

INSPECTION OF EPOXY RESIN AND 263 COILS IN AC8 PERMANENT-MAGNET BRUSHLESS MOTOR WITH TAGUCHI METHOD

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Abstract

On the design and analysis of motors, the thermal problem is an important subject because the size and life of motors are affected by the thermal characterization. To design a reliable and economical high voltage and high frequency motor, it is necessary to be able to predict accurately the temperature distribution within the motor physical geometry. For thermal analysis, this study presents thermal analysis of a brushless permanent magnet motor with 263 coils and epoxy resins. The temperature distribution solutions carried out by FLUENT 5.5 are used to determine the relationship between the thermal conductivity of epoxy resins and the motor based parameter. The predictions by software have been verified by experiments, and agreement between the numerical and the experimental data has been found. In addition, the Taguchi method is used to find optimal processing condition to reduce the thermal problem. The data presented in this report have been used to improve the quality of practical motor designing processes and reduce the failure rate.

Keywords : Brushless permanent magnet motor, Thermal analysis, Epoxy resin, Taguchi method

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