Abstract

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Analysis and Simulation of the neutral Current in Three Phase Four Wire Distribution Systems with Nonlinear Loads

Attention has been paid to power system quality due to the significant increase of nonlinear loads. Nonlinear loads such as computer, compact fluorescent lamps, and variable-speed drives produce harmonic currents, which affect negatively major parts in the power system. In three phase four wire distribution systems, these harmonics current results in increasing the neutral line current over its expected values. In this paper the neutral current in three phase four wire distribution system loaded with nonlinear loads is analyzed and simulated. A Series Active Filter (SAF), based on the use of single-phase inverter in series with the neutral wire, is also presented and simulated to examine its efficiency in reducing the neutral current.