Abstract

Due to enormously increasing of power electronic devices such as arc furnaces, rectifiers, variable frequency drives introduces harmonics in the power system this leads to very low power factor in the power system. Power filters are widely used in modern electrical distribution systems to eliminate harmonic associated with it. This paper represents the effective solution of shunt active power filter to eliminate the harmonics associated with the utility power supply. The ShAPF requires accurate control algorithm that provides robust performance under source and load unbalances thus, compensation of harmonics depends largely on the algorithm adopted.

In this work both PI and ANN controller are used in three-phase shunt active power filter to compensate harmonics and reactive power by nonlinear load to improve power quality is implemented for three-phase three wire systems. ANN-based technique is implemented in shunt active power filters to produce controlled pulses required for IGBT inverter. Simulation result obtained shows that performance of ANN controller found is better than PI controller.
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Index Terms

Computer Science

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Keywords

Shunt Active Power Filter (ShAPF), Passive filters, Hysteresis current controller, control strategy,
PI controller, Ann controller.