

عنوان مقاله:

Design of Thrust Ripple Minimization in Wound Secondary Linear Synchronous Motors by Response Surface Methodology (RSM)

محل انتشار:

دومین کنفرانس بین المللی الکترونیک قدرت و سیستم های درایو (سال: 1389)

تعداد صفحات اصل مقاله: 6

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خلاصه مقاله:

In this paper, after modeling and analyzing a singlesided wound secondary linear synchronous motor, single- and multi-objective design optimizations of the motor are carried out to develop larger average thrust and lower thrust ripple than the prototype by using design of experiments (DOE) and response surface methodology (RSM) considering multiple responses. By defining the motor weight as another objective function, it is tried to prevent an increase in motor size and reduce its material consumption. The optimization results confirm that desirable improvements in thrust mean, thrust ripple and motor weight are achieved. Finally, a finite element analysis is employed to evaluate the effectiveness of the employed machine models used in thrust and force ripple calculations and subsequently to confirm the proposed optimization method.

کلمات کلیدی:

Linear synchronous motors, Thrust ripple, Design of experiments, Response surface methodology, Optimization

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