LOAD MARGIN ENHANCEMENT IN POWER SYSTEM CONSIDERING CONTINGENCY

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ABSTRACT

This project is presents the load margin enhancement in power system considering contingency. The load margin can improved through the pre and post optimization technique. The pre optimization is increase a power (MW) at load and for the post optimization technique the reactive power dispatch (RPD) is utilized with evolutionary programming (EP) is consider. The contingency are generator outage, line outage and transmission outage. For this project, it focused at line outage. Line outage can be happened through the human mistake and natural disaster. The main purpose of this project is improving loadability system at the two cases which are normal condition (case 1) and contingency condition (case2). From the result, it shows the different maximize the loadability for the two cases. To realize the effectiveness of the proposed technique, 26-bus IEEE systems are used as the test specimen. The program was developed by using MATLAB software.

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CHAPTER 1

INTRODUCTION

1.0 Introduction

Power system voltage collapse is a very complex subject that has been challenging the system engineers since the past two decades. In recent years voltage instability has been responsibility for several major voltage collapse incidents. Voltage instability has been recognized as one of the main causes for major blackouts throughout the world. Voltage instability can be caused by stressed condition at a particular load bus.

Voltage stability is the ability of a power system to maintain steady acceptable voltages at all buses in the system under normal operating conditions and after being subject to disturbances. A system enters a state of voltage instability when the disturbances, increase in load demand, or a change in system condition causes a progressive and uncontrollable drop in voltage. The main factor causing instability is the inability of the power system to meet demand for reactive power. Total transmission losses in the system will increase accordingly as the reactive power loading at a particular load bus increases.

The voltage stability problem would be more express in the free energy trading market because power flows on transmission lines could be increased to the thermal limits. This limit is normally higher than surge impedance loading of the line, which leads to degradation of system voltage characteristics. In urban area systems, it would become more serious as there are fewer lines, each designed with large thermal capacity to overcome the difficulty of constructing new overhead transmission lines in these areas.