

THREE-LEVEL COMMON-EMITTER CURRENT-SOURCE POWER INVERTER WITH SIMPLIFIED DC CURRENT-SOURCE GENERATION

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Abstract	<p>A diverse circuit of a three-level common-emitter current-source power inverter with simplified DC current source generation circuits was developed and presented in this paper. The required power devices to construct the inverter can be reduced by using the proposed circuit. The power supplies of gate drive circuits are much more modest than the traditional three-level H-bridge current source power inverter. In this new inverter circuits, nearly all controlled semiconductor switching components are coupled at a common emitter configuration. Thereunto, using the proposed inverter circuits, a perfect modified sine-wave and pulse-width modulation operations can be attained. To examine the basic operations of inverter circuits, computer simulations were done. The simulation tests were conducted by utilizing power electronic design software PSIM. The test results showed that the proposed inverter circuits worked well delivering a three-level current, both pulse-width modulation and staircase waveforms, which attest the basic operation of the proposed inverter.</p>
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