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ECONOMICS AND ENVIRONMENTAL IMPACT OF SHIP SPEED REDUCTION

Summary

Ship emissions pollute the environment and cause global warming. They participate in the global CO2 emissions with 3,3% (843 million tons per year), sulfur oxides are emitted at around 4% of world total (6,5 million tons per year), while nitrogen oxides are about 7% (5 million tons per year) of all total emissions. According to the European Union targets these levels of emissions need to be drastically reduced already in 2020. Knowing that the power of a ship as well as her emissions have an exponential relationship with the speed, by significantly decreasing ship's speed we can greatly reduce ship emissions. Furthermore, reducing the speed will significantly also reduce the consumption and thus the running costs. In this study was analyzed the economic effects and environmental impact of reducing the service speed for an AFRAMax and for a VLCC tanker to a minimum of 5 kn. By varying speed and the main engine power, considering also the effects of fuel price difference and discount due to the reduced transport capacity, we show that the slow steaming ship can be simultaneously commercially viable and eco-friendly. Furthermore, we indicate scenarios in which slow steaming ship can be more profitable than the ship operating at the standard service speed. Changes in the environmental efficiency design index, or the EEDI, are also addressed for both tanker types.

Key words: ship emission, speed reduction, CO_2, AFRAMAX, VLCC, tanker, EEDI

NASLOV DOKUMENTA NA HRVATSKOM

Sažetak

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Ključne riječi: ključne riječi na Hrvatskom