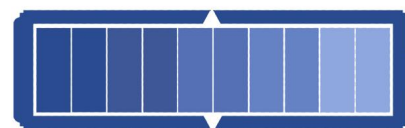


BOLETÍN DE VIGILANCIA TECNOLÓGICA E INTELIGENCIA COMPETITIVA

ALMACENAMIENTO DE ENERGÍA

MAYO - JUNIO 2020



BATTERYPLAT

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NOTICIAS

Steven Chu: Long-Term Energy Storage Solution Has Been Here All Along

Publicada en <https://www.forbes.com>, 24/06/2020.

The most efficient energy storage technology may be as close as the nearest hill, according to former Energy Secretary Steven Chu, and almost as old. "It turns out the most efficient energy storage is you take that electricity and you pump water up a hill," Chu said Tuesday at the Stanford University Global Energy Forum.



[ver más...](#)

Finland to stabilize grid with 30 MW/30 MWh battery

Publicada en <https://www.pv-magazine.com>, 19/06/2020.

The Yllikkälä Power Reserve One project will be one of Europe's largest storage installations and the biggest in the Nordic countries. French developer Neoen will deploy the big battery close to Lappeenranta in the southeastern part of the country.



[ver más...](#)

Europe's next energy storage opportunities in a continent-wide energy transition

Publicada en Energy Storage news, 18/06/2020.

France, Italy, Spain and Belgium are among the regions of most interest for energy storage stakeholders in Europe, analysis firm Clean Horizon has told Energy-Storage.news.



[ver más...](#)

Energy Storage IEA report

Publicada en <https://www.iea.org>, 15/06/2020.

IEA (2020), Energy Storage, IEA, Paris <https://www.iea.org/reports/energy-storage>- Lead authors: Luis Munuera. Contributors: Claudia Pavarini



[ver más...](#)

New Battery Performance Standard for residential and small-scale commercial applications proposed to Standards Australia

Publicada en <https://www.dnvgl.com>, 15/06/2020.

The new battery standard, once adopted, will address consumers' dilemma of which energy storage system is best suited to residential and small-scale commercial applications. To support the proposed standard, the project consortium will be releasing an interim best practice guide

[ver más...](#)

Energy storage: Why UK industry isn't going with the flow

Publicada en <https://theenergyst.com>, 12/06/2020.

Flow storage struggles to compete against lithium even in long duration applications, suggests Marek Kubik, market director at Fluence Energy. The UK hit a new flexibility milestone earlier this year, with a gigawatt of lithium-ion battery energy storage now estimated to be operational according to Solar Media Research. The trend mirrors a global picture – lithium-ion batteries continue to dominate the global energy storage market, accounting for 99.3% US share in Q4 2019, continuing a long historic trend.

[ver más...](#)

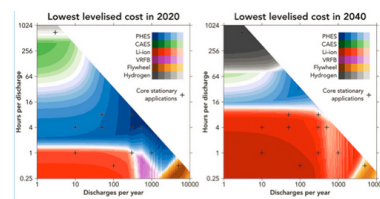
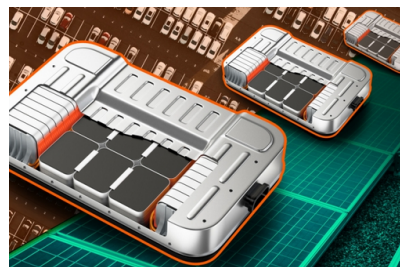


Figure 2 - Projecting the Future Levelised Cost of Electricity Storage Technologies (Schmidt et al, 2019)

Solar energy farms could offer second life for electric vehicle batteries

Publicada en <http://news.mit.edu>, 22/05/2020.

Modeling study shows battery reuse systems could be profitable for both electric vehicle companies and grid-scale solar operations. As electric vehicles rapidly grow in popularity worldwide, there will soon be a wave of used batteries whose performance is no longer sufficient for vehicles that need reliable acceleration and range. But a new study shows that these batteries could still have a useful and profitable second life as backup storage for grid-scale solar photovoltaic installations, where they could perform for more than a decade in this less demanding role.

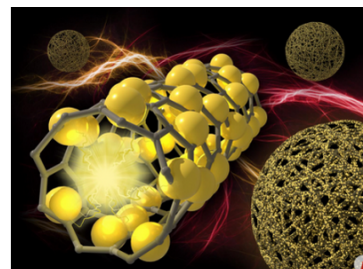


[ver más...](#)

El silicio puede abrir la puerta a las baterías de iones de litio de alto rendimiento

Publicada en <https://www.energias-renovables.com>, 21/05/2020.

Científicos del Departamento de Energía de los Estados Unidos han encontrado una forma novedosa de utilizar el silicio en el diseño de los electrodos de las baterías, que podría servir de base para desarrollar una nueva generación de baterías de litio con mayor capacidad energética y alto rendimiento. Estas baterías se utilizan en los automóviles eléctricos, dispositivos electrónicos y otros equipos.

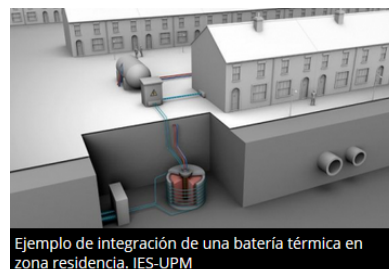


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Las baterías térmicas se perfilan como una alternativa rentable para el autoconsumo fotovoltaico

Publicada en <https://www.energias-renovables.com>, 04/05/2020.

Un estudio desarrollado por el Instituto de Energía Solar de la Universidad Politécnica de Madrid (IES-UPM), en colaboración con la Universitat Politècnica de Catalunya (UPC), concluye que almacenar electricidad en forma de calor para convertirlo de nuevo en electricidad puede ser una solución rentable para el autoconsumo de electricidad fotovoltaica en domicilios y en aplicaciones de mayor tamaño.



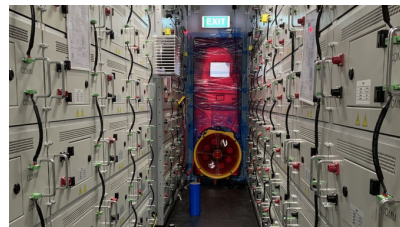
Ejemplo de integración de una batería térmica en zona residencial. IES-UPM

[ver más...](#)

Safety and efficiency first in solar-plus-storage

Publicada en <https://www.energy-storage.news>, 01/05/2020.

Ensuring battery systems used in conjunction with solar perform safely and optimally is essential in the continued roll-out of storage technology. Robert Puto and Gerhard Klein of TÜV SÜD examine independent technical assessments that must be undertaken before a storage system is built. This article first appeared in 'Storage & Smart Power', Energy-Storage.news' dedicated section of the quarterly technical journal PV Tech Power. Volume 22, in which it appeared, was first published online in mid-February.



[ver más...](#)

EMPRESAS Y MERCADOS

Baterías para coches eléctricos libres de cobalto: España protagonista del proyecto COBRA

Publicada en <https://www.hibridosyelectricos.com>, 25/06/2020.

Cinco de los 15 socios del proyecto COBRA, cuyo objetivo es crear una nueva tecnología de baterías de litio libres de cobalto de alta densidad energética, seguras, duraderas y económicas, son españoles. El proyecto COBRA (CObalt-free Batteries for FutuRe Automotive Applications - Baterías sin cobalto para aplicaciones automotrices FutuRe) tiene como objetivo desarrollar una nueva tecnología de batería de iones de litio que prescindan del cobalto. El programa Horizonte 2020 de la Comisión Europea lo ha seleccionado otorgándole una subvención de 11,8 millones de euros para llevar a cabo su objetivo. De los 15 socios que forman el consorcio, cinco son españoles.



[ver más...](#)

Britishvolt's billion-pound battery gigafactory narrows down site selection

Publicada en Energy Storage news, 15/06/2020.

South Wales is likely to be the location for the UK's first lithium-ion 'gigaplant', as Britishvolt announces plans to combine the site with solar. An initial 42 locations were considered, with two sites left in the running.



[ver más...](#)

NEC Energy Solutions reportedly never made a profit since its Japanese parent bought the grid storage arm of A123

Publicada en <https://www.greentechmedia.com/>, 12/06/2020.

