

DC DRIVES AUTOMATION SYSTEM

**This is presented in partial fulfilment for the award of the
Advanced Diploma in Electrical Engineering of
INSTITUT TEKNOLOGI MARA**



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JUNE 1995

ABSTRACT

This project is regarding a development of a computer controlled dc drive system capable of providing a variable speed and accurate positioning drive. Variable speed drive is achieved by varying the input supply of the drive motor. A controlled single-phase four thyristors full-converter generate the required variable dc voltage supply. The polarity of the output supply can also be changed by energizing the respective relay contactor. With the availability of such supply, the drive system is capable of driving its motors to rotate in both clockwise and anticlockwise directions. Input signals from the transducers provide data for the computer to compute and transmit appropriate command signal for automatic operation of the system. All the analog signals are first converted into digital form by analog-digital converter (ADC) and transmitted into computer in sequence by the latching circuitry. The software developed is flexible and can be further modified to accommodate any variation in operating procedure.

ACKNOWLEDGEMENTS

In the name of ALLAH, the Beneficent and the Merciful. It is with the deepest sense of gratitude of the Al-Mighty ALLAH who gives strength and ability to complete this project.

I would like to take this opportunity to express my most gratitude to my project supervisor Mr. Mohammad Aris b. Ramlan for his guidance, advice and willingly give, his ideas and suggestion for completing my project. Also wish to express my heartiest thanks to lectures, technicians and the laboratory.

Lastly, not least, thanks to my friends to Mr. Samidi b. Basar and many other who some how or other had helped me directly or inderectly in successful of my project.

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CHAPTER 1

1.0 INTRODUCTION

Recent developments in semiconductor technology have made smaller, faster microprocessors available at reduced costs. This has led to their wide spread use AC and DC adjustable-speed drive industry [1]. Furthermore, the regulating system of the motors which are used in industrial applications are also required to be more compact so that they usage of computer in the drive system controller is justified.

High starting torque, extended speed range, and ease of control in dc machines have ensured their continue use in particular industrial applications, such as traction and steel plants[3]. The speed control are simpler and less expensive then that of ac drives. The separately excited dc motors are normally used in variable speed drives. The development of dc machines being widely used in dc drives, using power semiconductor actuators under computer controlled.

Controller rectifiers provide a variable dc output voltage from a fixed ac voltage. Due to their ability to supply a continuously variable dc voltage, controlled rectifiers made a revolution in modern industrial control equipment and variable-speed drives, with power levels ranging from fractional horsepower to several megawatts.