

Integrated Solution for Power System Stability Improvement: Case studies on IEEE 12 Bus and Sri Lankan transmission networks

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Abstract

Dramatic increase in electric energy demand results the power system network to span in a large scale, consequently increasing the possibility of power disturbances, which may lead towards major blackouts. Therefore the power system stability is of prime importance and mainly influencing factors such as rotor angle stability, frequency stability and voltage stability. This paper discusses the overall power system stability improvement using series injection with a suitable control technique. The proposed control technique for series injection has been simulated using EMTDC/PSCAD software. The suitability of this controller operation was tested in three cases of (i) simple power system network (ii) standard IEEE 12 Bus system and (iii) the 220 kV Biyagama – Kotmale transmission line, the major line tripping of the Sri Lankan transmission network. Simulated results have been presented and the improvement on stability is confirmed.