

A Novel Three-level CLLC Resonant DC-DC Converter for Bidirectional EV Charger in DC Microgrids

In this project, a novel three-level CLLC resonant converter for off-board EV charger is proposed. By adding resonant CLLC components and by combining the working modes of the two three-level full bridges, the proposed converter adapts to the wide voltage range of EV, from 200 V to 700 V. An equivalent circuit model with first harmonic approximation approach is established to analyze the frequency characteristics of the resonant converter. Moreover, an algorithm of working mode selection is proposed on the principle of minimum transformer RMS current. The effectiveness of the proposed system is verified by simulation in MATLAB/SIMULINK.

Domain: Power Systems solar Power Generation

Technology: Electrical