BOLETÍN DE VIGILANCIA TECNOLÓGICA E INTELIGENCIA COMPETITIVA

ALMACENAMIENTO DE ENERGÍA

MARZO - ABRIL 2021

BATTERYPLAT

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NOTICIAS

How can we store renewable energy? 4 technologies that can help

Publicada en https://www.weforum.org, 22/04/2021.

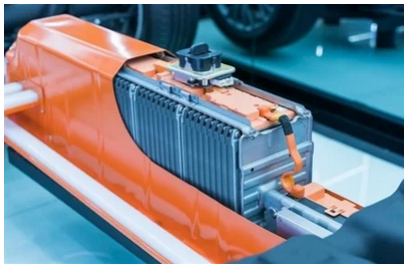
Europe and China are leading the installation of new pumped storage capacity – fuelled by the motion of water. Batteries are now being built at grid-scale in countries including the US, Australia and Germany. Thermal energy storage is predicted to triple in size by 2030.
Mechanical energy storage harnesses motion or gravity to store electricity.

ver más...

Massless Energy Storage: The Next Step in Battery Technology

Publicada en https://www.azocleantech.com, 08/04/2021.

In this environmentally conscious world, fossil fuels are being shunned in favor of renewables for electricity generation and transportation. Due to their periodic nature, excess energy generated by renewables is frequently stored in batteries. However, these often add extra weight to the cars and consumer electronics they power.



ver más...

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Europe predicted to deploy nearly twice as much electrical storage in 2021 than last year

Publicada en https://www.energy-storage.news, 24/03/2021.

Two recent large commercial and industrial (C&I) deployments of Tesla Megapack storage systems totalling 28MWh in Slovenia contributed to Central and Eastern Europe's C&I segment growing by a significant percentage last year, the report said. Europe’s cumulative electrochemical energy storage installation capacity has gone past the 5GWh mark and this year is likely to see installations almost double from 2020’s figures.

ver más...

How a New Generation of Batteries Will Change the World

Publicada en https://www.bloomberg.com, 10/03/2021.

Silicon Valley is about to commercialize revolutionary technology that will enable huge breakthroughs in the battle against global warming. (Source: Bloomberg)

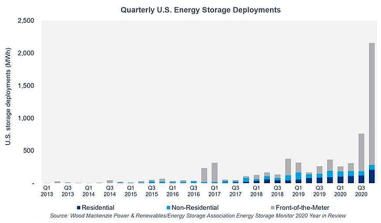
ver más...

Volver al índice

'It's gigantic': Battery storage grows exponentially

Publicada en https://www.eenews.net, 04/03/2021.

The energy storage industry is shattering records for battery deployments, underscoring its growing role in decarbonizing the economy. In the last three months of 2020, nearly 2.2 gigawatt-hours (GWh) of energy storage systems were put into operation, according to the energy data firm Wood Mackenzie. That's an increase of 182% from the previous record-setting quarter.



ver más...

Plans for €383.5M investment in batteries R&D detailed in draft climate work programme

Publicada en https://sciencebusiness.net, 04/03/2021.

Horizon Europe research funding calls aim to put flesh on policy initiatives by the European Commission, following launch of the European Battery Alliance in 2017 and adoption of a strategic action plan for batteries in 2018. The EU is to spend €383.5 million on batteries research over the next two years, according to a draft Horizon Europe work programme.

ver más...

Volver al índice

US energy storage in 2021: Notes from a maturing industry

Publicada en Energy Storage news, 25/01/2021.

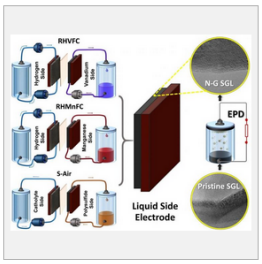
The US energy storage industry remained “remarkably resilient” during what most of us have found to be a difficult year - to say the least. Andy Colthorpe speaks with Key Capture Energy’s CEO Jeff Bishop and FlexGen’s COO Alan Grosse - two companies that made 2020 one of growth in their energy storage businesses - to hear what lessons can be learned and why economics rule.

ver más...

Highly efficient grid-scale electricity storage at fifth of cost

Publicada en Eurekalert technology & engineering, 22/01/2021.

(University of Warwick) Researchers in WMG at the University of Warwick, in collaboration with Imperial College London, have found a way to enhance hybrid flow batteries and their commercial use. The new approach can store electricity in these batteries for very long durations for about a fifth the price of current technologies, with minimal location restraints and zero emissions.



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Scientists synthetize new material for high-performance supercapacitors

Publicada en Eurekalert chemistry & physics, 15/01/2021.

(Tomsk Polytechnic University) Scientists of Tomsk Polytechnic University jointly with colleagues from the University of Lille (Lille, France) synthetized a new material based on reduced graphene oxide (rGO) for supercapacitors, energy storage devices. The rGO modification method with the use of organic molecules, derivatives of hypervalent iodine, allowed obtaining a material that stores 1.7 times more electrical energy. The research findings are published in Electrochimica Acta academic journal (IF: 6,215; Q1).

ver más...

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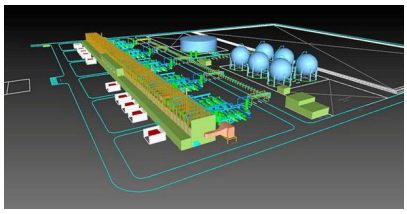
EMPRESAS Y MERCADOS

Gigawatt-scale compressed air: World’s largest non-hydro energy-storage projects announced

Publicada en https://www.rechargenews.com, 29/04/2021.

A Canadian company has today announced that it is developing two 500MW/5GWh ‘advanced’ compressed-air long-duration energy storage (A-CAES) projects in California, each of which would be the world’s largest non-hydro energy storage system ever built.



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Ford plans $185-million research hub for next-generation EV batteries batteryplat

Publicada en https://newatlas.com, 27/04/2021.

