BOLETÍN DE VIGILANCIA TECNOLÓGICA E INTELIGENCIA COMPETITIVA

ALMACENAMIENTO DE ENERGÍA

SEPTIEMBRE - OCTUBRE 2021

BATTERYPLAT

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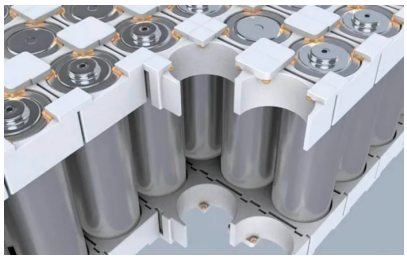
NOTICIAS

La forma de las celdas de las baterías de los coches eléctricos, ¿clave para lograr una mayor autonomía?

Publicada en https://www.hibridosyelectricos.com/, 22/10/2021.

El Tesla Model 3, el Lucid Air y la Rivian R1T son los tres coches eléctricos líderes en autonomía y eficiencia en cada una de sus categorías y los tres tienen algo en común: las celdas de sus baterías son cilíndricas.

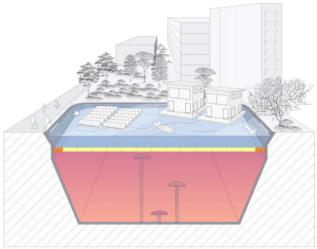


ver más...

Very large thermal energy storage for renewable districts

Publicada en https://www.iea.org, 22/10/2021.

The project giga_TES aims to develop very large thermal energy storage concepts for urban districts in Austria and Central Europe, with the ultimate goal a 100% renewable energy heat supply for cities. To achieve this, large underground hot water tanks and pits are required to provide multifunctional energy hubs for future district heating systems. These large thermal energy storage technologies will facilitate seasonal as well as short-term storage of a wide range of volatile energy sources, enabling the share of renewable energies to increase massively.



ver más...

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Battery Production in Europe – An Important Corner Stone of Our Future Economy?

Publicada en https://www.ees-europe.com, 21/10/2021.

Europe’s turn towards clean energy and its very ambitious transition to emission free cars by 2035 especially create a huge need for lithium ion batteries. A need that comes along with the necessity of further research, huge manufacturing capacities, raw materials and a whole ecosystem of companies and suppliers. Hence you currently read about new Gigawatt factories being launched all across the continent, with politicians scrambling to lure investors to build their Gigawatt Factories in their constituency.

ver más...

Energy Storage Ecosystem Offers Lowest-Cost Path to 100% Renewable Power

Publicada en https://www.nrel.gov, 20/10/2021.

As states reach higher toward 100% renewable operation, energy storage will be key to enabling a more variable power supply. But no single technology will be a silver bullet for all our energy storage needs. Rather, a portfolio of storage solutions makes best economic sense for future energy systems, according to a recent National Renewable Energy Laboratory (NREL) analysis titled "Optimal energy storage portfolio for high and ultrahigh carbon-free and renewable power systems," published in Energy & Environmental Science.

ver más...

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The growth and growth of the global energy storage market

Publicada en https://www.woodmac.com, 07/10/2021.

Global energy storage continues to increase apace, despite the challenges of Covid-19. Despite the tough challenges brought by Covid-19 and the worldwide pandemic, global energy storage deployments will nearly triple year-on-year, reaching 12 GW/28 GWh this year and close to the 1TWh mark by 2030. While global lithium-ion battery manufacturing capacity will double in the next two years.

ver más...

Lithium-ion batteries just made a big leap in a tiny product

Publicada en https://www.technologyreview.com/, 08/09/2021.

Sila’s novel anode materials packed far more energy into a new Whoop fitness wearable. The company hopes to do the same soon for electric vehicles. A materials company in Alameda, California, has spent the last decade working to boost the energy stored in lithium-ion batteries, an advance that could enable smaller gadgets and electric vehicles with far greater range.

ver más...

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Approved 50MW UK battery site will show technology can play multiple grid-balancing roles

Publicada en https://www.energy-storage.news, 07/09/2021.

