

ABSTRACT

Today, there are many people who use renewable energy. In addition to being environmentally friendly, this energy has no side effects on the environment itself. One of the energy that is being developed massively is solar cells. In addition to its easy application, currently there are many solar cell available on the market. However, there are many but there are many factors that affect the performance of solar cells themselves, including internal and external factor.

In this study, the author will analyze how the influence of external factors such as changes in the angle of incidence of light, changes in temperature, and changes in light intensity. Later the test uses polycrystalline solar cells and is carried out on an acrylic box which is given a light source in the form of a 15Watt LED lamp.

From the observation and analysis of the above factors, the results obtained that the maximum output obtained at a temperature of 24.19oC with a fixed angle and distance is 4.817V and 0.006922029W, and at temperatures of 40.38 oC at 4.23V and 0.001427A. The decrease in voltage and power values is 0.14774V / oC and 0.0002W / °C. At a distance of 5cm with angles and temperatures made fixed that is 5.99V and 0.017997W, and at a distance of 150cm is 0.685V and 0.00024A. The decrease in voltage and power is 0.0315V / cm and 0.000024W / cm. The average efficiency produced by solar cells ranges from 9.33%. At an angle of 90° (perpendicular) the temperature and distance are fixed at 4.597V and 0.005824399W and at 0° angles are 2.738V and 0.000234A. Voltage drop and power are 0.093V / degree and 0.000099W / degree. And for testing the angle of arrival of the sun, for an angle of 90° (perpendicular) with temperature and distance fixed is 6.48V and 0.0481A. The 0° angle is 5.85V and 0.0133A. There is a decrease in voltage and power of 0.14V / degree and 0.0044W / degree

Keywords: *solar cell, polycrystalline, temperature, irradiance, angle of light*