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**ANNOUNCEMENT & CALL FOR PAPERS**

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## To Improve Performance of Photovoltaic Module Using various Cooling Method: A Review

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### Abstract

In recent year the thermal energy conservation has become most important issue for humanity. The photovoltaic module are used for alteration of solar energy to electric energy and remaining thermal energy raise in temperature of photovoltaic cell it causes decrease in photovoltaic panel electrical efficiency. In this paper various cooling method to improve performance evaluation and photovoltaic panel efficiency with PCM cooling method are described. To keep solar cell temperature nearer to room temperature and to attain higher electrical energy efficiency by different cooling methods like air cooling, water cooling, photovoltaic panel with micro channel, mixture of water and nano particles with different concentration with different flow rate, PCM slurry circulation, mixture of PCM and Nano particles with variation in percentage of concentration and variation in their flow rate. Out of various cooling method the compressive overview of literature and quantitatively evaluated PCM cooling method is more effective and to enhance electrical efficiency of photovoltaic module. The PCM as energy storage materials are used to absorb the heat energy from photovoltaic module during charging process and keep it close to ambient temperature and same heat utilized for other applications. Mixture of PCM and nano particles with variation in their concentration the results shown increase in thermal conductivity of PCM materials because the PCM suffering problem with their properties like thermal conductivity, latent heat and specific heat etc.

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**Keywords:** PCM; photovoltaic module; thermal energy storage.

### 1. Introduction

The rapid change in worldwide economic growth has speedily rising day by day energy requirement. The fossil fuel energy has limited stock, and their enlarged practice is unfavorably disturbing environmental science due to the emanation of unhelpful gasses, which are accountable for weather changes and environmental greenhouse gasses. Now days, The thermal energy storage systems, It became one of the most indispensable source on fossil fuel and causative to a more competent environmental gracious energy that is unwanted heat from solar energy. To accumulate and release energy inactively, the sensible heat energy occupies more space as compare to latent heat energy storage. The scholar investigates new energy sources. The innovative energy storage strategy developed rising source of energy. To store energy in appropriate form that can conservatively be transformed into the today confront for the new technologists.

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