

An Advanced Control Approach for a Shunt Selective Active Power Filter

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Abstract

This paper deals with the design, analysis and simulation of a three phase three wire shunt selective active power filter. It compensates harmonic currents selectively under balanced supply network. In order to improve, the factor of power of the network electric. An advanced control based on a multi-variable filter is adopted. The novelty with the control approach developed in this paper is to use a multi-variable filter, which can extract the harmonics of references of the load current, selectively according to the axis of Concordia (α - β). Generally the harmonic in questions are of low frequencies and order 5 and 7. The objective is that the current of the network doesn't contain the harmonics desired to filtered. The shapes of waves and the values of the THD of the network current before and after the selective active filtering of the harmonic 5 and 7 from of the results of numerical simulations under the Matlab/Simulink environment put in evidence the efficiency of this type of active filtering elaborated.

Keywords

Harmonic; shunt selective active power filter control; power factor; multi-variable filter; MVF; axis of Concordia; THD.