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Real Time Implementation of Shunt ActivePower Filter (SAPF) for Harmonic suppressionand Power Quality Improvement

B. Babes, L. Rahmani, A. Bouafassa, N. Hamouda

Abstract : In this paper, A Shunt Active Power Filter (SAPF) is implemented using a dSPACE DS1104 processorto compensate harmonics and reactive power produced by nonlinear load. The reference source currentis computed based on the measurement of harmonics in the supply voltage and load current.A hysteresis based current controller has been implemented in a DSP processor for injecting thecompensating current into the power system, so that SAPF allows suppression of the harmonics andreactive power component of load current, resulting in a supply current that is purely sinusoidal.Simulation and experimental results of the proposed SAPF to meet the IEEE-519 standards arepresented.

Keywords : Harmonics, Power quality, Active power filter, Hysteresis comparator, Real-time control