

## **ABSTRACT**

The current increase in electricity demand has resulted in an energy crisis. Based on these problems, solar energy included in renewable energy is chosen as an alternative energy to produce electricity. The purpose of this study was to determine the effect of cooling effectiveness on solar cell devices, cooling by wind was not taken into account. The parameters measured in this study are temperature, current and output voltage.

The tool used here is a solar cell, because solar cells can convert direct solar radiation into electrical energy (photovoltaic process) and also thermoelectric system as a cooling for solar cells. In this study also used a system without cooling to be compared with the use of coolant in order to know how much the effectiveness of cooling on solar cell devices and also its efficiency.

From this research found that solar panels with Thermoelectric cooler more efficient than solar panel without cooling. In solar panels with coolant obtained percentage increase in efficiency of 18.53%, percentage increase in output power of 18.59%, percentage of cooling temperature of 19.53% when compared with solar panels without cooling.

**Keywords:** solar cell, photovoltaic, renewable energy, thermoelectric