

Abstract

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Three-phase ac–dc buck–boost converter with a reduced number of switches,

A single-switch, single-stage, three-phase ac-dc buck-boost converter suitable for medium-voltage applications is proposed. Basic relations that govern steady-state converter operation are established, confirmed using PSCAD/EMTDC simulations, and substantiated experimentally. Simulation and experimental results establish that the proposed converter has good dynamic performance in buck and boost modes, with near unity input power factor.