

SINGLE PHASE HALF BRIDGE INVERTER FOR SHUNT ACTIVE
POWER FILTER

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ABSTRACT

This thesis describes implementation of half bridge inverter as active power filter to compensate the harmonic current due to the non-linear loads to get THD less than 5% as suitable to the IEEE519-1992 standard. The active power filter consists of a half-bridge inverter, which reduces the number of switch used, compare to H-Bridge inverter.

The proposed system is connected in parallel with load and at normal condition; it gives appropriate compensation to solve problems of current displacement and harmonic. Bridge rectifier is used which emulates the non-linear load characteristic. Simulation completed by using MATLAB-Simulink simulation package. Simulation and experimental result were presented to verify proposed system.

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CHAPTER 1

INTRODUCTION

1.1 INTRODUCTION

Nowadays most of the load and control equipment use computers, microcontroller, power electronic device and converters to obtain the desired control performance. These devices and controllers draw non-sinusoidal current from the supply resulting the generation of current and voltage harmonic. These distorted voltage and current result poor power factor operation, low energy efficiency, and harmful disturbance to other appliances [1]. The problems of eliminating harmonics with unity power factor operation of supply systems are receiving considerable attention to researchers worldwide [2].

Active power filter (APF), is increasingly used to mitigate harmonics in utility power lines Compared to the more established method such as the static var compensator or passive filter, APF is relatively new in the market. Much type of active power filters (APF) is design to solve harmonic problems. In recent years, various active power filter (APF) configurations has been proposed to solve harmonics problem, it is classified into series, shunt and hybrid active power filter [2-6].