TRANSIENT STABILITY OF POWER SYSTEM WITH STATIC VAR COMPENSATOR AND POWER SYSTEM STABILISERS

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ABSTRACT

When increase power transfer, transient stability is increasing important for secure operation. Transient stability evaluation of large scale power system is an extremely intricate and highly non-linear problem. An importance function of transient evaluation is to appraise the capability of the power system to withstand serious contingency in time, some emergencies or preventive control can be carried out to prevent system breakdown. Static VAR compensator (SVC) and Power System Stability (PSS) play an important role as a stability aid for dynamic and transient disturbances in power system. The damping of power system oscillation after a three-phase fault is analyzed with the analysation of the effects of SVC and PSS on transient stability performance of a power system. The obtained result shows the effected of SVC and PSS on transient stability of power system.

TABLE OF CONTENTS

APPROVAL	ii
DECLARATION	iii
ACKNOWLEDGEMENT	iv
ABSTRACT	v
TABLE OF CONTENTS	vi
LIST OF FIGURES	viii
LIST OF TABLES	ix
LIST OF ABBREVIATIONS	x
CHAPTER I INTRODUCTION	1
1.1 Project Background	1
1.2 Problem Statement	4
1.3 Objectives	3
1.4 Project Scope	3
1.5 Thesis Outline	4
CHAPTER II LITERATURE REVIEW	7
2.1 IPower System Stability	5
2.1.1 Power System Stability Problem	5
2.2 Transmission System Reactive Power Compensation and Control	8
2.2.1 Surge Impedance Loading	17
2.3 FACTS Controller	18
2.3.1 Static Var Compensator (SVC)	19
2.3.2 Static Synchronous Series Compensator (SSSC)	22
2.4 Power System Stabilisers	23
CHAPTER III METHODOLOGY	25
3.1 Transient Stability of Power System	25
3.1.1 PSS on Single-Phase Fault without SVC	30
3.1.2 SVC on Three-Phase Fault without PSS	31

CHAPTER 1

INTRODUCTION

1.1 PROJECT BACKGROUND

A power system is a complex network in terms of numerous generators, transmission lines, variety of load and transformers. The increasing power demand makes some transmission lines are more loaded. The problems of transient stability due to the increasing loading on long transmission lines can become a transmission limiting factor. Power system stability can defined as the property of a power system that enables it to remain in a state of operating equilibrium under normal operating conditions and to regain an acceptable state of equilibrium after being subjected to a disturbance.

Static Var Compensator can control voltage at the required bus and improving the voltage profile of the system. The function of a SVC is to maintain the voltage at a particular bus which means reactive power compensation can be obtained by varying the firing angle of the thyristors. SVCs are used for high performance steady state and transient voltage control compared with classical shunt compensation. SVCs are also used to dampen power swings, improve transient stability and reduce system losses by optimizing reactive power controller.