CONDITION MONITORING OF SUBSTATION AND 33KV OVERHEAD TRANSMISSION LINE UTILIZING ULTRASONIC DETECTION
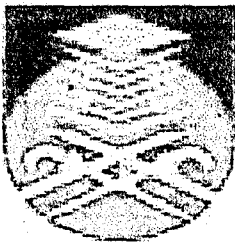
This project report is presented in partial fulfillment for the award of the

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ABSTRACT

This project describes condition monitoring using Ultrasonic Detection failures of substations and 33kV Overhead Transmission Lines. It also describes a general outline of the analysis methods to determine component failure from the collected data of field measurement. Results obtained were from data collected at TNB Distribution Wilayah Metro Substation and 33kV Overhead Transmission Line linking Kelumpang and Sg. Tinggi. The main objective of this project is to monitor the system component of its "Electrical Characteristics" effectively in order to detect the component failures. Electrical characteristics means that the component insulations, insulators and component failures. Component failures mainly due to arcing, corona, and tracking. The component failures were identified by sound pattern that produced by CSI data analyzer. Then, data collected is simulated into fuzzy logic system to identify the failures. Recommendation was proposed so that proper action can be taken from the associated causes.

TABLE OF CONTENTS

CHAPTER 1

INTRODUCTION

1.1   Introduction

Today's cost-sensitive maintenance environment dictates an effective, simple-to-use, high payback technology where materials cost and personnel training are concerned. Ultrasonic monitoring is such a technology. Most plant systems and equipment generate operational noise of some sort and during failure modes the noise characteristics can change dramatically. Detecting this change and fixing the problem before failure can result in higher quality production output, reduced downtime, reduced maintenance overtime, and greatly reduced costs [1].

In general, Ultrasonic Detection is one of the Condition Monitoring techniques to check the condition of high voltage (HV) electrical equipments. Condition Monitoring allows the operators of industrial plant or equipment to assess its condition while it is in service. It thus allows defects to be detected and addressed before they lead to major breakdown. Condition Monitoring system also known as preventive (and predictive) maintenance [3].

Condition Monitoring is very important because it will decrease routine maintenance since only defective equipment will be repaired and need to be taken out of service. It will also create an efficient schedule to repair all of the defective equipment. Condition Monitoring can identify as well quantify defective equipment. Thus, maintenance schedule will be created to rectify the most critical problems. This avoids inspection to all suspected defective equipments [1].