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Bidirectional charging of photovoltaic containers for bridges



Overview

Bidirectional DC/DC converters enable charging of the battery in the forward mode of operation and facilitate flow of power back to the grid from the battery during reverse mode of operation, which can be used to stabilize the grid during peak load periods. What is a bidirectional DC/DC converter?

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What is the maximum power transfer in a dual-active bridge?

The maximum power transfer in a dual-active bridge occurs at a phase shift of 90°. However, a high phase shift requires a high leakage inductance for power transfer. Using a high inductor leads to increased RMS currents in the primary and secondary side, which affects the efficiency of the converter.

What are the requirements of a converter in a DC charging station?

Power density and system efficiency are two important requirements of a converter in a DC charging station. Operating at high switching frequencies enables reduced size of magnetics. By moving to higher bus voltage to facilitate fast charging, more power can be transferred at the same current level.

What are the design specifications of a dual-active-bridge DC/DC converter?

Table 1-1 lists some of the critical design specifications of the dual-active-bridge (DAB) DC/DC converter. The system has a full load efficiency of 97.6% at an output power of 10 kW. Table 1-1. Key System Specifications

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B. Power-grid Flexibility (Demand-Oriented Transport and E-Charging



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Bidirectional, Dual Active Bridge Reference Design for ...

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