SIMULATION OF INDUCTION MACHINE ON A PERSONEL COMPUTER USING TURBO C++

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ABSTRACT

This project is concerned on the improvement of a computer simulation software that could be used to simulate the dynamic performance characteristics of various ratings of induction motor complete with graphical analysis display to be operated on a personal computer and can be used for educational purposes. The machine analysis uses the well known Park's form of linear equations that has been transformed into state vector matrices. The equations are solved using a number of numerical methods for purposes of studying the performance of the mathematical techniques as applied in this simulation.

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CONTENTS

CHAPTER 1

1.0 INTRODUCTION

Induction machines are used for many industrial drives where simple, reliable and robust machines is the first requirement and where the use of non-synchronous speed drives is of no disadvantage. The popularity of these machines are apparent due to those features resulting in a world market share of 85% and are manufactured in sizes ranging from a few watts to around 10 MVA[1].

The stator of an induction motor is similar to that of the synchronous motor but the rotor structure is different. Induction machine rotors are of two types, wound rotor and squirrel cage rotor. In either case, the rotor windings are contained in slots in a laminated iron core which is mounted on the shaft. In small machines, the rotor lamination stack is pressed directly on the shaft. In larger machines, the core is mechanically connected to the shaft through a set of spokes called a spider.

The winding of a wound rotor is a polyphase winding consisting of coils placed in slots in the rotor core. It is also quite similar to the stator winding of synchronous machine. It is almost always three phase, and connected in Y. The three terminal leads are brought to slip rings mounted on the shaft. Carbon brushes riding on these slip rings are shorted together for normal operation. Wound rotor are usually used only in large machines. External resistance are