Grid battery integrator NEC Energy Solutions is winding down, Bloomberg reported Thursday. The company manufactured and integrated hundreds of megawatts of battery systems for projects around the world. But parent company NEC Corp. of Japan told Bloomberg that the subsidiary lost money since its founding in 2014, when NEC paid \$100 million for the grid storage arm of bankrupt A123.

[ver más...](#)

El Gobierno valenciano negocia con 10 firmas para crear una gigafactoría de baterías junto a Ford

Publicada en <https://www.eleconomista-es>, 06/06/2020.

La Generalitat Valenciana avanza en su proyecto para la construcción de una gigafactoría de baterías en la autonomía, anunciado en 2019. Fuentes del Gobierno valenciano indican a elEconomista que la iniciativa, que se enmarca en los planes de la Unión Europea para el desarrollo de entre 10 y 20 grandes fábricas de este tipo en el continente (para abaratar los costes y reducir la dependencia de la producción asiática), ya está sobre la mesa de diez firmas industriales interesadas en su desarrollo.

[ver más...](#)

Giant twin batteries proposed to boost links between two biggest energy markets

Publicada en <https://reneweconomy.com.au>, 02/06/2020.

US battery storage technology company Fluence is proposing two big batteries – each of 250MW and 30 minute storage – could be installed as a faster and potentially cheaper solution to solve the transmission limits between the two biggest electricity markets in Australia, NSW and Victoria. The proposal by Fluence – which built the 30MW/30MWh Ballarat Energy Storage System in Victoria, (pictured above) one of two big batteries that operate in the state – is revealed in a series of submissions made to the Australian Energy Market Operator as it canvasses options to increase the capacity of transfers between NSW and Victoria.

[ver más...](#)

Top 50 Energy Storage startups

Publicada en <https://www.energystartups.org>, 29/05/2020.

Updated: May 29, 2020. Country: USA | Funding: \$825.7M
Bloom Energy offers on-site power generation systems that can use a wide variety of inputs to generate electricity.



[ver más...](#)

Exclusive: Tesla's secret batteries aim to rework the math for electric cars and the grid

Publicada en <https://www.reuters.com>, 14/05/2020.

(Reuters) - Electric car maker Tesla Inc (TSLA.O) plans to introduce a new low-cost, long-life battery in its Model 3 sedan in China later this year or early next that it expects will bring the cost of electric vehicles in line with gasoline models, and allow EV batteries to have second and third lives in the electric power grid.



[ver más...](#)

Madrid receives pure-electric BYD 12-metre eBus fleet

Publicada en <http://www.byd.com>, 13/05/2020.

BYD, Europe's leading electric bus manufacturer, has this week delivered a fleet of 15 BYD 12-metre pure electric buses to the Municipal Transport Company of Madrid – EMT Madrid. The handover marks the first time that BYD has supplied vehicles to EMT Madrid, Spain's largest public transport provider operating 2,100 vehicles.



[ver más...](#)

Tesla Gained Another Battery Cell Patent: Cell With A Tabless Electrode

Publicada en <https://www.tesmanian.com>, 07/05/2020.

Tesla is actively engaged in the development of its own batteries, as they are the most important component of an electric car. The company seeks to create a battery that allows Tesla cars to travel long distances without recharging, which will have a long service life. Tesla filed a patent 'Cell with a tabless electrode' Filed Date: November 4, 2019. Publication Date: May 7, 2020



[ver más...](#)

PATENTES

Variable Zero Voltage Switching (ZVS) Hybrid Controller for Power Factor Corrector (PFC)

Publicada en Tecnologías asociadas a baterías, supercapacitadores, supercondensadores, acumuladores, 17/06/2020.

Solicitante: Lear Corporation

A power factor corrector (PFC), such as for an on-board charger (OBC) for charging a vehicle traction battery, uses an input voltage and an input current from a power source to output a desired voltage. The PFC has an inductor and first and second power switches. A micro-controller generates, for each half-cycle of the input voltage, first and second reference signals respectively indicative of (i) a sinusoidal envelope of the inductor current for which the PFC will absorb sufficient power from the power source for the PFC to output the desired voltage and (ii) a reverse value of the inductor current for which zero voltage switching (ZVS) of the switches is ensured.

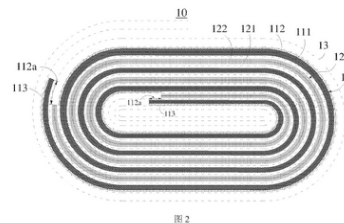
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Wound-type cell, lithium ion secondary battery and negative electrode plate

Publicada en Tecnologías asociadas a baterías, supercapacitadores, supercondensadores, acumuladores, 17/06/2020.

Solicitante: CONTEMPORARY AMPEREX TECHNOLOGY CO., LIMITED [CN]

Disclosed are a wound-type cell, a lithium ion secondary battery and a negative electrode plate. A negative electrode plate (11) of a wound-type cell (10) comprises a negative electrode current collector (111) and negative electrode active substance layers (112) arranged on two opposite surfaces of the negative electrode current collector (111), wherein the negative electrode active substance layer (112) comprises a negative electrode active material



[ver más...](#)

Crankshaft driven flywheel magneto generator with circular winding for power supply in handheld batteryless combustion engines

Publicada en Tecnologías asociadas a baterías, supercondensadores, supercondensadores, acumuladores, 10/06/2020.

Solicitante: SEM AB [SE]/[SE]

The invention relates to a Magneto ignition system for battery less handheld combustion engines comprising a claw generator (1) with a stationary circular power coil winding (10) enclosed by two iron claw halves (11, 12) and with a rotating flywheel magnet ring (13) with multiple magnetic poles. The stationary circular coil winding includes a trigger coil with a stationary coil winding (2) arranged in a plane orthogonal to the stationary circular power coil winding.

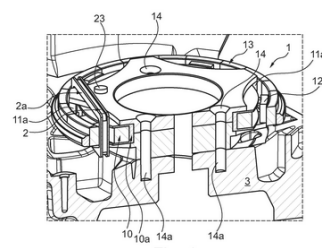


Fig. 4

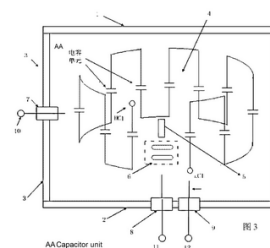
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Gas-tight environment-based high pulse current generation device having nanosecond-scale rise time

Publicada en Tecnologías asociadas a consumo y reciclaje de energía, 10/06/2020.

Solicitante: XI'AN JIAOTONG UNIVERSITY

Disclosed is a gas-tight environment-based high pulse current generation device having a nanosecond-scale rise time, the device comprising a gas-tight cavity having a pressure greater than or equal to the normal atmospheric pressure. An energy storage capacitor, a waveshaping resistor, and discharging switches are installed within an environment having a sealed gas. Each element thus has superior insulation and withstand voltage properties, and a gap between the discharging switches is further reduced, thereby further reducing the inductance of the discharging switches.



[ver más...](#)

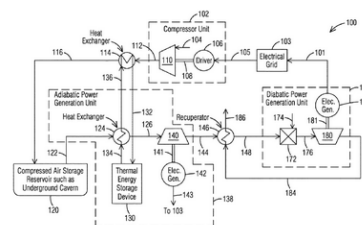


Hybrid compressed air energy storage system

Publicada en Tecnologías asociadas a almacenamiento de energía, 10/06/2020.

Solicitante: Dresser-Rand Company

A hybrid compressed air energy storage system is provided. A heat exchanger 114 extracts thermal energy from a compressed air to generate a cooled compressed air stored in an air storage reservoir 120, e.g., a cavern. A heat exchanger 124 transfers thermal energy stored in a thermal storage device 130 to compressed air conveyed from reservoir 120 to generate a heated compressed air. An expander 140 is solely responsive (no heat is introduced by way of a combustor) to the heated compressed air to produce power and generate an expanded air.



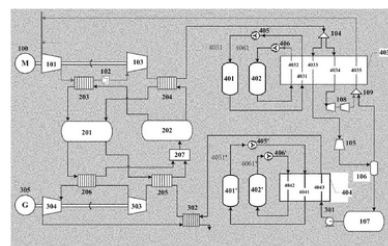
ver más...

