Journal of Marine Science and Engineering

an Open Access Journal by MDPI

CiteScore: 5.0
Impact Factor: 2.8

Special Issue Reprint

Advanced Research in Flexible Risers and Pipelines

Edited by: Yong Bai and Weidong Ruan

With the surging global demand for ocean resources, slender marine structures like flexible risers and pipelines have become core equipment for subsea energy transportation, boasting advantages such as convenient laying, long-term durability, and excellent recoverability. harsh marine environments (extreme pressures, dynamic loads, and geological uncertainties) pose great challenges to their design, operation, and maintenance. To address these complications, this Special Issue Reprint showcases the latest research and technical achievements in this field, seeking to serve as a platform that fosters the exchange of knowledge. The Reprint gathers together 14 cutting-edge research papers that cover core aspects such as analyses of the mechanical behavior of flexible pipes/risers under complex loads (internal pressure, axial tension, bending, or vortex-induced vibration) and in-depth explorations of failure mechanisms (unlocking failure, buckling collapse, or fatigue damage). The studies herein adopt advanced analytical and numerical methods, mainly finite element analysis, combined with experimental validation, probabilistic models and fluid–structure interaction simulation to accurately predict key performance parameters. They also address practical engineering issues such as pipe–soil interaction, fluid impact on pipeline performance, slugging control and free span dynamic evolution. Integrating theory, numerical modeling, and engineering practice, the Reprint provides technical references and innovative ideas for both researchers and engineers, facilitating the safe, reliable, and efficient development of marine energy.

https://www.mdpi.com/books/reprint/12508