

Single phase Unified Power Flow Controller (UPFC) : simulation and construction.

ABSTRACT

Unified Power Flow Controller (UPFC) is used to control the power flow in the transmission systems by controlling the impedance, voltage magnitude and phase angle. This controller offers advantages in terms of static and dynamic operation of the power system. It also brings in new challenges in power electronics and power system design. The basic structure of the UPFC consists of two voltage source inverter (VSI); where one converter is connected in parallel to the transmission line while the other is in series with the transmission line. The main scope of this paper involves the designing of a single phase UPFC using Matlab and Simulink software, and constructing a lab scale model of the UPFC. A microcontroller program has been developed to provide the required phase shift. The experimental result which has been obtained from a lab scale system showed a good agreement with the simulation result.

Keyword: Unified Power Flow Controller; Power flow; Power system; Microcontroller.