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Solar Thermal Power Systems

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Message from the Guest Editors

Increasing the share of intermittent renewable energy resources requires cost-effective and reliable energy generation to balance the production and demand for electricity to stabilise the grid.

Integrated solar thermal power systems with storage options can be used to improve dispatchability, reduce carbon emissions, and enhance distributed electricity generation and lower the cost compared to current state-of-the art-technologies. Solar thermal systems can also be used to generate industrial process heat beyond electricity generation, such as food processing, space heating and cooling, water desalination, and water purification/treatment. Current solar thermal technology is limited in efficiency because thermal storage fluids are limited to temperatures of 500-600°C. Advancements have been made to increase the efficiency of the plant by raising the temperature of the heat transfer fluids, including gas, liquid or solid particles, and there are several pathways demonstrating promise for commercialisation, but these routes face significant technological and economic barriers.

Sustainability is publishing a Special Issue on "Solar Thermal Power Systems".

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Message from the Editor-in-Chief

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