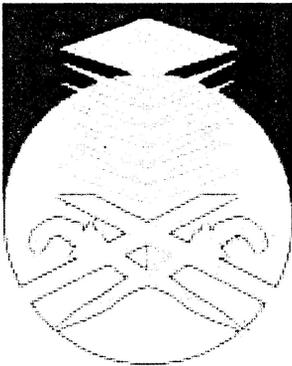


**OFFLINE STUDY ON LOSS OPTIMIZATION IN
DISTRIBUTION NETWORKS USING ARTIFICIAL BEE
COLONY (ABC) ALGORITHM**

Thesis submitted to the Faculty of Electrical Engineering, Universiti Teknologi MARA in
fulfillment of the requirement for the Degree of Bachelor of Engineering



**DEEZEX NOOR AINIZAA BINTI ABDULLAH
FACULTY OF ELECTRICAL ENGINEERING
UNIVERSITI TEKNOLOGI MARA
40450 SHAH ALAM
SELANGOR DARUL EHSAN**

NOVEMBER 2009

ACKNOWLEDGEMENT

In the name of Allah, the most Beneficent and Merciful, with the deepest gratefulness to Allah who has given me this full of strength in order to complete this final year project. First and foremost, I would like to express my gratitude to my project supervisor Dr. Ismail Musirin for his guidelines, supervision and assistance. I would also like to thank Mr Nik Fasdi for his helpful suggestion.

Herein, I would like to emphasize this thankfulness to my family members especially my mother, Zabidah Md.Zin and my sister, Nurul Ezaili Alias for their advices, prayer, encouragement and continuous moral supports for the completion of my study in UiTM.

Last but not least, I would like to dedicate this thankfulness especially to Nik Azman Nik Hassan and also to all my friends, lecturers, staff and supporting staffs that has been helping me a lot during finishing this project in various ways.

Deezex Noor Ainizaa Binti Abdullah
Bachelor in Electrical Engineering (Hons)
Faculty of Electrical Engineering
Universiti Teknologi MARA
Shah Alam, Selangor.

ABSTRACT

This paper present offline study on loss optimization in distribution networks using Artificial Bee Colony (ABC) algorithm. The study involves the development of Artificial Bee Colony (ABC) algorithm to implement loss minimization in a distribution system. Loss minimization can be achieved by performing network reconfiguration considering loss minimization as the objective function. The ABC algorithm was tested on the 14-bus radial distribution system and was programmed in Matlab 7.0. Results obtained from the experiments indicated that loss minimization has been successfully achieved.

TABLE OF CONTENT

CONTENTS	PAGE
ACKNOWLEDGEMENT	i
ABSTRACT	ii
TABLE OF CONTENT	iii
LIST OF FIGURES	v
LIST OF TABLES	vi
LIST OF ABBREVIATIONS	vii
CHAPTER 1 INTRODUCTION	
1.1 Introduction	2
1.2 Background of Study	2
1.3 Project Objective	4
1.4 Scope of Work	4
1.5 Thesis Organization	5
CHAPTER 2 LITERATURE REVIEW	
2.1 Introduction	7
2.2 Network Reconfiguration	7
2.3 Overview of Artificial Bee Colony Algorithm (ABC)	
2.3.1 Introduction	8
2.3.2 Behaviour of real bees	9
2.3.3 Artificial Bee Colony (ABC) algorithm	11

CHAPTER 3 RESEARCH METHODOLOGY	
3.1 Formulation of Optimization Model for Loss Minimization	15
3.2 ABC Algorithm Process	18
3.3 Proposed ABC Algorithm	20
3.4 ABC Algorithm Implemented in Matlab 7.0	25
CHAPTER 4 RESULT AND DISCUSSION	29
CHAPTER 5 CONCLUSION AND RECOMMENDATION	
5.1 Conclusion	37
5.2 Recommendation	38
REFERENCES	40
APPENDIX A	A-1
APPENDIX B	B-1