ARTIFICIAL INTELLIGENT BASED TECHNIQUE FOR PARTIAL DISCHARGE DETECTION

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ABSTRACT

This project presents an artificial intelligent based technique for partial discharge (PD) detection. The study involves an artificial neural network (ANN) development which will be used to train and test a series of data set in order to predict the presence of PD. The PD data are generated using a PD circuit, controlled by the various parameters in the circuit. The generated data will be grouped into training and testing data. Two programmes are developed namely the training programme and testing programme. The developed ANN model is able to predict the occurrence of partial discharge under various scenarios.

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CHAPTER 1

INTRODUCTION

1.1 BACKGROUND OF STUDY

Partial discharge resembles a cancer in an insulation system of the High Voltage equipment [1]. Partial discharge is also synonymous with the degradation of insulation and can cause further damage in an insulation system of high voltage equipment such as cable, switch gear and transformer. Partial discharge can also be detected by several detection techniques.The PD detection is used for monitoring the insulation condition in high voltage which is considered as a very important tool. In a modern high voltage insulation system, Partial Discharge detection is used to monitor and control the state of health of a transformer in service .It also helps plant managers to manage the schedule device maintenance. In order to maintain the reliability of the high voltage equipment, the PD measurement has been considered in the high voltage insulation system.

1.2 PROBLEM STATEMENT

Partial discharges are important in High Voltage equipment. These partial discharges will be occurring in electric insulation of cables, switchgear and transformers. The PD will give effect to the life span of high voltage equipment. When the partial discharges have existed in electric insulation of cables, the cable will be damaged and burnt up. Besides that, PD can also exist in switchgear and transformers. It can cause the failure of switchgear and transformer operation. In the power system, the distribution of power to consumer will not be reliable.