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SOLAR POWER TECHNOLOGIES, REFRIGERATION AND COOLING SYSTEMS – REVIEW

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Abstract— Energy is the heart of the modern world. This paper provides a detailed review of solar photovoltaic and concentrated solar power technologies. The status of solar photovoltaic technology being commercially developed, subsidized and mature technology is suited for both residential and commercial applications. On the other side, concentrated solar power technology despite having higher capital cost yield higher economic returns hence suited for commercial applications.

This paper also provides a review of different solar refrigeration technology and cooling methods. Different cooling systems using various working fluids assisted by solar energy are reviewed. Solar powered refrigeration technologies are classified into four categories: Solar photovoltaic cooling systems, solar thermo-electrical cooling, solar thermo-mechanical cooling and solar thermal cooling techniques which includes sorption, absorption and adsorption systems. In this article we have tried to produce a review based on solar energy collection and coefficient of performance of different refrigeration systems.

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Keywords— Renewable energy, PV system, Concentrated solar power (CSP), Absorption, Adsorption