

**MONOCRYSTALLINE SOLAR PANEL COOLING SYSTEM WITH USING  
WATER CONDENSATE EVAPORATOR COOLING MACHINE**  
Dedy Eko Rahmanto S.T.P., M.Si. (Pembimbing Skripsi)

**Reynaldi**

*Study Program of Renewable Energy Engineering*

*Majoring of Engineering*

**ABSTRACT**

Indonesia is located in the equatorial region, so it has great solar energy potential. One of the uses of solar energy is to generate electricity using solar panels (photovoltaic). The efficiency of solar panels is optimal when the temperature is 25°C, if the temperature of the solar panels exceeds 25°C it will reduce their efficiency. This study aims to create a solar panel cooling system using condensate water from a cooling machine, in order to maintain the performance of the solar panels. This study used 2 solar panels with 50Wp each. The first solar panel uses a cooler and the second solar panel without a cooling system. The solar panels were flowed with condensate water from a cooling machine for 7 hours. The data recorded were voltage, current and temperature to determine the performance of the cooling system. Based on the results of observations, it can be seen that the solar panel cooling system using condensate water is able to reduce the temperature of the solar panels which should be 55.0°C without a cooler to 45.3°C using a cooler. The highest electrical voltage produced on the second day of testing, namely the solar panel using a cooler of 16.56 V and a current of 2.672 A, while the solar panel without a cooler had the highest voltage value of 12.984 V and a current of 2.087 A. The highest efficiency of the solar panel using a cooler on the second day was 19.74% and the solar panel without a cooler was 15.85%. The efficiency of the solar panel using a cooler was 3.89% higher.

**Keywords:** *Condensate water, Efficiency Solar panels, Cooling, voltage.*