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IMPROVEMENT OF VESSEL OPERATION EFFICIENCY WITH RESPECT TO ENERGY EFFICIENCY AND SAFETY INDICATORS

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Introduction. Today, modern maritime transport faces significant challenges in terms of energy efficiency and safety. Increasing demands on the energy efficiency of the world fleet are a consequence of growing environmental awareness and the need to reduce emissions and fuel consumption. The energy efficiency of ships is becoming an important factor in ensuring the sustainable development of maritime transport and reducing its impact on the environment. In the context of increasing environmental requirements and the desire to reduce operating costs, the issues of efficient use of energy while ensuring safety of navigation are becoming increasingly important. For this reason, research into the energy efficiency of ships and the evaluation of its impact on operational safety is of great relevance and importance.

Materials and Methods. Energy efficiency and ship safety are two important aspects of maritime transport that are essential for economic efficiency, environmental protection and maritime safety. Ship safety is primarily concerned with the protection of crew, cargo and the environment. Energy-efficient technologies in shipping contribute to economic efficiency, reduce fuel costs, reduce greenhouse gas emissions and, most importantly, they aim to increase the manoeuvrability of the ship, reducing the likelihood of it getting into emergency situations; the choice of energy-efficient materials and the optimisation of the structure and hull increase the ship's resistance to adverse conditions. The main objective of my research is

to evaluate the impact of the ship's energy efficiency on its operational safety.

Improving the ship's energy efficiency leads to a reduction in fuel consumption and savings in operating costs. This is especially important in the context of high fuel prices and strict emissions regulations. Increased energy efficiency also contributes to the sustainable operation of the vessel in the long term.

Results. Implementing modern technologies and systems can enhance the safety of the vessel. For instance, the installation of efficient engine control systems, automated control and surveillance systems, and communication and navigation devices can improve the ship's reliability, thus mitigating any potential emergency situations.

International organizations such as the International Maritime Organization (IMO) are actively promoting the improvement of energy efficiency and safety of ships. The introduction of various regulations and recommendations to improve the efficiency of ship systems and operations ensures compliance with high safety standards and contributes to reducing risks.

Conclusion. Analyzing the relationship between energy efficiency and ship safety makes it possible to obtain information about the influence of various factors on ship safety and to use this model to predict the safety of new ships based on their characteristics.

Key words: Maritime Transport, Energy Efficiency, Modern Technologies, Sustainable Development, Ship Safety.

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