

Design and Control Algorithms for Power Electronic Converters for EV Applications

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Abstract : The power electronic components within Electric Vehicles (EV) need to operate in several important modes. Some modes directly influence safety, while others influence vehicle performance. Given the variety of functions and operational modes required of the power electronics, it needs to meet efficiency requirements to minimize power losses. Another challenge in the control and construction of such systems is the ability to support bidirectional power flow. This paper considers the construction, operation, and feasibility of available converters for electric vehicles with feasible configurations of electrical buses and loads. This paper describes logic and control signals for the converters for different operations conditions based on the efficiency and energy usage bases.

Keywords : electric vehicles, electrical machines control, power electronics, powerflow regulations

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