Journal of
Marine Science and Engineering

MDPI

Editorial

Strength of Ship Structures

Erkan Oterkus

Department of Naval Architecture, Ocean and Marine Engineering, University of Strathclyde, Glasgow G4 0LZ, UK; erkan.oterkus@strath.ac.uk

Ships are the main drivers of global transportation. Ships operate in one of the harshest environments in the world, which can cause various damage scenarios such as corrosion and fatigue damage. In this Special Issue, we aim to focus on the state of the art in numerical, analytical, and experimental methods for the reliable and economic assessment of the strength of ship structures. The Special Issue considers a wide range of areas related to the strength of ships structures including the structural response of the ship hull under dynamic and quasistatic conditions, the design and optimization of ship structures, the grounding and crashworthiness of ship structures, the buckling and ultimate strength of plates and stiffened panels, the springing and whipping of the ship hull girder, fatigue and crack modelling of welded structures, uncertainty and reliability modelling, noise and vibration, the corrosion of ships' structural parts, structural health monitoring, and the composite design of ships.

Ryumin et al. [1] discussed several issues related to the geometric modelling of ship hull structures in specialised CAD systems. They provided algorithms for the recognition of the elementary plate panels of hull structures and the determination of their parameters. Silva-Campillo et al. [2] investigated the effect of the dimensions of the torsion box in container ships on local stress distribution. Moreover, they performed a fatigue strength assessment. Anwar et al. [3] performed a numerical study using the RANS model and investigated the effect of variation in the mass ratio on the vortex-induced vibration of a circular cylinder in the crossflow direction at a Reynold's number of 10^4. Cheemakurthy et al. [4] performed a comparison study of metal grillages, fibre reinforced plastic (FRP) composites, and nature-inspired composites subjected to bearing impact loads during ice–hull interaction. Feng et al. [5] utilised electron backscattered diffraction (EBSD) technology to investigate the corrosion behaviour of 7075 aluminium alloy in a sulphate-reducing bacteria marine environment. Maric et al. [6] performed a quality analysis of AISI 321 welds of bellow compensators utilised in shipbuilding. Cheemakurthy et al. [7] compared the performance of metal grillages, sandwich structures, and stiffened sandwich structures subjected to bearing quasi-static ice–hull interaction loads by using the finite element method. Woloszyk and Garbatov [8] reviewed recent advances in the modelling and analysis of the strength of corroded ship structures. Liu et al. [9] used the extended finite element method (XFEM) to investigate the residual ultimate strength of central-cracked stiffened plates subjected to tensile and bending loading conditions.

As a final remark, I sincerely hope that readers who are interested in marine structures will find this Special Issue useful to their studies.

Acknowledgments: I would like to thank the Special Issue editors Murat Ozdemir and Selda Oterkus for their efforts and the authors for their contributions to this Special Issue.

Conflicts of Interest: The author declares no conflict of interest.

check for updates

Citation: Oterkus, E. Strength of Ship Structures. *J. Mar. Sci. Eng.* **2023**, *11*, 1452. https://doi.org/10.3390/jmse11071452

Received: 6 July 2023
Accepted: 12 July 2023
Published: 20 July 2023

References

1. Ryumin, S.; Tryaskin, V.; Plotnikov, K. Algorithms for the Recognition of the Hull Structures' Elementary Plate Panels and the Determination of Their Parameters in a Ship CAD System. *J. Mar. Sci. Eng.* **2023**, *11*, 189. [CrossRef]
2. Silva-Campillo, A.; Pérez-Arribas, F. Effect of the Torsion Box Dimensions on Local Stress Distribution and Fatigue Strength Assessment of a Container Ship. *J. Mar. Sci. Eng.* **2022**, *10*, 1172. [CrossRef]
3. Anwar, M.U.; Lashin, M.M.A.; Khan, N.B.; Munir, A.; Jameel, M.; Muhammad, R.; Guedri, K.; Galal, A.M. Effect of Variation in the Mass Ratio on Vortex-Induced Vibration of a Circular Cylinder in Crossflow Direction at Reynold Number = 10^4: A Numerical Study Using RANS Model. *J. Mar. Sci. Eng.* **2022**, *10*, 1126. [CrossRef]
4. Cheemakurthy, H.; Barsoum, Z.; Burman, M.; Garme, K. Comparison of Lightweight Structures in Bearing Impact Loads during Ice–Hull Interaction. *J. Mar. Sci. Eng.* **2022**, *10*, 794. [CrossRef]
5. Feng, Z.; Li, J.; Ma, J.; Su, Y.; Zheng, X.; Mao, Y.; Zhao, Z. EBSD Characterization of 7075 Aluminum Alloy and Its Corrosion Behaviors in SRB Marine Environment. *J. Mar. Sci. Eng.* **2022**, *10*, 740. [CrossRef]
6. Marić, D.; Cumin, J.; Šolić, T.; Samardžić, I. Quality Analysis of AISI 321 Welds of Bellow Compensators Used in Shipbuilding. *J. Mar. Sci. Eng.* **2022**, *10*, 452. [CrossRef]
7. Cheemakurthy, H.; Barsoum, Z.; Burman, M.; Garme, K. Lightweight Structural Concepts in Bearing Quasi-Static Ice Hull Interaction Loads. *J. Mar. Sci. Eng.* **2022**, *10*, 416. [CrossRef]
8. Woloszyk, K.; Garbatov, Y. Advances in Modelling and Analysis of Strength of Corroded Ship Structures. *J. Mar. Sci. Eng.* **2022**, *10*, 807. [CrossRef]
9. Liu, G.; Chen, Z.; Zhou, J. Numerical Investigation on the Residual Ultimate Strength of Central-Cracked Stiffened Plates under Tensile and Bending Loads Using XFEM. *J. Mar. Sci. Eng.* **2023**, *11*, 302. [CrossRef]