

## **REVIEW OF BASIC CONTROL TECHNIQUES FOR HARMONIC MITIGATION IN THREE PHASE SHUNT ACTIVE FILTERS**

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### **Abstract**

Active filters are used to eliminate the problem of source current harmonics caused by non-linear loads. In this paper an attempt is made to review and compare three basic types of control techniques for generation of real time compensating current in shunt active filter. All the techniques are analyzed mathematically and simulation results are compared in terms of compensation performance with multi parameter under varying load condition. The control strategies analyzed are the instantaneous reactive power theory (PQ Theory), SRF theory and modified SRF theory without using synchronizing circuit like phase lock loop (PLL) also called instantaneous current component theory. Simulation results are obtained under sinusoidal balanced voltage source with balanced and unbalanced loads. The comparison and effectiveness of all the methods is based on the theoretical analysis and simulation results obtained using software MATLAB employing a three phase diode bridge rectifier with R-L load as a test system.

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**Keywords:** Instantaneous Power Theory, SRF theory, Modified SRF Theory, Active Filter, Harmonics, and THD.