

Implementation of a Novel Modified Multilevel Inverter Topology for Grid Connected PV System

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Abstract : Multilevel converters offer high power capability, associated with lower output harmonics and lower commutation losses. Their main disadvantage is their complexity requiring a great number of power devices and passive components, and a rather complex control circuitry. This paper proposes a single-phase seven-level inverter for grid connected PV systems, With a novel pulse width-modulated (PWM) control scheme. Three reference signals that are identical to each other with an offset that is equivalent to the amplitude of the triangular carrier signal were used to generate the PWM signals. The inverter is capable of producing seven levels of output-voltage levels from the dc supply voltage. This paper proposes a new multilevel inverter topology using an H-bridge output stage with two bidirectional auxiliary switches. The new topology produces a significant reduction in the number of power devices and capacitors required to implement a multilevel output using the asymmetric cascade configuration.

Keywords : asymmetric cascade configuration, H-Bridge, multilevel inverter, Pulse Width Modulation (PWM)

Conference Title : ICPEPE 2014 : International Conference on Power Electronics and Power Engineering

Conference Location : Venice, Italy

Conference Dates : November 14-15, 2014