EVOLUTIONARY PROGRAMMING TECHNIQUE USED FOR LOSS MINIMIZATION IN DISTRIBUTION SYSTEM

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ABSTRACT

Network reconfiguration refers to the closing or opening of tie line switches and sectionalizing switches respectively in a power network to alter the topological structure of the distribution feeder. By changing the topology, minimum power losses can be achieved. A common optimization technique called Evolutionary Programming (EP) has been chosen. For the purpose of this research, the IEEE 69-bus system was used to analyze the viability and performance of the EP technique. The EP is expected to have convergence value which cause the result to be optimum and at the same time minimize the power losses in the 69-bus system.

TABLE OF CONTENTS

CHAPTER 1

INTRODUCTION

1.1   BACKGROUND OF STUDY

Customers will have the priority of receiving power continuously with no interference from the power company. The generation, transmission and distribution are the fundamental segments in power system. Electricity is created by the generation by method from a several resources. Transmission is capable to convey a tremendous measure of power given to the distribution system by the generators which operating "medium" that conveys power to the users.

Linkage is provided by distribution systems between the monopoly company and the customers for the power delivery. The structure of the distribution systems which mainly used in Malaysia is ring main unit (RMU). But this paper focuses on radial system type. Inside the radial circuits, there are two types of switches known as tie-line switch and sectionalization switch which used for protection and configuration management in primary distribution system.

There are numerous methods produced by past researchers to handle the issue of network reconfiguration. Utilized approaches have been altered and enhanced, and some different procedures have been utilized, for example:

i.   Particle Swarm Optimization(PSO)

ii.   Artificial Immune System

iii.   Non-linear mathematical programming

iv.   Genetic Algorithm(GA)

v.   Neural Network

vi.   Differential Evolution