

ABSTRACT

One solution to overcome the problem of limited electrical energy is the use of new and renewable energy as an alternative to the community's electrical energy needs with a solar power generation system (PLTS). Among the components that support the implementation of PLTS are inverters, namely inverters that can accommodate the house's electrical load, because there are many systems with inappropriate inverters that can affect the electrical devices connected to the system. Factors that can damage home electrical devices include the signal wave generated by the inverter and inappropriate frequency.

In this study, a system with an off grid inverter was created for a sun power energy kit as an alternative energy in the event of a natural disaster or a PLN power outage. The off grid inverter is very suitable for the application of a network that is not connected to the PLN network, because it can work without having to be connected to the PLN electricity network. The system that will be designed for this sun power energy kit is an inverter system consisting of a DC-DC converter and a DC-AC converter with the SPWM method. 12 volt DC input voltage on the off grid inverter, incorporated in a portable, modular form. This off grid inverter converts DC voltage to AC with adjustable frequency via PWM. The 12 volt DC source voltage is converted by a DC-DC converter into a high voltage of 300 volts DC, then the 300 volt DC voltage is converted by a DC-AC converter into a voltage of 220-230 volts AC the average efficiency of the inverter reaches 80.18%. It is expected that the application of the off grid inverter in the sun power energy kit system can accommodate an AC electrical load of 200 watts with an output voltage of 220-230 volts AC.

Keywords: Off-grid Inverter, DC-DC converter, DC-AC converter, Modular, Full Bridge