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SIMULATION OF INDUCTION MOTOR

BY

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SYNOPSIS

Simulation Of Induction Motor.

The simulation is based on the two-axis theory of the alternating current machines. i.e the general theory of alternating current machines.

The traditional method used for the analysis of electrical machine is in the steady state condition, this is contributed by the fact that calculation on the dynamic behaviour was closed to impossible, hence it is very difficult to predict system capability in supplying additional machines without major modification.

The two-axis theory embodied in the generalised theory of electrical machines leads for both the steady state and transient performance of the three-phase machines. The mathematical analysis of the transient process requires the solution of differential equations and the methods used have invariably been based on a circuit analysis approach, which avoids detailed reference to the electromagnetic phenomena internal to the machines. The mathematics required include numerical integration, matrix algebra and a few other methods.

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chapter one

1. INTRODUCTION

The first elementary form of polyphase induction motor was exhibited by Nicola Tesla[8] in 1891. In 1893 Dobrowolsky described a machine with a cage rotor and distributed stator winding. Ever since then the induction motors have enjoyed an increasing popularity and are being used in far greater numbers than any other type of machines, due to being a relatively simple device.

Induction machines are used for many industrial drives where a simple, reliable and robust machine is the first requirement and where the use of non-synchronous speed drives is of no disadvantage. They require limited maintenance even when subjected to high mechanical stresses incurred with repeated starts and reversals of direction. Over eight-five per cent[12] of the world's alternating current motors are induction machines and they are manufactured in sizes ranging from fractional horse powers to around 15,000 hp. They also find a restricted role in supply systems as induction generators if driven above synchronous speed.

The stator of an induction motor is similar to that of