

PSOMSF BASED UPFC SUPPLEMENTARY CONTROLLER FOR DAMPING LOW FREQUENCY OSCILLATIONS IN POWER SYSTEMS

DAKKA OBULESU, S. F. KODAD AND B. V. SANKAR RAM

Abstract

The Unified Power Flow Controller (UPFC) is the most versatile device in the FACTS (Flexible AC Transmission Systems) which has emerged to enhance power system stability spectrum and dynamic performance. This paper briefs the effectiveness of the proposed GMSF DC- voltage regulator and PSOMSF DC- voltage regulator has been tested on a SMIB power system in comparison with conventional UPFC controller. The non-linear time-domain simulation results the oscillations of synchronous machines could be quickly and effectively damped with proposed PSOMSF DC-voltage regulator. The construction and implementation of this controller is fairly easy, which can be useful in real world power system. The simulation results show the effectiveness of the method presented.

Keywords: FACTS, UPFC, GMSF (Genetic Algorithms based Multi-Stage Fuzzy), PSOMSF (Particle swarm optimization based Multi-Stage Fuzzy), POD, low frequency oscillations