

Third harmonic injection feedback to input technique for input current improvement in phase bridge rectifier

ABSTRACT

This paper schemed a circuit which applying active harmonic injection current with star connection of capacitors bank. The proposed circuit has a controller that regulates the synchronization of phase and injected appropriate harmonic waveform to reduce the harmonic components that appears in the three phase system. The aspirations of this paper were to propose and construct a three-phase rectifier with third harmonic injection current with regard to obtain an input current of three phase bridge rectifier of sinusoidal waveforms and produce low total harmonic distortion (THD). Consequently, the prototype of the three phase rectifier of the harmonic injection current is designed and fabricated. In this paper, in order to develop the method to obtain sinusoidal waveforms for input current, new method of harmonic injection in current is suggested. Experimental and simulation results have been compared. As a result, satisfactory similarities have been found in both experiments and simulations. As a remarkable achievement, it has been proven that the suggested method is accurate.

Keyword: Three-phase convertor; Input current; Total harmonic distortion; Sinusoidal waveform