World Academy of Science, Engineering and Technology
International Journal of Energy and Power Engineering
Vol:9, No:06, 2015

Finite Element Analysis of High Performance Synchronous Reluctance Machines

Authors : T. Mohanarajah, J. Rizk, M. Nagrial, A. Hellany

Abstract : This paper analyses numerous features of the synchronous Reluctance Motor (Syn-RM) and propose a rotor for high electrical torque, power factor & efficiency using Finite Element Method (FEM). A comprehensive analysis completed on solid rotor structure while the total thickness of the flux guide kept constant. A number of tests carried out for nine different studies to find out optimum location of the flux guide, the optimum location of multiple flux guides & optimum wall thickness between flux guides for high-performance reluctance machines. The results are concluded with the aid of FEM simulation results, the saliency ratio and machine characteristics (location, a number of barriers & wall width) analysed.

Keywords : electrical machines, finite element method, synchronous reluctance machines, variable reluctance machines
Conference Title : ICPESE 2015 : International Conference on Power and Energy Systems Engineering
Conference Location : London, United Kingdom
Conference Dates : June 28-29, 2015