

**VOLTAGE STABILITY IMPROVEMENT USING STATIC VAR  
COMPENSATOR IN POWER SYSTEMS**

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**UNIVERSITI TEKNOLOGI MARA (UiTM)**



**MOHD ANIF BIN MOHD NAZIR**  
**Faculty of Electrical Engineering**  
**UNIVERSITI TEKNOLOGI MARA**  
**40450 Shah Alam, Selangor,**  
**Malaysia**

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## **ABSTRACT**

This thesis investigates the effects of Static Var Compensator (SVC) on voltage stability of a power system before and after installing SVC due to the load (reactive power) variation. SVC is a shunt device of the Flexible AC Transmission Systems (FACTS) family using power electronics to control power flow and improve transient stability on power grids. SVC is basically a shunt connected static var generator whose output is adjusted to exchange capacitive or inductive current so as to maintain or control specific power variable like the control variable is the SVC bus voltage. MATLAB is used to carry out simulations of the system under study and detailed results are shown to assess the performance of SVC on the voltage stability of the system.

# TABLE OF CONTENTS

<b>CONTENTS</b>	<b>PAGE</b>
<b>ACKNOWLEDGEMENT</b>	<b>i</b>
<b>ABSTRACT</b>	<b>ii</b>
<b>TABLE OF CONTENTS</b>	<b>iii</b>
<b>LIST OF FIGURES</b>	<b>vi</b>
<b>LIST OF TABLES</b>	<b>viii</b>
<b>LIST OF SYMBOLS AND ABBREVIATIONS</b>	<b>ix</b>
<b>CHAPTER 1: INTRODUCTION</b>	
1.1 Introduction	1
1.2 Problem Statement	2
1.3 Project Objectives	3
1.4 Scope of Work	3
<b>CHAPTER 2: LITERATURE REVIEW</b>	
2.1 Static Var Compensator	4
2.1.1 Overview of SVC	4
2.1.2 Basic Structure of SVC	5
2.1.2.1 The Operation of SVC	5
2.1.3 Basic Elements of SVC	7
2.1.3.1 Fixed Capacitor (FC)	7
2.1.3.2 Thyristor Controlled Reactor (TCR)	7
2.1.3.3 Thyristor Switch Capacitor (TSC)	8
2.1.4 SVC Configuration	8
2.1.4.1 TCR with FC	8
2.1.4.2 TCR with TSC	9
2.1.4.3 TSR with TSC	10
2.1.4.4 TCR with MSC	10
2.1.5 The V-I Characteristic Curve of SVC	12

# CHAPTER 1

## INTRODUCTION

### 1.1 INTRODUCTION

This project presents the application of the Static Var Compensator (SVC) to improve voltage stability on load bus system due to voltage collapse and the costing of electricity supply increase. Installation of SVC device on load bus system at the end of transmission line can achieve the voltage stability. The system of SVC model is difficult to investigate the voltage at load bus system because the load at the end of transmission line is fixed value. However, the comparison of the voltage at load bus system can be seen obviously due to load at the end of transmission line is varied with different value of reactive power.

This thesis presents the mitigation technique to solve this problem by planning SVC. SVC which one of the mitigation technique, these devices are going to use for voltage support, minimization of reactive power and system losses and improving stability limits.

There are 5 chapters present in this thesis. Chapter 1 which is the introduction of the project describes the concept, overview as well as the objective of the project. Chapter 2 is discussing on the literature review related to the project. They include the information of Static Var Compensator (SVC), Reactive Power (Q) and Voltage Stability.

Chapter 3 is the review on the methodology that is being used in implementing the project are description about Static Var Compensator (SVC) block, single-line