Clayhill, the UK’s first subsidy-free solar farm, which Anesco built with colocated battery storage, before selling on in August last year. Image: Anesco. A new 50MW battery storage site in the UK will be another example of how batteries are benefiting the grid and offering returns for investors, the company behind the project has said.

ver más...

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EMPRESAS Y MERCADOS

ElevenEs receives investment and support from EIT InnoEnergy to build a battery gigafactory near Serbia's lithium deposit

Publicada en https://www.innoenergy.com, 21/10/2021.

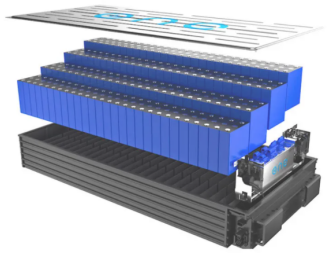
ElevenEs has developed its own LFP technology to produce batteries for electric passenger cars, buses, trucks, forklifts, other industrial vehicles, and energy storage systems.
LFP batteries are more affordable, durable, sustainable and safer than competing solutions, and they do not require cobalt, nickel, and other hard-to-obtain minerals.

ver más...

Esta es la batería híbrida para coches eléctricos que le gusta a Bill Gates y a Jeff Bezos

Publicada en https://www.hibridosyelectricos.com/, 21/10/2021.

La unión de dos baterías con diferente química y diferente propósito, Aries y Gemini, permite al coche eléctrico cubrir todas las necesidades de los conductores: tanto en viajes diarios de corto recorrido como los ocasionales de largo alcance.



ver más...

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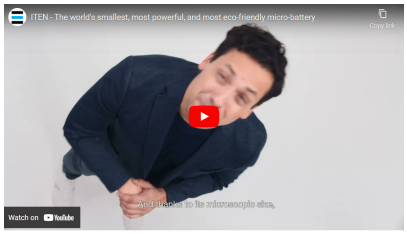
Iten’s batteries revolutionize energy storage

Publicada en https://innovacom.com/, 20/10/2021.

Since its inception in 2013, I-TEN develops a new generation of lithium ion batteries used to store energy inside any electronics circuits. All solid, compact and rechargeable, I-TEN’s components offer high temperature resistance, unrivalled energy density. It fulfills the needs of the electronics industry in terms of shelf life, miniaturization, manufacturing requirements and eco-design.



ver más...

Huawei wins deal for world’s largest energy storage project at Red Sea development

Publicada en https://energy-utilities.com/, 19/10/2021.

China’s Huawei Digital Power has been awarded a contract for the battery energy storage solution (BESS) for the utilities project at the Red Sea development in Saudi Arabia

ver más...

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SunPower and The New Home Company Create Sustainable, Energy Independent Community with Solar, Energy Storage and Electric Vehicle Charging in Every Home

Publicada en altenergymag, 15/10/2021.

Features in new 72 home community enable residents to weather power outages, save on electricity bills and make electric lifestyle more convenient. SunPower Corp. (NASDAQ:SPWR), a leading solar technology and energy services provider, and The New Home Company (NEW HOME), a top 50 homebuilder focused on creating a new generation of innovative homes, today announced that NEW HOME is making solar systems, battery storage and at-home electric vehicle (EV) chargers standard features in its newest community, Eureka Grove.

ver más...

PV guided tours meets FENECON

Publicada en https://fenecon.de/pv-guided-tours-meets-fenecon/, 15/10/2021.

CEO talk: Franz-Josef Feilmeier about big electric storage systems (ESS). Commercial storage: Many customers want as many functions and high performance as possible, but want to pay as little as possible. Franz-Josef Feilmeier, CEO of Fenecon, explains how this fits together.

ver más...

Volver al índice

Bill Gates-backed ESS — which makes giant batteries out of iron, salt and water — starts trading

Publicada en https://www.cnbc.com/, 11/10/2021.

