

ABSTRAK

Solar energy is a renewable energy that can be converted into electrical energy using solar panels or photovoltaic (PV). However, PV has the disadvantage of decreasing efficiency when the surface temperature increases. To overcome this, the wasted heat on the back of the PV can be converted back into electricity using a Thermoelectric Generator (TEG).

The purpose of this study is to increase the voltage, current and power generated by the system. In this study, a system was designed that integrates 6 TEG type TEC1-1706 measuring 4x4 cm in a 20 Wp monocrystalline PV. The hot side TEG is installed on the back of the PV to read the temperature of the heat generated during PV work and the cold side of the TEG is given a heatsink to maintain the cold side of the TEG, from the temperature difference between the temperature of the hot side and the temperature of the cold side, the delta T value can be obtained, the value of the temperature difference which will be converted into electrical energy.

From the results of the research that has been done, it can be concluded that TEG can be integrated into a fixed photovoltaic system, to take advantage of the wasted heat energy in PV. With an increase in the voltage value of 52.8%, the current increase value is 58.88% and the power increase value is 37.70%.

Keywords: Photovoltaic, Thermoelectric Generator, Waste Heat.