Staged cryogenic storage type supercritical compressed air energy storage system and method

Publicada en Tecnologías asociadas a almacenamiento de energía, 10/06/2020.

Solicitante: INSTITUTE OF ENGINEERING THERMOPHYSICS, CHINESE ACADEMY OF SCIENCES

The present disclosure provides a supercritical compressed air energy storage system. The supercritical compressed air energy storage system includes a supercritical liquefaction subsystem, an evaporation and expansion subsystem, a staged cryogenic storage subsystem, a heat storage and heat exchange subsystem, and a cryogenic energy compensation subsystem, the staged cryogenic storage subsystem being used for implementing the staged storage and release of cryogenic energy, improving efficiency of recovering cryogenic energy during energy release and energy storage, and thereby improving cycle efficiency of the system. The present disclosure does not need to provide any inputs of additional cryogenic energy and heat energy input externally, and has the advantages of high cycle efficiency, low cost, independent operation, environmental friendliness, and no limitation on terrain conditions, and it is suitable for large-scale commercial applications.



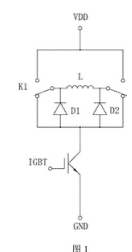
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Storage battery type electric permanent magnet and forward and reverse excitation methods therefor

Publicada en Tecnologías asociadas a baterías, supercapacitores, supercondensadores, acumuladores, 10/06/2020.

Solicitante: HVR MAGNETICS CO., LTD. [CN]

Disclosed is a storage battery type electric permanent magnet and forward and reverse excitation methods therefor. The electric permanent magnet comprises a storage battery, a controller, and an electric permanent magnet body. The controller comprises excitation circuit units connected in parallel with each other and freewheeling circuit units connected in series, in one-to-one correspondence, with the excitation circuit unit. Each excitation circuit unit comprises a first switch and a second switch, and an excitation coil in an electric permanent magnet body is connected between the two switches.



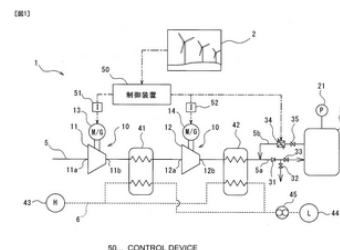
[ver más...](#)

Compressed air energy storage power generation device and compressed air energy storage power generation method

Publicada en Tecnologías asociadas a almacenamiento de energía, 03/06/2020.

Solicitante: KABUSHIKI KAISHA KOBE SEIKO SHO (KOBELCO STEEL, LTD.) [JP]

A compressed air energy storage power generation device 1 is provided with: a compression/expansion dual-purpose machine 10 having a function to produce compressed air by using electric power and a function to generate electric power by using the compressed air; a pressure accumulation unit 20 for accumulating the compressed air, the pressure accumulation unit 20 being connected with the compression/expansion dual-purpose machine 10 fluidically



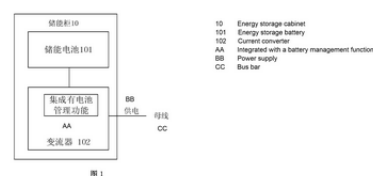
[ver más...](#)



Current converter and energy storage system

Publicada en Tecnologías asociadas a almacenamiento de energía, 03/06/2020.

Solicitante: GREE ELECTRIC APPLIANCES, INC. OF ZHUHAI [CN]
A current converter (102) and an energy storage system. The current converter (102) is integrated with a battery management function, is connected with an energy storage battery (101), and is used for managing the energy storage battery (101) and converting the direct current outputted by the energy storage battery (101) into the current of a required voltage level.

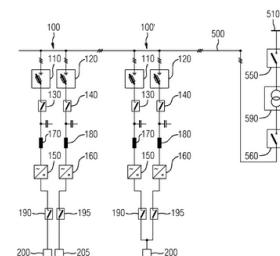


ver más...

DC overvoltage protection for an energy storage system

Publicada en Tecnologías asociadas a almacenamiento de energía, 03/06/2020.

Sollicitante: SIEMENS AKTIENGESELLSCHAFT
A DC overvoltage protection device for an energy storage system, an energy storage system having such a DC overvoltage protection device, a method for operating a DC overvoltage protection device for an energy storage system and a method for operating an energy storage system having a DC overvoltage protection device. The DC overvoltage protection device includes at least one solid-state relay. The solid-state relay interrupts an auxiliary voltage circuit of the AC switch.



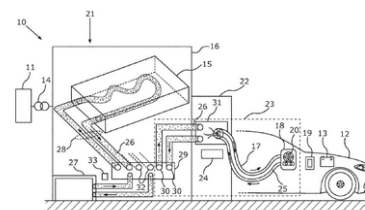
ver más...

Electric Storage Device for Providing Electric Energy for a Charging Operation of at Least One Electrically-Driven Motor Vehicle, and Retrofit Module and Operating Method

Publicada en Tecnologías asociadas a almacenamiento de energía, 03/06/2020.

Solicitante: Bayerische Motoren Werke Aktiengesellschaft

An electric storage device for providing electric energy for a charging operation of at least one electrically-driven motor vehicle has a storage unit for storing the energy, a cooling assembly for providing cooling capacity and a coolant circuit which is designed to convey thermal energy from the storage unit to the cooling assembly by a coolant. At least one charging cable is coupled to the storage unit, each charging cable being designed for connection to the motor vehicle and having a cooling channel.



[ver más...](#)

Electricity storage battery and corresponding thermal regulation element

Publicada en Tecnologías asociadas a almacenamiento de energía, 03/06/2020.

Solicitante: FAURECIA SYSTEMES D'ECHAPPEMENT

A thermal regulation element that includes an intermediate cover interposed between the first and second levels of electricity storage cells, with first and second flow volumes for a thermal regulation fluid being formed on first and second major faces of the intermediate cover, a first thermally conductive plate being disposed against the first major face of the intermediate cover and closing the first flow volume, and a second thermally conductive plate being disposed against the second major face of the intermediate cover and closing the second flow volume.

[ver más...](#)

Energy control method and system for cascade utilization energy storage battery of energy storage unit

Publicada en Tecnologías asociadas a almacenamiento de energía, 03/06/2020.

Solicitante: ZHANGJIAKOU WIND AND SOLAR POWER ENERGY DEMONSTRATION STATION CO., LTD. STATE GRID XIN YUAN COMPANY [CN]

Disclosed are an energy control method and system for a cascade utilization energy storage battery of an energy storage unit. The method comprises: acquiring a power command value of a cascade utilization energy storage battery of each energy storage unit at the current moment (101); according to the power command value of the cascade utilization energy storage battery of each energy storage unit at the current moment, using a pre-established recurrent neural network model to acquire a power command value of the cascade utilization energy storage battery of each energy storage unit at the next moment.

[ver más...](#)

Fabrication of polymeric solar thermal fuel composites applicable as STFF, STFI, STEG, STFP

Publicada en Tecnologías asociadas a almacenamiento de energía, 03/06/2020.

The primary purpose for the present invention is to illustrate ways of dispersion and increasing the efficiency of azobenzene modified with filler or nanofiller in diverse substrates to produce a new product. Azobenzene modification improves energy storage density in these materials, and the loading of modified azobenzene with various fillers or nanofillers in polymers results in the production of polymeric solar thermal fuel composites having the potential to store solar energy in the present of sun light and convert this energy to the thermal energy overtime. This invention seeks to produce a consumer product using modified azobenzene molecules. The fillers or nanofillers functionalized by the azobenzene molecule within the polymeric substrate store solar energy and release it as heat after 3 to 10 hours (depending on the structure of the azobenzene molecule, fillers, and polymers).

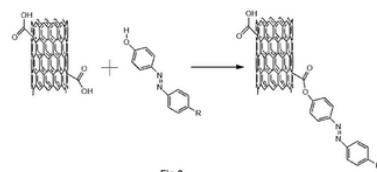


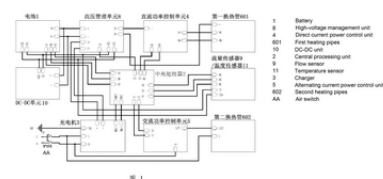
Fig 2

[ver más...](#)

Instantaneous water heater with energy storage and hot-water system

Publicada en Tecnologías asociadas a almacenamiento de energía, 03/06/2020.

