Power oscillation damping method suitable for network reconfigurations based on converter interfaced generation and combined use of active and reactive powers

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Abstract-

Power system stabilisers (PSSs) are commonly used in solar power plants. This means that CIG-based power plants should also contribute to oscillation damping. Moreover, CIGs may use both active and reactive power for power oscillation damping (POD). However, their combined use has been seldom studied in the literature. Moreover, only a few articles have addressed the adaption of POD controllers when the power system changes (e.g., after a fault). In this paper, a POD controller for CIG-based power plants is proposed that is suitable for operation in power systems exposed to reconfiguration. This controller takes advantage of both active and benchmark model is emulated and four 15 kVA CIGs operating in parallel connection. The applicability of the proposed controller was also explored for the IEEE 39-bus system.

Index Terms- Power oscillation damping; Low-frequency oscillations; Power modulation; Network reconfiguration; Power oscillation damping controller