

ABSTRACT

Electricity is an energy source that is needed both in the world of industry and households. With the increasing need for electric energy in the world, especially in Indonesia, then we need to find alternative energy sources that can support the needs of human power. Alternative energy and economic value should not have a negative impact on the environment. One possible alternative energy can help to supply the energy needs of the human energy from the sun. The utilization of solar energy using solar panels that can transform solar energy into electric energy called a solar cell.

To get maximum energy, we need a control system that can control the movement of the solar panel to keep it perpendicular to the sun. In this thesis the author makes the solar cell design controllers using Field-Programmable Gate Array (FPGA) to get the maximum energy.

The working principle of this is the current solar tracker sensors exposed to sunlight so that the control system has been programmed on Field-Programmable Gate Array (FPGA) will work to move the solar panel in accordance with the movement of the sun. In making solar tracker uses four solar cell as a feedback control sensor to Field-Programmable Gate Array (FPGA) and then drive a DC motor.

The results of this research indicate that the solar panels produce more energy using Solar Tracker. This is evidenced by the results of the data shown in the test results section 4.6.3 which states that the energy generated 2,062% greater.

Keywords: Solar Tracker, Solar Cell, Field-Programmable Gate Array (FPGA), DC Motor Driver