عنوان مقاله:

Design and Control of Three-phase Quasi-Z-Source Based Hybrid ۲/۳ Level Inverter

محل انتشار:

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خلاصه مقاله:

Hybrid ۲/۳ level inverter is a combination of three-level diode clamped inverter and conventional two-level inverter. This structure has the advantages of both two-level and three-level structures. Also, the number of switches is less than three level diode clamped inverter. In this paper, a modified structure for a hybrid ۲/۳ level inverter, which is based on quasi-Z-source network, is investigated. This structure improves the performance of the ۲/۳ level inverter and develops the voltage boost capability of the structure. Increasing the output voltage can be achieved by selecting the appropriate short-circuit interval in quasi-Z-source network. In addition, short-circuit intervals in quasi-Z-source networks allow the inverter to operate without any dead time, which results in higher quality for output AC voltage. A modified switching method is presented for the proposed inverter and the related calculations are performed. Also, a simple control scheme is proposed to balance the neutral-point of the structure and to compensate the voltage imbalance of the Quasi network's capacitors. The proposed structure can be used to connect different distributed generation sources to an islanded load or to a low voltage grid. Simulations are carried out in MATLAB/Simulink .environment and results depict suitable performance of proposed inverter

کلمات کلیدی:

hybrid ۲/۳-level inverter, quasi-Z-source network, switching strategy, loss analysis, THD