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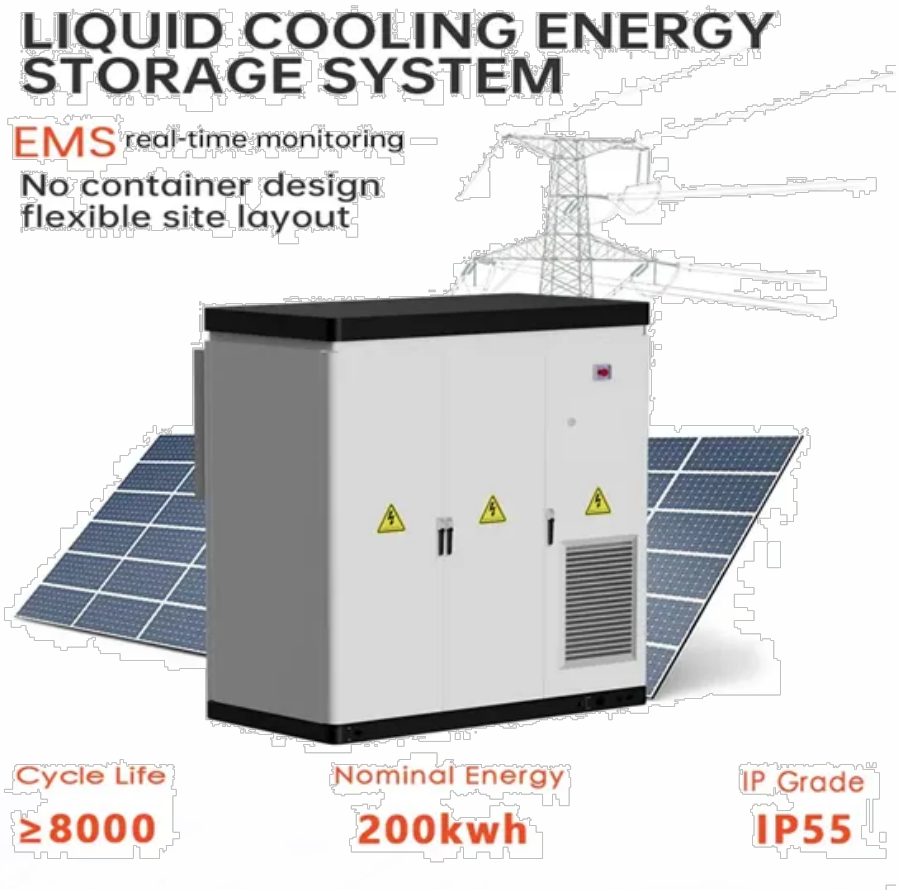
High voltage inverter discharge



Overview

What is high-voltage active discharge?

High-voltage active discharge refers to the process in which the electrical energy stored in high-voltage capacitors is rapidly (typically within 1-2 seconds) released to a safe level (reducing the high voltage to below 60V) through a specialized discharge circuit and control strategy after the high-voltage system of the EV is powered off.

Do EV traction inverters need a DC link active discharge?

Every EV traction inverter requires a DC link active discharge as a safety-critical function. The discharge circuit is required to discharge the energy in the DC link capacitor under the following conditions and requirements: Power transistor on, off control using the TPSI3050-Q1.

What is a passive discharge in a high-voltage system?

Application scenarios: Passive discharge ensures gradual voltage reduction within the high-voltage system when the vehicle is switched off and no other discharge mechanisms are active. It serves as a final safety barrier when active discharge paths fail. How quickly should a high-voltage system discharge to be considered safe?

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What is a high-voltage DC link?

Image used courtesy of Adobe Stock High-voltage DC links are central to a wide range of power electronic systems in electric and hybrid vehicles—including inverters relying on large capacitors (e.g 1 mF) to stabilize the voltage, reduce ripple, and support efficient control and operation.

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During the emergency situations, key-OFFs, or maintenance, discharging the inverter dc-bus capacitor voltage within seconds is imperative due to safety concerns (inverter ...

High-voltage inverter-driven motors, such as those found in EVs, are more prone to partial discharge phenomena. In general, partial discharge occurs when a voltage greater than ...

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The inverter has a capacitance that, by the competition rules, we need to discharge when we shutdown the car. For this, we use a 4.7 k? power resistor. I'm in charge ...

Fast Discharge prevents Fire hazard actively discharged to prevent residual voltage. separate disconnection unit. power resistors with minimal time discharge in less than ...

Image used courtesy of Adobe Stock DC Link Discharge Challenges in Inverter High-voltage DC links are central to a wide range of power electronic systems in electric and ...

A DC link capacitor 5 is connected in parallel with the inverter 1, and a high resistance passive discharge resistor 6 is connected in parallel with the link capacitor to ...

TI technology and devices, such as MCUs, isolated gate drivers, isolated bias supplies, safety PMICs, active discharge, position sensing, isolated voltage, and current ...

The paper includes a simulation comparison of winding-based discharge with the proposed Hybrid discharge technique. The proposed solution has a higher discharge rate and ...

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The DC-Link capacitor is a part of every traction inverter and is positioned in parallel with the high-voltage battery and the power stage (see Figure 1). The DC-Link ...

Contact Us

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