ABSTRACT

DC Brushless motor has more benefits than the other motor, so that it is often used in industrial. The most common beneficial is DC Brushless motor is loosing mecanic contact so that it could reduce every limit and firework along comutasion proccess. DC Brushless motor is unique because its input is AC current so it needs converter in its implementation. Inverter is a converter which could interchange between DC to AC current. This research would like to design and implement three phases inverter to be used in electrical car prototype.

The main goal of this research is designing a three phases inverter as a driver of DC Brushless Motor type BL-2212/13 12 Volt on electrical car prototype. The main block of the design are minimum system block, driver block, and six step inverter block. Six step inverter block consist of six MOSFET type P and type N which is activated by IC TC4469 and controlled by microcontroller STMega 16. It is used PWM (Pulse Width Modulated) switching technique to activate MOSFET on inverter. The PWM signal is controlled by ATMega 16.

It has been made a three phases inverter in this implementation of this research. This circuit is tested in output of six step inverter, on DC brushless motor which connect to the wheel of electrical car prototype, and on frequency changing to amount of cycle of motor. According to the test, there is 1 Volt drop voltage on output of inverter, 0.5Volt drop voltage on output of load in phase to netral, and maksimum 1 Volt on phase to phase. The oyher result of the research is the changing of frequency is linear to the speed of motor which is used. According to the result the driver circuit which has been made has been working well and it could create cycle on 12 Volt brushless DC motor which connect to the wheel of the electrical car prototype.

Keyword: *three phases DC brushless motor, microcontroller ATMega 16, three phases inverter, Pulse Width Modulated*