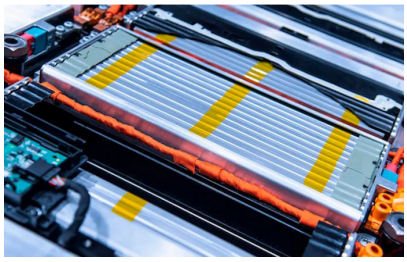
The battery company ESS went public through a SPAC with Acon S2 Investment Corp. and starts trading on the New York Stock Exchange on Monday under the ticker symbol GWH.

ver más...

Estos son los siete principales proveedores de baterías para coches eléctricos

Publicada en https://www.hibridosyelectricos.com, 14/09/2021.

Actualmente las siete empresas que dominan el mercado de las baterías para coches eléctricos tienen su sede en Asia: dos en China, tres en Corea del Sur y otras dos en Japón, según los datos de Benchmark Minerals.



ver más...

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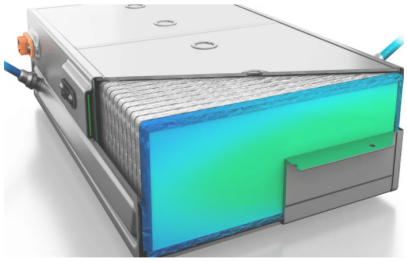
El sistema de refrigeración por inmersión de Mahle permite cargar una batería a 750 kW de potencia

Publicada en https://www.hibridosyelectricos.com, 12/09/2021.

En lugar de un circuito que recorre las celdas de la batería, Mahle emplea el enfriamiento por inmersión que consiste en lavar las celdas con un refrigerante no conductor que reparte el calor y reduce la temperatura de la batería.



ver más...

Las celdas de batería 4680 de StoreDot, similares a las de Tesla, se recargan en 10 minutos

Publicada en https://www.hibridosyelectricos.com, 12/09/2021.

StoreDot afirma haber logrado un prototipo de celda 4680, con el formato de las anunciadas por Tesla, que emplea su tecnología XCF basadas en silicio, capaz de recargarse en condiciones de laboratorio en tan solo 10 minutos.

ver más...

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Toyota to spend 1.5 trillion yen on EV battery development

Publicada en https://www.asahi.com, 08/09/2021.

The Toyota bZ4X, Toyota Motor Corp.’s prototype electric sport utility vehicle (Provided by Toyota Motor Corp.) Toyota Motor Corp. announced on Sept. 7 that it will invest 1.5 trillion yen ($13.6 billion) by 2030 in expanding the production of batteries for its electric and gas-electric hybrid vehicles.

ver más...

Iberdrola lanza el EV Fleet Assesment Tool Startup Challenge

Publicada en https://elreferente.es, 06/09/2021.

AVANGRID busca desarrollar una herramienta web que ayude a los operadores de flotas a evaluar la viabilidad, costes y beneficios de convertir sus flotas a soluciones eléctricas. Para ello, Iberdrola lanza este reto a través de su Programa Internacional de Startup - PERSEO.

ver más...

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One small new battery, one giant leap for our energy future

Publicada en https://silanano.com/, 02/09/2021.

The market launch of Sila's next-gen silicon anode battery technology is a critical stepping stone to the advanced electrification of everything—from mobile, to electric vehicles, and the power grid. And Sila has the vision, persistence, and the chemistry to get us there.

ver más...

Wallbox picks Texas for site of first U.S. EV charger manufacturing facility

Publicada en https://www.marketwatch.com/, 01/09/2021.

Wallbox, the builder of electric vehicle charging stations, and which is expected to go public through a merger with special purpose acquisition company (SPAC) Kensington Capital Acquisition Corp. II KCAC, -0.30%, said it has selected Arlington, Texas for its first U.S. manufacturing facility. The company expects the 130,000 facility, which will create 250 jobs, to start production of its Pulsar Plus AC chargers as early as June 2022, and production of its DC bidirectional charger Quasar and its DC fast charger for public use Supernova is expected to start in the first half of 2023. Wallbox expects the facility to reach its full capacity of 500,000 charging units by 2030.

