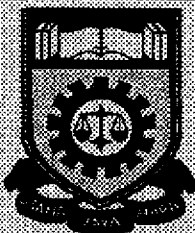


**HARMONIC MEASUREMENT  
(SOFTWARE DEVELOPMENT)**

**This is presented in partial fulfilment for the award of the  
Bachelor in Electrical Engineering (Honours) of  
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## **Abstract**

Modern technology has made possible the rectification of AC power to DC power using static rectifier for DC drivers as well as static inversion for AC drivers. Although more versatile than past methods, these newer technologies may have detrimental effects on the quality of the AC system, especially when they comprise a significant portion of the system. Rectification generates harmonic voltages and currents which can cause problem, e.g, insulation failures due to overheating and overvoltages, malfunction of solid-state equipment and communication. The main objective of this project is to measure and monitor in PC. However, the through analysis of power quality will not be covered in this project but they will be perform in a different project by another student member. The harmonic related project is proposed in view of the frequent power supply disturbance occurring at the school of Engineering, ITM. This project classified under the category of measurement using software development.

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## **1.0 INTRODUCTION**

The studies on power system harmonic had been recognized as early as the 1920's and 1930's, when distorted voltage and current waveforms were observed on transmission line. During which the main concern of studies were related only to the effect on synchronous and induction machine, telephone interference and power failure. With the increasing use of converters and other thyristor-controlled device, the problem of mains harmonic is achieving increasing importance of particular interest are the harmonic produced by rail traction loads, since these loads are large and are often accompanied by phase unbalance.

Generally, electrical equipments, when working normally, produce only odd harmonics. Even harmonics usually occur only during transient conditions, condition of malfunction or single-phase rectification. There are other harmonic studies that had been carried out. For instant, the study performed at Midwestern steel facilities. [3] The study was to determine the harmonic distribution level in its power distribution system before and after a new Electro-galvanizing line (EGL) been operated. It was concluded that the harmonic levels were not enough to cause concern. There was another harmonic study made throughout the Western state cement plant.

The study was to determine the harmonic content in the current of 1500 HP induction motor for the baghouse filter exhaust fan which is controlled by a