Abstract

Cycloconverter performs the power converting function in a single stage without any intermediate d.c link i.e the cycloconverter can produce adjustable voltage, adjustable frequency ac power from an ac source of fixed voltage and frequency. The production of harmonics in the output of a cycloconverter as a result of the process of voltage synthesis is unavoidable. The direct process of frequency changing makes the harmonics as a function of
both the input and output frequencies. As a result the cycloconverter input current and output voltage waveform contain harmonics, non-standard harmonics and sub-harmonics. The harmonic spectrum of cycloconverter input and output waveform depends upon its control strategy, pulse number and structure. In this paper the comparative frequency spectrum analysis of two major cycloconverter structures i.e circulating current (CC) and non circulating current cycloconverter (NCC) are made using FFT and DWT. Hence it establishes the acceptability of wavelet transform in detecting the harmonics in the input and output voltage and current waveform. Further using the power quality indices a comparison in performance of NCC and CC are made. The analysis are performed in MATLAB/SIMULINK environment.

References


Index Terms

Computer Science

Emerging Trends in Technology
Keywords

- circulating current cycloconverter (CC)
- non circulating current cycloconverter (NCC)
- harmonics
- power quality indices
- fast fourier transform (FFT)
- discrete wavelet transform (DWT)