

ABSTRACT

In the Ministerial Regulation of the Ministry of Energy and Mineral Resources number 49/2018 article 6 paragraph 1 which reads "The electricity for the customers of PLTS Roof for export is calculated based on the export-import kWh value stated on the export-import kWh meter multiplied by 65% (sixty five percent). This means that PLTS electricity sold to PLN is valued at 65% of the prevailing electricity fare. The voltage generated by PLN is alternating voltage (AC) while the solar panel produces direct voltage (DC), so a tool is needed to convert DC voltage into AC voltage, namely an inverter.

When combining two different sources the inverter and the PLN network, it requires a control system, namely a grid connected. The preparation of this final project is carried out to synchronize the singlephase power source (inverter) with other single phase electricity sources (PLN). The main system of this design is an inverter, where the inverter will convert DC voltage into AC voltage. The synchronization process requires the same frequency and phase to be adjusted between the two sources. The author performs the Zero Crossing technique which is a technique for determining the zero point of a single-phase power source, namely PLN. This zeropoint will trigger the microcontroller PWM and the formation of SPWM for inverter switching.

In this final project, testing the efficiency of the inverter when conditions are on grid by taking data at the same point in bear times. The results of this test obtained an average inverter efficiency of 96.24% and the power transfer test can only send power at an angle difference of less than 10.8 with a maximum power of 25.7Watts provided that the inverter is leading to PLN and the amplitude of the PLN and the inverter must be the same.

Keywords: Inverter, on grid, PLN, efficiency, zero crossing