

# Analysis and Simulation in Electrical Networks Using SSSC Device for Damping Power Oscillations

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**Abstract :** A large power system has many interconnections and bulk power transmissions over long distance. As a result, there low frequency inter-zone oscillations which make the system vulnerable to cascade failures. Many different methods have been proposed to alleviate the oscillations in the power system. For many years, Power System Stabilizer (PSS) has been one of the devices traditionally used to dampen oscillations. It is reported that during some operating conditions, PSS may not effectively attenuate oscillations; for this reason, other effective alternatives are required in addition to PSSs. On the other hand, the advent of FACTS has led to a new and more versatile approach to controlling the power system in a desired way. These devices based on very advanced power electronics components (GTO, IGBT,...). FACTS devices according to their network connection are distinguished countervailing series, shunt and hybrid such as: SSSC, ASVC and IPFC, respectively. One of the best-innovated Flexible AC Transmission System devices is the Static Synchronous Series Compensator. The purpose of this paper is to study the control functions provided by the SSSC in controlling the power flow of the load capacity of power lines.

**Keywords :** PSS, FACTS, GTO, IGBT, SSSC, ASVC, IPFC