

ABSTRACT

Batteries very important role in the existing electrical system on the motorcycle as the ignition system, magneto ignition to turn, to turn on the lights, horn, etc.. That requires a battery charging system that serves to offset expenditures battery and battery that can be used repeatedly. Problems arising from the battery charging system is the battery charging system is not going well because regulators still exist in the system is linear, so it is not resistant to voltage fluctuations generated by the dynamo or alternator. This will certainly result in the incoming voltage on the battery is not appropriate and leads to rapid deterioration of the battery.

In this thesis, will be designed Buck Converter using synchronous buck topology. Buck Converter is a conversion tool level DC voltage (DC to DC Converter) with the method of switching regulators. Working system of this thesis is 3 phase voltage from the alternator will be rectified and then stabilized using a buck converter at 14 Volts. Battery used in this thesis is a battery of 12 V / 5 Ah. The main components used in the design of a buck converter is IRFP260 MOSFET, MOSFET driver IR2103, 3.9 mH inductor, capacitor $\mu\text{F}/50\text{V}$ 2200, and microcontroller ATmega8535

The results of the testing and analysis of DC to DC Converter design obtained the highest power efficiency of 92.59% with a resistive load of 50 ohms 40 watts. large charging current average of 1.53 A performed for 300 minutes with a final charging current 0.210 A. From these results we can conclude the DC to DC Converter circuit can work well for charging to the battery.

Keywords : Alternator, Dc to dc converter, Synchronous buck, Microcontroller, Battery