BUHLE POWER

AC Discharge Inverter

Overview

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.

Why do EV inverters need to be discharged?

Abstract: when an Electrical Vehicle (EV) encounters an accident or the vehicle is taken to a service station, the DC-link capacitor in the inverter must be discharged to ensure safety of both the passengers and the operator.

How is power dissipated in an inverter?

The power dissipated by the the inverter’s housi ng or through a cooling s ystem. the current. The discharge energy is used to charge the Low- voltage battery (12 V) us ed as an auxiliary bat tery. the Flyback transformer. A charging current of 1C is used to Ampere ho urs (Ah). The blue trace i n Fig.1 illustrates the energy.

How do EV traction inverters work?

To control the voltage so that the voltage does not exceed 50 V (touch safe), the auxiliary power supply has to turn on and power up safety-relevant circuits that can discharge the DC link caps (active discharge) or actively short circuit the motor. Every EV traction inverter requires a DC link active discharge as a safety-critical function.

AC Discharge Inverter

[SYSTEMS AND METHODS FOR ACTIVE DISCHARGE FOR INVERTER ...]

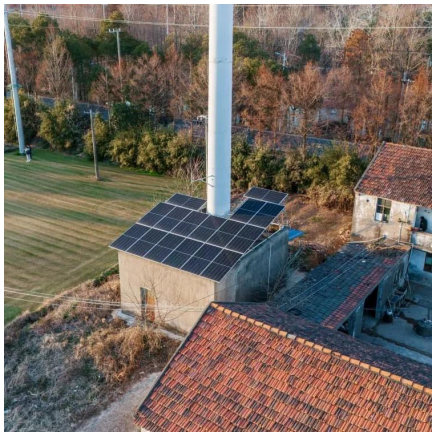
Inverters, such as those used to drive a motor in an electric vehicle, for example, are responsible for converting High Voltage Direct Current (HVDC) into Alternating Current (AC) to drive the ...

[Design Priorities in EV Traction Inverter With Optimum ...]

Apr 1, 2023 · TI technology and devices, such as MCUs, isolated gate drivers, isolated bias supplies, safety PMICs, active discharge, position sensing, isolated voltage, and current ...

[Bi-directional Battery Charging/Discharging Converter for ...]

First the bidirectional AC-DC converter operates in two modes, namely as front-end rectifier when power transfer is from the single-phase grid to the EV battery, and it works as a voltage source ...



[How to Reduce the Power Resistor for DC-Link ...]

Aug 16, 2024 · 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 ...

[Enabling Smarter DC Link Discharge in EV Traction Inverters]

May 25, 2025 · Enabling Smarter DC Link Discharge in EV Traction Inverters By using an integrated gate driver for DC link discharging, you can shrink BOM costs, save PCB space, ...

[A DC-Link Hybrid Active Discharge Scheme ...]

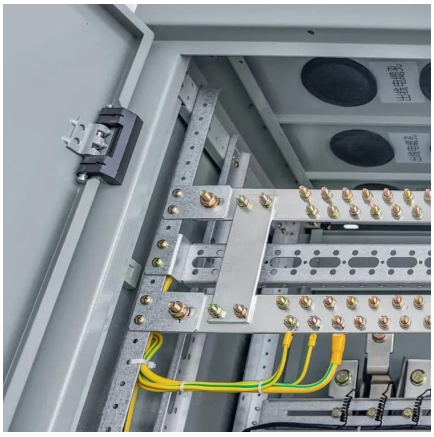
Oct 28, 2024 · The paper includes a simulation comparison of winding-based discharge with the proposed Hybrid discharge technique.

[A DC-Link Hybrid Active Discharge Scheme for Traction Inverters]

Oct 28, 2024 · The paper includes a simulation comparison of winding-based discharge with the proposed Hybrid discharge technique.

[A technical review of modern traction inverter systems used ...]

Nov 1, 2023 · Abstract This article presents a comprehensive review of modern traction inverter systems, their possible control strategies, and various modulation techniques deployed in ...

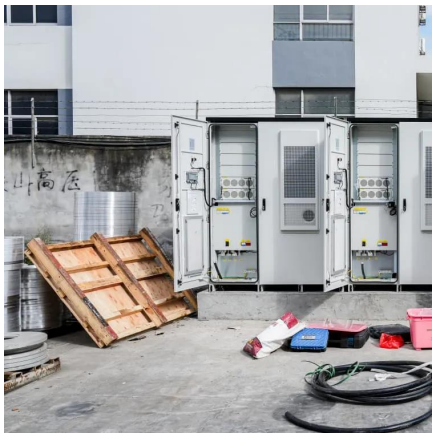


[The working principle of bidirectional charging and ...]

Aug 16, 2024 · The system features an AC-coupled, open-source bidirectional charge and discharge battery. Bidirectional charging and discharging enables grid peak shaving, load ...

[A DC-Link Hybrid Active Discharge Scheme for Traction Inverters]

Sep 6, 2024 · when an Electrical Vehicle (EV) encounters an accident or the vehicle is taken to a service station, the DC-link capacitor in the inverter must be discharged to ensure safety of ...



[What is Partial Discharge in an Inverter-Driven Motor? , HIOKI]

Home Knowledge Center Basics of Electricity What Is Partial Discharge In An Inverter-Driven Motor? An inverter-driven motor, also known as an inverter-fed motor, is a system that ...

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