



MT 26
International Conference
on Magnet Technology
Vancouver, Canada | 2019

Contribution ID: 1634

Type: **Poster Presentation**

Wed-Mo-Po3.12-09 [104]: Study on Reduction of Eddy Current Loss of Permanent Magnets in Ultra-High Speed Machines

Wednesday, 25 September 2019 09:30 (1h 45m)

This paper describes the analysis on the Number of Axial Segments of Permanent Magnet in SPMSM for Ultra-High-Speed Application; Electric-Turbo Compound System(E-TCS) for Construction Equipment. E-TCS is a device that combines a turbocharger, which is a regenerative device through exhaust gas, and a compressor to improve the turbo lag. As a result, E-TCS must be able to drive at least 80,000 rpm and require a large torque at low speeds. And because of scattering problem of permanent magnets, so limit to increase the rotor size and shaft length is relatively long. To increase performance of motor, difficulties of permanent magnetization and reduce permanent magnet loss, the segment must be applied in the axial direction on permanent magnet. Design criteria and power loss analysis of the ultra-high-speed motor are described by analytical method, and the results are validated by 3D-finite element method. And then, the prototype motor has been fabricated 3 cases and tested. The experimental results confirmed the validity of the proposed design and analysis scheme of the ultra-high-speed SPMSM(Surfaced Permanent Magnets).

Primary authors: LEE, Ho-Joon (Busan Institute of Science & Technology University); JANG, Hyungkwan (Hanyang University); LEE, Seungheon; LEE, Ju (Hanyang University)

Presenter: JANG, Hyungkwan (Hanyang University)

Session Classification: Wed-Mo-Po3.12 - Motors IX