INTERNATIONAL MARITIME ORGANIZATION

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Agenda item 2

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CONSIDERATION OF THE ENERGY EFFICIENCY DESIGN INDEX FOR NEW SHIPS

Comments on the draft Interim Guidelines on the Method of Calculation of the Energy Efficiency Design Index for New Ships

Submitted by China

SUMMARY

Executive summary:	This document provides comments on the draft Interim Guidelines on the Method of Calculation of the Energy Efficiency Design Index for New Ships contained in document MEPC 58/23, annex 1
Strategic direction:	7.3
High-level action:	7.3.1
Planned output:	7.3.1.1 and 7.3.1.3
Action to be taken:	Paragraph 10
Related documents:	MEPC 58/4/24, MEPC 58/23 and GHG-WG 2/1

Introduction

1 MEPC 58 approved the draft Interim Guidelines on the Method of Calculation of the Energy Efficiency Design Index for New Ships (MEPC 58/23, annex 11) to be used in trial for further verification, and instructed GHG-WG 2 to consider the EEDI formula with a view for further improvement.

2 China generally supports the establishment of such an EEDI formula to improve the energy efficiency of new ships, and has conducted several trials to verify the practicability and feasibility of the new EEDI formula. Following the trials, it is found that further clarifications and verifications need to be made to the following factors:

Comments

3 Auxiliary engine power P_{AE}:

In the new EEDI formula, the auxiliary engine power P_{AE} is simplified as follows:

For ships with a main engine power of 10,000kW or above, P_{AE} is defined as:

$$P_{AE(MCRME\geq 10000KW)} = \left(0.025 \times \sum_{i=1}^{nME} MCR_{MEi}\right) + 250 \qquad \textbf{(1)}$$

For ships with a main engine power below 10,000kW, P_{AE} is defined as:

$$P_{AE(MCRME<10000KW)} = 0.05 \times \sum_{i=1}^{nME} MCR_{MEi} \qquad \textbf{(2)}$$

The simplified formulae above are obtained from the results and proposals in document MEPC 58/4/24 (Denmark). The simplification principle is only to consider the required auxiliary engine power to supply normal maximum sea loading including necessary power for main engine under operation. In the formula (1), the power for the main engine pump is 2.5% MCR_{ME}, and the power for accommodation is 250 kW. Such simplification principle is desirable. However, the simplified formula are derived from, according to the study, only 12 cargo vessels and cannot be applied to all types of ships, such as passenger vessels and ro-ro cargo and passenger vessels, because the power for the accommodation for such vessels is generally more than 250 kW. Auxiliary engine power in the formula (2) cannot cover the actual situation for passenger vessels and ro-ro cargo and passenger vessels with a main engine power below 10,000 kW. Therefore, the simplified formula of the auxiliary engine power need to be considered further before becoming practical to all types of ships.

4 The determination of power P

P_{ME} and P_{PTI} are output power of the propulsion engines in the EEDI formula, while P_{WHR} and other power parameters are related to electric power, the standards for determination of power parameters are inconsistent, and need to be unified.

5 The determination of P_{eff}

The EEDI formula indicates that the reduced main engine power P_{eff} should be deducted due to new energy-saving technologies, but it does not explain how to reduce P_{eff}, and the definition of new energy-saving technologies is not clear. Various kinds of new energy sources such as wind, solar, bio-energy, wave energy, which energy efficiency (power generated) also varies with different application of energy-saving devices. How to verify the selected P_{eff} value? How to determine the deduction factor f_{eff}? All these issues need to be considered and clarified.

6 The determination of SFC_{AE}

In the EEDI formula, the determination of the auxiliary engine fuel consumption is based on the EIAPP certificate at the ratio of 50% auxiliary engines power P_{AE} MCR. However, in actual design situation for an individual ship, various kinds of auxiliary engines will be selected which may result in different fuel consumptions. It is difficult to define the corresponding

auxiliary fuel consumption of SFC_{AE}. Therefore it is proposed that further reasonable definitions should be given to ship's auxiliary fuel consumption in case multiple types of generators are installed on board due to the possible simplification of auxiliary power. Furthermore, as for the power of the primer generator, if it is below the MARPOL Annex VI requirements (130 kW), the diesel engines are not required to get EIAPP certificates, so the way to obtain the fuel consumption under 50% of auxiliary engine MCR power is still pending.

7 The determination of coefficient *fw*

The introduction of coefficient *fw* is to consider the actual sea conditions during the service speed. The selection of Baufort scale 6 sea condition cannot be universally representative for different types of ships under different sea conditions, different climate, different range and different zones will have different results. The reduction of voyage speed relates much to the operational environment, therefore it is more reasonable to include the *fw* value in the EEOI formula instead of EEDI.

8 Impacts of relevant IMO new standards on EEDI

More and more new standards are formulated nowadays by IMO to improve maritime safety and protect marine environment. For instance, the revised MARPOL Annex VI to enter into force on 1 July 2010 provides requirements for Tier II and III NO_x emission standards which will increase the fuel consumption of diesel engines (taking the low-speed diesel engine as an example, an increase of about 3 to 5 g/kWh is expected to meet the Tier II standards). Therefore, the impact of IMO new standards on safety and environment should be fully assessed when determining the EEDI formula and baselines.

Conclusion

9 In light of paragraphs 3 to 8 above, it is proposed that the EEDI formula needs to be further improved, and mandatory application of the EEDI at the present stage is premature without full verification and assessment, especially the assessment of the impact of new IMO standards on maritime safety and marine environment standards.

Action requested of the Intersessional Meeting

10 The Intersessional Meeting is invited to consider the above comments and proposals, and take action as appropriate.