ABSTRACT

Electric car is one of alternative transportation that used the battery as its energy. Different with conventional car that used BBM as its energy. The expand of electric car is an important thing to do to save the using of BBM that has a really small availability. With the expand of electric car also can reduce air polution that caused by conventional car. But, one of the problem of electric car is the saved-energy in the battery are limited and to fillin it, it takes a huge time, so that the charging energy must be controlled smartly to shortened times to fillin it despite of the long-last battery.

In this final task planned a charging system in electric car battery which consist of 4 bateries of 12 Volt are arranged in parallel when charging and when the use of electric cars (discharging) the battery in series to 48 Volt. The work system of the charger is a strain from PLN that will be made it one-way and then reduce it and make it stable using buck converter. The battery that we used are sealed lead acid battery with 12 V/10 Ah capacity. Buck converter topology that used to fillin process is synchronous buck. The main component that used in the DC chopper synchronous buck are MOSFET IRFP260, MOSFET IR2103 driver, 3.9 mH inductor, 4600 uF/100 V capacitor, and ATMega8535 microcontroller.

The value of this test and analysis from the DC chopper stake out, we can get the highest efficiency power about 96.30% with the resitif load about 47 ohm and the maximum strain drop from the output side about 1.37 Vdc. From this research value we have conclusion that DC chopper chain work well to help ration the power to battery. For the method of charging, charging without control takes over 400 minutes, while charging with control takes over 190 minutes.

Keyword : Battery, Charger, Electric car, Sealed Lead Acid, Synchronous Buck Converter.