Solicitante: JIANGSU SOUL NEW ENERGY TECHNOLOGY, INC. [CN]
Disclosed are an instantaneous water heater with energy storage and a hot-water system. The water heater comprises a battery (1), a central processing unit (2), a battery charger (3), a direct current power control unit (4), an alternating current power control unit (5), heating elements and water pipes (7).

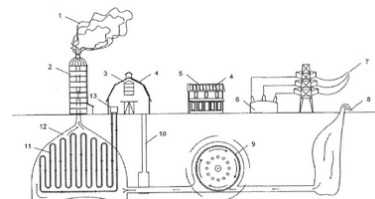


[ver más...](#)

Kinetic energy electric power

Publicada en Tecnologías asociadas a almacenamiento de energía, 03/06/2020.

Solicitante: Solicitantes Keith Bandy
Kinetic Energy Electric Power is an ecofriendly method of producing utility-scale electricity. It does not need high pressure steam to operate, there is no need for expensive steam turbines, nor do any of its operating plants need to be placed within any particular geographical location or weather condition such as sunny, windy, near water, etc.



[ver más...](#)

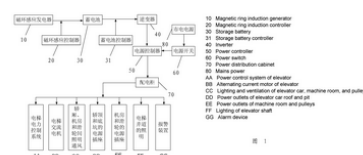


Magnetic ring induction-type elevator power supply system

Publicada en Tecnologías asociadas a baterías, supercapacitores, supercondensadores, acumuladores, 03/06/2020.

Solicitante: SHANDONG UNIVERSITY OF SCIENCE AND TECHNOLOGY [CN]

A magnetic ring induction-type elevator power supply system comprises: a magnetic ring induction generator (10) mounted on an output shaft of an elevator traction motor and used to drive, when the output shaft of the elevator traction motor rotates, the magnetic ring induction generator to rotate so as to generate power; a magnetic ring induction controller (20) used to control an operating status of the magnetic ring induction generator (10); and a storage battery (30) used to store power generated by the magnetic ring induction generator (10).



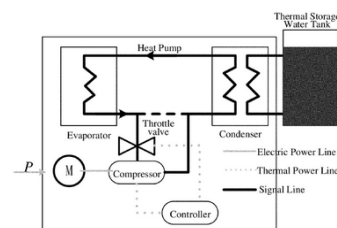
ver más...

Method and apparatus for smoothing link-line power of electrothermal microgrid using thermal storage heat pump

Publicada en Tecnologías asociadas a baterías, supercapacitores, supercondensadores, acumuladores, 03/06/2020.

Solicitantes: State Grid Jiangsu Electric Power CO., LTD Nanjing Power Supply Company; SHANGHAI JIAO TONG UNIVERSITY; HOHAI UNIVERSITY

Disclosed are a method and apparatus for smoothing a link-line power of an electrothermal microgrid using a thermal storage heat pump cluster. The method includes: determining a current link-line power control target and pre-distributing a smoothing task to the heat pump cluster; making, by a heat pump start-stop control layer cluster, a heat pump cluster start-stop scheme, determining a start-stop state of the heat pump cluster and a start-stop smoothing component of the heat pump cluster according to the smoothing task, obtaining a remaining fluctuating power based on link-line fluctuating power and the start-stop smoothing component of the heat pump cluster



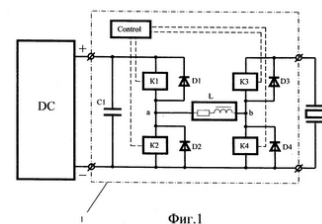
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Method for generating mechanical oscillations and generator for the implementation thereof

Publicada en Tecnologías asociadas a consumo y reciclaje de energía, 03/06/2020.

Solicitante: KUZNETSOV, Andrey Leonidovich [RU]

The invention relates to electrical engineering and can be used for actuating various devices in the fields of precision instrumentation, acoustics and hydroacoustics, as well as in nanotechnological systems and in devices for generating vibrations. The proposed energy recovery device for generating electrical oscillations on the plates of a piezo actuator (P) has two input clamps and two output clamps for connection to a DC power supply and to the piezo actuator (P), respectively. The device comprises a storage capacitor (C1) connected in parallel to the power supply, two half-bridges, a choke connecting the midpoints of the half-bridges, and a device for controlling the switches in the half-bridges.



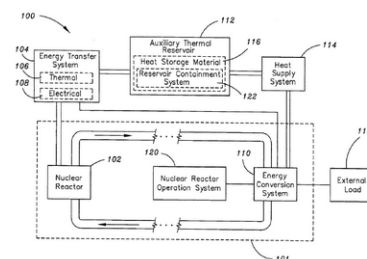
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Method, system, and apparatus for the thermal storage of nuclear reactor generated energy

Publicada en Tecnologías asociadas a almacenamiento de energía, 03/06/2020.

Solicitantes TerraPower, LLC

A method, system, and apparatus for the thermal storage of nuclear reactor generated energy including diverting a selected portion of energy from a portion of a nuclear reactor system to an auxiliary thermal reservoir and, responsive to a shutdown event, supplying a portion of the diverted selected portion of energy to an energy conversion system of the nuclear reactor system.



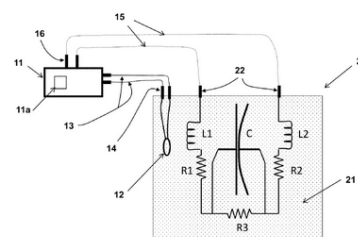
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Methods for heating and charging energy storage devices at very low temperatures

Publicada en Tecnologías asociadas a almacenamiento de energía, 03/06/2020.

Solicitante: Omnitek Partners LLC

A method for heating an energy storage device having a core with an electrolyte, the method including: providing the energy storage device having inputs and characteristics of a capacitance across the electrolyte and the core and internal surface capacitance between the inputs which can store electric field energy between internal electrodes of the energy storage device that are coupled to the inputs



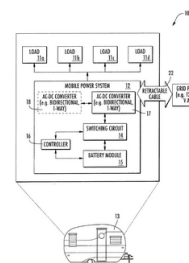
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Mobile power system with multiple DC-AC converters and related platforms and methods

Publicada en Tecnologías asociadas a baterías, supercapacitadores, supercondensadores, acumuladores, 03/06/2020.

Solicitantes MOBILE ESCAPES, LLC

A mobile power system may include AC-DC converter configured to convert a grid AC signal to a power limited DC charging signal, a DC-AC converter coupled to the AC-DC converter, and a battery module configured to provide a DC power signal. The mobile power system may include a switching circuit coupled between the battery module, and the AC-DC converter and the DC-AC converter.



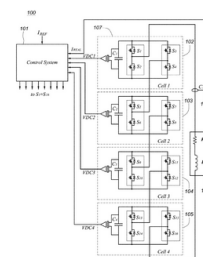
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Multi-level multi-quadrant hysteresis current controllers and methods for control thereof

Publicada en Tecnologías asociadas a almacenamiento de energía, 03/06/2020.

Solicitantes TAE TECHNOLOGIES, INC.

Systems and methods for multilevel hysteresis current control for a cascaded multilevel converter having a plurality of power cells connected in series with a positive integer number of output voltage levels, and to control any shape of AC/DC current in the load, transfer electrical power from energy storage elements of the power cells to that load and recover the energy back to the storage elements.



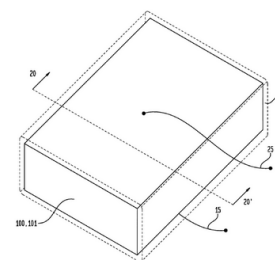
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Printable Ionic Gel Separation Layer For Energy Storage

Publicada en Tecnologías asociadas a consumo y reciclaje de energía, 03/06/2020.

Solicitantes Printed Energy Pty Ltd

Representative embodiments provide a liquid or gel separator utilized to separate and space apart first and second conductors or electrodes of an energy storage device, such as a battery or a supercapacitor. A representative liquid or gel separator comprises a plurality of particles, typically having a size (in any dimension) between about 0.5 to about 50 microns; a first, ionic liquid electrolyte; and a polymer.



