HARMONIC CURRENT COMPENSATION USING SHUNT ACTIVE POWER FILTER BASED ON NEURAL REFERENCE GENERATOR

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Abstract

This paper presents a new control algorithm for shunt active power filter, based on single layer feed forward neural network. This control scheme consists of three control loops namely voltage loop, current loop and a neural reference generator. Outer voltage loop is accountable to control the dc capacitor voltage. Current control loop is used to track the reference current signal. The reference current signal generated by the neural reference generator is used to generate gating pulses for active power filter switches. The performance of the proposed neural controller is evaluated and compared with a linear control scheme, incorporating a resonant selective linear reference generator. It consists of several generalized integrators like second order band pass filter with high gain and low band width which is responsible for selective harmonic elimination. Simulations are carried out using Matlab Simulink and the results show that the proposed system is capable of compensating the harmonic current to minimum level.