Biofouling Management

Policy paper
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Biofouling management is critical for reducing the risk of moving invasive aquatic species into vulnerable marine ecosystems and an efficient measure to improve energy efficiency of ships.

OUR VIEW

Danish Shipping supports the IMO guidelines on biofouling management and actively promotes the use of coatings that reduce the need for frequent cleaning. We advocate for effective hull monitoring and cleaning practices that are environmentally friendly and tailored to minimize both fouling and biosecurity risks. Furthermore, we emphasize the importance of maintaining records of all related activities to demonstrate compliance with the guidelines.

Danish Shipping advocates for the use of non-toxic, long-lasting coatings that reduce maintenance and environmental impact in line with the IMO's AFS Convention.

Danish Shipping encourage new technologies like advanced anti-fouling paints, real-time biofouling monitoring and robotic hull cleaning to boost ship efficiency and reduce ecological impacts.

IMO Guidelines for Biofouling Control
The International Maritime Organization (IMO) has developed a comprehensive guideline on management of biofouling (the 2023 Guidelines for the Control and Management of Ships' Biofouling to Minimize the Transfer of Invasive Aquatic Species). This IMO guideline promotes the adoption of standardized operational procedures to reduce biofouling risks.

The guideline also emphasizes the importance of proactively preventing biofouling through systematic monitoring and well-defined contingency plans, aiming to minimize the colonization of fouling organisms on submerged surfaces. This approach helps reduce hydrodynamic drag and mitigates biosecurity risks.

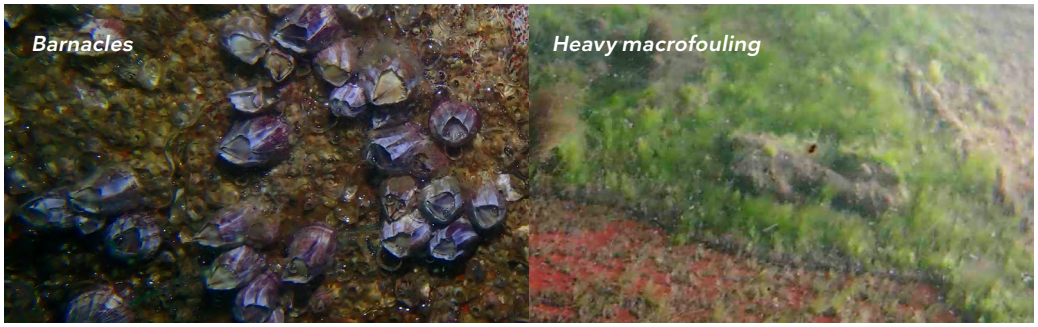
Moreover, the guideline promotes the use of state-of-the-art, non-toxic, and biocide-free anti-fouling coatings, including inter alia silicone-based foul-release coatings. These coatings are engineered for durability and high performance, thereby decreasing the frequency of maintenance cycles and the environmental consequences of hull biofouling.

Compliance with biofouling management guideline is ensured through monitoring and documentation of hull inspection schedules, biofouling assessments, and the application of anti-fouling treatments.

To further optimize biofouling management, it is recommended to utilize innovative technologies such as hydrodynamic hull designs optimized for reduced fouling, autonomous robotic hull-cleaning systems, and advanced sensor technologies for real-time monitoring of biofouling accumulation. These technological advancements also increase operational efficiency, reduce maintenance downtime, and contribute to the sustainable operation of ships.

FACTS

- Biofouling is a major factor in the spread of invasive species. A study has shown that this vector has the same impact as that of ballast water prior to implementation of the ballast water convention.[1]
- Biofouling on the hull reduces a vessel's fuel efficiency. Even a small amount of fouling (like algae or barnacles) can increase drag by up to 55%, leading to a considerable rise in fuel consumption.[2]
- To reduce biofouling, some ships now use underwater robots that can autonomously clean the hull. These devices use brushes or water jets to remove organisms before they become a major problem, reducing the need for dry-docking or manual cleaning.



[1] *Hewitt CL & Campbell ML 2010. The relative contribution of vectors to the introduction and transportation of invasive marine species, Department of Agriculture, Fisheries and Forestry, Australia.*
[2] *Impact of Ships' Biofouling on Greenhouse Gas Emissions, by GloFouling and IMO, 2022.*

DanishShipping

Contact Per Winther Christensen Head of Technical Affairs +45 33 48 92 52 pwc@danishshipping.dk