With a view to one day manufacturing its own battery cells for electric vehicles, Ford has revealed plans for a new research and development center to explore all aspects of the technology. The company's new global hub for battery research will focus on developing next-generation lithium-ion and solid-state batteries, and will pilot manufacturing techniques that will enable Ford to scale up its anticipated breakthrough designs.

ver más...

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Fluence and Northvolt collaborate to co-develop smart, sustainable battery technology for grid-scale energy storage

Publicada en https://northvolt.com/, 21/04/2021.

Fluence and Northvolt are working to develop sustainable, next-generation battery systems which are intended to lower total cost of ownership and improve functionality of technology that is key to reliable, resilient & decarbonized electric grids .

ver más...

Three new energy storage projects that prove the versatility and value of batteries for the grid

Publicada en https://www.energy-storage.news, 21/04/2021.

While the average output (in megawatts) and capacity (in megawatt-hours) of grid-connected battery storage systems appear to be getting larger, with some recently completed and announced projects exceeding the hundred MW / MWh mark, there’s still a vital role to be played for smaller systems that showcase the multiple different configurations and applications for lithium-ion batteries. Here are three battery energy storage system (BESS) projects from the US that may not individually make headlines for their relative size, but nonetheless prove the value and flexibility of batteries for the grid.

ver más...

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Zinc battery storage contracts in Texas, India and California for Eos Energy Enterprises

Publicada en Energy Storage news, 14/04/2021.

Eos Energy Enterprises, the NASDAQ-listed designer and manufacturer of energy storage systems based on the company's aqueous zinc battery technology, has announced three large-scale projects in the US and India. While the company did not give full details including sizing and capacity of each project, it did name the customers as being US renewables, natural gas and battery storage project developer Hecate Energy for a project in Texas, solar energy independent power producer (IPP) Azure Power for a project in India and power engineering consultancy ZGlobal for a project in California.

ver más...

España se suma a la ola europea de gigafactorías para fabricar baterías de vehículos eléctricos

Publicada en https://cicenergigune.com, 14/04/2021.

Como ya explicamos desde CIC energiGUNE en nuestro anterior post, Europa y gran parte de sus Estados miembros están apostando de manera clara por el desarrollo de la industria asociada a la fabricación de baterías eléctricas, la cual es clave para lograr los objetivos de transición energética fijados para los próximos años.

ver más...

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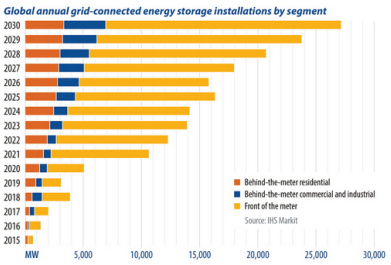
Strong growth ahead for battery storage

Publicada en https://www.pv-magazine.com, 13/04/2021.

Annual battery storage installations will exceed 10 GW/28 GWh in 2021, following a particularly strong year in 2020, despite the challenges created by the global pandemic, writes IHS Markit analyst Mike Longson. Combined solar and storage will be a core focus for new deployment in 2021, as the front-of-the-meter and behind-the-meter energy storage markets are both expected to grow significantly in the months ahead.

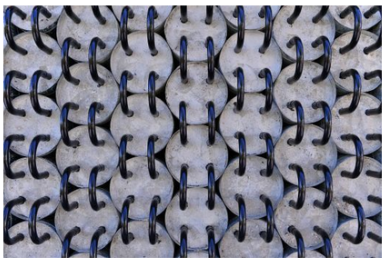


ver más...

Thermal energy storage startup EnergyNest secures US$130 million investment

Publicada en Energy Storage news, 12/04/2021.

An investment worth €110 million (US$131.5 million) has been agreed by 'thermal battery' manufacturer EnergyNest which would make infrastructure equity investor Infracapital its biggest shareholder.



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Wärtsilä’s DC-coupled solar-plus-storage hybrid enables Georgia Power to make full use of resource

Publicada en Energy Storage news, 07/04/2021.

Hickory Park Solar project, a 200MW PV power plant in the US state of Georgia, will be equipped with a battery energy storage system that allows the local utility company to maximise the benefit of the renewable resource. Technology provider and system integrator Wärtsilä has been awarded a contract by the plant’s owner and operator RWE Renewables to supply a 40MW / 80MWh DC-coupled solar-plus-storage system that includes the controls platform to manage and optimise the operation of the entire plant.

ver más...

Gigafactorías: una gran apuesta de Europa para su recuperación a través del desarrollo de fábricas de baterías

Publicada en https://cicenergigune.com, 07/04/2021.

Desde que Tesla popularizará el nombre en 2014 a través de su primer macroproyecto de fabrica de baterías, el término gigafactoría ha ido ganando protagonismo en la agenda industrial y ecónomica de los principales países desarrollados de todo el mundo.

ver más...

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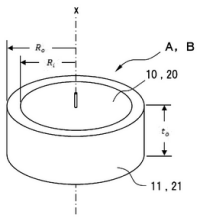
PATENTES

Flywheel, flywheel designing method, and flywheel power storage systyem

Publicada en Tecnologías asociadas a almacenamiento de energía, 14/04/2021.

Soliciante: FUKUSHIMA SIC APPLIED ENGINEERING INC. [JP]
The present invention provides a flywheel which has a high energy density, a designing method which facilitates designing of the flywheel, and a power storage system which can simultaneously achieve the increase of power storage energy and lightness of weight by adopting the flywheel. A flywheel A is provided with: a low-density disk 10 which has a low average density; and a high-density outer edge 11 which is provided to the outer circumference of the low-density disk 10 and which has an average density higher than that of the low-density disk 10.

FIG. 1



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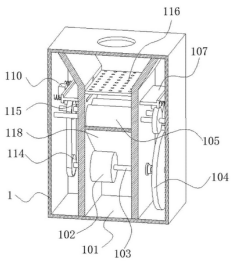
Flywheel energy storage corn flour mill

Publicada en Tecnologías asociadas a almacenamiento de energía, 17/03/2021.

