Special Issue

Hydraulic System Simulation and Hydro Turbines for Pumped Storage and Hydroelectricity

Message from the Guest Editors

Hydropower plays a pivotal role in supporting the global energy transition, offering reliable and sustainable solutions for integrating renewable energy sources. As energy grids evolve to accommodate increasing levels of intermittency from wind and solar power, flexibility in hydroelectric plants and pumped hydro energy storage systems (PHESs) has become more critical than ever. Modern hydropower facilities must operate across a broader range of conditions, often requiring innovative approaches to address challenges such as hydrodynamic instability, transient events, vibrations, and deep off-design operation. **Topics of interest for this Special Issue include, but are not limited to, the following:**

- All aspects related to the design and optimization of hydraulic turbines and pump turbines;
- Transient behavior of hydraulic systems and control mechanisms;
- Hydrodynamic stability of reversible pump turbines under partial load and off-design operation;
- Vibration analysis and mitigation strategies in hydraulic turbines;
- Variable speed generation technologies and their application in hydroelectric systems;

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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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