Selected Harmonics Elimination for Modified Multilevel Inverter with Bi-Directional Switches

Multilevel inverters are receiving continuous attention in terms of circuit topology, control methods and applications. This paper presents a modified topology that applies a bidirectional switching module to reduce the number of switches of the 3-level inverter. Common emitter back-to-back IGBTs have been used to assemble the bidirectional conducting module. The modified inverter has been controlled using the selected harmonics eliminations technique with 3, 4 and 5 primary switching angles. The control algorithm has been implemented using a basic fixed point, low-cost microcontroller. Results including output voltage and current waveforms, spectrum, harmonic distortion, and converter efficiency data are presented. Simulation and experimental results verified the ability of the inverter to provide a wide range of output voltage and eliminate the targeted harmonics.

References

1. Rodríguez, J.; Morán, L.; Pontt, J.; Hernández, J.L.; Silva, L.; Silva, C.; and Lezana, P.


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PWM Inverter Employing a Deadbeat Control Scheme. IEEE TRANSACTIONS ON POWER ELECTRONICS, 18(3).


Index Terms

Computer Science  Circuits and Systems

Keywords

Multilevel Inverters, Voltage Control, Selected Harmonics Elimination.