Solicitante: GANZHOU GOLD WOTE POWER EQUIPMENT CO., LTD. [CN]
A flywheel energy storage corn flour mill, comprising an enclosure (1) internally provided with a grinding channel (101). A double shaft motor (102) is fixedly provided on an inner side wall of the grinding channel (101). A flywheel (104) is fixedly provided on the peripheral side surface of a first shaft rod (103) located outside the grinding channel (101). Strip-shaped holes (106) are provided on two opposite inner side walls of the grinding channel (101). Inner walls of the strip-shaped holes (106) are slidably connected to baffle plates (107). Two springs (108) are symmetrically fixed on one side surface of the baffle plate (107).



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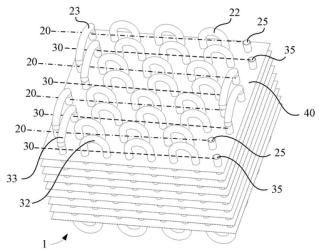
Heat exchanger assembly, energy storage heat exchange device and electrical appliance

Publicada en Tecnologías asociadas a almacenamiento de energía, 17/03/2021.

Solicitante: GUANGDONG MIDEA WHITE HOME APPLIANCE TECHNOLOGY INNOVATION CENTER CO. LTD. [CN]
Provided in the present application are a heat exchanger assembly, an energy storage heat exchange device and an electrical appliance. The heat exchanger assembly comprises a housing and a heat exchanger. The heat exchanger is located in the housing. The heat exchanger comprises: first fluid channels through which a first medium circulates, which are arranged in at least one row; and second fluid channels through which a second medium circulates, which are arranged in at least one row.

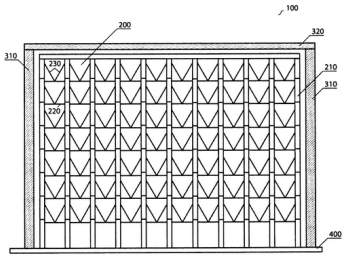


ver más...

Load-supporting construction of gravitational energy-storage system

Publicada en Tecnologías asociadas a almacenamiento de energía, 17/03/2021.

Soliciante: LIMITED LIABILITY COMPANY "ENERGOZAPAS" [RU]
The present invention describes a load-supporting construction of a gravitational energy-storage system, comprising a load-bearing framework and an external enclosure. The load-bearing framework comprises an upper frame and a plurality of modules, each of which consists of a plurality of columns and trusses. At least one truss of the plurality of trusses is attached rigidly to at least one of the columns. The external enclosure can be in the form of a rigid structure arranged at a short distance from the load-bearing framework. The load-supporting construction makes it possible to create a height difference between an upper and a lower position of weights, the difference being sufficient for storing energy.



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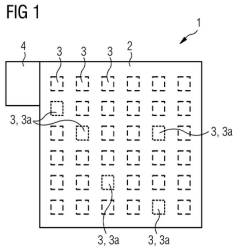
Methods for configuring and operating a thermal energy storage system and thermal energy storage system

Publicada en Tecnologías asociadas a almacenamiento de energía, 17/03/2021.

Soliciante: SIEMENS GAMESA RENEWABLE ENERGY GMBH & CO. KG [DE]
Methods for configuring and operating a thermal energy storage system and thermal energy storage system The invention is related to a method for configuring a thermal energy storage system (1), comprising the following steps: - providing a thermal energy storage device (2) for storing heat, - providing a plurality of temperature sensors (3) at different locations of the thermal energy storage device (2) for measuring temperatures at the different locations, - providing a control device (4) of the thermal energy storage system (1) for reading measurement data of the plurality of temperature sensors (3)

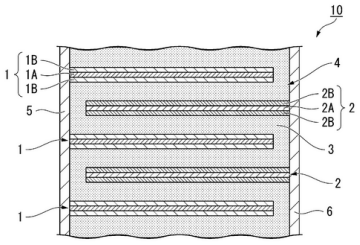


ver más...

Solid electrolyte layer, all-solid-state secondary battery, and method for manufacturing same

Publicada en Tecnologías asociadas a baterias, supercapacitadores, supercondensadores, acumuladores, 17/03/2021.

Soliciante: TDK CORPORATION [JP]
A solid electrolyte layer according to the present invention comprises a solid electrolyte and a compound represented by compositional formula MxZr2(PO4)y, where M is at least one selected from the group consisting of Na, K, Mg, Ca, Sr, Ba, Cu, Zn, and Ni, x satisfies 0x2.5, and y satisfies 2.7y3.5.



ver más...

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Storage battery management system

Publicada en Tecnologías asociadas a baterias, supercapacitadores, supercondensadores, acumuladores, 17/03/2021.

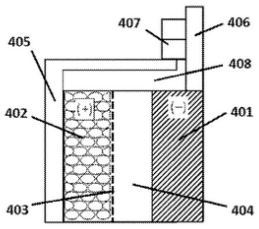
Solicitante: KABUSHIKI KAISHA TOSHIBA [JP]
Provided is a storage battery management system that can improve the operating efficiency of a storage battery. A control device 2 has a state information acquiring unit 21 for acquiring state information of a storage battery 1, a state information transmitting unit 22 for transmitting the state information to a management device 3, a first estimating unit 24 for estimating the SOH of the storage battery 1, and an SOH transmitting unit 25 for transmitting the SOH estimated by the first estimating unit 24 to the management device 3.

ver más...

Systems and methods for grid scale energy storage

Publicada en Tecnologías asociadas a almacenamiento de energía, 17/03/2021.

Solicitante: AMBRI INC. [US]
The present disclosure provides an energy storage device comprising a negative electrode, a molten electrolyte in electrical communication with the negative electrode, and a positive electrode in electrical communication with the molten electrolyte. One or more of the negative electrode, positive electrode, and molten electrolyte may be at least partially liquid at an operating temperature of the energy storage device. The positive electrode may be at least partially solid at the operating temperature of the energy storage device.



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Wireless charging receiver-integrated battery management system and method

Publicada en Tecnologías asociadas a baterias, supercapacitadores, supercondensadores, acumuladores, 17/03/2021.

