A NOVEL FACTS BASED MODULATED POWER FILTER COMPENSATION SCHEME FOR SMART ELECTRIC GRID STABILIZATION AND EFFICIENT UTILIZATION

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ABSTRACT

This paper presents a novel modulated power filter compensator (MPFC) scheme for the smart grid stabilization and efficient utilization. The MPFC is controlled by a novel tri-loop dynamic error driven inter coupled modified PID controller. The Matlab digital simulation models of the proposed MPFC scheme has been fully validated for effective power quality (PQ) improvement, voltage stabilization, power factor correction and transmission line loss reduction. The proposed FACTS based scheme can be extended to distributed/dispersed renewable energy interface and utilization systems and can be easily modified for other specific stabilization, compensation requirements, voltage regulation and efficient utilization.