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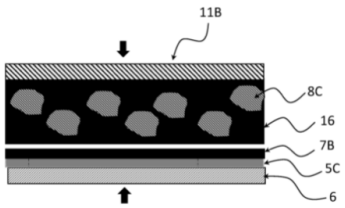
PATENTES

Method for the manufacture of an energy storage device utilizing lithium and solid inorganic electrolytes

Publicada en Tecnologías asociadas a almacenamiento de energía, 21/10/2021.

Solicitante: PULSEDEON OY [FI]
In the present invention there is introduced a method for producing of electrochemical energy storage devices utilising lithium and for producing materials used in the devices, such that anode comprising lithium metal, inorganic solid electrolytes, as well as joining anode and cathode components together by means of pressure and/or temperature are utilised in the production. The lithium-metal layer is produced at least partly by pulsed laser deposition method.



ver más...

Thermal energy storage device and an auxiliary container for thermal energy storage device

Publicada en Tecnologías asociadas a almacenamiento de energía, 21/10/2021.

Solicitante: KYOTO GROUP AS [NO]
Thermal energy storage device comprising at least one heat medium storage container (1, 2, 3, 4, 5) for a liquid heat medium, conduits (11, 21, 31, 41, 51) to transfer heat medium to and from the heat medium storage container(s) (1, 2, 3, 4, 5) and a control unit (70) arranged to control the charge and discharge of liquid heat medium to and from the heat medium storage container via valves (11o/51o, 11i/51i) and pumps (P1, P2) controlled by the control unit. The thermal energy storage device further comprises an auxiliary container (10) in which said valves () and pumps (P1, P2) controlled by the control unit is located.

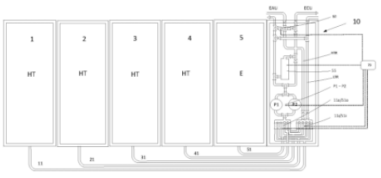


Figure 1

ver más...

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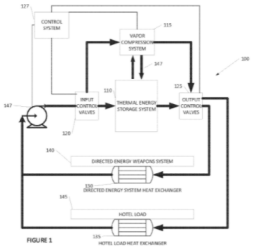
Thermal energy storage system with zeolite

Publicada en Tecnologías asociadas a almacenamiento de energía, 21/10/2021.

Solicitantes: ROCKY RESEARCH [US]/[US]; HONEYWELL INTERNATIONAL INC. [US]
Disclosed are systems and methods of flexibly cooling thermal loads by providing a thermal energy storage cooling system having a phase change material which includes a salt hydrate and a zeolite.



ver más...

Energy-storage wall and solar greenhouse

Publicada en Tecnologías asociadas a almacenamiento de energía, 14/10/2021.

Solicitante: QINGDAO AGRICULTURAL UNIVERSITY [CN]
An energy-storage wall (10). The energy-storage wall (10) comprises a wall body (1), a heat-absorbing pipe layer (2), a heat-storage pipe layer (3), a first connecting pipe (4) and a second connecting pipe (5) the heat-absorbing pipe layer (2) is laid on a side surface of the wall body (1) in the thickness direction, the heat-storage pipe layer (3) is laid inside the wall body (1), the upper end of the heat-absorbing pipe layer (2) is connected to the upper end of the heat-storage pipe layer

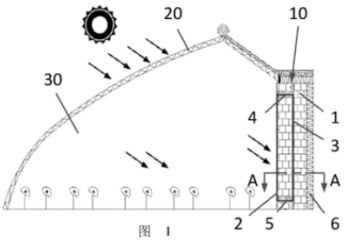


图 1

ver más...

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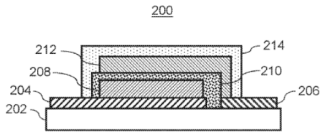
Solid-state thin film battery for microcomputing devices

Publicada en Tecnologías asociadas a almacenamiento de energía, 14/10/2021.

Solicitante: INTERNATIONAL BUSINESS MACHINES CORPORATION
A device includes a solid-state thin film battery (STFB) configured for use as an energy storage device of a microcomputing device. The STFB includes an anode and a cathode to account for voltage mismatch by enabling a first electromotive force associated with the STFB to be less than a second electromotive force associated with a photovoltaic device of the microcomputing device.