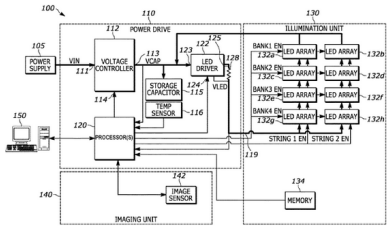
Soliciante: LG ENERGY SOLUTION, LTD. [KR]
A battery management device according to one embodiment of the present invention comprises: a battery management system for monitoring the state of a battery; and a power reception device for wirelessly receiving power from a power transmission device, wherein the battery management system can calculate optimum charging conditions of the battery on the basis of the power transmission performance of the power transmission device and data related to the state of the battery.

ver más...

Systems and methods for adaptive energy storage in an illumination system

Publicada en Tecnologías asociadas a consumo y reciclaje de energía, 15/03/2021.

Solicitante: ZEBRA TECHNOLOGIES CORPORATION
Systems and methods for adaptive energy storage in an illumination system are disclosed herein. An example method includes (1) obtaining, by one or more processors, data stored at a memory of a illumination unit; (2) obtaining, by one or more processors, a temperature value from a temperature sensor; (3) analyzing, by one or more processors, the obtained data and the temperature value to determine a minimum capacitor voltage to operate LEDs in accordance with an illumination cycle



ver más...

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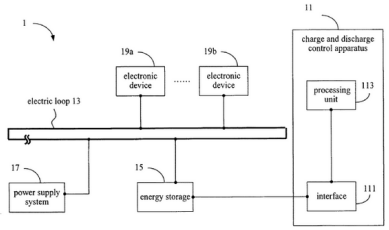
Charge and discharge control apparatus and method for an energy storage system

Publicada en Tecnologías asociadas a almacenamiento de energía, 10/03/2021.

Solicitante: Institute For Information Industry

A charge and discharge control apparatus and method are provided. The charge and discharge control apparatus determines a plurality of adjustment time intervals of a predicted load curve of an electric loop, wherein each adjustment time interval individually corresponds to an adjustment objective.



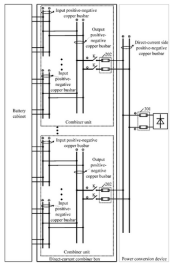
ver más...

Energy Storage System and Multi-Stage Short Circuit Protection System Thereof

Publicada en Tecnologías asociadas a almacenamiento de energía, 10/03/2021.

Solicitante: SUNGROW POWER SUPPLY CO., LTD.

An energy storage system and a multi-stage short circuit protection system thereof are provided. The multi-stage short circuit protection system includes N stages of fuse units. Each battery pack is connected to a corresponding first-stage fuse unit, a direct-current side of a power conversion device is arranged with a third-stage fuse unit, and at least one second-stage fuse unit is arranged between multiple battery packs and the power conversion device.



ver más...

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Energy storage assembly

Publicada en Tecnologías asociadas a almacenamiento de energía, 10/03/2021.

Solicitante: GUANGXI LIUGONG MACHINERY CO., LTD. [CN]
The present disclosure relates to an energy storage assembly (1, 100, 500) for a construction machine, preferably for a tracked construction machine, comprising at least a first and a second energy storage devices (2.1, 2.2), preferably a first and a second battery devices, the energy storage devices (2.1, 2.2) each being configured to power a working equipment and/or locomotion of the construction machine, a rack (3, 300) mountable to the construction machine, the rack (3, 300) being configured to support the first and second energy storage devices (2.1, 2.2), preferably vertically above each other, and a first damping device (22.1) for damping vertical shocks acting on the first energy storage device (2.1) and a separate second damping device (22.2) for damping vertical shocks acting on the second energy storage device (2.2).

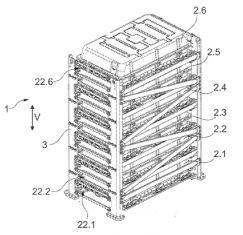


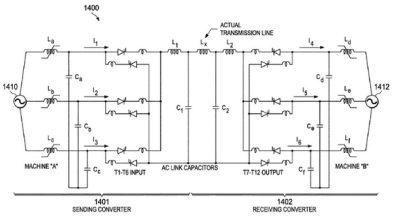
Fig. 2

ver más...

Hybrid energy storage modules for pulsed power effectors with medium voltage direct current (mvdc) power distribution

Publicada en Tecnologías asociadas a consumo y reciclaje de energía, 10/03/2021.

Solicitante: Raytheon Company
A system includes a power source configured to provide constant-current power to a medium-voltage direct current (MVDC) bus. The system also includes a first rotating electrical machine configured to receive the power from the MVDC bus. The system further includes a plurality of second rotating electrical machines connected in series with the first rotating electrical machine, with a long distance transmission line between adjacent rotating electrical machines. In addition, the system includes a flywheel energy storage coupled to each of the rotating electrical machines, where each flywheel energy storage is configured to store inertial energy.



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Power battery energy storage-type tramcar charging system and charging method therefor

Publicada en Tecnologías asociadas a baterias para transporte, 10/03/2021.

Solicitante: CRRC QISHUYAN CO., LTD [CN]
A power battery energy storage-type tramcar charging system and a charging method therefor, the system comprising: a tramcar (3) that extracts power from a contact rail (2) by using a pantograph (1); a charging control system used for supplying energy; a vehicle-mounted energy storage management system disposed within the tramcar (3); and a ground signal machine (8) disposed within a platform (7).

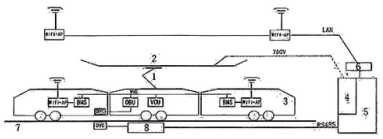


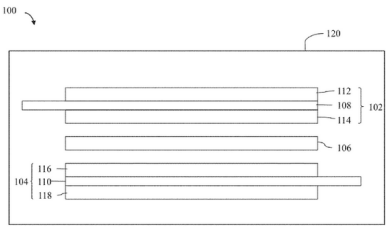
图 1

ver más...

Prelithiated hybridized energy storage device

Publicada en Tecnologías asociadas a almacenamiento de energía, 10/03/2021.

