

However, the structural transformation of energy systems faces essential challenges: the intermittent nature of clean energy sources such as wind and solar causes significant temporal and spatial ...

In addition, a black body film or bulk light-absorbing material placed at the bottom of the water container as a light-heating medium integrated in a solar-thermal energy system can increase ...

This hybrid method is of high computational efficiency and fully utilizes the advantages of both continuum topology optimization and size optimization. Frame structure optimization is a ...

Topology optimization has rapidly developed as a powerful tool of structural design in multiple disciplines. Conventional topology optimization techniques usually optimize the material ...

The density visualization as shown in Fig. 2 added another layer, shining a spotlight on popular themes such as "solar stove design" and "thermo-structural analysis"--areas where scientists seem to ...

Abstract Fast, gradient-based structural optimization has long been limited to a highly restricted subset of problems--namely, density-based compliance minimization--for which gradients can be ...

Conventional solar trees, inspite of their high-power density, are relatively unviable due to the huge shading losses (>30%) and structural cost (>50% of the total cost) associated with them. ...

The result shows that this method can optimize the structure design and contribute to determine the structure scheme effectively, which has paid an important part on successful development of the solar ...

By addressing the challenges of structural optimization in solar energy systems, this study provides a comprehensive approach that enhances sustainability, energy efficiency, and cost ...

The air-cooling system is of great significance in the battery thermal management system because of its simple structure and low cost. This study analyses the thermal performance ...

The structures of biomass gasifier are essential to the performance of gasification. This paper proposed a solar spouted bed reactor of biomass gasification, in which solar energy replaces ...

By strengthening structural strength, lightweight design and full life cycle cost optimization, energy storage systems can effectively support the large-scale application of new ...

Structural optimization design of solar container system

This paper presents life cycle analysis of the container-based single-family housing and combines energy analysis and optimization, life cycle assessment and life cycle costing. The ...



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