

An integrated analysis of EV electric motor system: electromagnetic, vibration and Thermal analysis

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ABSTRACT

An electric car is a car powered by an electric motor rather than a gasoline engine. At some time during the operation of motor, it is likely to experience high vibration levels. Therefore, the vibration reduction of electric motor is essential for silent automobile. This paper presents the combined analysis procedure between electromagnetic analysis and vibration analysis, and the reduction of vibration. In addition, the thermal analysis combining electromagnetic analysis is performed during high speed motor operations. Numerical results are compared with the vibration test, then both results agree well. Through these combined analysis procedure, the vibration level is significantly reduced.

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