Hardware Development for Zero Crossing of a Multilevel Single Phase Rectifier Chopper for Plug-In Electric Car Battery Charger Using a PIC Microcontroller(Book Chapter)

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Abstract:
This paper focuses on developing the hardware for a controller and of a zero crossing circuit for an electric car battery charger. A novel topology of a battery charger is studied and tested. A conventional rectifier has drawbacks in terms of harmonic currents. This paper describes a five-level single-phase rectifier associated with buck chopper with a control signal which draws a clean sinusoidal line current for the application in a plug-in battery charger. The MATLAB/Simulink results reveal that the proposed battery charger performance is better compared to the conventional method.

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