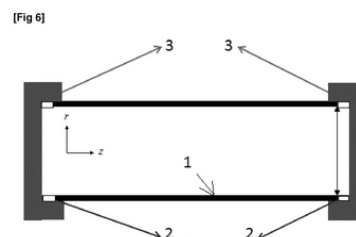
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Sliding connection for compressed air storage tank made of prestressed concrete

Publicada en Tecnologías asociadas a almacenamiento de energía, 03/06/2020.

Solicitante: IFP ENERGIES NOUVELLES [FR]

The present invention relates to a pressure tank comprising at least two sections including a bottom (3). The junctions between the different sections may be of different types but comprise at least one sliding connection (2), preferably at least one sliding connection (2), the sliding axis being the longitudinal axis of a section of a substantially cylindrical portion (1) of the pressure tank.



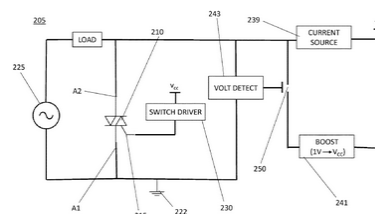
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Switching control circuits having reduced conducted emi

Publicada en Tecnologías asociadas a consumo y reciclaje de energía, 03/06/2020.

Solicitante: STELPRO DESIGN INC.

The present disclosure provides a control circuit to control power to a load, a typically load being a heating element. The control circuit is preferably comprised of a switch, such as a TRIAC switch, to switch from a first state to a second state. An energy bank, such as a capacitor, is also provided, the energy bank to store energy to power a thermostat when the switch is in a non-conducting state.



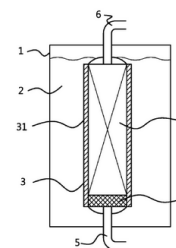
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System for energy storage including a heat transfer fluid tank

Publicada en Tecnologías asociadas a almacenamiento de energía, 03/06/2020.

Solicitante: Nederlandse Organisatie voor toegepast-natuurwetenschappelijk onderzoek TNO

The invention is directed to a system for energy storage including a heat transfer fluid (HTF) tank containing a HTF such as water; a chemical combustion reactor that is at least partially filled with a metal and/or an oxide thereof, and that includes a gas inlet and a gas outlet; wherein the chemical combustion reactor is at least partially submerged in the HTF within the HTF tank.



[ver más...](#)

Systems and methods of thermal energy storage

Publicada en Tecnologías asociadas a almacenamiento de energía, 03/06/2020.

Solicitante: ELEMENT 16 TECHNOLOGIES, INC. [US]

Thermal energy storage systems are disclosed in this application. Systems of the inventive subject matter are designed to reduce maintenance requirements by sequestering, for example, corrosive fluids that might otherwise damage difficult-to-fix internal components are kept out of those components by introducing a non-corrosive heat transfer fluid to facilitate heat transfer between a thermal energy storage medium (e.g., molten sulfur) and a potentially corrosive working fluid. Thus, the potentially corrosive fluid is kept out of a thermal energy storage tank containing the thermal energy storage medium, which, by design, is difficult to repair when internal components corrode or otherwise require maintenance.

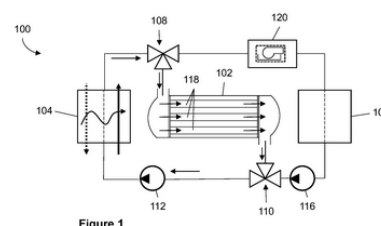


Figure 1

[ver más...](#)

Thermal storage sheet, thermal storage member, and electronic device

Publicada en Tecnologías asociadas a almacenamiento de energía, 03/06/2020.

Solicitante: FUJIFILM CORPORATION [JP]

The present invention addresses the problem of providing a thermal storage sheet in which occurrence of defects when being handled is suppressed, and a thermal storage member and an electronic device having the thermal storage sheet. The thermal storage sheet according to the present invention includes microcapsules having encapsulated therein a thermal storage material, and has a porosity less than 10 vol%.

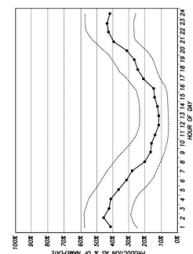
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Hydraulisches geofrakturenergiespeichersystem mit entsalzung

Publicada en Tecnologías asociadas a almacenamiento de energía, 02/06/2020.

Solicitante: QUIDNET ENERGY INC

Energy may be stored by injecting fluid into a fracture in the earth and producing the fluid back while recovering power and/or desalinating water. The method may be particularly adapted to storage of large amounts of energy such as in grid-scale electric energy systems. The fracture may be formed and treated with resin so as to limit fluid loss and to increase propagation pressure. The fluid may be water containing a dissolved salt or fresh water and a portion or all of the water may be desalinated using pressure in the water when it is produced.



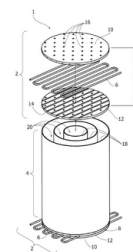
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A storage device for thermal energy

Publicada en Tecnologías asociadas a almacenamiento de energía, 27/05/2020.

Solicitante: David S.r.l.

A storage device for thermal energy includes a thermo-vector unit, and a thermo-accumulator unit. The thermo-vector unit includes one or more flow ducts for a working fluid. The thermo-accumulator unit includes a thermal storage material configured to operate in a thermal exchange relationship with the working fluid and for storing and releasing thermal energy due to a thermal exchange with the working fluid. The thermo-accumulator unit has a thermal diffusivity comprised between 10 and 150 mm²/s.



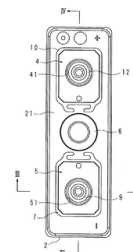
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Energy storage device and energy storage module

Publicada en Tecnologías asociadas a almacenamiento de energía, 27/05/2020.

Solicitantes: Robert Bosch GmbH; GS Yuasa International Ltd.

An energy storage device and the energy storage module include: an outer case on which an external terminal is mounted; an electrode assembly housed in the outer case; a conductive shaft portion having one end thereof connected to the external terminal; and a conductive plate portion housed in the outer case, to which the other end of the conductive shaft portion is connected, and the electrode assembly is connected. A recessed portion is formed on a first surface of the external terminal on which a bus bar is placed, and a second surface of the external terminal oppositely faces the outer case. One end of the conductive shaft portion is brought into pressure contact with the external terminal in the inside of the recessed portion. The recessed portion formed on the external terminal is gas-tightly covered by the bus bar.



[ver más...](#)

Energy storage management and control method, system, computer device, and storage medium

Publicada en Tecnologías asociadas a almacenamiento de energía, 27/05/2020.

Solicitante: EQUOTA ENERGY TECHNOLOGY (SHANGHAI) CO., LTD. [CN]

The present application provides an energy storage management and control method, a system, a computer device, and a storage medium. The energy storage management method is used for managing an energy storage apparatus for providing storage electric energy to an electricity utilization party.

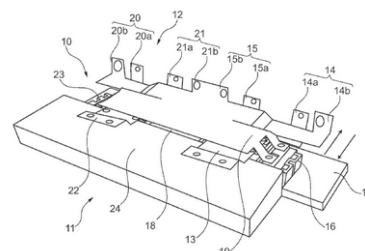
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Modular DC Link Circuit of a Converter, Converter Circuit, Energy Converter, and Vehicle

Publicada en Tecnologías asociadas a consumo y reciclaje de energía, 27/05/2020.

Solicitantes Bombardier Transportation GmbH

A modular intermediate circuit for a power converter has at least two or more intermediate circuit capacitor modules connected in parallel and in a chain, each intermediate circuit capacitor module having a first terminal, a second terminal, and at least one first intermediate circuit capacitor, which is electrically connected with the first terminal and the second terminal.



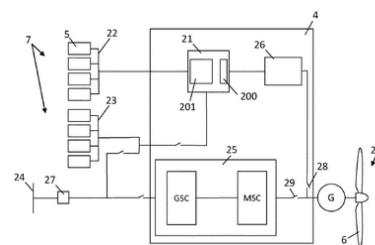
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Operation of a wind turbine during grid loss using a power storage unit

Publicada en Tecnologías asociadas a almacenamiento de energía, 27/05/2020.

