

## **ABSTRACT**

*Limited conventional power sources encourage a variety of alternative power sources that are efficient and environmentally friendly. The variety of generating sources creates innovations to create a “hybrid system” from several generating sources. The combination of two or more generators is intended to maximize the electrical energy obtained from the generating source. Generating sources that have different properties and values require a module to optimize several input sources into one required output.*

*In this final project, the design and manufacture of a multiple input single output (MISO) boost converter is carried out for a renewable energy system. Boost converter aims to get a higher voltage level from the input source of several power sources, such as solar panels, wind turbines, etc. In the process of converting renewable energy sources, a system that can maximize the output power of the source is needed, namely MPPT (Maximum Power Point Tracking). The MPPT system design on the boost converter used P&O (Perturb and Observe) control. In P&O control, it is intended to track power at the MPP point in order to maximize input from generating sources that have intermittent properties*

*In the test, the MISO boost converter was able to increase the voltage value to the battery voltage with an accuracy of 98.89% from the solar panel source. Hybrid system testing is done by using two solar panels as a substitute for a wind turbine that is not optimal in producing electrical energy. In testing the boost converter circuit using P&O, the system can maintain when the source is at the MPP point in generating electrical energy. The boost converter circuit has an efficiency of 98.86%. The test was carried out at the FTE Building (Faculty of Electrical Engineering) Telkom University by utilizing existing solar panels and wind turbines.*

**Keyword:** *Boost Converter, MISO, MPPT, P&O.*