

Special Issue

Artificial Intelligence (AI) for Energy Systems

Message from the Guest Editor

Artificial Intelligence (AI) is revolutionising green energy systems, finding optimal operation solutions, improved material and component performance, energy efficiency, and enabling smarter decision-making for the progression of different stages of research-based development. In the realm of sustainable energy solutions, AI algorithms process a vast amount of data based on both experimental and numerical methods to predict patterns and parametric relationships, optimise multiphysics efficiency, and manage resources effectively. Physics-based machine learning techniques enable the predictive optimization of processes, reducing downtime and costs. AI-assisted innovative concepts and systems also facilitate the coupling and effective assessment of integrated clean energy technologies. Additionally, human-machine interactions have the potential to develop and evaluate high-performance materials. These advancements not only safely increase reliability and resilience, but they also pave the way for a more sustainable and environmentally friendly energy future, with smaller carbon footprints and fewer wasted resources.

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Message from the Editor-in-Chief

As the world of science becomes ever more specialized, researchers may lose themselves in the deep forest of the ever increasing number of subfields being created. This open access journal *Applied Sciences* has been started to link these subfields, so researchers can cut through the forest and see the surrounding, or quite distant fields and subfields to help develop his/her own research even further with the aid of this multi-dimensional network.

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