Abstract

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Multilevel Single Phase Isolated Inverter with Reduced Number of Switches

This paper proposes a cascaded single phase multilevel inverter using an off-the-shelf three-phase inverter and transformer. The concept is based on a cascaded connection of two inverter legs using a typical three phase inverter in such a way that the third leg is shared between the other two phases. The cascaded connection is achieved through an integrated series transformer with a typical three-phase transformer core. Utilization of a special transformer design has been previously proposed in the Custom Power Active Transformer. However, cascaded connection of inverter legs has not been previously investigated with such a concept. In this way, a three-leg inverter and a three-phase transformer are converted into an isolated multilevel single-phase inverter based on an unique configuration and modulation technique.