Microcontroller Based BLDC Motor Drive for Commercial Applications

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Abstract

Brushless DC (BLDC) motors are now a days becoming popular in battery operated vehicles, fuel pumps, medical equipments, printers and in many applications because of its light weight, high operating speed and excellent speed-torque characteristics. However, BLDC motor requires complex and expensive high speed drives and converter circuits to perform electronic commutation and suitable control circuits for implementing control technique. Since the conventional drive circuits are expensive, bulky and more complex, this paper proposes a low cost, compact, high performance BLDC drive system employing solar module with DC–DC converters and Pulse Width Modulation (PWM) control strategy. The proposed drive consists of a solar module, charge controllers, batteries, SEPIC converter and BLDC motor, henceforth developed into the Solar Powered BLDC motor drive and solar powered equipments and three phase inverter containing six MOSFET switches. A microcontroller or DSP will be used to control the overall system. This project explains the study of designing a Solar Powered BLDC Motor Drive which is one of the solutions for the oncoming crisis. The approach of selecting the appropriate components for this application is studied and each of them is simulated.

Keywords

Brushless DC (BLDC) motors Pulse width modulation (PWM) SEPIC converter

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