Vol 10, Number 2, 2015
European Journal of Technic
EJT

The Efficiency of South-North Directional Three Positions Sun Tracking System

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Received: 28 August 2015; Accepted: 25 November 2015

Abstract

With the gradual depletion of fossil fuels in our planet, the application of solar energy becomes very popular currently in the world, solar energy can be directly utilized through variety of devices such as solar collectors or photovoltaic cells. However, the use of PV system is limited due to higher cost. In a PV system, the PV cell material contributes about 50% of the total cost, One of effective measures to lower the cost of electricity generated by a PV system is to reduce the use of solar cells for given power demand, and this can be achieved by solar concentrators. Recent years, low concentrator optics such as compound parabolic concentrators (CPCs) and V-trough concentrators is getting more attention due to no need of continuous sun-tracking device, and is widely tested to concentrate radiation on commercially available solar cells, Experimental studies performed by it was showed that the use of an asymmetric CPC with geometric concentration factor of 2.01 increased the maximum power point of photovoltaic modules by 62% as compared to similar flat plate modules.

Keywords: sun tracking system; parabolic concentrators; solar collectors; solar energy