IMK CONTAINERS

DC inverter discharge

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.

What is a discharge resistor?

Discharge resistors are used to discharge DC links. They discharge the electricity after an electric vehicle has been switched off and convert the energy into heat. This allows the DC link to be discharged reliably. The requirements and various methods for how best to carry out the discharging process are explained below.

How does a DC link discharge a resistor?

When discharging the DC link using constant power, intelligent control electronics apply a sequence of constant power pulses to the resistor at a high frequency, typically referred to as PWM. As a result, the discharge energy is distributed evenly over the entire discharge process of the DC link.

DC inverter discharge

Active Short Circuit and Safe Discharge Mechanisms in ...

The aim of this study is to analyze the real-world operation of active short-circuit and safe discharge methodologies in voltage-fed inverter drive systems with multiple phases in ...

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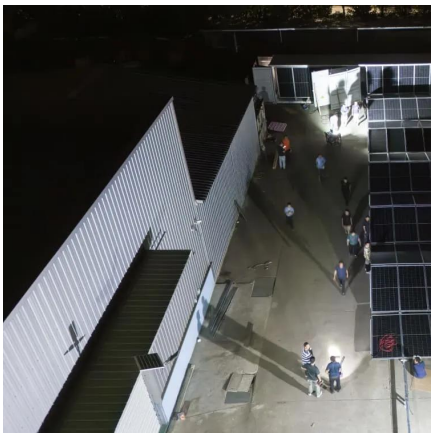

How to Reduce the Power Resistor for DC-Link ...

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 ...

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A DC-Link Hybrid Active Discharge Scheme for Traction Inverters

A DC-Link Hybrid Active Discharge Scheme for Traction Inverters October 2024 Conference: ECCCE Europe 2024 At: Darmstadt, Germany Authors:

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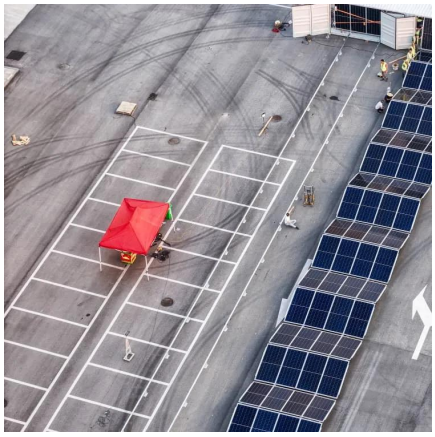

Calculation example - discharging circuit

Calculation example: Uo = 600 V Uo = HV battery voltage (DC circuit voltage) R1, R2, R3, R4 = 150 kOhm R = Discharging resistance (predefined) C = 300 µF C = DC circuit ...

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[Enabling Smarter DC Link Discharge in EV Traction Inverters]

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, ...

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[An Active Discharge Scheme for DC-Bus Capacitors in EV ...]

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

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[Miba: Discharging the DC link , e-Mobility , Miba]

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[Reference Design Active Discharge Circuit for 400 V ...]

However, some OEMs prefer more restrictive discharge timing. Therefore, in this application we choose to set the discharge time at less than 2 s. This reference design follows ...

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

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