**Abstract**

The aim of this project is to design and implement a single phase inverter which can convert DC voltage to AC voltage at high efficiency and low cost. Solar and wind powered electricity generation are being favored nowadays as the world increasingly focuses on environmental concerns. Power inverters, which convert solar-cell DC into domestic-use AC, are one of the key technologies for delivering efficient AC power. A low voltage DC source is inverted into a high voltage AC source in a two-step process. First the DC voltage is stepped up using a boost converter to a much higher voltage. This high voltage DC source is then transformed into an AC signal using pulse width modulation. Another method involves first transforming the DC source to AC at low voltage levels and then stepping up the AC signal using a transformer. A transformer however is less efficient and adds to the overall size and cost of a system. Therefor the former method is the one used to implement this project.

To deliver such performance, the power inverters is driven by high-performance PIC 16F877A microcontroller units (MCUs) that can achieve high-level inverter control, and therefor this microcontroller is the heart of the system and controls entire system. The microcontroller is programmed using embedded c compiler and in specific mikroC pro to generate sine pulse width modulated (SPWM) pulses which are used to drive H-bridge. By alternate switching switches of two legs of H-bridge alternating 340V DC voltage is converted into 240V Ac voltage.

The design is essentially focused upon low power electronic appliances such as personal computers, chargers, television sets. To build the design it is first mathematically modeled then is simulated in Proteus and finally the results are practically verified.

Keywords: Inverter, Microcontroller, SPWM, H-bridge.

**Block Diagram**

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