HARMONIC MEASUREMENT AND ANALYSIS

AT SCHOOL OF ENGINEERING

INSTITUT TEKNOLOGI MARA

Thesis presented in partial fulfilment for the award of the
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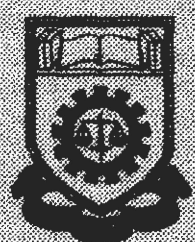

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May ALLAH be with us.

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ABSTRACT

Harmonic is defined as a component of order greater than 1 of the Fourier series of a periodic quantity [1]. It means that for any system which being imposed on them the currents and voltages that has frequencies that are an integral multiple of the fundamental frequency, the system is said to have the harmonic problem.

Harmonic sources which to be the non-linear devices or loads such as rectifiers, converters and other devices utilising solid-state switching [9] are utilised increasingly during recent years. In conjunction with this knowledge, harmonic study in term of data collection had been performd in the School of Engineering, Institut Teknologi MARA, Shah Alam.

Investigations were carried out to determine the level of harmonic distortion in the School of Engineering's power distribution system.

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CONTENTS Page No.

CHAPTER 1

1.0 INTRODUCTION

Since the very early stages of alternating current system development, harmonic have been present in power system. Rectifiers and electric furnaces are the primary sources of the harmonic.[3], [9]

Performance of modern electronic equipments such as electronic versions of motors, offices and industrial control equipment, and lighting which are becoming more common, are tied directly to the quality of the power distribution system serving the equipment. But at the same time, the ability of the power distribution system to serve the equipment varies with the impact of the equipment on the facility power distribution system. No doubt that electronic equipment provides more convenience into life on its positive side, but it does have its negative side as well, which happens to be the harmonic pollution to the power distribution system.

For instant, in using power electronic motor drives. On one hand, it gives benefit in the economics, energy reduction savings, smooth ramp-up and ramp-down acceleration transitions, reduce audible noise levels and reduce physical space requirement.[7] Unfortunately, on the other hand, such a motor creates harmonic