عنوان مقاله:

Using of Thermoelectric Devices In Photovoltaic Cells In Order To Increase Efficiency

محل انتشار:

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خلاصه مقاله:

Outdoor performance of photovoltaic (PV) modules suffers from elevated temperatures. Conversionefficiency losses of up to about %25 can result, depending on the type of integration of the modules in theroof. Cooling of modules would therefore enhance global PV l waste by attaching thermoelectric (TE)converters to the back of PV modules, to form a PV–TE hybrid module. A new approach to thermoelectricpower generation using large area pn-junctions is presented.A modified Genetic Algorithm (GA) have beenused to obtain the optimum dimensions for a large area pn-junction thermoeperformance. Instead of modulecooling we propose to use the thermalectric power generator device. Optimization routine allows forobtaining maximum output thermoelectric power.The use of thermoelectric devices .based on siliconmaterial results in increasing efficiency of PV cell from %6.8 up to %10.92% at 83˚C

کلمات کلیدی:

Thermoelectric conversion , Efficiency , Solar cells , large area pn-junction , temperatureincreasing , Genetic Algorithm