

# Abstract

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## **Two-step strategies towards fuel saving and emissions reduction onboard ships**

Management of energy consumption constitutes the major challenge in marine shipping industry for the next generation. It has received a large attention from both scientific researchers considering consumption, economic and environmental impact and industrial experiments supported by marine engine manufacturing companies and other governmental and nongovernmental entities. Over the years, many solutions have been put forward to overcome the effects of this problem, while maintaining the amount of goods transported globally at the same transfer rate and ship speed. The present paper sheds light on many of the methods used currently to reach this purpose. We argue that applying a certain fuel-saving strategy will rely on some factors, the most important of which is the type of ship. Mainly two methods, including shore-side power and cold out of heat strategies, have been investigated regarding adaption, economic, and environmental issues in case of applying onboard high-speed passenger ships. This concept has also been applied on a vessel operating in the Red Sea region for applicability and benefits of this approach. It was determined that the proposed two-step strategies significantly reduce the consumption of fuel onboard the ship by about 310 ton per year, and in addition, considerably reduce the amount of ship emissions, which could reach more than a thousand tons per year.