

DESIGN AND IMPLEMENTATION OF PERFORMANCE MONITORING OF DC MOTOR BASED ON MICROCONTROLLER AND TEMPERATURE CONTROL OF HEAT SINK

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Abstract

The electric drive systems used in industrial applications are increasingly required to meet the higher performance and reliability requirements. DC drive is widely used in application requiring adjustable speed, good speed regulation and frequent starting, braking and reversing. Permanent magnet (PM) motors are probably the most commonly used DC motors, but there are also some other type of DC motors (types which use coils to make the permanent magnetic field also). A PM motor can provide relatively high torque at low speeds and PM Field provides some inherent self-braking when power to the motor is shutoff. Microcontrollers provide a suitable means of meeting these needs. In this Project work, implementation of microcontroller, PIC16F877A for of speed control of PMDC motor fed by a DC chopper is carried out. The chopper is driven by a high frequency PWM signals. Controlling the PWM duty cycle is equivalent to controlling, the motor terminal voltage which in turn adjusts directly the motor speed. Microcontroller based closed loop control system for a PMDC motor which gives the output as speed at different conditions, system provides over current protection of PMDC Motor and temperature controlled system.

Keywords : PMDC motor drives, Microcontroller, Speed control, Temperature control

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