MULTIOBJECTIVE EVOLUTIONARY PROGRAMMING BASED FOR NETWORK RECONFIGURATION IN A DISTRIBUTION SYSTEM

This project thesis is presented in partial fulfillment for the award of the

Bachelor of Electrical Engineering (Honours)

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ACKNOLEDGEMENT

First and foremost I would like to express my gratitude to Allah for giving me strength, patience and ideas in completing my project.

My deepest appreciation goes to Miss.Siti Rafidah Bt Abdul Rahim in guiding and helping me to solve the Evolutionary Programming Method in the Matlab program.

To my project supervisor, I am deeply indepted to Prof.Madya Dr.Titik Khawa Bt Abd.Rahman for her tireless support, patience and encouragement in guiding me to complete this project with confidence and make this thesis a reality.

Last but not least, would like to express my utmost gratitude to my parent and friends who provide the moral support and helping me to complete this project successfully.

May Allah bless all these beautiful people with good health, happiness and prosperity.

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ABSTRACT

This project report presents an Evolutionary Programming optimization technique for optimal reconfiguration of radial distribution network for loss minimization and voltage improvement in the system.

Evolutionary programming is used to determine the best tie-line and sectionalizing switch combination, minimum losses and voltage improvement in the system. The proposed method has been tested on standard IEEE 33 bus distribution system.

The results have been compared with initial network. From the result, the developed technique is able to identify the best tie-line and sectionalizing switch pair that with minimize the total losses in the system and also improve the voltage for locating the tie switches and providing the minimum number of sectionalizing switches in the branches.

Keywords:
Evolutionary Programming (EP), Network Reconfiguration (NR), Distribution System

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CHAPTER 1

INTRODUCTION

1.1   Introduction

The primary function of the distribution system is to connect the electric bulk power to customers requiring service at voltages below that of the transmission and subtransmission system. The distribution system is the portion of the electric power system most readily seen by the customer and which contributes most directly to providing electric service.[16]

Of the three primary functions of the electric utility,generation, transmission and distribution, the distribution system plays the largest role in the quality of serviced received by the consumers. The primary components of a distribution system are[16]:

(a) Distribution substation

(b) Primary feeder

(c) Distribution transformer

(d) Secondaries and services

The distribution substation receivers electric power directly from the transmission or subtransmission systems and converts it to a lower voltage for use on primary distribution feeder. In a common configuration a distribution substation may have several transformers and a number of primary distrbution feeders emanating from it. These feeders are most commonly seen being supported by wooden utility poles on residential street. [16]

The distribution transformer usually on a pole,is supplied by the primary distribution feeder and transformer the voltage of the primary feeder to alower most commonly used by consumers. The secondary lines and service connections provide electric servive directly to the ultimate consumer at the lower voltage produced at the output terminals of the distribution transformers.[16]