LOW POWER REGULATED POWER SUPPLY

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PREFACE

The objective of this project is to develop a control technique to obtain a good regulated dc power supply from variable ac input voltage. The regulated power supply means that the voltage and frequency are maintained between the specific range.

Conventional PI and PID controllers are available to give satisfactory results for a system which requires some controls. But these techniques require development of complete models representing dynamics of the process to be implemented. The simplicity and versatility features of a personal computer can be used in order to avoid these complexity and difficulty.

This project describes the development of a control technique to provide a reliable constant voltage supply through the use of solid-state devices and a personal computer. Experimental works were carried out for the proposed technique. The results show that this technique gives a good regulation with a tolerance of about 6.6%.

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In the name of ALLAH s.w.t., the Most Gracious, Ever Merciful, who has given us the strength and ability to complete this project and report.

> All perfect praises belong to ALLAH alone, Lord of the worlds. May His blessings upon Prophet Muhammad s.a.w. and members of his family and companions.

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1.0 INTRODUCTION

A good regulated power supply where the voltage and frequency are maintained within the specific range or tolerance is vital in order to achieve proper, safe and reliable operation of most of electrical equipments. Failure to follow this specification may result in problems like damage (in case of over voltage) or malfunction eg. refuse to start/operate (in case of undervoltage) to the equipments. It is therefore apparent that some means of controlling/adjustment method(s) are needed between the supply and equipments to overcome the problems.

Various control methods are available to give a satisfactory result for a system which requires some controls. Among them are PI and PID controllers. These controllers whether employing analogue or digital approach have common setbacks. These techniques require development of complete models representing dynamics of the process to be implemented. These models may take the form of equations of motion or transfer functions which are cumbersome and time-consuming.