

عنوان مقاله:

A Novel ۱۹-Level Boost Type Switched-capacitor Inverter with Two DC Sources and Reduced Semiconductor Devices

محل انتشار:

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خلاصه مقاله:

In this paper, a novel voltage-boosting switched-capacitor multilevel inverter (SCMLI) capable of producing ۱۹ voltage levels using a combination of only ۱۰ switches, ۴ diodes, ۲ capacitors, and ۲ DC sources has been proposed. The main features of the proposed topology are ۱) utilization of a very low number of devices, ۲) very low Total Standing Voltage (TSV) equal to ۶.۵۵ and ۳) self-balance property of the capacitors' voltages. In order to provide the IGBTs of the circuit with the desired switching signals, the Nearest Level Control (NLC) method has been adopted. To clarify the benefits of the designed topology as to the total quantity of switches, DC sources, capacitors as well as the total standing voltage (TSV), and converter boosting, a thorough comparison has been carried out versus the recently published ۱۹-level topologies. Also, for the purpose of performance evaluation and validation, the suggested topology has been tested against various loads through an experimental setup in the laboratory using TMS۳۲۰F۲۸۳۷۹D DSP as the processor. The comparative, simulation, and experimental results all imply the superiority of the proposed topology against its predecessor counterparts.

کلمات کلیدی:

multilevel inverter, Switched-Capacitor, Voltage Boosting, Nearest Level Control

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