ABSTRACT

Utilization of solar energy in the generation of electrical energy has been done by using solar cell panels, but the installed solar cell panels are still static, so with this condition, the solar panels cannot capture the maximum amount of sunlight throughout the day which can result in the electricity produced not maximum. To overcome the limitations of the static solar cell panels, this final project design solar cell panels that can follow the movement of the sun using the calculation of the declination angle, the angle of the sun clock by changing the position of the solar panel following the solar movement according to the calculation of the parameters during testing so that the panel the sun can follow the direction of movement of the sun.

From the results of tests that have been carried out, it can be concluded that the sensor value has an accuracy rate at a pitch angle of 97.18% and an accuracy value at a roll angle of 96.4%. When the addition of a PID controller the system response when it reaches the set point becomes faster, the time needed to reach a stable state is also faster and can reduce oscillation in the system response. The results of this test compare the output produced by the solar panel fixed system and the solar panel dual-axis system. The output power of dual-axis solar panels has an increase of 20.2% compared to solar panel fixed systems (axis position 0 °). This is because the dual-axis system moves the panel so that it is perpendicular to the sun which results in maximum power output.

Keyword : Solar Tracker, Azimuth Angle, Altitude Angle.