DEVELOPMENT OF ACTIVE POWER FILTER USING RECTIFIER BOOST TECHNIQUE

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ABSTRACT

This project concern with the study of a method for the reduction of harmonic distortion in power systems that have the non-linear load. These project develop active power filter using rectifier boost technique to eliminate the harmonic problems. The technique of a single-phase diode bridge rectifier with the capacitor filter, followed by a boost stage containing only one switch and one boost-inductor. This strategy results the eliminating of the harmonic distortions and will be improve the power factor to unity of the rectifier circuit. This is achieved through the use of boost technique in wave shaping the supply current to be sinusoidal and in-phase with the supply voltage. This compensation strategy is analyzed using PSIM and verified in experimental implementation. The results show close agreement between the simulation and experimental explorations.

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CHAPTER ONE

1.1 INTRODUCTION

A rectifier that converts an ac voltage to a unidirectional voltage is used as a dc power supply for many electronics circuits. A rectifier is also called an ac-dc converter. The rectifier normally employs diodes with capacitor filter at the output. This will results in discontinuous and non-sinusoidal current being drawn from the supply system. This has contributed to high total harmonic distortion (THD) of the supply current. Therefore in this work, problem will be addressed and corrected so that the supply current in now continuous, sinusoidal and in-phase with the supply voltage. In this way, the proposed strategy will help to eliminate the harmonic distortions by improve the supply current waveform and correct the supply power factor to unity.