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Flywheel energy storage patent

Overview

An energy storage system comprises a housing and a flywheel having a drive shaft portion attached to a cylindrical ferromagnetic rotor portion. The drive shaft portion defines a substantially vertical axis about which the rotor portion is mounted for rotation. A magnetic bearing assembly comprised.

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A compact energy storage system includes a high speed rotating flywheel and an integral motor/generator unit. The rotating components are contained within a vacuum enclosure to minimize windage losses. The flywheel rotor has a unique axial profile to both maximize the energy density of the flywheel.

A high-voltage flywheel energy storage system to prevent ionization, plasma formation, and electrical are discharge and corresponding method are provided. The high-voltage flywheel energy storage system prevents ionization, plasma formation, and electrical are discharge by isolating the motor.

Flywheel energy storage (FES) system is a way of energy storage, mainly by accelerating the rotor (having a flywheel) to a very high speed, such that energy can be stored in the system as rotational kinetic energy. When the system needs to output energy, according to the principle of conservation.

[0001] The present invention relates to energy storage systems, and more specifically to energy storage sys-tems capable of storing electrical energy as kinetic en-ergy of a rotating flywheel, for release of the stored kinetic energy as electrical energy when required. [0002] Large-scale energy.

A flywheel energy storage system (1), comprising: an electric motor (112); a flywheel rotor (111), the electric motor being connected to the flywheel rotor to drive the flywheel rotor to rotate; and an asynchronous generator (20), the asynchronous generator comprising a stator and a rotor, wherein.

U.S. patent application number 17/242748 was filed with the patent office on 2021-12-02 for flywheel energy storage system. The applicant listed for this patent is KAZAK TECHNOLOGIES, INC. Invention is credited to Michael McAleenan. Flywheel system properties are enhanced with rim designs that. Why is a flywheel energy storage system better than a chemical battery?

The power density of the flywheel energy storage system is significantly higher than that of chemical batteries (e.g., lead-acid battery), making the flywheel energy storage system more suitable than the chemical batteries in some applications that demands fast energy storage.

What is a flywheel energy storage system?

Flywheel energy storage system 1a is, for example, a horizontal-type flywheel energy storage system, which includes a casing 10a, a shaft 20, a flywheel 30a and two electric motor assemblies 40a. The casing 10a may be made of highly rigid and non-magnetic material, such as aluminum alloy, but the embodiment is not limited thereto.

What is a flywheel rotor?

The flywheel rotor has a unique axial profile to both maximize the energy density of the flywheel, to maximize the volumetric efficiency of the entire system and to provide a circumferential ridge to add balance weights without the damaging procedure of grinding away fibers.

What is a flywheel assembly?

A flywheel assembly comprising: a cylindrical sleeve carried on said shaft, said sleeve closed at each of two opposing axial ends to define an enclosed volume; wherein said sleeve is deformed by expansion of said fluid within said enclosed volume to tightly engage said rotor.

Flywheel energy storage patent

How do flywheels store energy?

From US Patent 2,914,962: Flywheel system by Bertram Schmidt, published December 1, 1959, courtesy US Patent and Trademark Office. How can a flywheel retain its energy? Photo: Flywheels eventually ...

CN108448807A

Flywheel energy storage system belongs to the motor field, in order to solve current flywheel energy storage device output voltage single and charge and the problem that can not go on ...

US20060053959A1

Energy storage systems using a flywheel, as is well known in the art, operates a motor using a redundant electric power and store inertia energy of a rotating member that rotates together ...

US20110114406A1

A flywheel energy storage system for a vehicle, comprising a first shaft, a second shaft operatively coupled to the first shaft and to the vehicle's drivetrain, a flywheel operatively coupled to the ...

WO2010074752A1

A flywheel energy storage battery includes two solid steel flywheels free of axial through holes and axially spaced apart at their outer diameter, forming an airgap between the flywheels, and ...

Jamshedpur engineer claims breakthrough in ...

Flywheel Energy Storage Systems are mechanical devices that store energy in the form of rotational kinetic energy, and they hold great promise for providing efficient large-scale energy storage

US20110298293A1

The present invention relates to energy storage systems, and more specifically to energy storage systems capable of storing electrical energy as kinetic energy of a rotating flywheel, for

WO/2023/005950 FLYWHEEL ENERGY STORAGE SYSTEM

The flywheel energy storage system is connected to the power grid without needing to use a power electronic device, so that necessary voltage and frequency support can be provided for ...

US4821599A

The mass of a metal flywheel and of the necessary containment for the flywheel could negate the advantage of using such an energy storage system in a vehicle. Preferably therefore the ...

Flywheel, flywheel designing method, and flywheel power storage ...

The present invention provides a flywheel having a high energy density, a designing method which facilitates the designing of the flywheel, and an energy storage system ...

US-9083207-B1

The high-voltage flywheel energy storage system prevents ionization, plasma formation, and electrical are discharge by isolating the motor windings and motor end windings from the partial ...

Flywheel energy storage system patented technology retrieval ...

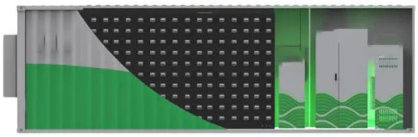
This page includes the patent name, patent number, legal status, invention/applicant, technical efficacy and accompanying drawings of Flywheel energy storage system-related invention ...

