SWITCHING OF CIRCUIT FOR TESTING PERFORMANCE OF THE SECONDARY SIDE OF CORE TRANSFORMER

This thesis is presented in partial fulfillment for the award of the Bachelor of the

Electrical Engineering (Hons.)

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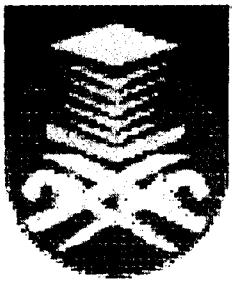

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ABSTRACT

Abstract- This thesis presents the work carried out of the project is to design switching of circuit for testing performance of the secondary side core transformer. The MATLAB simulation, PSIM simulation and the hardware implementation did in order to test the switch can be function or not. From the simulation by PSIM software the switch will be function to ON and OFF the switch with depend on the cycle of the degrees were set up in the circuit. The modeling and simulation of SPMC were used MATLAB/Simulink and PSIM simulation set to predict the behaviour. As a conclusion the switch in the PSIM simulation will producing the B-H curve from it operation in the circuit. Then the result of simulation from the PSIM software can be considered used in order to test the performance at the secondary side of the core transformer.

Keywords: Core Transformer, Pulse Width Modulation (PWM), Sinusoidal Pulse Width Modulation (SPWM), MATLAB/Simulink (MLS), PSIM Simulation.

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CHAPTER 1

INTRODUCTION

1.1 Introduction

In electronics, a switch is an electrical component which can break an electrical circuit, interrupting the current or diverting it from one conductor to another. The most familiar form of switch is a manually operated electromechanical device with one or more sets of electrical contacts. Each set of contacts can be in one of two states: either 'closed' meaning the contacts are touching and electricity can flow between them, or 'open', meaning the contacts are separated and no conducting. The switch needs in order to operate the electronic transformers. In the electronic transformer have a core which it is the main part of the electronic transformer [2]. In testing performance of the core, the reversal method was used for the switching of the circuit to test the performance of the core. Core is the main part of the electronic transformer. The composition of the transformer core depends on voltage, current and frequency. Commonly used core materials are air, ferrite, soft iron and steel. Iron core transformers are usually used when the source frequency is low (below 20 Khz). The iron core transformer provides better power transfer than the air core transformer. The performance of the transformer is affected by the characteristics of the material in the core. The core loss in transformer consist Hysteresis loss and Eddy current loss. The value of losses is depending on the area of the B-H curve. By measuring the area of the hysteresis loop so obtained by means of a planimeter and expressing the area in B-H units of the area, the hysteresis loss for the material may be obtained. Since hysteresis loss per cycle per cubic meter, in joules is equal to area of loop in B-H units as shown in Eqn. 1.

Hysteresis loss = Area of loop in B-H units...Eqn. (1)