

ABSTRACT

The increasing number of vehicles causing increased fuel consumption. Therefore, it takes a vehicle that is environmentally friendly electric cars. The electric car uses an electric motor as the driving with a battery as an energy source. To improve the efficiency of energy use, we need a system that can restore the energy wasted during braking to charge the battery called regenerative braking. Regenerative braking system is a braking system that converts mechanical energy into the energy system in the form of electricity that can be stored in batteries and can be used again later.

In this final project will be made a regenerative braking system utilizing an electric car with the rest of the BLDC motor rotation when the accelerator pedal is released. Because the BLDC motor is an AC motor, three-phase rectifier is used to rectify the AC into DC voltage. The output of the three-phase rectifier circuit becomes the input to the buck converter. The output of the buck converter will be used for charging the battery. The input voltage buck converter and the battery voltage will be processed using fuzzy logic using a microcontroller. The output of the fuzzy logic duty cycle will be used to set the switching MOSFET in the buck converter circuit.

From the results obtained , the greater the duty cycle , the greater the output power of the buck converter . The time difference with the braking duty cycle of 0 % (minimum) and a duty cycle of 100 % (maximum) is 3.22 seconds. So that more optimal battery charging

Keywords: *regenerative braking, buck converter, BLDC motor*