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MODELING OF ELECTROMECHANICAL PROCESSES OF THE LINEAR PERMANENT MAGNET ACTUATOR FOR TWO MASS VIBRO-IMPACT SYSTEM

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Abstract

The paper presents a model for study of electromechanical processes in the linear permanent magnet actuator for two-mass vibro-impact system. The model is grounded on an equivalent circuit with the lumped parameters and takes account the dependence of electric parameters from an operating frequency. The model also considers magnetic losses in the actuator core. We applied the Hertz's formula for modeling of an impact force. Furthermore, we calculated the characteristics of two-mass electromechanical system in dependence of the impact parameters and operating frequency. Besides that, for the validation of the model, we did the comparative calculation of electromechanical characteristics of the linear permanent magnet actuator and experimental investigations for the same system parameters. There is good agreement of the experimental results with the developed model. References 7, figures 4, table 1.

Key words: electromechanical characteristics, linear permanent magnet actuator, vibro-impact system.

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