ABSTRACT

The electrical power produced by solar panels is affected by the intensity of sunlight radiation and ambient temperature. In order for solar panels to produce maximum power, it is necessary to adjust the position of the solar panels to the sun to increase the intensity of solar radiation. The purpose of this study is to control the position of the solar panel to the position of the sun by using the active tracking system type dual-axis (two shafts that move the position of the solar panel) to produce more maximum electrical power.

The Backgroumd substraction method is used to detect sun objects with a webcam. The RGB image captured by the webcam is then converted to grayscale and converted to binary image so that object detection is more accurate. Then the center coordinate of the object is sent to the actuator

Based on the results of the trial for 7 days, when the conditions are bright and the position of the solar panel is exactly 90o facing the sun, the solar panel can capture solar energy optimally. In testing the system, the maximum value that can be produced from solar panels is 21.04 volts at 08.00 WIB and 240 threshold settings.

Keywords *: raspberry pi, background substraction, solar tracking, dual axis, grayscale, threshold*