IMPLEMENTATION OF MULTISTAGE INVASIVE WEED OPTIMIZATION (IWO) TECHNIQUE FOR SOLVING OPTIMAL POWER FLOW PROBLEM

Thesis presented in partial fulfilment for the award of the Bachelor in Electrical Engineering (Hons)

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ABSTRACT

This project presents the implementation Invasive Weed Optimization (IWO) algorithm technique to solve the optimal power flow problems. This technique used the concept of the invasive habits of growth or weeds in nature. IWO is actually a population-based intelligence algorithm. The main goal of this paper is to minimize the total power losses and the total generation cost while satisfying the power flow equations. The overall operating cost is composed by the generation cost, transmission cost, and the consumer benefit. IWO has been implemented on the standard IEEE 26-bus system. The distributed optimization process represent by MATLAB program.

Keywords;

Optimal Power Flow (OPF), Invasive Weed Optimization (IWO), Multistage IWO.

TABLE OF CONTENTS

CONTENT	PAGE
DECLARATION	iii
ACKNOWLEDGEMENT	iv
ABSTRACT	v
TABLE OF CONTENTS	vi
LIST OF FIGURES	ix
LIST OF TABLES	x
LIST OF SYMBOLS AND ABREVIATIONS	xi
CHAPTER 1	
INTRODUCTION	1
1.1 INTRODUCTION	1
1.2 OBJECTIVE	2
1.3 SCOPE OF WORK	2
1.4 THESIS OVERVIEW	
CHAPTER 2	
LITERATURE REVIEW	4
2.1 INTRODUCTION	4
2.1.1 Optimal Power Flow	4
2.1.2 The Formulation of OPF	5
2.1.3 Objective Function	5
2.1.4 Constraint	6
2.2 PREVIOUS TECHNIQUES FOR SOLVING OPF	8
2.3 INVASIVE WEED OPTIMIZATION (IWO) ALGORITHM	8
2.3.1 Introduction	8
2.3.2 Weed Reproduction	9
2.3.3 Forces of selection acting on plant community dynamics	9
2.3.3.1 r-selection: "live fast, reproduce quick, die young."	10
2.3.3.2 K-selection: "live slow, reproduce slow, die old."	10
2.3.4 Simulating weed colonizing behaviour	11
2.3.4.1 Initialize a population	12
2.3.4.2 Reproduction	12
2.3.4.3 Spatial dispersal	13
2.3.4.4 Competitive exclusion	13
CHAPTER 3	
METHODOLOGY	14
3.1 INTRODUCTION	14

CHAPTER 1

INTRODUCTION

1.1 INTRODUCTION

The optimal operation of power system is required to proceed the optimal planning of facilities or devices for the system. In order to ensure optimal power for economic operation, power generation is schedule base on Optimal Power Flow (OPF) and Economic Dispatch (ED).

Optimal Power Flow are new tool that available to utility planners. System parameter like voltages at load buses corresponding to a specified setting of variables such as generator output is have been calculated by ordinary power flows. Optimal Power Flows attempt to find the best possible setting for a list of control variables such that a desired objective is met. Typical objectives are minimization of losses, minimization of fuel costs and minimization of added VArs. Sometimes a weighted composite objective function may be formed (e.g., minimize losses and at the same time minimize VAr additions). The control variables include generator bus voltage, transformer and phase shifter settings, real power at generator buses, addition of VArs and shedding load. In addition Optimal Power Flows obey specified constraints such as maintaining bus voltages, line flows, interface flows, transformer and phase angle regulator settings as well as real and reactive power limits [1].

Optimal Power Flow are very related to Economic Dispatch. Economic dispatch have been used to operate the generation of facilities to produce the lowest energy cost to reliably the best service to consume by the user. This operation have been recognized to limit the operation of generation and transmission facilities. Electric