

## **Optimal Structures for Cascaded Multilevel Inverter**

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### **Abstract**

The general function of a multilevel inverter is to synthesize a desired output voltage from several levels of dc voltages as inputs. In order to increase the steps in the output voltage, a new H- bridge topology is recommended which benefits from a series connection of several sub-multilevel inverters. In addition, for producing an output voltage with a constant number of steps, there are different configurations with a different number of components. In this paper, the optimal structures for H- bridge topology are investigated for various objectives such as minimum number of switches and dc voltage sources and minimum standing voltage on the switches for producing the maximum output voltage steps. Two new algorithms for determining the dc voltage sources magnitudes have been proposed. Finally, in order to verify the theoretical issues, simulation results for 25 level inverter with a maximum output voltage of 120V are presented. Our approach is significantly better than traditional methods in terms of relevance.

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