future of transportation means is quickly moving towards green solutions in order to reduce the emission of CO<sub>x</sub> and SO<sub>x</sub> firstly and, secondly, to progressively abandon the fossil fuels. In this perspective, alternative propulsion such as fully electric engine, biofuels, hydrogen, LNG are now largely used in the automotive field and for mass transportation means. The naval field is now moving on the same trend by using hybrid and fully electric engine especially for pleasure vessels, where the relatively small engine power allows the installation of battery stacks onboard without adding unreasonable weight for only few navigation miles.

In this paper, the transformation of a traditional pleasure vessel towards a new hybrid version is proposed; after a more comprehensive view of the modifications that are necessary to install hybrid engine and battery onboard, highlighting all the critical aspects of these new design, a FE numerical analysis of the basement of electric variable speed generators is presented.

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