ABSTRACT

Electrical energy is the most wanted energy in today's modern era. Good in terms of operating electronic appliances, lighting, mobile phone power, etc. Electricity is most easily obtained from PLN through cable installation to homes with 220 AC Voltage. But not always able to get a source of electricity from the PLN, for example when in a remote place that does not have power lines from PLN and there is only a source of electricity from the 12-Volt battery. One solution to obtain 220 Volt AC power from a 12-Volt battery source is to use a 12 Volt DC to 220 Volt AC or so-called inverter.

The existing inverters generally use transformer components as Voltage converters that have weaknesses in the low efficiency and form of non-sinusoidal output signals. Therefore designed an inverter switching 12 Volts DC to 220 Volt AC single phase without using a transformer. Instead it will use the HBC (Hybrid Boosting Converter) method to raise DC to DC Voltage. As well as a single-phase inverter DC to AC using H-Bridge topology with PWM signal as a regulator, in order to form output Voltage approaching pure sine wave.

The results obtained from the use of the above system, this inverter can work on the input Voltage range 12-14 Volts to produce an AC Voltage of 215-224 Volts with an incandescent lamp loading up to 15 watts. THD is measured on average by 18% with an average power efficiency of 49%.

Keywords: *Inverter, HBC (Hybrid Boosting Converter), H-Bridge, AC, DC.*