Good Stays

Superconducting inductive solar container pulse power technology

Overview

IPPS using superconducting coils, normally known as superconducting pulsed power supplies (SPPS), have more advantages over normal coils like higher energy density, very low resistance losses, and higher time of energy storage. A prior study presented an improved SPPS capable of energy recovery by adjusting two. The proposed effort will develop a technology to wirelessly and efficiently transfer power over hundreds of meters via resonant inductive coupling. The key innovation of this approach is the use of dielectricless high-temperature superconducting (HTS) coils to overcome the limitations in efficiency. By storing energy in the magnetic field of inductive elements and then releasing it rapidly, these systems play a crucial role in a myriad of applications.

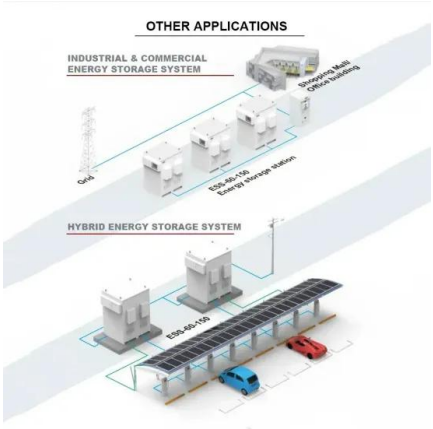
Superconducting inductive solar container pulse power technology

High temperature superconducting rotating electrical machines: An

Superconducting rotating machines are more efficient, smaller and lighter than conventional ones. Thus, they can reduce energy consumption and can be ...

High Temperature Superconducting Devices and Renewable Energy ...

Recent developments in high temperature superconducting (HTS) materials have made superconducting cables and energy storage systems promising alternatives for use in future power ...



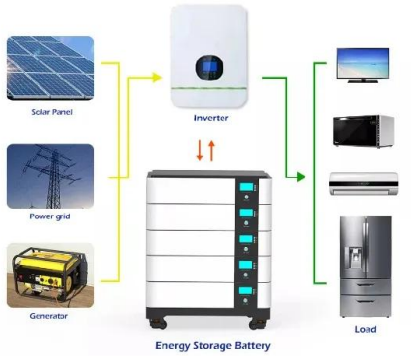
Simulation of an Electromagnetic Launcher With a Superconducting

This paper discusses the application of superconducting inductive pulsed power supplies in electromagnetic launchers by presenting a dynamic model. In this model, the load of the pulsed ...

Experimental Study of Inductive Pulsed Power Supply Circuit With

Inductive pulsed power supply (IPPS) is considered to have great potential in the field of Electromagnetic Launch (EML) due to its high energy density and fast discharge speed. A

repetitive ...



A Multi-Module HTS Inductive Pulse Power Supply With Wide Current Pulse

High-temperature superconducting (HTS) inductors have the advantages of low loss, low charging power, and long-term energy storage, making them very suitable for high-power inductive pulse ...

Superconducting magnetic energy storage systems: Prospects and

This paper provides a clear and concise review on the use of superconducting magnetic energy storage (SMES) systems for renewable energy applications ...

A Novel Repetitive Inductive Pulsed Power Supply Circuit With ...

Due to the low electrical losses and low charging power requirements, the application of superconducting inductors in the inductive pulsed power supply (IPPS) for Electromagnetic Launch ...

Superconducting Magnets , Springer Nature Link (formerly SpringerLink)

Superconducting magnets are widely used in medicine, accelerators, industry, science, and fusion research. Superconducting magnets consume power mainly for refrigeration to keep them ...

Development of Improved Superconducting Pulsed Power Supply ...

IPPS using superconducting coils, normally known as superconducting pulsed power supplies (SPPS), have more advantages over normal coils like higher energy density, very low resistance losses, and ...

A Multi-Module HTS Inductive Pulse Power Supply With ...

The current inductive pulse power supply modes are difficult to meet this requirement. For this issue, this paper proposes a new multi-module IPPS circuit based on high-temperature superconducting pulse ...

NASA Interests in Superconducting and Cryogenic Technology

New Technical Challenge (Oct 2024 - Sept 2030) Develop a 5 MW superconducting motor system and demonstrate at subscale to enable new higher performance airplane architectures (TRL 3)

Simulation and Experimental Investigation of a High-Temperature

In this paper, to obtain a higher amplitude, higher energy transfer efficiency and better waveform quality of pulse current, a pulsed power supply that has time delay effect of the

A modified circuit topology for inductive pulsed power supply based on

High temperature superconducting pulsed power transformer (HTSPPT) provides an efficient method for inductive energy storage and current multiplication.

A Multi-Module HTS Inductive Pulse Power Supply With Wide Current Pulse

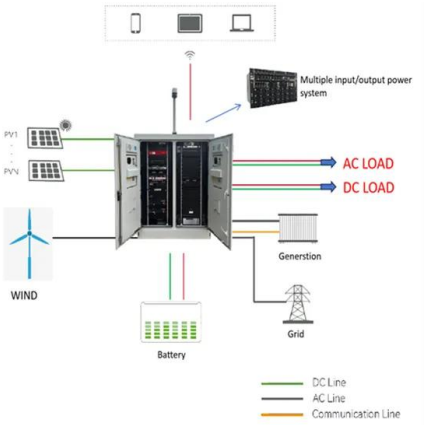
The current inductive pulse power supply modes are difficult to meet this requirement. For this issue, this paper proposes a new multi-module IPPS circuit based on high-temperature superconducting pulse ...

NASA TechPort

The proposed effort will develop a technology to wirelessly and efficiently transfer power over hundreds of meters via resonant inductive coupling. The key innovation of this approach is the use of ...

Superconducting Magnetic Energy Storage for Pulsed Power Magnet

As part of the exploration of energy efficient and versatile power sources for future pulsed field magnets of the National High Magnetic Field Laboratory-Pulsed Field Facility (NHMFL-PFF) at Los Alamos ...



An Inductive Pulsed-Power Supply Circuit Consisting of Multiple ...

An SPPS consisting of eight high-temperature superconducting pulsed-power transformer (HTSPPT) modules with XRAM methodology was designed and simulated in preliminary studies.

Design and Simulation of a Multimodule Superconducting Inductive ...

The superconducting inductive pulsed-power supply (IPPS) is considered to have broad application prospects in the field of electromagnetic launch because of its low electrical loss. In order ...

Superconducting inductive energy storage pulsed current generator ...

Capacitive energy storage have been widely used in area of pulsed power, however, it canpsilat be used in application which requires long time energy storage (for example, accumulation of solar energy) ...

Research and economic evaluation on novel pulse superconducting ...

In tokamak operation cycle, the proportion of pulse power output time is very small, most of the time stable power is output, And the amplitude of stable power is much smaller than that of ...

Simulation and experimental investigation of a high-Temperature

We simulated the superconducting pulsed power system and obtained the pulse outputs under the condition of different delay times. Meanwhile, its correctness is verified by experiments.

Microsoft Word

Examples of technologies that provide these unique solutions include superconducting fault current limiters, generators for off shore wind turbines, superconducting magnetic energy storage, and ...

Superconducting Magnetic Energy Storage using High Temperature

Inductive pulsed power generators apply coils as powerful short time energy storage which is an ordinary mean to deliver pulses of high power to loads like electromagnetic accelerators.

Inductive Pulsed Power Supply Consisting of Superconducting Pulsed

We have been developing an inductive pulsed power supply (PS) consisting of several superconducting pulsed power transformers with Marx generator methodology. Each of these pulsed power ...

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