

**HARDWARE AND SOFTWARE DEVELOPMENT
FOR
COMPUTERISED HARMONICS MEASUREMENT**

**Thesis is presented in partial fulfilment for the award of the
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Abstract.

This project is to develop The hardware and software part of a Computerised Harmonics Measurement employing a High Performance Data Acquisition Card (PCL-818H). The works involved are calibrating and programming for current operation of the card and detecting , amplifying and filtering of signals to be analysed.

The programming was developed in C language by using Turbo C compiler.

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1.0 INTRODUCTION.

Harmonic currents and voltages may be injected into the electrical system by non-linear device which consumes power from a sinusoidal electrical system.

The non - linear devices such as thyristor, rectifiers and others, are the main source of undesired harmonics. Common applications of rectifiers are solid-state drives , uninterruptible power supply (UPS) and others.[1]

A d.c load fed from rectifier have harmonics content. Harmonic order determined by the pulse number of the rectifier. Harmonics at multiples of the pulse number will exist and the rectifier will have a higher harmonic content when the rectifier is uncontrolled.[2]

The switching action of the rectifier device give results in non sinusoidal current being drawn from the a.c supply system. The a.c supply delivers a sinusoidal voltage with power flow relating to the fundamental frequency. The load then converts some of this power to higher frequencies , and transmit back harmonics power into the supply system.This is how the pollution exist in supply system. Nowadays there are many electronics equipment which are very sensitive to the pollution of the power line. In the presence of harmonic, equipment such as computers, telephone system, and controllers may respond incorrectly to normal input, no response or gives false output.[1]