

Article Abstract

Title:	Power quality enhancement using cascaded multilevel inverter based shunt hybrid active power filter
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Abstract:	This paper investigates mitigation of current harmonics using different configuration of cascaded multilevel inverter based shunt hybrid active power filter (SHAPF) and to improve power quality of the system. The main objective of this paper is to develop and analyze the compensation characteristics of cascaded multilevel inverter based shunt hybrid active power filter by employing indirect current control algorithm. The indirect current control algorithm is employed to generate reference current and phase disposition pulse width modulation technique is incorporated to generate gating signal for shunt hybrid active power filter strategy. The nonlinear loads are connected to distort the source current to 21% of harmonics distortion, as per IEEE 519 allowable current harmonic distortion is 5%. To mitigate harmonic distortion, cascaded multilevel inverter based shunt hybrid active power filter is proposed and after compensation the source current harmonic distortion is reduced to 2.93%. The simulation analysis is carried out using SIMPOWERSYSTEMS block set of MATLAB/SIMULINK to determine which of the inverter topology based shunt hybrid active power filter strategy perform better on compensating source current harmonic distortion.
Keywords:	Cascaded Multilevel Inverter, Multicarrier PWM technique, power factor correction, shunt hybrid active power filter.