

ON-LINE IDENTIFICATION AND CONTROL THROUGH SERIES CONVERTER VOLTAGE OF A UNIFIED POWER FLOW CONTROLLER

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Abstract

The dynamic performance of a power system can be improved by controlling the voltage magnitude and phase angle of the converter voltages in the unified power flow controller (UPFC). Self-tuning adaptive control of the voltage magnitude of the series converter for stabilization of a power system is presented in this paper. The plant parameters are identified through a regressive least square algorithm and the stabilizing control is derived through a pole-shifting technique using the adaptive plant model. The controller has been tested for ranges of operating conditions and for various disturbances. From a number of simulation studies on a single machine infinite bus power system it was observed that the adaptive algorithm converges very quickly and also provides robust damping profiles.