Solicitante: Maxwell Technologies, Inc.
An energy storage device can include a first electrode, a second electrode and a separator between the first electrode and the second electrode wherein the first electrode includes an electrochemically active material and a porous carbon material, and the second electrode includes elemental lithium metal and carbon particles. A method for fabricating an energy storage device can include forming a first electrode and a second electrode, and inserting a separator between the first electrode and the second electrode, where forming the first electrode includes combining an electrochemically active material and a porous carbon material, and forming the second electrode includes combining elemental lithium metal and a plurality of carbon particles.



ver más...

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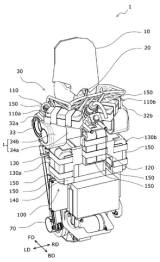
Storage battery unit and humanoid robot

Publicada en Tecnologías asociadas a baterias, supercapacitadores, supercondensadores, acumuladores, 10/03/2021.

Soliciante: KAWASAKI JUKOGYO KABUSHIKI KAISHA [JP]
A storage battery unit (100) is provided with: a first storage battery module (120) disposed on at least one of a front part and a back part of a trunk (30) of a humanoid robot (1); second storage battery modules (110, 130) disposed around the trunk in a direction intersecting the front-back direction of the trunk; and a base (140) that connects the first storage battery module and the second storage battery modules. The base is configured to be detachably attached to the trunk together with the first storage battery module and the second storage battery modules.

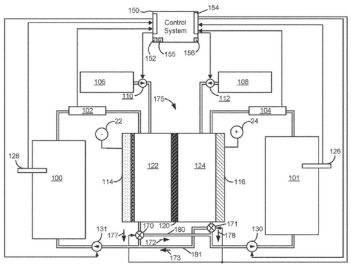


ver más...

System and method for determining state of charge for an electric energy storage device

Publicada en Tecnologías asociadas a almacenamiento de energía, 10/03/2021.

Solicitante: ESS TECH, INC
Systems and methods for operating an electric energy storage device are described. The systems and methods may generate a state of charge estimate that is based on negative electrode plating. An overall state of charge may be determined from the state of charge estimate that is based on negative electrode plating and a state of charge estimate that is not based on negative electrode plating.



ver más...

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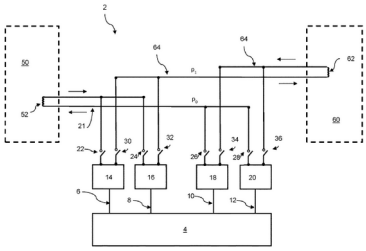
System and method of pumped heat energy storage

Publicada en Tecnologías asociadas a almacenamiento de energía, 10/03/2021.

Solicitante: Gridworthy Technologies LLC



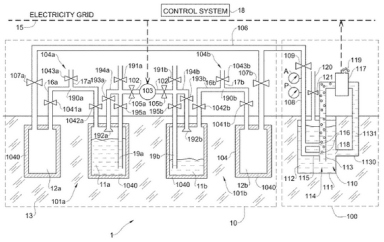
Methods and systems for energy storage and management are provided. In various embodiments, heat pumps, heat engines and pumped heat energy storage systems and methods of operating the same are provided. In some embodiments, methods include controlling thermal properties of a working fluid by virtue of the timing of the operation of cylinder valves. Methods and systems for controlling mass flow rates and charging and discharging power independent of working fluid temperature and system state-of-charge are also provided.

ver más...

System for energy storage and electrical power generation

Publicada en Tecnologías asociadas a almacenamiento de energía, 10/03/2021.

Solicitante: Augwind Ltd.



A system for energy storage and electricity generation is described. The system includes an energy storage subsystem and an electricity generation subsystem coupled to the energy storage subsystem. The energy storage subsystem is configured to store energy in the form of compressed air at a temperature greater than a temperature of ambient air in the atmosphere. The electricity generation subsystem is configured to produce electricity by utilizing the compressed air stored in the energy storage subsystem at the temperature greater than the temperature of ambient air in the atmosphere.

ver más...

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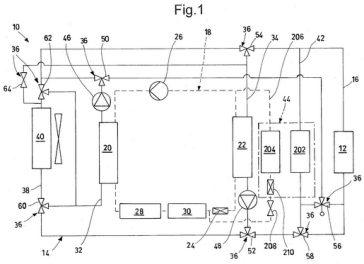
System for integrated control of the temperature of a battery and of an interior air conditioning apparatus in a vehicle

Publicada en Tecnologías asociadas a baterias, supercapacitadores, supercondensadores, acumuladores, 10/03/2021.

Solicitante: DENSO THERMAL SYSTEMS S.P.A. [IT]
The system (10) comprises: a battery (12) configured for outputting electric power; an air conditioning apparatus (44) in thermal exchange relation with an interior or cabin of the vehicle; a thermal regulation circuit (14) configured for being run through by a liquid. The circuit (14) comprises an operative tract (16) in thermal exchange relation with the battery (12), so as to control the temperature thereof; and an interior heating tract (42) connected in parallel with the operative tract (16) and in thermal exchange relation with the air conditioning apparatus (44).

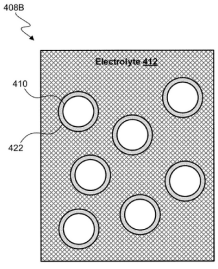


ver más...

Systems and Methods of Making Solid-State Batteries and Associated Solid-State Battery Anodes

Publicada en Tecnologías asociadas a baterias, supercapacitadores, supercondensadores, acumuladores, 10/03/2021.

Solicitante: TeraWatt Technology Inc.
Various embodiments and methods related to solid-state battery and associated solid-state battery anodes are presented. The solid-state battery may include a solid-state battery cathode, a solid-state battery anode, and a solid electrolyte separator. The solid electrolyte separator may be positioned between the solid-state battery cathode and the solid-state battery anode to form the solid-state battery. The solid-state battery anode may include a second solid electrolyte powder, a plurality of graphite particles, and a plurality of conductive fibers. The plurality of conductive fibers may be interspersed between the plurality of graphite particles. The plurality of graphite particles may be characterized by a D50 diameter of less than 20 m.



ver más...