Flywheel Energy Storage Device

An example flywheel energy storage device includes a fiber-resin composite shell having an elliptical ovoid shape. The example device also includes an axially oriented internal ...

CN218206936U

The utility model relates to the field of energy storage devices, in particular to a flywheel energy storage device, which comprises a connecting pipe, a guard plate, a shell, a rotating bracket, a ...

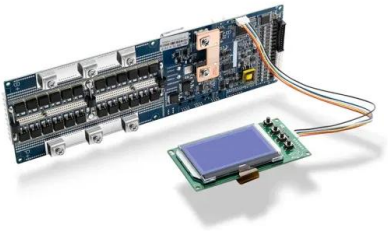


US20110298293A1

An energy storage system comprises a housing and a flywheel having a drive shaft portion attached to a cylindrical ferromagnetic rotor portion. The drive shaft portion defines a ...

U.S. Patent for High-voltage flywheel energy storage system ...

A high-voltage flywheel energy storage system to prevent ionization, plasma formation, and electrical arc discharge and corresponding method are provided.

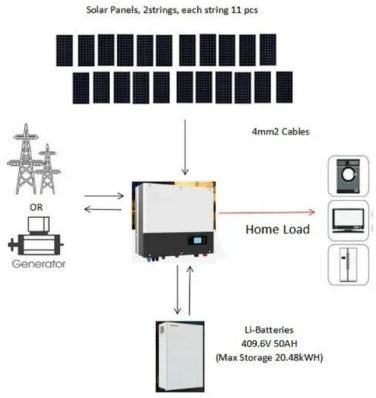


WO2020247967A1

An example flywheel energy storage device includes a continuously curved fiber-resin composite ovoid shell. Hubs are concentrically disposed within and outside the shell at the shaft. A ...

Flywheel energy storage for operating elevators

During periods of high demand, the inertial energy stored in the flywheel motor generator is utilized (67, 68) to add energy to the DC bus to provide additional current to the three phase ...



FLYWHEEL ENERGY SYSTEM

[0001] The present invention relates to energy storage systems, and more specifically to energy storage sys-tems capable of storing electrical energy as kinetic en-ergy ...

US10112491B2

A hybrid/electric vehicle power management system in which an Inertial Storage and Recovery System (INSTAR) utilizes an enhanced Flywheel Energy Storage (FES) system to reach higher ...

Flywheel energy storage system

The power density of the flywheel energy storage system is significantly higher than that of chemical batteries (e.g., lead-acid battery), making the flywheel energy storage ...

Top 5 Advanced Flywheel Energy Storage Startups in 2025

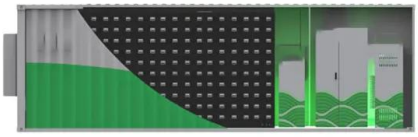
Helix Power has developed a patented flywheel energy storage system to overcome these issues and provide short-duration energy storage. This technology uses a carbon fiber rotor and ...

CN116094251A

The invention discloses a flywheel energy storage device, which belongs to the technical field of flywheel energy storage, and comprises: a cabinet body; the flywheel is arranged in the cabinet ...

Flywheel Energy Storage System Patent Application

U.S. patent application number 17/242748 was filed with the patent office on 2021-12-02 for flywheel energy storage system. The applicant listed for this patent is KAZAK ...

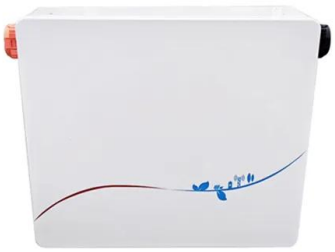


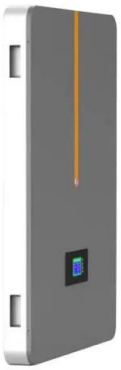
US11015678B2

An example flywheel energy storage device includes a continuously curved fiber-resin composite ovoid shell. Hubs are concentrically disposed within and outside the shell at the shaft. A ...

Multiple flywheel energy storage system

An electrical energy storage system for supplying power to a load comprises a plurality of flywheel energy storage systems, each supplying a power output signal, and a connector circuit. The ...



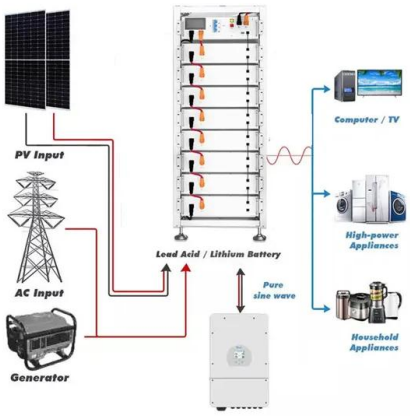


CN114257036A

The flywheel energy storage is an energy storage mode that a motor drives a flywheel to rotate at a high speed, electric energy is converted into kinetic energy to be stored, and the flywheel ...

Flywheel energy storage system

A flywheel energy storage system for a vehicle, comprising a first shaft, a second shaft operatively coupled to the first shaft and to the vehicle's drivetrain, a flywheel operatively coupled to the ...



Portable Multi-Stack Flywheel Energy Storage Assembly

The Portable Multi-stack Flywheel Energy Storage Assembly stores energy from any electrical grid or other energy source such as wind turbines and photovoltaic solar power to a flywheel ...

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