METHODS AND SYSTEM FOR TRACKING GLOBAL MAXIMUM POWER POINT(MPP) IN A SOLAR PANEL ARRAY

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The invention relates to tracking a global maximum power point in a solar panel array using module voltage information. It does not involve any complex optimization algorithms.

BACKGROUND

Solar panels convert solar energy into electrical energy which is distributed through grid. Traditionally, maximum power point tracking (MPPT) algorithm is used for tracking maximum power point in a solar panel array. However, they do not consider partial shading condition as non-uniform irradiation leads to multiple power peaks causing difficulty in MPPT. Though a few conventional systems address this issue, they are highly computationally intensive. Few systems require customized converters or array configurations, which cannot be used with existing solar systems.

TECHNOLOGY

The global maximum power point method does not involve any complex optimization algorithms. It is independent of specific photovoltaic (PV) array configuration or power electronic converter and therefore, can be retro-fitted with existing PV systems to maximize their efficiency. The method involves sensing of voltages of modules in an array. Two algorithms have been proposed for long and short PV strings, optimizing the time and resources to track the global maxima under all shading conditions.

COMMERCIALIZATION

IISc has filed a patent application for this invention for grant of patent in India.