

Thrust density characteristics of linear DC motor

ABSTRACT

Since the linear motion machines have been recognized in industrial field, linear motor has becomes one of the most demanding machine especially in the factory. Miniaturization, increased speed, and higher accuracy for industrial positioning devices have recently been the main request for industrial upgrades. This is as a result from its simple structure and easy operation that linear motor can offer. One of the most obvious usages of the Linear DC Motor is as a gripper for transporting objects. This paper presents the analysis on the thrust density characteristics for Linear DC Motor (LDM). In order to produce higher thrust with compact sizes, the dimensions of LDM become main priority in the analysis. As a result, by varying the dimensions and comparing the result between the calculated and measured thrust, the thrust characteristics can be seen from the plotted graph of thrust versus the volume of the motor's yoke. The percentage accuracy of the result is good between measured and calculated value.

Keyword: Linear DC motor; Thrust characteristics; Thrust density expression