Design of Bldc 450 Watt Motor Control System Based on Arduino Uno R3 Microcontroller for Disability Electric Motorbikes

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ABSTRACT

In an electric vehicle generally uses a Brushless DC motor as a driving motor because when viewed from the construction and how it works the Brushless DC motor has a higher initial efficiency and torque when compared to induction motors and lower maintenance costs. The working system of a BLDC motor is to utilize the electromagnetic force of a copper coil on an iron core, between the iron core and permanent magnet are arranged in such a way as to produce a continuous rotation in the rotor when the coil is flowed by three-phase electric current. In a microcontroller BLDC motor control device plays a role to regulate the switching process in the inverter circuit. Arduino Uno R3 is an Atmega328 based microcontroller that will be used to control the switching process in a three phase inverter circuit. In this study the method used is experimental, comparing input values with output values with several variations of treatment. The data obtained from the results of the study show that the BLDC motor has increased the current flowing from the mosfet driver by 25 Amperes when compared to the current flowing on the controller with a power specification of 350 watts that is equal to 18 Amperes. So it can be concluded that the electric current flowing on the controller is larger with a power specification of 450 watts.

Keywords: BLDC, Controller, Mosfet Driver, Arduino Uno