

Static Eccentricity Fault Diagnosis in Synchronous Reluctance Motor and Permanent Magnet Assisted Synchronous Reluctance Motor

Authors : M. Naeimi, H. Aghazadeh, E. Afjei, A. Siadatan

Abstract : In this paper, a novel view of air gap magnetic field analysis of synchronous reluctance motor and permanent magnet assisted synchronous reluctance motor under static eccentricity to provide the precise fault diagnosis based on three-dimensional finite element method is presented. Analytical nature of this method makes it possible to simulate reliable and precise model by considering the end effects and axial fringing effects. The results of the three-dimensional finite element analysis of synchronous reluctance motor and permanent magnet synchronous reluctance motor such as flux linkage, flux density, and compression both of SynRM and PM-SynRM for various eccentric motor conditions are obtained and analyzed. These results present useful information regarding to the detection of static eccentricity.

Keywords : synchronous reluctance motor (SynRM), permanent magnet assisted synchronous reluctance motor (PMaSynRM), finite element method, static eccentricity, fault analysis

Conference Title : ICEPES 2018 : International Conference on Electrical Power and Energy Systems

Conference Location : Toronto, Canada

Conference Dates : June 21-22, 2018