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A Five-level Inverter using SEPIC Converter for Motor Drive Application

Abstract

The research in inverter is one of the fast-evolving technology in the present era and many researchers start to replace the conventional transformer with different types of circuits. A major problem with the conventional transformers resulting in entire system in expensive range and voluminous. This paper will demonstrate a new technique to replace the conventional transformer concept by using dual DC/DC SEPIC Converter and modified H-bridge inverter to form a five-level inverter with multirange voltage selection which depending on the duty-cycle employed for SEPIC converter. The input DC voltage of the proposed inverter can be stepped-down or stepped-up the five-level output voltage waveform which make it suitable to drive the AC motor drive. A simulation using PowerSim with various duty-cycle values, are used to evaluate the suggested inverter. © 2023 American Institute of Physics Inc.. All rights reserved.