

Application of STATCOM-SMES Compensator for Power System Dynamic Performance Improvement

Authors : R. Sedaghati, M. Hayatdavudi, A. Rouhani, M.H. Raouf, and H. Sedaghati

Abstract : The growth of distributed generation within the bulk power system will result in the need for greater control of transmission line power flows. Static Synchronous Compensators (STATCOM) can only exchange reactive power with power grid and is effective for improving voltage stability. The integration of Superconducting Magnetic Energy Storage (SMES) with a STATCOM can extend the traditional STATCOM capabilities to four-quadrant bulk power system power flow control and providing exchange both reactive and active power for STATCOM with the ac network. In this paper presents how a SMES system can be connected to the ac system via the dc bus of a STATCOM. It's shown how the integration of STATCOM and SMES allows bus voltage regulation and power oscillation damping (POD) to be achieved simultaneously. The dynamic performance of the integrated STATCOM-SMES is evaluated through simulation by using PSCAD/EMTDC software and shows the compensation effectiveness of this integrated compensator.

Keywords : STATCOM-SMES compensator, stabilizing, signal, voltage.

Conference Title : ICEP 2014 : International Conference on Electronic Publications

Conference Location : journal city, WASET

Conference Dates : November 23-23, 2014