

Superconducting 24v inverter





Overview

How many kW can a DC inverter deliver?

The working point of 1,700 A and 300 V is chosen to deliver 500 kW at relatively low voltage. Apart from the energy transport from the DC source to the inverter, the DC bus also includes the protection functionality of the network in case of overcurrent events.

How does a superconducting electric motor work?

The superconducting AC and DC cables connect to current leads at the ambient temperature side and interface with the cryogenically cooled power electronics at around 100 K and the superconducting electric motor at 35 K over demountable connectors. The operating parameters and dimensions are chosen to represent a generic electrical powertrain.

What is a superconducting AC & DC BUS?

Downstream of the motor control unit there is a 2 m long 3-phase superconducting AC bus that powers a partially superconducting electric motor. In ASCEND the superconducting AC and DC buses are cooled with flowing liquid nitrogen subcooled at 65–68 K.

Can a superconducting powertrain be a breakthrough electric propulsion solution?

cryogenic and superconducting powertrain as a breakthrough electric propulsion solution on future electric aircraft. A direct current distribution network is used in a propulsion chain to transfer 500 kW of power from the source to an electrical converter, which transforms the power into an alternating voltage/current to drive a superconducting motor.



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Basic experiments with a superconducting full-bridge ...

As a result, the principle of a full bridge current-driven inverter using the dynamic resistance of superconductors and operating in short circuit output condition is experimentally ...

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