This paper focuses on the design and implementation of 1.5kVA 12V DC, 230V AC Solar-powered mobile inverter. The basic principle of operation is the conversion of 12V DC from a 200Ah Deep cycle battery using integrated circuits SG3524 and semiconductors at a frequency of 50Hz, into a 230V AC across the windings of a transformer. The battery was charged using solar panels via a charge controller. It incorporated a monitoring and supervisory circuit of microcontroller based (ATMEGA16) that employs a Liquid crystal display (LCD) and light emitting diodes to communicate the state of the inverter to the user. The results show that as soon as the load goes above1500VA and the battery voltage goes below the preset threshold 12V DC the overload protecting circuitry attached to the system automatically shut down the system to prevent the inverter from being overloaded, a smaller transformer was used to energize and control the operation of the relays, which switched from the inverting mode to charging mode with battery monitor cut-off voltage 13.6V with its surge protection voltage above 250V. The system was successfully installed, tested and confirmed to deliver the required output. It also offers a better alternative to Public Power Supply from the utility companies such as the (Power Holding Company of Nigeria PHCN) as the case may be, generators as well as UPS considering its cost-effectiveness, noiselessness and ease of maintenance.

KEYWORDS

Power Inverter, Renewable Energy, Solar energy, DC to AC power