

ABSTRACT

In this research, monitoring of the influence of solar radiation received by solar cells has been carried out to charge the lead acid battery. By using the Arduino Mega microcontroller, it can be seen the amount of energy produced by solar cells and the value of solar radiation. There are 2 data storage methods, namely using an SD card and an IoT platform. In the measurement process for 5 days, the efficiency values of the 20Wp and 10Wp Polycrystalline Silicon solar cells were obtained with a value of respectively 7.298% and 8.843%. The effect of the value of solar radiation received by solar cells also affects the length of time to charge the battery. When the sky is clear, the average daily energy produced by the 20Wp and 10Wp solar cells is 112.245 VAh and 67.85 VAh, respectively, and is able to charge 86.4 VA lead acid batteries for 9¼ hours and 12½ hours respectively. However, in cloudy skies, solar cells only produce daily energy of 47.62 VAh and 32.33 VAh, and charge 86.4 VA lead acid batteries for longer, namely 19 hours or ± 1 day 7 hours and 20½ hours or ± 1 days 8½ hours.

Keywords: Microcontroller, Lead Acid battery, IoT.