

**DEVELOPMENT OF A NEW TWO PHASE SUB-KW  
SWITCHED RELUCTANCE DRIVE**

**Thesis presented in partial fulfilment for the award of the  
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## ABSTRACT

Switch reluctance motor (SRM) is now widely recognised as an important class of machine, offering the potential for variable-speed drive system that are competitive to other motor drive system. The simplicity of construction and use of minimum number of switching devices in the drive circuit are two important factors in its favour.

The main concern of this project is to construct and test the SRM that designed by project advisor. The in house assemble has given a valuable practical experienced in fully assembly of the SRM. One must understand the basic operation of the SRM in a way to construct a good machine. Several test has taken place to evaluate the SRM characteristics and performance. The ac test was done to determined the flux-linkage/current characteristic while the dc test shows the SRM is capable to operate at higher speed with a very low exciting current.

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## 1. INTRODUCTION

In recent years there has been a great demand in industry for variable-speed drives. They can provide controlled power over a wide range of speeds to improve the controllability of the machine and also to improve the efficiency. The squirrel cage motors are known for their wide speed range, ease of control, ruggedness and low maintainance. However, complexity of the machine and mechanical commutator results in an expensive machine needing periodic maintainance.

Reluctance motor is one of the simplest electrical machine. They consist of stator with excitation windings and a magnetic rotor with saliency. The apparent advantage of these machine is that there is no windings on its rotor. Both rotor and stator are made of laminated steel. Its construction is even simpler than that of squirrel cage induction motor, and hence may even be lower cost. For this reason, the VRM has gained significant importance in the variable-speed drive market.

Torque is produced by the tendency of salient-pole rotor to align with excited magnetic poles stator. Its torque-speed characteristic can be easily tailored for driving fans and pumps. Since the torque is independent of polarity of phase current, the VRM requires only unipolar excitation and for certain applications, permitting the design of a simple and inexpensive inverter. The VRM has excellent controllability