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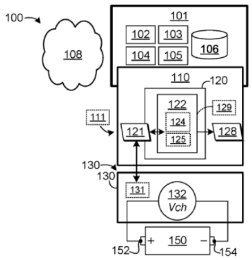
Systems and methods for managing energy storage operations

Publicada en Tecnologías asociadas a almacenamiento de energía, 10/03/2021.

Solicitante: BATTELLE ENERGY ALLIANCE, LLC
An energy storage device (ESD) manager determines charge conditions that result in charge-related aging of an energy storage device (ESD), such as a battery, cell, or the like. The ESD manager may determine charge-related costs for charge operations, which may quantify charge-related aging imposed by subjecting ESD to specified charge conditions.

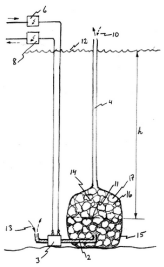


ver más...

Underwater energy storage system

Publicada en Tecnologías asociadas a almacenamiento de energía, 10/03/2021.

Solicitante: Hans Gude GUDESEN
An underwater energy storage system comprising a container where energy is stored by transporting water between the container and a body of water, is disclosed. 5 The container comprises a water- and gas-tight membrane surrounding a container volume, where the container is rendered mainly incompressible by a fill material comprising densely packed, incompressible objects arranged in the container volume, the fill material forming a mainly incompressible aggregate.



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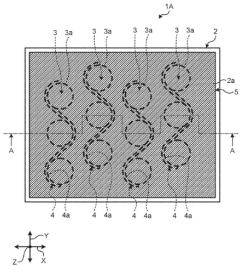
Vehicle battery pack

Publicada en Tecnologías asociadas a baterias para transporte, 10/03/2021.

Solicitante: Yazaki Corporation
A vehicle battery pack includes: a battery cell; a casing that has a heat dissipation property for discharging heat outside the casing and houses the battery cell in a housing space; a first solid-liquid phase change material that directly comes in contact with the battery cell and fills the housing space; a second solid-liquid phase change material that has a heat storage property and has a second phase change temperature higher than a first phase change temperature of the first solid-liquid phase change material; and a heat storage container that has thermal conductivity and has an internal space filled with the second solid-liquid phase change material.

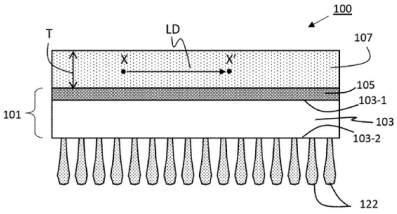


ver más...

Asymmetric anodes for lithium-based energy storage devices

Publicada en Tecnologías asociadas a almacenamiento de energía, 03/03/2021.

Solicitante: Graphenix Development, Inc.
A method of making an anode for use in an energy storage device is provided. The method includes providing a current collector having an electrically conductive substrate and a surface layer overlaying a first side of the electrically conductive substrate. A second side of the electrically conductive substrate includes a filament growth catalyst, wherein the second side is opposite the first. The method further includes depositing a lithium storage layer onto the surface layer using a first CVD process forming a plurality of lithium storage filamentary structures on the second side of the electrically conductive substrate using second CVD process.



ver más...

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Graphite adsorption phase change energy-storage powder, and preparation method therefor and application thereof

Publicada en Tecnologías asociadas a almacenamiento de energía, 03/03/2021.

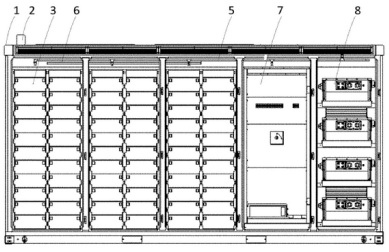
Solicitante: ZHANG, Liqiang [CN]
A graphite adsorption phase change energy-storage powder. The graphite adsorption phase change energy-storage powder comprises the following components in parts by weight: 100 parts of a phase change powder and 5-9 parts of worm-like expanded graphite. The worm-like expanded graphite is selected as an adsorption material, so that same is loose and porous and has a large specific surface area, and thus has a very strong adsorption capacity for the phase change powder, and the adsorption of the phase change material can be completed using only a relatively few parts by weight of the worm-like expanded graphite.

ver más...

Outdoor Energy Storage System Cabinet and Outdoor Energy Storage System

Publicada en Tecnologías asociadas a almacenamiento de energía, 03/03/2021.

Solicitantes SUNGROW POWER SUPPLY CO., LTD.
An outdoor energy storage system cabinet and an outdoor energy storage system are provided. The cabinet includes a cabinet body, a water firefighting system, and a gas firefighting system. The water firefighting system includes a water firefighting pipe. The water firefighting pipe is arranged at a top part of an interior of the cabinet body and is provided with a water nozzle. The gas firefighting system includes a gas firefighting pipe.



ver más...

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Supercapacitor based energy storage device

Publicada en Tecnologías asociadas a consumo y reciclaje de energía, 03/03/2021.

Solicitante: Kilowatt Labs, Inc.

An energy storage device includes a charge storage assembly, an auxiliary storage element, and a charge control circuit. The charge storage assembly includes an array of supercapacitors coupled in series, a plurality of batteries, and a charge retention circuit. Each of the plurality of batteries is electrically coupled to a corresponding supercapacitor in the array of supercapacitors. The charge retention circuit is configured to maintain a charge state of at least one supercapacitor in the array of supercapacitors when the at least one supercapacitor is in an idle state.

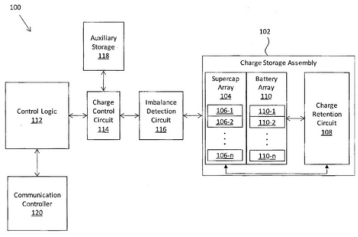


FIG. 1

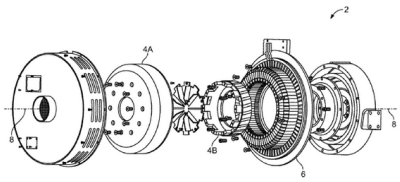
ver más...

