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Bidirectional Power Flow Control Integrated With Pulse and Sinusoidal-Ripple-Current Charging Strategies for Three-Phase Grid-Tied Converters

In this project, bidirectional charging and discharging strategies for three-phase grid-connected converters is proposed. The converter's bidirectional power flow control feature allows for both charging and discharging. Furthermore, five charging strategies have been adopted and developed in order to achieve high charging efficiency while also extending the life of the battery: 1) the constant current (CC) charging, 2) the pulse-ripple-current (PRC) charging, 3) the sinusoidal-ripple-current (SRC) charging, 4) the bidirectional pulse-ripple-current (BPRC) charging and 5) the bidirectional sinusoidal ripple-current (BSRC) charging. The direct quadrature (d-q) transformation is utilized for the converter to realize different charging methods. These methods can be achieved by the Matlab/Simulink. In addition, the charging power differences between each strategy are considered and analyzed in this paper

Domain: Power Systems _ Hybrid Systems

Technology: Electrical