

عنوان مقاله:

Design and Thermal Analysis of a ۳۰۰ Watt BLDC motor

محل انتشار:

مجله مهندسی برق مجلسی، دوره 3، شماره 4 (سال: 1388)

تعداد صفحات اصل مقاله: 9

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خلاصه مقاله:

This paper presents the mechanical design and transient thermal analysis of a permanent magnet Brushless DC motor to be replaced with an induction motor and its gearbox for a propulsion application requiring ۳۰۰ W and ۲۲۰ RPM. This work presents a suitable method for direct motor drive design. The critical design criterion is based on magnet demagnetization. The motor has magnets inset into the surface of the rotor to give a maximum field-weakening range. A prototype model is fabricated based on the presented method. Analytically based lumped circuit method for thermal analysis has been used to simulate the motor. Simulation results are compared with practical measurements. The comparison of the results shows that the presented method has a high efficiency in design and thermal analysis of BLDC motors.

کلمات کلیدی:

Thermal analysis, en, lumped circuit method, MotorCad, BLDC motor

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