

POWER FACTOR CORRECTION (PFC) RECTIFIER
USING HYSTERESIS CURRENT CONTROL

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ABSTRACT

This study presents the Power Factor Correction (PFC) Rectifier Using Hysteresis Current Control which allows dynamic power factor correction and eliminates the harmonics distortion. Boost rectifier is introduced in this technique to extracting the fundamental sinusoidal from distorted load current waveform. This filter connected in parallel with non-linear load and current control to generate the required compensation currents. This compensation strategy is analyzed using MATLAB/simulink and the computer simulation results are also presented showing the good performance of the developed this filter.

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CHAPTER I

INTRODUCTION

1.1 Introduction

Most people in the power engineering field have encountered the question about which direction the harmonic power is flowing, from the source to the load or, from the load to the source. While this is still a controversial topic for some people, the most commonly accepted practice for determining this is to look at the harmonic watts phase angle, or the relationship between the voltage and current for a particular harmonic. The presence of harmonics can distorted the supply waveforms and cause problems in respect to firing circuits which is rely on the supply voltage zero.

The objective of this proposal was to develop a circuit with all the necessary components and control system that will in-cooperated into the design of any single-phase rectifier hence, improves the PF and reduces the current harmonics. The AC mains utility supply ideally is supposed to be cleaned and free from high voltage spikes and current harmonics in order to ensure good quality and efficient power system harmonics to electronics equipment. Discontinuous input current that exists on the AC mains caused by the non-linearity of the rectification process could be shaped to follow the sinusoidal form of the input voltage.