Systems and methods for enhancing electrical energy storage

Publicada en Tecnologías asociadas a almacenamiento de energía, 03/03/2021.

Solicitante: ClearWater Holdings, Ltd.

An electrical energy storage device comprises a housing having a first end, a second end, a first side, and a second side; a first electrode disposed in the housing adjacent the first side; a second electrode disposed in the housing adjacent the second side; and an electrolyte mixture disposed between the first electrode and the second electrode, the electrolyte mixture containing a plurality of ions. In an implementation, a channel disposed in the housing permits ions to flow adjacent to the first end and a barrier in the housing prevents ions from flowing adjacent to the second end. In another implementation, some of the ions are magnetic. In a further implementation, some of the ions have a greater density than other ions.



ver más...

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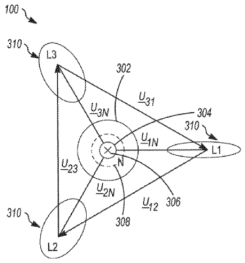
Systems and methods for smooth start up of vehicle onboard battery charger

Publicada en Tecnologías asociadas a baterias para transporte, 03/03/2021.

Solicitante: DELPHI AUTOMOTIVE SYSTEMS LUXEMBOURG SA
A method for a battery charger circuit of a vehicle includes measuring a first voltage value on a first side of a relay that is connected to an incoming alternating current source. The method also includes measuring a second voltage value on a second side of the relay that is connected to the battery charger circuit. The method also includes determining whether a difference between the first voltage value and the second voltage value is greater than a threshold.

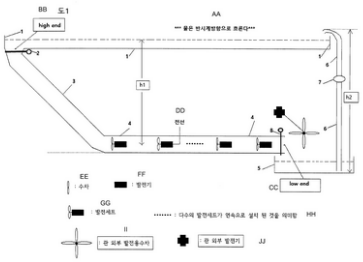


ver más...

Pumped-storage hydroelectric power station having pipe installed such that both ends of pipe have different heights, thereby inducing fluid flow inside pipe, and utilizing fluid flow

Publicada en Tecnologías asociadas a almacenamiento de energía, 20/01/2021.

Solicitante: HEO, Kyu-hwe [KR]
(1) Technical field of the invention described in the claims: natural laws regarding water flowing from a high place to a low place, and fluid dynamics regarding potential energy of water. (2) Technical objectives to be solved by the invention: A. Simultaneously producing electric power and pumping up water; B. Installing hydroelectric power stations in unlimited places, that is, guaranteeing that hydroelectric power stations can be installed anywhere



ver más...

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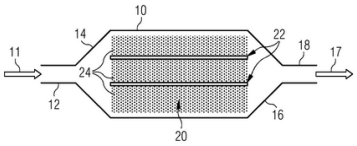
Thermal energy storage

Publicada en Tecnologías asociadas a almacenamiento de energía, 13/01/2021.



Solicitante: SIEMENS GAMESA RENEWABLE ENERGY GMBH & CO. KG [DE]
There is described a thermal energy storage comprising a housing (10) having a fluid inlet (12) and a fluid outlet (18), and a thermal energy storage structure (20) arranged within the housing (10) between the fluid inlet (12) and the fluid outlet (18), the thermal energy storage structure (20) comprising thermal energy storage elements and flexible separator elements (22), the flexible separator elements (22) being arranged such that the thermal energy storage elements are separated into layers (24), each layer (24) forming a channel between the fluid inlet (12) and the fluid outlet (18). Furthermore, a method of manufacturing a thermal energy storage and a power plant for producing electrical energy are described.

ver más...

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PUBLICACIONES CIENTÍFICAS

To Store or Not to Store: A Q-Methodological Study into the Influence of Perceived Needs and Factors on the Implementation of Electrical Storage Applications in the Dutch Power Grid

Publicada en BASE Bielefelt Energy Storage, 14/04/2021.

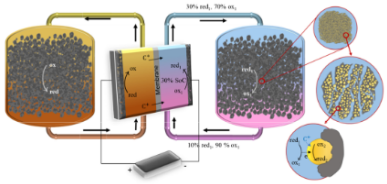
Modern society is highly dependent on the reliable supply of affordable electricity. To ensure a sustainable future, this energy should be derived from renewable generation systems. The intermittent output of such systems makes it hard to maintain the so-called grid balance, which can lead to the malfunctioning of the current power grid. Adding electrical storage applications to the electrical energy infrastructure is increasingly mentioned as a viable and even instrumental solution, but no stak[...]

ver más...

Thermodynamics, Charge Transfer and Practical Considerations of Solid Boosters in Redox Flow Batteries

Publicada en BASE Bielefelt Energy Storage, 14/04/2021.

Solid boosters are an emerging concept for improving the performance and especially the energy storage density of the redox flow batteries, but thermodynamical and practical considerations of these systems are missing, scarce or scattered in the literature. In this paper we will formulate how these systems work from the point of view of thermodynamics. We describe possible pathways for charge transfer, estimate the overpotentials required for these reactions in realistic conditions, and illustra[...]



ver más...

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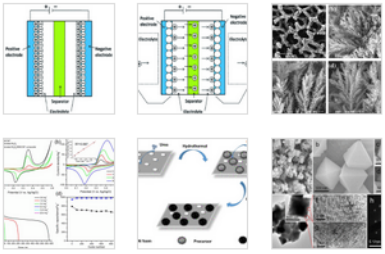
Recent progress and emerging challenges of transition metal sulfides based composite electrodes for electrochemical supercapacitive energy storage

Publicada en BASE Bielefelt Energy Storage, 06/04/2021.

The need for clean energy production and utilization is urgent and continues to grow due to the serious issues of human population growth and environmental pollution. The energy crisis is driving the demand for novel and innovative materials for the development of alternative energy sources and the fabrication of innovative energy storage devices.



ver más...

Thermal energy storage in buildings through phase change materials (PCM) incorporation for heating and cooling purposes

Publicada en BASE Bielefelt Energy Storage, 01/04/2021.

