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The experiment of double solar energy by reflection light method

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Abstract

This paper we propose a novel conception design that can be used to generate double power the new optical solar energy using refection solar light propagating within photo voltage PV system. By the four mirror refection upon the solar cell occurs the solar energy have double energy for 10 W to 20 W. The temperature effect relation the power solar energy in this paper have clear concept the heat by water sink and winding flow for under solar cell in discussion section.

Keywords: Solar power; double solar power; PV and Solar energy

1. Introduction

Solar cells are often electrically connected and encapsulated as a module. Photovoltaic modules often have a sheet of glass on the front (sun up) side, allowing light to pass while protecting the semiconductor wafers from abrasion and impact due to wind-driven debris, rain, hail, etc. Solar cells are also usually connected in series in modules, creating an additive voltage. Connecting cells in parallel will yield a higher current; however, very sigificant problems exist with parallel connections. For example, shadow effects can shut down the weaker (less illuminated) parallel string (a number of series connected cells) causing substantial power loss and even damaging excessive reverse bias applied to the shadowed cells by their illuminated partners. As far as possible, strings of series cells should be handled independently and

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not connected in parallel, save using special paralleling circuits. Although modules can be interconnected in series and/or parallel to create an array with the desired peak DC voltage and loading current capacity, using independent MPPTs (maximum power point trackers) provides a better solution. In the absence of paralleling circuits, shunt diodes can be used to reduce the power loss due to shadowing in arrays with series/parallel connected cells. The optimization of the energy in a solar cell works as follows.Double layer SiNx:H films for passivation and anti-reflection coating of c-Si solar cells [1], Effects of metal electrode reflection and layer thicknesses on the performance of inverted organic solar cell [2], Low temperature deposited boron nitride thin films for a robust anti-reflection coating of solar cells [3], The effects of a double layer anti-reflection coating for a buried contact solar cell application [4], Double exposure flat-plate collector and Determination of the optimum orientation for the double exposure flat-plate collector and its reflectors [5-7], Energy management in solar thermal power plants with double thermal storage system and subdivided solar field and Energy sufficiency potential for combination system of solar energy and electricity system in north-East of Thailand [8-9]. The application for double energy instance as the enhancement of energy gain of solar collectors and photovoltaic panels by the reflection of solar beams [10], experimental investigation of high temperature congregating energy solar stove with sun light funnel [11], concentration ratios for flat-plate solar collectors with adjustable flat mirrors [12] and theoretical and experimental assessment of a double exposure solar cooker [13].

In this paper, we present theory and background, Math-model of solar cell, the Laws of reflection and summary of results from experiments and used as an alternative fuel technology a little more simple and uncomplicated.

2. Theory and Background

The characteristic of solar cell can be description by curve has shown be relation current and voltage of solar cell (IV-Curve) which the solar cell curve can be show 3 types the cell side, module side and array side use to this curve show in Fig. 1. [9]

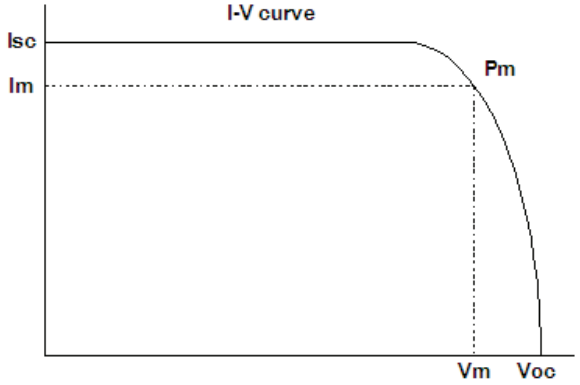

Fig. 1. Shown characteristic of relation current and voltage of solar cell

- Maximum current value (I_m) is the maximum current of solar cell with load.
- Maximum voltage value (V_m) is the maximum voltage of solar cell with load.
- Short-circuit Current value (*Isc*) is the current of solar cell short circuit
- Open-circuit Voltage value (*Voc*) is the voltage of solar cell short circuit without load.
- Maximum power value (P_m) is the maximum power output of solar cell without load.
- Fill Factor value (*F.F*) is ratio of the maximum power to the Current short circuit value multiple the voltage of solar cell short circuit with show that equation (1).