

ABSTRACT

Solar energy has enormous potential to be an alternative energy in the future because solar energy can be converted into electrical energy without causing pollution. In this research will be used photovoltaic (PV) which serves to convert sunlight into electrical energy the use of PV has a disadvantage ie if the light received by PV is small then the output produced by PV will be low. To overcome this, a concentrator will be used that works to focus sunlight towards PV so that the light received by PV is greater and the voltage produced by PV will increase. Another disadvantage is that when PV experiences a rise in temperature then PV will experience a decrease in power efficiency. To overcome this, a thermoelectric generator (TEG) module will be used that can utilize the heat energy wasted from PV so that TEG can increase PV efficiency.

In this study we will use a parabolic concentrator that is placed facing the PV and has a slope angle of 70° facing east while the PV faces west with the same slope angle as the concentrator. The use of TEG with type TEC1-12706 as many as 8 pieces will be placed on the back of the PV which is arranged in series and uses heatsink as coolant for TEG

The results of 3 days of testing showed that the voltage, current and power generated by the PV-TEG hybrid system with a parabolic concentrator of 7.62V, 241.38mA, 2.9 Watts while without the hybrid system of 6V, 187.6 mA 1, 43 Watts of use of this hybrid system can increase the power generated by PV by 55%.

Keyword : *Photovoltaic, Thermoelektrik Generator, parabolic concentrator, system hybrid*