MODELING AND SIMULATION OF BRUSHLESS AC MOTOR USING MATLAB/SIMULINK AND POWER SYSTEM BLOCKSET

This thesis presented in partial fulfillment for the award of the

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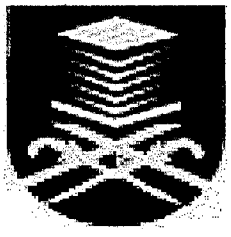

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ABSTRACT

This project presents the simulation and modeling of brushless ac motor using MATLAB/SIMULINK. The working principle of the model and simulation method is presented and the Power System Blockset (PSB) operation is described. MATLAB software is used to study the performance of brushless ac motor. The principle of the modeling method is presented, using block diagram in SIMULINK library to analyze the characteristics of the brushless ac motor. The results obtained with MATLAB software are presented to illustrate its possibilities.

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CHAPTER 1

INRTRODUCTION

1.1 Introduction.

Over the years, experience on power system simulation has shown the development on representing the apparatus on the power generation including the brushless ac motor or also known as permanent magnet synchronous motor [2]. The phenomena growth in technology demands rapid development of techniques and method to study, develop and to design electrical devices faster. Hence, it is essential to study and learn the technique required to simulate the dynamic behaviors of electrical devices, including the synchronous machine using simulation software [11]. One such software which is already established is MATLAB/SIMULINK software. It is due to the fact that reference and manuals concerning the use of this software are readily available in the market.

Synchronous machines can either operate as a motor or generator is well known that it can run at synchronous speed and run at constant speed during steady state operation. The largest and almost common are three phase synchronous machines that can produce high efficiency at higher power rating [9]. As there are the component that will affect the characteristics and off course the operation of these machines, the improved simulation built to properly analyze for such problem

This project will use the MATLAB/SIMULINK to perform the desired result of analysis on permanent magnet synchronous motor [11]. The simulation were based on the basic two pole representation of these machine, where the axis of the north pole is called the direct or d-axis (also called pole axis) and the quadrature, or q-axis (also called interpolar axis). The mathematical description or model developed in simulation is based on the concept of an ideal synchronous machine with these two basic pole [3].