Solicitante: MHI VESTAS OFFSHORE WIND A/S

The present invention relates to operation of a wind turbine using a power storage unit, such as a rechargeable battery, to power a group of power consuming units during grid loss. The wind turbine comprises a number of power consuming units being grouped into at least a first group and a second group, a first electrical converter for connecting the generator to the electrical grid, and a second electrical converter for connecting the electrical generator to the power storage unit.



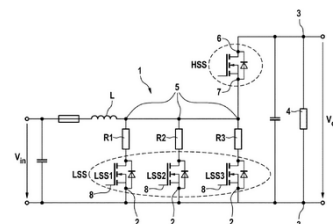
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Power switch system

Publicada en Tecnologías asociadas a almacenamiento de energía, 27/05/2020.

Solicitante: Robert Bosch GmbH

A power-switch-system (PSS) having a low-side transistor (LSS) and a high-side transistor (HSS), which are switchable to be conductive or switched to be blocking in respectively alternating time-segments of a switching-period of the PSS. A source-terminal of the LSS is connected to a load-terminal, and a drain-terminal of the LSS is connected to a supply-voltage via a storage-inductor. A drain-terminal of the HSS is connected to the load-terminal, and a source-terminal of the HSS is connected to the supply-voltage via the storage-inductor. Provided is a PSS of this kind, the LSS having at least two transistor-segments. At least two of the transistor-segments have a different electrical resistance in the connection to the storage-inductor. The PSS provides that at least two of the transistor-segments are switched at a different point in time during a switching operation of the PSS to reduce unwanted voltage fluctuations, without markedly increasing switching losses.



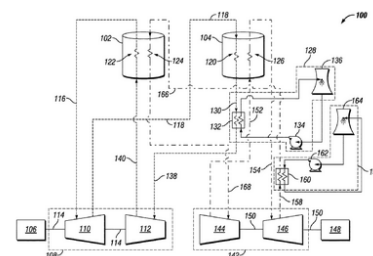
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Pumped heat energy storage system

Publicada en Tecnologías asociadas a almacenamiento de energía, 27/05/2020.

Solicitante: DRESSER-RAND COMPANY

A pumped heat energy storage (PHES) system (100) including a charging circuit and a discharging circuit effective to balance or split a total heat rejection of the PHES system between the charging circuit and the discharging circuit. The charging circuit may include thermal storage vessels (102, 104) to store thermal energy generated from a first compressor (110). A first heat rejection system (128) is fluidly coupled with the thermal storage vessels to remove thermal energy from the charging circuit.



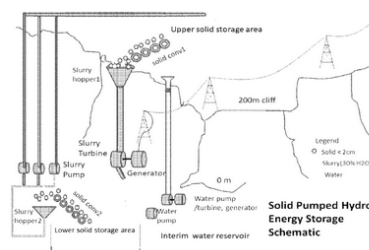
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Solid pumped hydro energy storage using slurry

Publicada en Tecnologías asociadas a consumo y reciclaje de energía, 27/05/2020.

Solicitante: Saugato Mukerji

Low cost Pumped Hydro Energy Storage (PHES) sites have already been exploited; new PHES sites now cost \$2 million per MW. A very large number of sites exist, not only on the coast but all over the land mass of all continents, that have an altitude difference of 100 m between two levels, where 1 to 5 million tonnes of solid can safely be stored at both high and low levels. Thus solids like sand, crushed rock and soil can be used to provide virtually unlimited gravitational energy storage.



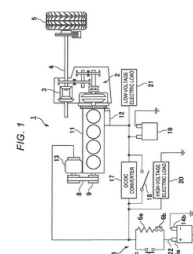
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Batterie, fahrzeug und verfahren zum verbinden/trennen eines leiterdrahts mit/von einer batterie

Publicada en Tecnologías asociadas a baterías para transporte, 26/05/2020.

Solicitante: MAZDA MOTOR

A battery (14) includes: a battery case (46) attached to the vehicle body; a plus terminal (14a) provided in this battery case; a minus terminal (14b); a ground member (52) that is attached to the minus terminal such that this minus terminal is electrically connected to the vehicle body of a vehicle (1) via the battery case, and that electrically connects the minus terminal and the battery case; and a plus terminal cover (54a) that covers the plus terminal to prevent accidental contact with the plus terminal. In a state where the ground member abuts the plus terminal cover and the minus terminal is thereby electrically connected to the battery case, exposure of the plus terminal is restricted by the plus terminal cover.



[ver más...](#)

Gravity-Based energy storage system

Publicada en Tecnologías asociadas a almacenamiento de energía, 26/05/2020.

Solicitante: GRAVITRICITY LTD

A multi-weight gravity base energy storage system and method of storing energy are disclosed. The system comprises first and second weights 3, 5, transporters 21 & 23, 29 & 31, and transporter linkages 25, 33. The linkages may be selectively coupled to their associated load 3, 5 to allow the weights to be moved along predefined paths. The volumes swept by the first weight coupled to the first transporter and the second weight coupled to the second transporter at least partially overlap. The volume swept by the second linkage when decoupled does not overlap with the volume swept by the first weight coupled to the first transporter. The system may include additional weights. The arrangement allows the raising and lowering of successive weights at the same time with minimal interruption in energy storage or release as the uncouple transporters can pass past weights being carried. A suspended platform system and winch and cable configuration are also disclosed.

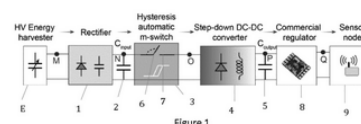
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Conditioning system for a triboelectric nanogenerator or an electrostatic kinetic energy harvestersystem for a triboelectric nanogenerator or an electrostatic kinetic energy harvester

Publicada en Tecnologías asociadas a consumo y reciclaje de energía, 21/05/2020.

Solicitante: CHAMBRE DE COMMERCE ET D'INDUSTRIE DE REGION PARIS ILE DE FRANCE, POUR SON ÉTABLISSEMENT ESIEE PARIS [FR]

The present invention concerns a conditioning system for a triboelectric energy generator or an electrostatic kinetic energy harvester, with a first stage comprising: an AC-to-DC voltage rectifier (1), intended to be connected to the energy harvesting device (E); an input capacitor (2) Cinpu, connected to the output of the AC-to-DC voltage rectifier...



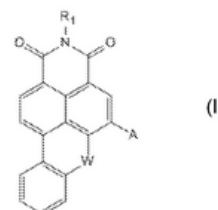
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Novel benzothioxanthene p-conjugated molecules for energy storage

Publicada en Tecnologías asociadas a almacenamiento de energía, 21/05/2020.

Solicitante: UNIVERSITE D'ANGERS [FR]

The present invention relates to a compound of formula (1), wherein: R1 is a linear, branched or cyclic alkyl, A is a group comprising a 5- or 6-membered aryl or heteroaryl bonded directly or via an alkyne, W is O, S or Se. The invention also relates to its preparation method and to its use for energy storage in supercapacitors.



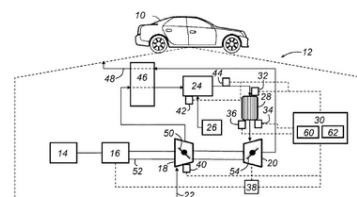
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Vehicle microturbine system and method of operating the same

Publicada en Tecnologías asociadas a baterías para transporte, 20/05/2020.

Solicitante: GM GLOBAL TECHNOLOGY OPERATIONS LLC

A microturbine system for a vehicle and method of operating the microturbine system. The microturbine system is an automotive range extender that includes a generator to provide power to a battery pack of the vehicle. A compressor is operably coupled to the generator and a burner is operably coupled downstream of the compressor to burn fuel and heat compressed charge air from the compressor to form an exhaust.



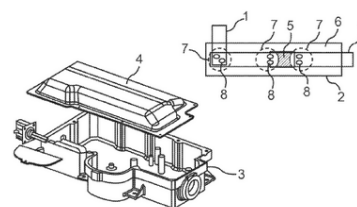
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Method for producing a current conducting unit, junction box for a vehicle battery, and motor vehicle

Publicada en Tecnologías asociadas a baterías para transporte, 13/05/2020.

Solicitante: AUDI AG

A method for producing a current conducting device, a junction box for a vehicle battery, and a motor vehicle having a corresponding junction box. In the method, multiple busbars are positioned in a predetermined location in relation to one another and then enclosed using an electrically insulating plastic cladding.



