DEVELOPMENT
OF A
HIGH SPEED MOTOR TEST RIG

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ABSTRACT

This project is concerned with the development of high speed motor test rig and an Switched Reluctance motor (SRM) drive circuit. The test rig for is testing for fractional horsepower motors. Alignment and position adjustment are provided in the designed test rig. The test rig also included facilities to measure speed, temperature and torque. The inverter drive is designed for 2 phase 4/6 sub-kW SRM. It is a standard split supply inverter. Rotor position sensing is obtained through a rotor-attached slotted disk plate and a fixed opto-sensor. Measurements were performed for both static and running conditions. The results of the tests were discussed.

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CHAPTER 1

1. INTRODUCTION

A broad spectrum of electric machine types and sizes can be found in modern applications. Fractional horsepower motors are used in many types of equipment in the home, office and industry. Due to widespread availability and decreasing cost in power electronics devices, the fractional horsepower switched-reluctance motor (SRM) is becoming an attractive option. This situation has brought the cost of sensing and control required to successfully operate SRM drive systems down to a level where these systems can be competitive with systems based on dc and induction motor technologies.

The concept of SRM has been around for a long time, only recently this machine begun to see widespread use in engineering applications. SRM is simpler in construction compare to other motors. Although they are simple in construction, they are somewhat more complicated to design and control. Lots of techniques have been developed to control the motor. In order to analyze the effectiveness of a technique, suitable test rig is essential for the evaluation of the motor characteristics.

This project provides the testing need in sub-kW SRM testing. It can be divided in three parts. The first part is development of motor test rig. This area involves in preparing mechanical parts to facilitate motor, dynamometer and rotor position