

عنوان مقاله:

Supplying Three Phases, Four Wire, Unbalanced and Non-linear Load by Neutral Point Clamped Inverter Based on (Model Predictive Control (MPC

محل انتشار:

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خلاصه مقاله:

In this paper, a new approach is presented to supply unbalanced three-phase load on neutral point clamping (NPC) inverter based on the model predictive control (MPC). The three-phase NPC inverter is also used to feed the four - phase three-phase load. Due to the neutral point of the DC bus, the NPC inverter has the ability to feed the four -sided load, and at the same time, due to the three-level voltage at the output, the LC filter size is lowered. The main feature of the predictive control system is the use of a model of the system to predict future behavior of controlled variables. In the proposed control scheme, the MPC control limits are provided for controlling the power converter and the converter modeling to determine all possible switching states. The switching modes of the NPC inverter are presented and the control scheme is based on the control schema for the MPC for applying the power converter and the cost function definition. The system performance is evaluated based on the proposed method in various loads including symmetric load and symmetric reference flow, unbalanced load, and symmetric phase voltage. The simulation results indicate the optimal performance of the proposed method in supplying three-phase load demand with optimal quality so that the current distortion is low and the inverter output voltage is also multi-level

کلمات کلیدی:

Unbalanced three-phase load, Four-phase three-phase load, Neutral point clamping inverter, Model predictive control

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