

## **NOVEL CONTROLLERS FOR THE 48-PULSE VSC SSSC USING THREE PHASE 9 LEVEL CONVERTER WITH ONE TRANSFORMER**

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### **Abstract**

The paper investigates the dynamic operation of novel control scheme for Static Synchronous Series Compensator (SSSC) based on a new full model comprising a 48-pulse Gate Turn-Off thyristor voltage source converter for combined reactive power compensation and voltage stabilization of the electric grid network. The complete digital simulation of the SSSC within the power system is performed in the MATLAB/Simulink environment using the Power System Block set (PSB). Novel controllers for the SSSC are presented in this paper based on a decoupled current control strategy. The performance of SSSC schemes connected to the grid is evaluated. The proposed novel control schemes for the SSSC have very low cost components.

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**Keywords :** 48-pulse Gate Turn-Off (GTO) thyristor model SSSC, novel decoupled control strategy, reactive compensation, 9 level cascade converter, voltage stabilization.