

SOFTWARE FOR MODELLING THE STATIC AND DYNAMIC FLUX LINKAGE - CURRENT CHARACTERISTICS OF A 6/4 SRM

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ABSTRACT

The aim of this project is to develop a non-linear modelling 6/4 SRM which is based on paper work by Torrey [5,7] using 6/4 (single tooth per pole 60kW) SRM. The intermediate parameters are determined from interactive operation to achieve ease of use, better insight into program execution and, more significantly, a guarantee of mathematical stability of the overall algorithm. For modelling the SRM, the flux-linkage to current relationship as a function of rotor position was considered. Once this was modelled, a general expression for torque production was derived. Program in C language was developed to validate the algorithm provided by Torrey [5,7].

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CHAPTER 1

1.0 INTRODUCTION

1.1 General

The first electromagnetic devices to be designed were the electromagnetic produced by Joseph Henry in the late 1820's. It was common knowledge at that time that an electric current in a wire coil (electromagnetic) would exert a strong force on a piece of iron.

In the early 1930's the specific requirement of discrete position control had been fulfilled with the invention of what is called as stepping motor . Not until recently, in the early 1980's, permanent magnet and switched reluctance motors (SRMs) began to show their respective potentials.

It is now that an SRMs can offer an alternative to the available modern drives and are now increasingly replace conventional motors. SRMs can be classified as a available drive type of electrical motors. It can be considered as a new entrant in the drive technology and the reluctance principle associated with the performance of the motor type had been realised long time ago.