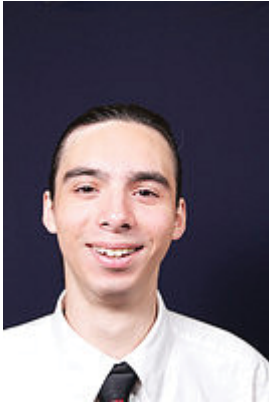


Capacitor Voltage Balancing in a Cascaded Multilevel Inverter



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Abstract

This research is aimed towards optimizing an electrical control process called capacitor voltage balancing for a multi-level inverter, which converts direct current (DC) to alternating current (AC) in renewable energy conversion circuits and motors drives. The capacitor voltage balancing technique ensures stable and reliable operation of the inverter despite non-uniformities at the DC input. Previous methods to achieve capacitor voltage balancing are often complicated and only stabilize under limited conditions. Control theory is connected to practical application in simulation by analytically designing and experimentally verifying control techniques to achieve reliable and effective capacitor voltage balancing. Simulations of the control scheme based on realistic system operations and component parameters prove the robust character of the solution presented.