Simulating Single Phase Active Filter[1]

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Abstract

This article aims to provide the basic principles, operating method of filters in general, and find out the specification of the active filter's component, capacitor, the value of dc-Link voltage, amplitude of Harmonic, and Total Harmonic Distortion (THD) .

In addition to define the load of the rectifier bridge, we need to filter its mains current, an this study, after providing the basic principles and the laboratory measuring of voltage spikes on commutating transistors, harmonics values.

An active power filter was simulated using a single-phase inverter by PSIM (Ver. 6.0) program.

The operating method of this system was described, clarifying its model and analyzing the mains current before and after filtering, and the operating behavior of each part of the filter's component.

The results of simulation show the efficiency of the filter and how it could eliminate the harmonics in the main current, to obtain a balanced and pure sinewave mains currents.