

ABSTRACT

Nowadays the world of electronics has rapidly developed. A lot of devices that convert electrical energy into others have been invented recently. Electric heater is one of the most popular device among those inventions. This kind of heater is highly recommended to use because it can replace the nonrenewable resources that commonly used for this device such as LPG & kerosene. There are some methods to make electric heater, induction method is one of those methods that this final project use. Induction heating is a non-contact heating process. It uses high frequency electricity to heat materials that are electrically conductive.

In this final project a single phase alternating current (AC) 220 Volt 50 Hz will be the source for the induction heater. In order to generate a high frequency AC the source must be rectified first using a bridge type full wave rectifier to get a DC signal. After that a half bridge inverter is used to generate an AC signal with 4047 IC to control its frequency. A high frequency AC that comes from the inverter then passed an induction coil/solenoid that will induce any magnetic objects which will be heated.

From the test & analysis that has been done, the outcome shows that the induction heater could heat 0.6 Kg water with 160 Watt input power & 133 Watt output power up to 100°C in 28 minutes at 19 KHz frequency. The maximum power generated from this heater happens when the circuit is at its resonant frequency & will be lower as the frequency changed. The heater efficiency at 19 KHz is about 80% while the overall efficiency is 67%.

Keywords : Induction heater, high frequency, Induction coil