

Cascaded Multi-Level Single-Phase Switched Boost Inverter

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Abstract : Recently, multilevel inverters have become more attractive for researchers due to low total harmonic distortion (THD) in the output voltage and low electromagnetic interference (EMI). This paper proposes a single-phase cascaded H-bridge quasi switched boost inverter (CHB-qSBI) for renewable energy sources applications. The proposed inverter has the advantage over the cascaded H-bridge quasi-Z-source inverter (CHB-qZSI) in reducing two capacitors and two inductors. As a result, cost, weight, and size are reduced. Furthermore, the dc-link voltage of each module is controlled by individual shoot-through duty cycle to get the same values. Therefore, the proposed inverter solves the imbalance problem of dc-link voltage in traditional CHB inverter. This paper shows the operating principles and analysis of the single-phase cascaded H-bridge quasi switched boost inverter. Also, a control strategy for the proposed inverter is shown. Experimental and simulation results are shown to verify the operating principle of the proposed inverter.

Keywords : renewable energy sources, cascaded h-bridge inverter, quasi switched boost inverter, quasi z-source inverter, multilevel inverter

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