

ABSTRACT

The development of electric cars in Indonesia at this time taking place very rapidly. The electric car uses an electric motor as the driving with a battery as an energy source. The main constraints arising from the use of the battery is recharging requires a long time, it takes hours to charge a fully charged electric power. The method developed is now overcome these obstacles by utilizing the braking energy regeneration electric current. Known in the automotive world with their electric regenerative braking system converts mechanical energy into electrical energy through the process of channeling energy from the electric motor to the battery during braking.

In this final project designed a brushless DC motor driver with a regenerative braking system on the electric car. Brushless DC motor driver with a six-step method using bidirectional inverter circuit 3 phase. Motor driver receives a reference control of switching components controlled by the microcontroller. Regenerative braking is done by exploiting the rest of the brushless DC motor rotation when the throttle is released. Regenerative currents will flow from the motor to the battery via a freewheeling diode.

The results obtained from this final project is the system able to drive the brushless DC motor at about 160 RPM. Bidirectional inverter capable of converting direct current (DC) into alternating current (AC) with a voltage of about 24,4V - 24,8V when no load or with the load and the current 0,3A - 0,4A conditioned with weights. On average the regenerative braking capable of generating energy of 5.47 Watt.

Keywords: Regenerative Braking, Three Phase Motor Driver, Bidirectional Inverter, DC Brushless Motor, MOSFET IRF3710.