ACTIVE FILTER FOR HARMONIC AND REACTIVE POWER COMPENSATOR

THESIS

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ABSTRACT

In recent years there has been an increasing concern over the introduction of current harmonics in power supply system owing to the use of non linear loads.Conventional filtering techniques which use passive filters are inflexible because they cannot cope with variation in the filtering requirements as the load and system conditions vary. The development of an active filter that can be connected across a non-linear load, is capable of self-tuning and overcomes the disadvantages of the conventional passive filters, is presented .In this technique, the utility is required to supply only the fundamental component of current required by the load; leading to a harmonic - free system. This current injected active filter was successfully implemented and tested.

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CHAPTER 1

1.0 INTRODUCTION:

A d.c load usually fed from a rectifier, will in its voltage have a harmonics contents, the lowest order of which is the pulse number of the rectifier. Harmonics at multiples of the pulse number will also exist. The rectifier will have a higher harmonic content in the load current than when the rectifier is uncontrolled [6],[4].

The harmonic voltage present in the voltage waveforms will inevitably give rise to harmonic current of the same frequency in the load. Although many of the waveforms were drawn with the assumption of level d.c load current, in the practice this assumption of infinite load inductance is not always justified, and harmonics current do exist in the load waveform. The effect of harmonics have on the load must be judged in respect of individual application, but often they merely contribute to increased losses.

The switching action of the rectifier device inevitably results in non sinusoidal current being drawn from the a.c. supply system. In essence, the a.c. supply delivers a sinusoidal voltage with power flow relating only to the fundamental frequency. The load then converts some of this power to higher frequencies, and transmits harmonics power back into the supply system. Hence a rectifier load acts part as a harmonic generator.