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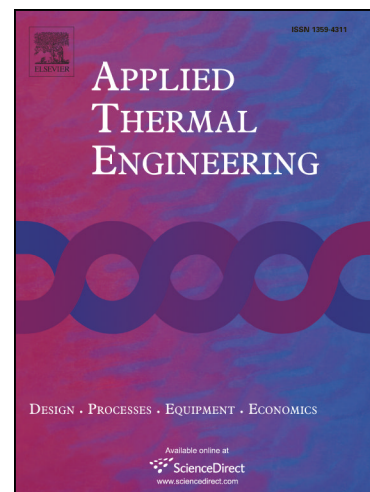
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High Temperature Solar Receiver and Thermal Storage Systems

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Abstract: For concentrating solar power (CSP) plants to become cost competitive, it is necessary to design systems with significantly higher cycle efficiencies and to innovate cost-effective storage systems and materials. Higher cycle efficiency demands higher operating temperature, which implies that the optical system for the solar receiver needs to be designed for higher concentration ratio. This paper reviews the present technologies for high temperature solar receivers associated with power dish and power tower systems. Significant research and development work required for high temperature storage systems and materials is also discussed. Recently, the supercritical carbon dioxide (s-CO₂) Brayton cycle is identified as a potential candidate to realize significantly higher thermal efficiency at high operating temperature and pressure. Recent developments and challenges involved in development of solar receivers and thermal storage systems for such applications are also presented.

Keywords: solar receiver, thermal storage, materials, systems, high temperature

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