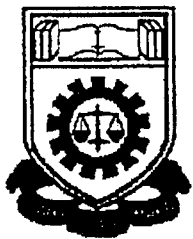


DC MOTOR CONTROLLER USING DC CONVERTER

**This is presented in partial fulfilment for the award of the
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ABSTRACT

This project describe the development of the D.C Motor controller using computer-controlled four-quadrant chopper unit for both clockwise and counter-clockwise rotation applications. The computer generated pulse width modulation (PWM) pattern is used to control the firing sequence of the transistors in the chopper circuit. The system is designed to have high output power and simple control structure, with very fast current response and instantaneous power reversal capability. Also it operation is almost insensitive to dc input voltage unbalances. The software and hardware developed provide suitable tools for research or teaching in electrical machine.

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CHAPTER 1

1.0 INTRODUCTION

Dc drivers usually employ a four-quadrant chopper fed from dc source as shown Fig. 1. However, these systems rely on switched resistors to control the dc bus capacitor voltage, particularly during regenerative braking of the motor. Duty cycle involving large periods of regenerative braking cannot therefore be achieved. Standard four-quadrant thyristor phase controlled converters are the preferred solution in such cases. This configuration has many drawback; including poor dynamic response and low power factor. It has been proposed to use pulse width modulation in conjunction with the controlled rectifier [1].

Recent development in converter and control techniques have included suppressed-link topologies [2,3] and instantaneous current control schemes [4,5].

This led to the developments converter which offer solution to developments, offer the solution to draw backs of the standard chopper system, while maintaining the presence of the intermediate dc link. The presence of the dc link allows the use of conventional four quadrant chopper. The chopper switching pattern is determined by an instantaneous load current control scheme.