

## عنوان مقاله:

Symmetric and Asymmetric Configurations for a Multilevel Inverter Using Less Number of Power Switches

## محل انتشار:

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## خلاصه مقاله:

This paper proposes a multilevel inverter that produces many steps in output voltage using fewer power electronic switches. The configuration of the proposed inverter is modular and extendable. The suggested topology consists of a combination of series-connected switching units and a conventional H-bridge converter. The presented multilevel inverter is analyzed in both symmetric and asymmetric configurations. Two different methods to determine the size of DC voltage sources of the asymmetric configurations are presented to achieve the maximum steps in the output voltage. The characteristics of both symmetric and asymmetric configurations are given and compared together in detail. The comparison results show that the asymmetric configuration with second design method uses less power switches and has less power losses than symmetric and first design method asymmetric configurations. However, it has more (Total Voltage Rating) TVR than two others. The comparison between symmetric configuration of the proposed multilevel inverter and four similar multilevel inverters shows that the proposed inverter uses fewer power switches and has less power losses. Finally, a laboratory prototype of the multilevel inverter is implemented and the experimental measurement results are given. The experimental measurement results validate proper operation of the proposed multilevel inverter.

## کلمات کلیدی:

Inverter, Multilevel, H-bridge converter, Symmetric and asymmetric configurations

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