THE IMPROVED COMPUTER CONTROL DC BUCK CHOPPER
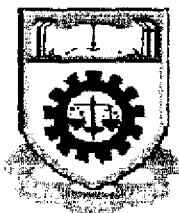
Thesis presented in partial fulfillment for the award of the
Bachelor in Electrical Engineering (Hons)

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ABSTRACT

In this project, a simple PC controlled chopper circuit was developed to generate variable dc output voltages that can used for many industrial drive and process application. It's also to measure and acquiring current, voltage and speed data of the experimental dc motor. Variable output voltage are generated by controlling the switching time of the chopper switching device controlled by the software written in Turbo C programming language. The hardware developed includes a parallel interface system, digital to analog converter, analog to digital converter, display interface, transducers and chopper converter system. The developed software is designed to provide reliable and flexibility in its operation so that any modification and alteration to the system operation can be done easily and conveniently.

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CHAPTER 1

1.0   INTRODUCTION

In much industrial application, it is required to convert a fixed voltage dc source into variable voltage dc source. A dc chopper converts directly a fixed dc input supply to variable dc output supplies i.e. dc-dc converter. A chopper can be considered as dc equivalent to an ac transformer with a continuously variable turn ratio. Choppers are widely used for traction motor control in electric automobiles, trolley cars, marine hoists, forklift trucks, and mine haulers [1]. Chopper can be used in regenerative braking of dc motors to return energy back into the supply and these feature results in energy saving for transportation system with frequent stops. Choppers are also used in dc voltage regulators. The basic function of the control system is a variable dc supply, where the speed dc motors is proportional to the input controls on and off switching of MOSFET.

A data acquisition system was developed for purpose of collecting various data of the dc motor. The system developed comprises of parallel interface card, digital to analog converter, analog to digital converter, transducer and dc chopper unit. From the motor any reading such as the speed, voltage and current can be displayed in monitor after the reading of the thing will convert from analog signal as input and the digital signal as output. The block diagram of the system is shown in figure 1.0.