Power Quality Improvement using Voltage Source Converter (VSC) based Unified Power Quality Conditioner (UPQC)

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Abstract

In recent years, there is tremendous growth in the use of power electronic devices in every sphere but in nonlinear loads, it has problem of drawing the two important limitations; draws the non-sinusoidal current and reactive power from source which in turn effects the power quality. This paper presents the performance evaluation of unified power quality conditioner (UPQC) for current and voltage harmonic elimination and improved power factor. The combined operation of shunt active power filter and series active power filter ensures THD of source current and load voltage within the permissible limits set by various regulatory agencies and near unity supply power factor. The effectiveness of the UPQC has been verified by the extensive simulation results carried out in MATLAB/Simulink and SimPowerSystem software. The results have been obtained with PI Controller and Fuzzy Logic Controller and then compared.

References

1. IEEE standard 519-1992, IEEE recommended practices and requirement for harmonic


Index Terms

Computer Science
Power Electronics
Keywords

Power Quality, UPQC, PI, Fuzzy Logic, VSC, Total Harmonic Distortion (THD).