

Basic characteristics of double stator slot-type permanent magnet generator

ABSTRACT

This paper discusses the basic characteristics of a double stator slot-type permanent magnet generator (DS-PMG). The PMG was basically operated in a single-phase and the flux direction in the air gap was radial. It was developed to optimize the magnetic flux linkage in a single-pole PMG. Simulation with the Finite Element Method (FEM) and calculations were used to analyze the PMG's characteristics. In addition, the performance of the PMG prototype was evaluated to ensure the simulation results were accurate. The DS-PMG had a low Total Harmonic Distortion (THD) of 6% and high efficiency of 80% at the rated speed of 3000 rpm. Here, THD is a comparison of the fundamental waveform to its harmonic content. Its output power was three times that of the single PMG.

Keyword: Permanent magnet generator; Double stator; Slot-type; Efficiency; Rectangular permanent magnet