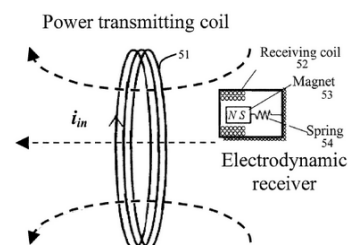
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Wireless power transfer via electrodynamic coupling

Publicada en Tecnologías asociadas a consumo y reciclaje de energía, 13/05/2020.

Solicitante: University of Florida Research Foundation, Inc.

Wireless power transmission (WPT) systems are provided. For example, the WPT system can use one or more power transmitting coils and a receiver for electromagnetically coupled wireless power transfer. The electrodynamic receiver can be in the form of an electrodynamic transducer where a magnet is allowed to oscillate near a receiving coil to induce a voltage in the receiving coil, a piezoelectric transducer where the magnet causes a vibrating structure with a piezoelectric layer to move, an electrostatic transducer where movement of the magnet causes a capacitor plate to move, or a combination thereof.



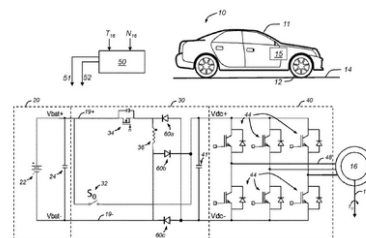
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Buck-boost converter for an electric drive

Publicada en Tecnologías asociadas a baterías para transporte, 11/05/2020.

Solicitante: GM GLOBAL TECHNOLOGY OPERATIONS LLC

An electric drive system for a vehicle may include positive and negative bus rails carrying a direct current (DC) bus voltage, an energy storage system (ESS), a power inverter having a plurality of semiconductor switches operable for inverting the DC bus voltage into an alternating current (AC) bus voltage, and an electric machine.



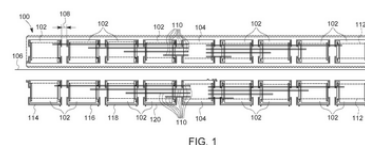
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Energy storage array including transportable storage container having connector channel

Publicada en Tecnologías asociadas a baterías para transporte, 06/05/2020.

Solicitante: GENERAL ELECTRIC COMPANY

An energy storage array includes a first transportable storage container including a first housing mountable to a transportation device and defining a first interior space. A first energy storage system is positioned within the first interior space and includes a first battery rack and a plurality of first battery modules. The energy storage array further includes a second transportable storage container including a second housing mountable to the transportation device.



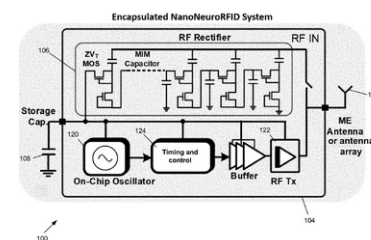
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Implantable Devices Based on Magnetoelectric Antenna, Energy Harvesting and Communication

Publicada en Tecnologías asociadas a consumo y reciclaje de energía, 06/05/2020.

Solicitante: Northeastern University

Disclosed is an implantable system that comprises a magnetoelectric (ME) antenna, a radio frequency rectifier, and a transmitter. The ME antenna may be characterized by a resonance frequency that changes according to an ambient magnetic field strength. The radio frequency rectifier may be configured to convert radio frequency energy, received by the ME antenna, into a direct current voltage, and to direct the direct current voltage to a storage capacitor. The transmitter may be configured to apply a transmission signal to the ME antenna. A transceiver may communicate with one or more of the implantable systems, to provide radio frequency energy to the implantable devices for energy harvesting, and to receive transmitted information from the implantable systems. The implantable system may be disposed within a brain to detect neuronal activity, by detecting small magnetic fields generated by such neuronal activity.



[ver más...](#)

Method for charging an energy storage system using a wind turbine

Publicada en Tecnologías asociadas a consumo y reciclaje de energía, 06/05/2020.

Solicitante: VESTAS WIND SYSTEMS A/S [DK]

A method of charging an energy storage system, such as a battery, a capacitor, or a super capacitor, using a wind turbine is described. The method comprises establishing if turbine power production can be increased and establishing if the energy storage system is capable of taking a charge.

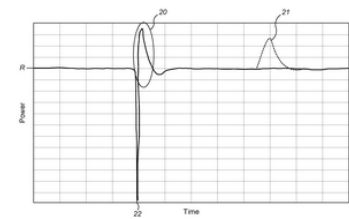


FIG. 4

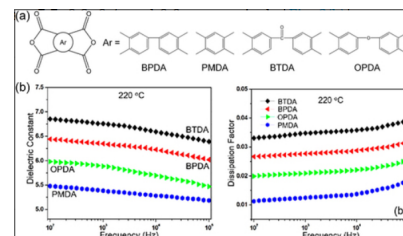
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Advanced polymer dielectrics for high temperature capacitive energy storage

Publicada en AIP Scitation, 23/06/2020.

Journal of Applied Physics, Volume 127, Issue 24, June 2020. Dielectric polymers are critical to meet the increasing demands for high-energy-density capacitors operating in harsh environments, such as aerospace power conditioning, underground oil and gas exploration, electrified transportation, and pulse power systems. In this perspective article, we present an overview of the recent progress in the field of polymer dielectrics for high temperature capacitive energy storage applications.

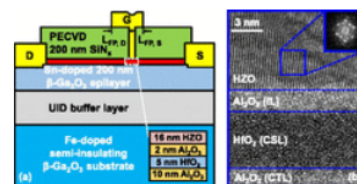


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Design and fabrication of field-plated normally off -Ga₂O₃ MOSFET with laminated-ferroelectric charge storage gate for high power application

Publicada en AIP Scitation, 16/06/2020.

Applied Physics Letters, Volume 116, Issue 24, June 2020. In this work, an enhancement-mode (E-mode) -Ga₂O₃ metal-oxide-semiconductor field-effect transistor (MOSFET) has been achieved by incorporating a laminated-ferroelectric charge storage gate (L-FeG) structure [Al₂O₃/HfO₂/Al₂O₃/Hf_{0.5}Zr_{0.5}O₂ (HZO) of 10/5/2/16nm].

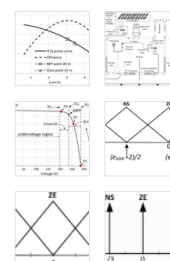


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A novel fuzzy controller for photovoltaic pumping systems driven by general-purpose frequency converters

Publicada en Sustainable Energy Technologies and Assessments, 15/06/2020.

Publication date: August 2020 Source: Sustainable Energy Technologies and Assessments, Volume 40 Author(s): Wanderley Sena dos Santos, Pedro Ferreira Torres, Alaan Ubaiera Brito, Marcos André Barros Galhardo, Wilson Negrão Macêdo. Abstract: In this paper, a fuzzy logic based Mandani-type controller is applied to an industrial frequency converter to couple a photovoltaic generator to a conventional centrifugal pump for water pumping applications. The system operates in closed loop and the DC bus voltage regulation of the frequency converter is done indirectly by varying the speed of the pump according to the power provided by the photovoltaic generator.

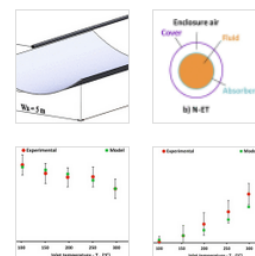


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A systematic parametric thermal analysis of nanofluid-based parabolic trough solar collectors

Publicada en Sustainable Energy Technologies and Assessments, 15/06/2020.

Publication date: June 2020 Source: Sustainable Energy Technologies and Assessments, Volume 39 Author(s): Evangelos Bellos, Christos Tzivanidis, Zafar Said. Abstract: The objective of this work is to investigate the thermal enhancement margin with the implementation of (Syltherm 800/Cu) nanofluid in parabolic trough collectors in a systematic way. Three different collector kinds are studied; the evacuated tube receiver, the non-evacuated tube receiver and the bare tube without cover.

