### UNIVERSITI TEKNOLOGI MARA KAMPUS BUKIT MERTAJAM 2005

# Faculty of Electrical Engineering



MODELLING AND SIMULATION OF THE DC TO DC MATRIX CONVERTER

ZAINUDDIN AB RAHMAN

MUHAMMAD SHAHRIL OTHMAN

#### ACKNOWLEDGEMENT

After much struggling and hard work we finally able to complete our project 1 KEU 280. First and foremost we should like to thanks the lord almighty ALLAH S.W.T for his guidance and blessing. Without all of this we might not able to finish our assignment.

Then we would like to thanks the man who is the hackbone of our project, our supervisor, Cik Saodah bt Omar because without his guidance, kindness, support and concern this project would be a failure. This also goes to other lecturer who played a big role in helping us to finish this project successfully.

I would also like to express our gratitude to our family, our father, mother and siblings for all their support m what we did in every way. Also we would like to express our thanks to our friends, for their time and effort in helping us overcame many problems we faced in process of completing this project. Last but not least we would like to thanks each other.

#### ABSTRACT

The circuit present here is regulator or variable output power supply. This is part of power supply from DC to DC converter.

For this part, components in this circuit work as to give the output from transformer which is to step down the AC supply and send to filter for change into DC which used for input in the variable output power supply.

This regulation is ideal for having a simple variable bench power supply. Actually quite important because one of the first projects a hobbyist should undertake is the construction of a bench supply. While a dedicated supply is quite handy e g. 1,5V to 30V, it's much handier to have a variable supply on hand, especially for testing.

That is why the variable is produce in this project. This is for easy to costumer for used their device in variable input supply

TABLE OF CONTENTS	PAGE
Acknowledgement	ii
Abstract	iii
CHAPTER	
1. INTRODUCTION	
1.1 Background	1
1.2 Scope of project	2
1.3 Objective of project	3
2. TYPES OF REGULATOR	
2.1 Introduction	4
2.2 Regulator Circuit	5
2.3 Variable Regulator Power Supply	6
2.4 How The Regulator Power Supply Works	8
2.4.1 Standard Application 2.4.2 Basic Circuit Operation	
3. CIRCUIT DESIGN AND OPERATIONS	
3.1 Circuit design	11
3.11 schematic diagrams	
3.12 component list and data	
o <b>Resistors</b>	
o <b>Capacitors</b> o <b>Diode</b>	
3.2 Circuit simulation 3.2.1 Circuit maker software	18
3.2.2 Simulation procedure 3.2.3 Circuit operati on	
4. RESULTS	
4.1 Simulation results	20
4.2 Circuit testing results	21
5. DISCUSSIONS	23
6. CONCLUSION	24
7. REFERENCES	25
8. APPENDIX	26

### **CHAPTER 1**

## **INTRODUCTION**

#### Background

Nowadays there are so many types of electronic components. This electronic component is use widely in our life.

These various types of electronic components need its own input voltage and because there are vary, the input voltage also varies according its type.

To ensure the components meet their input voltage value and without to changes the voltage source, this variable output power supply was designed.

This variable output power supply can supply voltage to almost electronic components. The voltage can be adjusted from 1.5 V to 30 V. This variable output power supply will be very useful as the voltage can be adjusted according to the electronic components.