

A Common Single-Phase Diode Rectifier for Multi-Load System with an Auxiliary Converter

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Abstract

This study presents a common single-phase diode rectifier for multi-load system. The advantages of common single-phase diode rectifier are simplicity, reliability, and cheapness. However, the diode rectifier draws significant harmonic current from the utility and lacks regeneration capability. Therefore, an auxiliary converter is proposed for the single-phase diode rectifier. The proposed auxiliary converter system operates as a shunt active filter that compensates for current harmonics of the diode rectifier, and provides regeneration capability. The auxiliary converter achieves the same functionality as an active front-end converter, but at a lower cost and higher reliability. Simulation results are utilized to verify the performance of the proposed system.

Keyword : single-phase diode rectifier , Auxiliary Converter