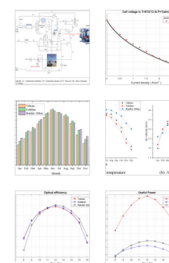


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Energy and exergy analysis of a new combined concentrating solar collector, solid oxide fuel cell, and steam turbine CCHP system

Publicada en Sustainable Energy Technologies and Assessments, 15/06/2020.

Publication date: June 2020 Source: Sustainable Energy Technologies and Assessments, Volume 39 Author(s): Michael Yao-Ping Peng, Chunchun Chen, Xuhui Peng, Mohammad Marefati. Abstract: In the present study, energy, exergy and thermodynamic analysis of a novel integrated system in form of combined cooling heating and power process is investigated. The proposed system consists of solid oxide fuel cell to produce electrical and thermal power, steam power turbine to generate additional electrical power, concentrating solar collector to provide a part of the process thermal energy and double effect absorption chiller to provide cooling demand.

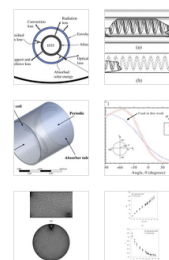


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Enhancing the overall thermal performance of a large aperture parabolic trough solar collector using wire coil inserts

Publicada en Sustainable Energy Technologies and Assessments, 15/06/2020.

Publication date: June 2020 Source: Sustainable Energy Technologies and Assessments, Volume 39 Author(s): brahim Halil Yılmaz, Aggrey Mwesigye, Taha Tuna Göksu. abstract: With the use of large apertures (higher concentration ratios) in parabolic trough solar collectors, increased temperature gradients, increased heat losses and increased heat transfer irreversibilities become inevitable. As such, means of reducing the magnitude of these operating parameters to enhance the overall thermal and thermodynamic performances become crucial. In this study, the use of wire coil inserts in the receiver's absorber tube to improve the parabolic trough solar collector's performance and to lessen the associated temperature gradients is presented.



[ver más...](#)

Two-stage stochastic home energy management strategy considering electric vehicle and battery energy storage system: An ANN-based scenario generation methodology

Publicada en Sustainable Energy Technologies and Assessments, 15/06/2020.

Publication date: June 2020 Source: Sustainable Energy Technologies and Assessments, Volume 39 Author(s): Saeed Zeynali, Naghi Rostami, Ali Ahmadian, Ali Elkamel. Abstract: This study implements two-stage stochastic programming in a smart home application to reduce the electricity procurement cost of an ordinary household. In this concern, vehicle to home (V2H) capability of the available electric vehicle (EV) is used in coordination with battery energy storage system (BESS) under control of a home energy management system.

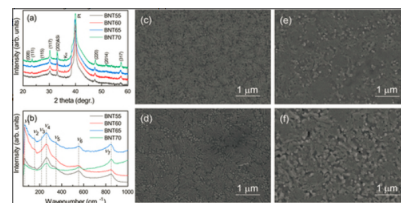


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Controlling the crystallization of Nd-doped Bi₄Ti₃O₁₂ thin-films for lead-free energy storage capacitors

Publicada en AIP Scitation, 12/06/2020.

Journal of Applied Physics, Volume 127, Issue 22, June 2020. Environmentally benign non-lead-based dielectric thin film capacitors with high electrostatic energy density, long-term stability, and fast charge/discharge capability are strongly demanded in advanced electrical and pulsed power devices.



[ver más...](#)

All-optical nanophotonic resonant element for switching and routing applications exploiting graphene saturable absorption

Publicada en AIP Scitation, 09/06/2020.

Journal of Applied Physics, Volume 127, Issue 22, June 2020. A silicon disk resonator overlaid with a uniform graphene layer in an add-drop configuration is proposed as an all-optical routing element. Operation is based on the saturable absorption effect provided by the graphene layer. The element is thoroughly analyzed as a two-channel device in the context of an appropriate nonlinear framework combining perturbation theory and temporal coupled-mode theory. Taking into consideration the primary nonlinear effect, which is graphene saturable absorption, a design path is carefully developed that eventually leads to a traveling-wave resonant element with low-power requirements, low insertion loss, high extinction ratio, and sufficient bandwidth. In a subsequent step, other important nonlinear effects originating from graphene and the silicon disk, including the Kerr effect and free-carrier effects, are considered and means for counterbalancing their action are demonstrated. A low control power of [math] together with a bandwidth of [math] is shown possible, with the insertion loss of almost [math] and an extinction ratio over [math] in both ports (add and drop).

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Wettability modification of laser textured copper surfaces applied to phase change heat transfer

Publicada en AIP Scitation, 07/06/2020.

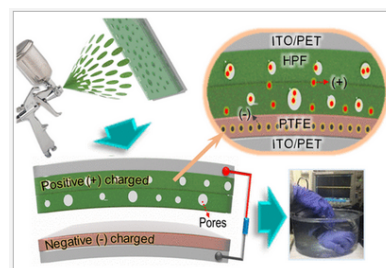
Journal of Laser Applications, Volume 32, Issue 3, August 2020. Phase change heat transfer allows high heat transfer rates associated with small temperature variations. Given that this technique is employed in several energy and industry applications, such as automotive air-conditioning evaporators, pulsating heat pipes are used for aerospace thermal management and in semiconductor-manufacturing heat exchangers. Although phase change heat transfer has served mankind for more than two millennia, little progress has been made in the last 40 years regarding the basic performance of phase change heat transfer surfaces.

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Integrated Design of Highly Porous Cellulose-Loaded Polymer-Based Triboelectric Films toward Flexible, Humidity-Resistant, and Sustainable Mechanical Energy Harvesters

Publicada en ACS Energy Letters, 04/06/2020.

A wearable and humidity-resistant cellulose-based flexible triboelectric nanogenerator (FTENG) device with high performance is proposed here. In this regard, cellulose extracted from cotton was combined with a poly(vinyl alcohol) solution and spray-coated onto a conductive-flexible substrate to develop a highly porous and flexible triboelectric film (HPF) which was employed in the fabrication of a FTENG.



[ver más...](#)

Resistance switching in two-terminal ferroelectric-semiconductor lateral heterostructures

Publicada en AIP Scitation, 02/06/2020.

Applied Physics Reviews, Volume 7, Issue 2, June 2020. Developing new memory concepts and devices has been one of the most productive fields of research for the past decade. There is a need for a nonvolatile memory technology based on resistance switching. An ideal memory element is a bistable rectifying diode that enables realization of a simple crossbar memory array with highest areal bit density. Ferroelectrics have been suggested to code digital information due to their intrinsic and stable binary electronic polarization. However, realization of a ferroelectric bistable rectifying diode is challenging since ferroelectricity and electrical conductivity are mutually exclusive and cannot coexist in a single compound. As a solution, lateral ferroelectric-semiconductor heterostructures have been suggested for the realization of ferroelectric diodes. Bistable rectifying diodes and their respective nonvolatile crossbar memory arrays based on ferroelectric-semiconductor lateral heterostructures have been successfully demonstrated with organic ferroelectrics and organic semiconductors. The present review focuses on the resistance switching in ferroelectric-semiconductor heterostructure rectifying diodes based on polymers and discusses the latest developments over the last decade.

[ver más...](#)

Experiment and simulation of the characteristics and mechanisms of self-oscillations in parallel-plate glow discharges

Publicada en AIP Scitation, 31/05/2020.

Journal of Applied Physics, Volume 127, Issue 21, June 2020. This paper presents experimental results of the characteristics appearance and the mechanism of self-oscillation in a parallel-plate glow discharge with argon as the discharge gas at 266Pa. The cathode and anode are molybdenum plates with a diameter of 3cm. The distance between the electrodes is 1cm. Discharge average voltage and current vary between 300V and 500 A, respectively. Light emission from the electrode gap is measured by a charge coupled device camera and argon spectra are recorded of emission lines at 650–800nm.

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The future responsibility: Technology and Design of Hybrid Energy Storage Systems

Publicada en <https://www.sciencedirect.com/>, 19/05/2020.

Hybrid Energy Storage Systems (HESS) consist of two (or more) storage devices with complementary key characteristics, that are able to behave jointly with better performance than any of the technologies considered individually. Recent developments in storage device technologies, interface systems, control and monitoring techniques, or visualization and information technologies have driven the implementation of HESS in many industrial, commercial and domestic applications.

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