

MULTI MACHINE POWER SYSTEM STABILITY ENHANCEMENT USING STATIC SYNCHRONOUS SERIES COMPENSATOR (SSSC)

ABSTRACT:-

This project presents the enhancement of voltage stability using Static Synchronous Series Compensator (SSSC). The continuous demand in electric power system network has caused the system to be heavily loaded leading to voltage instability. Under heavy loaded conditions there may be insufficient reactive power causing the voltages to drop. This drop may lead to drops in voltage at various buses. The result would be the occurrence of voltage collapse which leads to total blackout of the whole system. Flexible AC transmission systems (FACTS) controllers have been mainly used for solving various power system stability control problems. In this study, a static synchronous series compensator (SSSC) is used to investigate the effect of this device in controlling active and reactive powers as well as damping power system oscillations in transient mode. The PI controller is used to tune the circuit and to provide the zero signal error.

EXISTING SYSTEM LIMITS:-

The power systems of today, by and large, are mechanically controlled. There is a widespread use of microelectronics, computers and high-speed communications for control and protection of present transmission systems; however, when operating signals are sent to the power circuits, where the final power control action is taken, the switching devices are mechanical and there is little high-speed control. Another problem with mechanical devices is that control cannot be initiated frequently, because these mechanical devices tend to wear out very quickly compared to static devices. In effect, from the point of view of both dynamic and steady-state operation, the system is really uncontrolled.

PROPOSED SYSTEM MERITS:-

A Static Synchronous Series Compensator(SSSC) is a member of F ACTS family which is connected in series with a power system. It consists of a solid state voltage source converter

(VSC) which generates a controllable alternating current voltage at fundamental frequency. When the injected voltage is kept in quadrature with the line current, it can emulate as inductive or capacitive reactance so as to influence the power flow through the transmission line. While the primary purpose of a SSSC is to control power flow in steady state, it can also improve transient stability of a power system. Here PI controller is used to control the parameters of the power system.

CIRCUIT DIAGRAM:

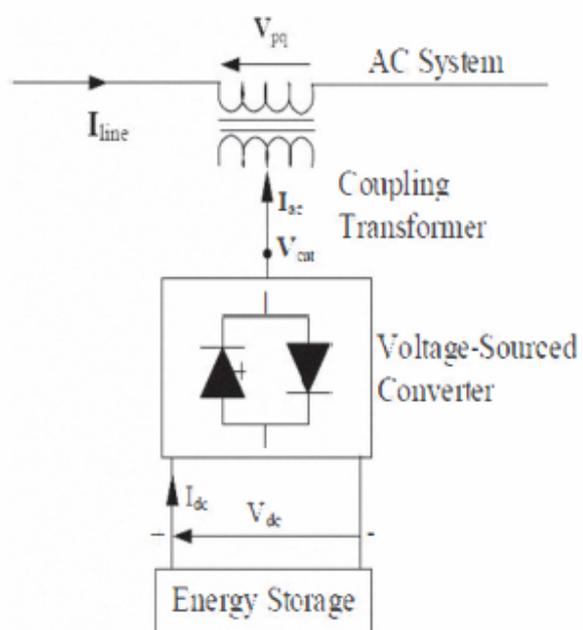


Fig (1): Functional Model of SSSC

SOFTWARE REQUIREMENTS:

MATLAB

APPLICATIONS:-

Power systems

Transmission lines

REFERENCES:-

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