

عنوان مقاله:

Model Predictive Control of Linear Induction Motor Drive with End Effect Consideration

محل انتشار:

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خلاصه مقاله:

Background and Objectives: Linear Induction Motors (LIMs) are favorite machines utilized in various industrial applications. But, due to the end effect phenomena, control of a LIM drive is more complicated than rotational machine drives. Therefore, selecting the proper control strategy for a LIM drive has been a significant challenge for the researchers. **Methods:** This paper concentrates on a new Model Predictive Control (MPC) of LIM drives which considers the end effect. Accordingly, the discrete-time model of the LIM with end effect is extracted, and the required flowchart used for the MPC of LIM drive has been presented in this paper. **Results:** To study the effectiveness of the suggested strategy, simulation results of a LIM drive with MPC are presented and compared to the traditional Indirect Field Oriented Control (IFOC) of LIM drive. Simulations have been carried out using Matlab. The end effect has been considered in the LIM model and control strategies. **Conclusion:** Simulation results validate that the suggested MPC of LIM drive yields excellent dynamic characteristics such as fast speed response with no overshoot. Moreover, in comparison to the traditional IFOC method, the suggested MPC strategy offers lower current ripple and lower electromagnetic force ripple, and therefore, it is suitable for industrial drive applications.

کلمات کلیدی:

Linear Induction Motor (LIM), End Effect, Model Predictive Control (MPC), Delay compensation, Indirect field oriented control

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