World Academy of Science, Engineering and Technology
International Journal of Mathematical and Computational Sciences
Vol:14, No:12, 2020

Analysis of Effects of Magnetic Slot Wedges on Characteristics of Permanent Magnet Synchronous Machine

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Abstract : The influence of slot wedges permeability on the electromagnetic performance of three-phase permanent magnet synchronous machine is investigated in this paper. It is shown that the back-EMF waveform, electromagnetic torque and electromagnetic torque ripple are all significantly affected by slot wedges permeability. The paper presents an accurate analytical subdomain model and confirmed by finite-element analyses.

Keywords : exact analytical calculation, finite-element method, magnetic field distribution, permanent magnet machines performance, stator slot wedges permeability
Conference Title : ICSRD 2020 : International Conference on Scientific Research and Development
Conference Location : Chicago, United States
Conference Dates : December 12-13, 2020