

Solar Storage Container Solutions

High voltage inverter discharge



Overview

What is high-voltage active discharge?

High-voltage active discharge refers to the process in which the electric energy in the high-voltage capacitor is quickly (generally 1 ~ 2 s) released to a safe level (the high voltage is reduced to below 60 V) through a special discharge circuit and control strategy after the high-voltage system of the EV is powered off.

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.

Why is high voltage active discharge important?

Therefore, the high-voltage active discharge function becomes an indispensable part of the EV safety design. These risks can be avoided by actively discharging the system voltage to a safe level quickly. Considering personal safety, there are clear requirements for the high voltage safety of EV at the standard level.

Why is high-voltage active discharge important in EV safety design?

If there is no effective discharge mechanism, the residual voltage may cause electric shock accidents, and even lead to serious consequences such as fire. Therefore, the high-voltage active discharge function becomes an indispensable part of the EV safety design.

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.

What is a high power switch in an inverter?

The high-power switches are the most critical component in the inverter as they control the flow of current to the motor to generate motion. As such, the switches' are monitored and protected by sensing their temperature, voltage and current throughout their operation.

High voltage inverter discharge



Circuit design and implementation of high voltage sinusoidal ...

Jun 21, 2014 · Introduction At present, high-voltage inverter power supplies are increasingly being used in the fields of ozone generators, sewage treatment, flue gas desulfurization, high-power ...

Designing a high voltage DC-link capacitor ...

Apr 23, 2024 · Introduction Electric vehicles (EVs) typically feature a large DC link capacitor (C DC LINK) to minimize voltage ripple at the input of the traction ...



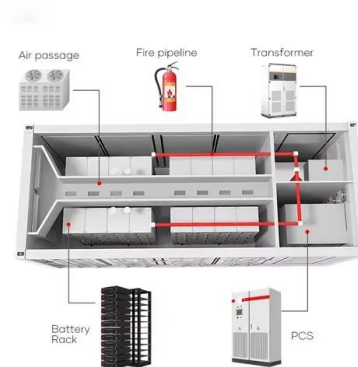
High Voltage Capacitor and Power Supply Applications

DC Filter A DC filter is used to create a smooth voltage from irregular or pulsating voltage sources. High peak currents and ripple currents are dissipated by capacitors storing and ...

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 ...



Why is Partial Discharge (PD) Testing Necessary for Inverter

...

Together with PD testing, the high-voltage multiplexer can integrate six different tests. Furthermore, its protective discharge function prevents damage to instruments and DUTs by ...

A novel embedded sensor for partial discharge detection ...

May 25, 2023 · Partial discharge is known as a source of degradation and lifetime reduction in the machines winding insulation. PD activity is becoming a major concern in high performance ...



A new method for the dispersal of high-voltage energy ...

Dec 8, 2021 · For the sake of high-power density, high efficiency, and compact structure, high-voltage permanent magnet synchronous machine (HV-PMSM) based propulsion systems are ...

EXPERIENCE WITH ON-LINE PARTIAL DISCHARGE ...

Jun 6, 2018 · Abstract - Partial discharge (PD) testing has long been an important tool for assessing the condition of the high voltage insulation in motor and generator stator windings. ...



Grid tie inverters and HV battery , Endless Sphere DIY EV ...

Oct 16, 2019 · A question came up on another forum about testing battery packs. Lots of people will have a 100-400 V battery they would like to load test, but a decent load for a high voltage ...

Experience With On-Line Partial Discharge Measurement in High Voltage

Aug 15, 2017 · The partial discharge (PD) in inverter-fed motors generated from high frequency and short rise time impulsive voltage are more complex than traditional sinusoidal voltage ...



HEV/EV Traction Inverter Design Guide Using Isolated ...

Apr 1, 2023 · This document describes how to design a HEV/EV traction inverter drive system using the advantages of TI's isolated gate drivers diagnostic and protection features.

Design Priorities in EV Traction Inverter With Optimum ...

Apr 1, 2023 · ABSTRACT This technical white paper explores key system trends, architecture, and technology for traction inverters. The devices and technologies used to enable traction ...



What is Partial Discharge in an Inverter-Driven Motor? , Hioki

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 ...

Self-limiting active discharge circuit for electric vehicle inverter

A DC link capacitor coupled to positive and negative DC busses between a high voltage DC source and an electric vehicle inverter is quickly discharged during a shutdown. An active ...



EV Traction Motor Power Inverter Control Reference ...

Aug 25, 2022 · 2 General Description The NXP EV Power Inverter Control Reference Platform provides a hardware reference design, system basic software, and a complete system ...

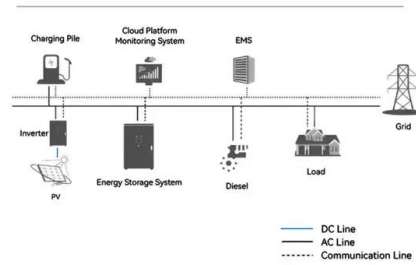
A technical review of modern traction inverter systems used

...

Nov 1, 2023 · These structures' key characteristics, which make them ideal for the upcoming generation of traction inverters, include low-output current distortion, dv / dt reduction, ...



System Topology



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

Jul 18, 2025 · During the emergency situations, key-OFFs, or maintenance, discharging the inverter dc-bus capacitor voltage within seconds is imperative due to safety concerns (inverter ...

Contact Us

For catalog requests, pricing, or partnerships, please visit:
<https://www.chrisnell.co.za>