

Control of Direct Current (DC) Motor Using GSM Technology

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ABSTRACT:

Electric drive systems used in many industrial applications require higher performance, reliability and ability to vary the speed. One of the attractive features of the Direct Current (DC) motor over all other types is the relative ease with which speed control can be achieved. In this paper, speed control of DC motor using global system for mobile (GSM) technology has been investigated. It is a closed-loop real time control system, where the control circuit is coupled to the motor shaft to provide the feedback signal. A cell phone is attached to the control circuit which serve as a trigger. Pulse Width Modulation (PWM) technique is used, where its signal is generated by a microcontroller. The PWM signal is sent to motor driver to vary the voltage supply to the motor. Controlling the PWM duty cycle is equivalent to controlling the motor terminal voltage, which in turn adjust directly the motor speed, switching ON or switching OFF the motor supply. The microcontroller computes the actual speed by sensing the terminal voltage and the currents, it then compares the actual speed with the reference speed and generates a suitable control signal which is fed into the triggering unit. The triggering unit drives power MOSFET amplifier, which in turn supplies a PWM voltage to the DC motor. Dual-tone multi-frequency (DTMF) signaling is used for telephone signaling over the line in the voice frequency band to the call switching center.