

## **ABSTRACT**

Interconnection between power sources requires tegangan synchronization between sources. Changes in load can cause the tegangans between sources to oscillate so that each tegangan becomes out of sync, resulting in power losses in the system. Therefore, in order to maintain system stability, it is necessary to monitor and control tegangan synchronization in the interconnection system between PV sources and existing sources (PLN).

The power generated through the photovoltaic system is used to operate various types of loads. Solar energy is harnessed through photovoltaic (PV) systems, which use an array of PV panels to convert solar energy into electrical energy. 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 inverter functions to convert energy in the battery bank from the form of voltage and direct current (DC) to pure sinusoidal alternating current (AC) voltage and follows the form of the grid voltage in amplitude, frequency and tegangan.

In this research work, a prototype of PV inverter tegangan synchronization controller with PLN grid has been made to synchronize the tegangan between PV Inveter and PLN which oscillates due to load changes. With the condition of the prototype that has been made, the results show that the voltage frequency control between the grid and the PV is synchronous.

**Keywords:** Synchronization, PV, Grid.