La reducció del consum energètic dels sistemes de calefacció i refrigeració dels edificis és un repte fonamental per assolir els objectius marcats per l'Horitzó 2020. Noves aplicacions d'emmagatzematge d'energia tèrmica en edificis es mostren prometedores per reduir aquest elevat consum energètic. Un dels objectius d'aquesta tesi doctoral és revisar les aplicacions passives i actives d'emmagatzematge d'energia que es troben en la literatura, especialment aquelles que utilitzen materials de canvi[...]

ver más...

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A new integrated system with thermal energy storage for five useful outputs: A case study

Publicada en Sustainable Energy Technologies and Assessments, 20/03/2021.

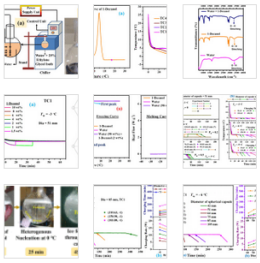
This paper proposes the design of a novel renewable energy based integrated system with thermal energy storage options which is capable of producing up to five useful outputs consisting of electricity, heating, cooling, freshwater, and hot water. The system is also capable of moderate thermal energy storage through the use of molten salts, NaNO3 and KNO3. Following the design of this integrated multigenerational system, an extensive energetic and exergetic thermodynamic analysis is conducted by studying heating and cooling, power outputs, storage capacities, and exergy destruction rates.

ver más...

Facile approach to fend off the supercooling phenomenon of water in a spherical enclosure for energy-efficient and sustainable cold thermal energy storage system

Publicada en Sustainable Energy Technologies and Assessments, 20/03/2021.

Performance of an ice-based cold thermal energy storage system (CTESS) is immensely affected by its supercooling nature. In this research, it was mitigated entirely using 1-Decanol as a nucleating agent, which has favourable properties such as absence of supercooling, low cost, suitable phase change temperature (5 °C) and reasonable freezing enthalpy (200 J g1).



ver más...

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Optimal storage systems for residential energy systems in British Columbia

Publicada en Sustainable Energy Technologies and Assessments, 20/03/2021.

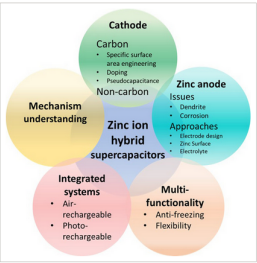
In recent years, deployment of low carbon energy systems to supply electricity in residential buildings has increased. These energy systems typically integrate different renewable energy resources with energy storage systems to meet electrical energy demand. This paper applies the ”energy hub” model to various energy systems for residential buildings in British Columbia considering several scenarios.

ver más...

Zincion hybrid supercapacitors: progress and future perspective

Publicada en Wiley: Batteries & Supercaps, 16/03/2021.

The increasing concern on the safety risks associated with the flammable organic electrolytes in alkaliion batteries and the pursuit of both high energy density and power density in one device has spurred the investigation of aqueous multivalent metal ion hybrid supercapacitors. Zinc ion hybrid supercapacitors (ZIHSCs) have the advantages of low standard potential, high theoretical capacity and good safety in aqueous electrolytes. In this review, the recent advancements achieved in ZIHSCs have been summarized and discussed.



ver más...

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Future trends in CSP with an emphasis on thermal energy storage

Publicada en AIP Scitation, 07/03/2021.

AIP Conference Proceedings, Volume 2323, Issue 1, March 2021. This article focuses on the utilization of concentrated solar energy. It describes current solar field technologies from parabolic troughs through parabolic disks to plane mirrors (heliostats). The article also deals with technologies for the storage of thermal energy from the storage of sensible heat, latent heat, through thermochemical heat, to the storage of sorption heat. The output is the implementation of the design of a concentrating solar thermal power plant, including a heliotechnical device using parabolic trough technology and thermal storage using sensible heat storage technology.

ver más...

Modeling of information exchange between power electronic units in energy storage systems

Publicada en AIP Scitation, 07/03/2021.

AIP Conference Proceedings, Volume 2333, Issue 1, March 2021. The paper discusses the exchange of information between energy storage systems. Variants of information exchange between Power Distribution Units are simulated. The advantages and disadvantages of different options for information protection are shown. Experimental data for PDUs have been used and can be multiplied for energy storage systems. The options for visibility and information protection are illustrated.

ver más...

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Model based design of a multiphase topology for energy storage systems

Publicada en AIP Scitation, 07/03/2021.

AIP Conference Proceedings, Volume 2333, Issue 1, March 2021. Energy storage systems use electrical converters for charging and discharging. In order to obtain higher power of the converters, parallel operation of units is used. Often these converters are resonant converters operating on a common load and with dephased controls - multiphase systems. The processes in a multi-unit system are complex and model-based design can be used for the design. The paper presents basic steps for model-based design. A model of a multiphase converter is presented, suitable for model-based design. Simulation results of the operation of the model are shown.

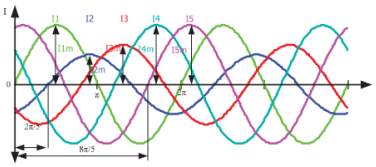

FIGURE 4. Currents generated by a five-phase current source.

ver más...

Geometric synthesis of flywheel energy storage design

Publicada en AIP Scitation, 07/03/2021.

AIP Conference Proceedings, Volume 2333, Issue 1, March 2021. The present work deals with the influence of the geometry of the central part of the kinetic battery on the amount of accumulated energy and the level of sound pressure emitted by it. The study was realized with a 3D structural-acoustic model in the environment of COMSOL Multiphysics®. The model explores the possibilities of reducing the sound pressure level at keeping and/or increasing the kinetic battery energy while maintaining the initial mass of the object. On the basis of the amount of energy stored and the sound pressure level emitted by the kinetic battery, geometric shapes with the best performance in terms of these parameters are determined. An experiment was performed aiming to verify the results of the numerical study with COMSOL Multiphysics®. The results of the study are analyzed.

ver más...

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