Voltage Balancing Circuits for Five-Level Power Inverter With A Single DC Voltage Source

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Abstract	This paper presents another topology of five-level voltage-source inverter developed from the H-bridge inverter with a single DC power source. In the proposed topology, a buck chopper working the voltage balancing circuits is presented to keep stable DC capacitor voltages, and to reduce the capacitor size of the inverter. A minimum number switching devices is also an important feature of the proposed inverter topology. The proposed five-level voltage-source inverter topology is tested through computer simulation using PSIM software. Laboratory experimental tests were also conducted to verify the proposed balancing circuits. The computer simulation and experimental test results showed that the proposed balancing circuits works properly keeping stable capacitor voltages of the inverter. A proper five-level output voltage waveform of the inverter was also confirmed experimentally.
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