ABSTRACT

Changes in the electrical load in the interconnection system can cause the voltages between the sources to oscillate, so that each voltage becomes out of sync. Furthermore, the result is power losses in the system. Therefore, in an interconnection system between power sources, voltage synchronization between sources is required. In addition to maintaining system stability, it is necessary to monitor and control voltage synchronization in the interconnection system between PV sources and existing sources (PLN).

For photovoltaic systems, the generated power can be used to operate various types of loads. Utilization of electrical energy through a photovoltaic (PV) system using a PV panel array capable of converting solar energy into electrical energy. Such systems are inexpensive and more reliable than other generating systems. PV Systems are suitable for applications such as battery charging, lighting and water pumping in remote areas. Solar energy charges the battery (DC supply) which in turn is connected to a DC-AC inverter which finally operates AC load. The function of the inverter is to convert the voltage and current waveforms from the battery bank or from PV to a pure sinusoidal voltage that follows the amplitude, frequency and voltage of the grid voltage.

In this Final Project research, it has been able to create a prototype of a PV inverter - Grid voltage synchronization monitoring system for changes in load which can result in PV voltage oscillation with the Grid (PLN) so that it becomes out of sync. With the condition of the prototype that has been made, the results show that the monitoring of the voltage frequency between the grid and the PV is synchronous.

Keywords**:** *Monitoring, PV, Grid, Voltage.*