UNIVERSITI TEKNOLOGI MARA

DEVELOPING WEB-BASE POWER SYSTEM APPLICATION USING MAPLE (LOAD FLOW CALCULATION)

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ACKNOWLEGEMENT

With the name of Allah, The most Gracious and Merciful. Praise to Allah Almighty for giving me the will and strength to complete this final project report successfully.

First and foremost, I would like to express my deepest gratitude and appreciation to my respected supervisor, Dr. Ismail Musirin and Assoc. Professor Rahidzab Talib for their guidance, advices, supervision and encouragement in completing this project. The valuable and useful ideas that they had shared with me are very much appreciated.

ABSTRACT

The Power Flow solution is used to evaluate the bus voltage, branch current, real power flow, reactive power flow, for the specified generation and load conditions. This thesis highlights the load flow calculation in web-base system using Maple 10 programming language specially created for Power System's student. The main objective is to help students do a calculation on load flow until third iteration with regards to the two figures given with four different bus arrangements. The bus arrangements are indicated by red and blue color. The system is designed for one-line diagram of a simple three bus power system including slack bus, generator bus and load bus. The student needs to key in known value in the program step by step as required by the system and he or she will get the answer by clicking the button. By using the Maple.net, the system can be uploaded on the University Technology MARA (UiTM) website, http://maple.uitm.edu.my:8080/maplenet/rahidzab/TOC.mw.

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CHAPTER 1: Introduction

1.1 Objective of The Study

Power flow studies commonly known as load flow, form an important part of Power System Analysis [9]. On the other hand load flow or power flow study would be considered as the basic requirement in Power System. Performing load flow study will result the magnitude and angle of voltage for all buses in the system. The study was done for academic purpose.

The main objective of the project is to help students in solving load flow analysis in the easiest way. Load Flow analysis is difficult to solve by hand calculation without any suitable software. Because of this; by using Maple 10, the Web Based Power System Application especially in Load Flow analysis is developed. Student only need to key in the parameters required by the system and click the button for each portion thus the answer will be appeared in the matrix form.

1.2 Scope of Work

There are four stages to complete this project. Such step are doing literature review on power system especially on load flow calculation, study on Maple software, make a hand calculation of the load flow and apply to Maple language, construct the flowchart program and develop the web-based power system application.

1. Perform literatures review on load flow calculation especially on load flow formulas and methods of calculation.
2. Study on Maple software and specific to Maple help for search maple command to create the project program.
3. Conduct hand calculation of the load flow analysis and implement it on Maple 10.