THE EFFECT OF FIELD RESISTANCE ON SPEED OF DC SHUNT MOTOR

MUBARAK BIN ZULKAFLI
031090308

SCHOOL OF ELECTRICAL SYSTEM ENGINEERING
UNIVERSITI MALAYSIA PERLIS
2007

ACKNOWLEDGEMENT

Assalamualaikum w.b.t,

First of all, I would like to express my gratitude to En. Ismail Daut (Dean School Of Electrical System), for giving me the opportunity as an Electrical System Engineering student at University Malaysia Perlis.

I also want to express my gratitude to IR Dina Maizana as a supervisor for my Final Year Project who guided and encouraged me during completing my final year project, En.Haidar (Teaching Engineer), technicians and staffs at Electric Machine Lab for their supervision, encouragement, ideas, opinions and essential device for this dissertation.

My deepest grace and thank goes to my beloved parents who gave me an endless supports and patience toward the completion of the dissertation. Their supports and advices have boosted up my spirit to do the best in my final year project.

Lastly, my greatest gratitude to School of Electrical System Engineering through the knowledge benefited and to all my friends who contributed in giving me a toughness spirit and support for me in completing my final year project whether it is directly or indirectly. The kindness, corporation and support from all of the above mentioned people would always be remembered.

Wassalam.

APPROVAL AND DECLARATION SHEET

This project report titled The Effect of Field Resistance on Speed of DC shunt motor was prepared and submitted by Mubarak Bin Zulkafli (Matrix Number: 031090308) and has been found satisfactory in terms of scope, quality and presentation as partial fulfillment of the requirement for the Bachelor of Engineering (Electrical System Engineering) in Universiti Malaysia Perlis (UNIMAP).

Checked and Approved by

_____

(Ir. Dina Maizana)
Project Supervisor

School of Electrical System Engineering
Universiti Malaysia Perlis
2007

KESAN RINTANGAN LUAR BOLEH UBAH KE ATAS KELAJUAN DC SHUNT MOTOR

ABSTRAK

Projek ini dilakukan untuk mengkaji tahap kelajuan motor arus terus jenis ‘shunt’ apabila dibekalkan voltan. Tahap kelajuan bagi motor arus terus jenis ‘shunt’ ini dikawal oleh perintang luar boleh ubah. Kawalan pada perintang luar boleh ubah ini akan memberikan kelajuan yang berbeza dan juga beberapa bacaan utama seperti nilai flux, nilai arus dan juga daya(torque). Bacaan-bacaan ini akan diterjemahkan ke dalam jadual dan akan memberikan graf-graf yang pelbagai. Graf-graf ini akan menjadi panduan kepada teori-teori yang dibincangkan dalam projek ini. Peralatan yang digunakan dalam projek ini ialah sebuah mesin arus terus yang mempunyai gabungan motor arus terus dan generator arus terus dan model yang digunakan ialah jenis MG-5211.

THE EFFECT OF FIELD RESISTANCE ON SPEED OF DC SHUNT MOTOR

ABSTRACT

The objective of the experiment in this project is to study the speed of DC shunt motor when it is supplied by voltage. The speed of the DC shunt motor is controlled by variable-field resistance. The speed of the DC motor is measured by using a Tachometer. The control of the field resistance will give different speed and other particular such as flux value, armature current and torque. These measurements data will be translated into a tables and will produce a graphs. These graphs will be a key about the theory that have been discuss in this project. The equipment used in this project is a DC machine which have a DC motor and DC generator and the model used is MG-5211.

TABLE OF CONTENTS

Page

CHAPTER 5

LIST OF TABLES

LIST OF FIGURES

LIST OF SYMBOLS, ABBREVIATIONS OR NOMENCLATURE

E_a	Internal voltage
I_a	Armature current
R_a	Armature resistance
I_f	Field current
R_f	Field resistance
ω	Speed function
ϕ	Field flux
rpm	Rotation per minute
τ	Torque
V_t	Terminal voltage
SCR	Silicon Controlled Rectifier
EMF	Electromagnetic Force