

A Multilevel-Synthesis Approach with Reduced Number of Switches for 99-Level Inverter

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Abstract : In this paper, an efficient multilevel wave form synthesis technique is proposed and applied to a 99-level inverter. The basic principle of the proposed scheme is that the continuous output voltage levels can be synthesized by the addition or subtraction of the instantaneous voltages generated from different voltage levels. This synthesis technique can be realized by an array of switching devices composing full-bridge inverter modules and proper mixing of each bi-directional switch modules. The most different aspect, compared to the conventional approach, in the synthesis of the multilevel output waveform is the utilization of a combination of bidirectional switches and full bridge inverter modules with reduced number of components. A 99-level inverter consists of three full-bridge modules and six bi-directional switch modules. The validity of the proposed scheme is verified by the simulation.

Keywords : cascaded connection, multilevel inverter, synthesis, total harmonic distortion

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