

Abstract

This thesis presents the application of Assumed Flux Path (AFP) Technique in calculating the unaligned permeance for single tooth and multi tooth per pole Switched Reluctance Motors (SRMs). The developed computational algorithm is based on the AFP Technique adopted by Stephenson and Corda [24]. The calculated permeance is then used in a CAD program to generate the magnetisation characteristics for static analysis. The simplified Block Modeling Technique has been used to generate the magnetisation characteristics leading to performance prediction of SRMs. The computed magnetisation characteristics can then be used to model the flux linkage/current/rotor position curves for subsequent prediction of SRMs performance. The characteristics are modelled analytically by piecewise first or second order function of the flux linkage against current with rotor position as undetermined parameter. A model equation is presented for accurate representation of magnetisation characteristics and a simple procedure is performed to determine the dynamic characteristics of SRMs. Optimisation studies using various objective functions have also been conducted. The results produced are of great significance to SRMs designers and researchers.

Researcher: Malek Pisol Md Saad, MEngSc Level

Supervisor: Dr Mohamad Rom Tamjis

Dated: 12th July 1995