

عنوان مقاله:

3D FEM Analysis for a Novel 4-3 Configuration of without Permanent Magnet BLDC Generator

محل انتشار:

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نویسنده:

H. Moradi CheshmehBeigi - *Electrical Engineering Department, Faculty of Engineering, Razi University Kermanshah*
۶۷۱۴۹, Iran

خلاصه مقاله:

This paper deals with using 3-D finite element method for characteristic analyzing of a novel 4-3 salient pole without permanent magnet brushless dc (WPMBLDC) generator. The proposed configuration consists of two magnetically dependent stator and rotor sets, in which each stator set includes three salient poles with windings wrapped around them, and the rotor comprises of four salient poles. The paper describes the complex magnetic structure and principle of the presented WPMBLDC generator in detail. There is a stationary reel which is a rotating cylindrical core, which has the assisted field coil, wrapped around it and is placed between the two-stator sets. The magnetic flux produced by the coils travels through the guide and shaft to the rotor and then to the stator poles, and finally closes itself through the machinehousing. The magnetic field distribution of presented generator is numerically computed by three-dimensional (3-D) finite element method (FEM). Complex geometry and nonlinear properties of the proposed Salient-Pole structure is the main reason for calculation and analysis of the flux distribution inside the machine for different excitation currents and rotor positions. The primary characteristics of the machine including magnetic flux density and flux linkage are obtained.

کلمات کلیدی:

D Finite Element Analysis; Field analysis; Brushless dc generator-3

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