Torque characteristics of small size single and double stator brushless permanent magnet motor

ABSTRACT

The paper presents the torque characteristics of small size single and double stator of brushless permanent magnet DC motor (BLDC). The effect of different magnetic circuit towards the torque characteristic of permanent magnet motor is presented. Three different magnetic circuits are modeled using Finite Element Analysis (FEA) tool to simulate the torque and cogging characteristics of the motor for the same size values. Total harmonic distortion (THD) of the torque is used to evaluate the characteristics of the motor. Based on the result, it shows that double stator type BLDC produced higher torque compared to single stator type BLDC. However, the serial and parallel of magnetic circuit affect the cogging characteristics of the motor. Conclusively, the paper contributes in term of guidance and suggestion for magnetic circuit selection before designing a BLDC.

Keyword: Double stator; Magnetic circuit; Single stator