Special Issue

AI-Driven Innovations in Turbomachinery Flow Modeling and Design Optimization

Message from the Guest Editors

The integration of Computational Fluid Dynamics (CFD) with deep learning techniques has transformed the design, analysis, and optimization of turbomachinery components such as turbines, compressors, and fans. Recent advancements in deep learning are accelerating this transformation, enabling real-time flow field predictions, data-driven surrogate modeling, and intelligent optimization of complex geometries. This Special Issue explores the latest developments in CFD methodologies and their synergy with deep learning to tackle the complex challenges in turbomachinery, focusing on improving efficiency, durability, and sustainability across energy generation, aerospace propulsion, and industrial fluid systems. Key themes include the following:

- High-Fidelity Simulations.
- Design Optimization.
- Multiphysics Integration.
- Advanced Numerical Methods.
- Intelligent Mesh Parametrization and Adaptive Generation.
- Machine Learning and Data-Driven Insights.
- Sustainable Innovations.

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Message from the Editor-in-Chief

Energies is an international, open access journal in energy engineering and research. The journal publishes original papers, review articles, technical notes, and letters. Authors are encouraged to submit manuscripts which bridge the gaps between research, development and implementation. The journal provides a forum for information on research, innovation, and demonstration in the areas of energy conversion and conservation, the optimal use of energy resources, optimization of energy processes, mitigation of environmental pollutants, and sustainable energy systems.

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