Special Issue

Optimal Design and Maintenance of Offshore Wind Farms

Message from the Guest Editors

Offshore wind farms represent a cornerstone of the global transition to renewable energy, harnessing vast ocean winds to generate clean power. However, their deployment in harsh marine environments poses significant challenges, including high installation costs, structural fatigue, and operational disruptions from component failures that are exacerbated by inclement weather. This Special Issue aims to explore innovative strategies for optimising the design, construction, and long-term maintenance of offshore wind farms, fostering sustainable and cost-effective solutions. Its scope encompasses multidisciplinary approaches, from engineering and materials science to logistics and economic modelling. Papers related (but not limited) to the following topics will be taken into consideration:

- Advancements in predictive maintenance (e.g., AI-driven), sensors, and robotics.
- Novel turbine designs for extreme conditions.
- Floating platforms and hybrid energy systems.
- Integration of digital twins for real-time optimisation.
- Autonomous systems like drones, robotic crawlers, and uncrewed vessels for safer cost-effective inspections of blades, foundations, and subsea infrastructure.

Guest Editors

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Dr. Jimmy Murphy
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About the Journal

Message from the Editor-in-Chief

The *Journal of Marine Science and Engineering* (*JMSE*; ISSN 2077-1312) is an international peer-reviewed open access journal which provides an advanced forum for studies related to marine science and engineering. The journal aims to provide scholarly research on a range of topics, including ocean engineering, chemical oceanography, physical oceanography, marine biology and marine geosciences. We invite you to publish in our journal sharing your important research findings with the global ocean community.

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