

**DEVELOPMENT OF SIMULINK MODEL FOR A  
MICROTUBINE SYSTEM**

**This is presented in partial fulfillment for the award of the  
Bachelor in Electrical Engineering (Hons.)  
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## ABSRTACT

This thesis presents the Development of Simulink Model for a Microturbine System. The study involved the development of mathematical modeling of a microturbine system using Matlab/Simulink model. Consequently, the developed model will be evaluated in terms of electrical performances such as the voltage, current, active oiwer and reactive power of the system. Microturbine system is developed to support power distributed generation due to increasing in energy demand. It's a new way to locally supply energy facilities.

A microturbine is a turbine engine-generator which has high-reliability power supply. Hence it will be suitable for use to critical and sensitive load. Microturbine has similar process as conventional gas turbine. This microturbine model comprises of compressor and turbine, permanent magnet synchronous generator (PMSG), combustor, inverter, converter and filter. Microturbine system can be connected in two ways for the distributions system namely the grid-connected mode and islanding mode. Results obtained from the experiments indicated that the developed model is able to produce the required performance of the system.

*Key Words* – Microturbine, permanent magnet synchronous generator, power conditioning system, grid-connected mode, islanding mode.

## TABLE OF CONTENTS

Chapter	List of Contents	Page
	<b>DECLARATION</b>	i
	<b>DEDICATION</b>	ii
	<b>ACKNOWLEDGEMENT</b>	iii
	<b>ABSTRACT</b>	iv
	<b>TABLE OF CONTENTS</b>	v
	<b>LIST OF FIGURES</b>	1
	<b>LIST OF TABLES</b>	3
	<b>ABBREVIATION</b>	4
<b>1.0</b>	<b>INTRODUCTION</b>	
	1.1 Project Overview	5
	1.2 Project Objectives	6
	1.3 Project Scopes of work	7
	1.4 Thesis Organizations	7
<b>2.0</b>	<b>LITERATURE REVIEW</b>	
	2.1 Introduction	9
<b>3.0</b>	<b>THEORETICAL BACKGROUND</b>	
	3.1 Microturbine System	11
	3.2 Permanent Magnet Synchronous Generator	14
	3.3 Power Conditioning System	15
<b>4.0</b>	<b>METHODOLOGY</b>	
	4.1 Introduction	18
	4.2 Matlab/Simulink	18
	4.3 Project Design	19
	4.4 Parameters Values	29
<b>5.0</b>	<b>RESULTS AND DISCUSSIONS</b>	
	5.1 Introduction	33
	5.2 Microturbine in Grid-Connected Mode	34
	5.3 Microturbine in Islanding Mode	38

<b>6.0</b>	<b>CONCLUSIONS AND FUTURE DEVELOPMENT</b>	
6.1	Conclusions	43
6.2	Recommendation for Future Research	44
	<b>APPENDICES</b>	45
	<b>REFERENCES</b>	46