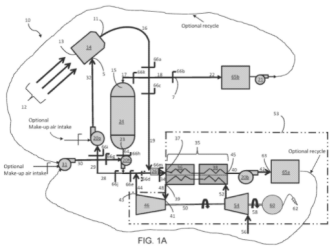


ver más...

Concentrated solar energy collection, thermal storage, and power generation systems and methods with optional supplemental fuel production

Publicada en Tecnologías asociadas a almacenamiento de energía, 07/10/2021.

Solicitante: 247SOLAR INC. [US]
Systems related to concentrated solar combination heating and power generation; solar heating; industrial heat driven power generation; thermal storage systems and heat exchanger and power generation systems therefore, including any of the above with optional supplemental fuel production, and associated methods, are generally described.



ver más...

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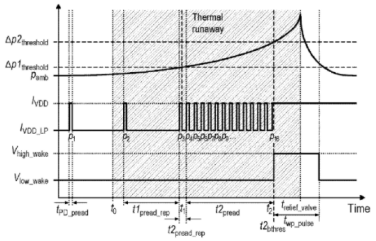
Electrochemical energy storage units, sensor devices and associated methods

Publicada en Tecnologías asociadas a almacenamiento de energía, 07/10/2021.

Solicitante: Infineon Technologies AG

A method comprises determining a first pressure increase in an electrochemical energy storage unit based on a first repetition rate, detecting that the first pressure increase has exceeded a first threshold value, determining a second pressure increase in the energy storage unit based on a second repetition rate, the second repetition rate being greater than the first repetition rate, detecting that the second pressure increase exceeds a second threshold value, and outputting a signal to a control unit based on detecting that the second pressure increase has exceeded the second threshold value.



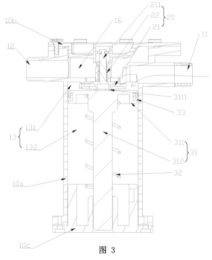
ver más...

Energy storage device and toilet flushing system having same

Publicada en Tecnologías asociadas a almacenamiento de energía, 07/10/2021.

Solicitante: XIAMEN EN MU INTELLIGENGT TECHNOLOGY CO. , LTD. [CN]

An energy storage device, comprising a body (1) provided with an energy storage cavity (13) and an energy storage component provided in the energy storage cavity (13). The body (1) is further provided with a water inlet (11) and a water outlet (12) which are in communication with the energy storage cavity (13). Intake water of the water inlet (11) flows into the energy storage cavity (13), and then is stored in the energy storage cavity (13), and enables the energy storage component to store energy. When the intake water reaches a predetermined intake water amount, the energy storage component automatically releases the stored energy, so that water in the energy storage cavity (13) flows out of the water outlet (12) together with the intake water.



ver más...

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Method of Electrochemical Energy Storage Device Construction

Publicada en Tecnologías asociadas a almacenamiento de energía, 07/10/2021.

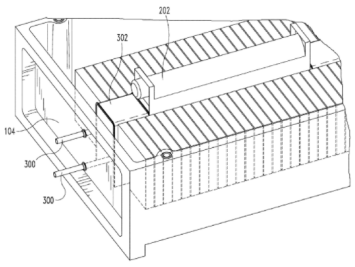
Disclosed is a novel method for constructing an electrochemical energy storage cell with a first and a second electrode. The method includes (a) coating the first electrode with a first electrolyte component to form a first coated electrode embedded within the first electrolyte component; (b) inserting the first coated electrode and the second electrode into a cell housing; (c) sealing the cell housing, wherein the cell housing comprises a solvent injection port; (d) injecting a liquefied gas solvent into the cell through the solvent injection port, wherein the solvent has a vapor pressure above an atmospheric pressure of 100 kPa at a temperature of 293 0.15 K; and (e) sealing the solvent injection port. This method can be modified in step (d) to include the injection of a liquid solvent.

ver más...

System and method for thermally robust energy storage system

Publicada en Tecnologías asociadas a almacenamiento de energía, 07/10/2021.

Solicitante: Allison Transmission, Inc.
Various systems for cooling a battery cell array are described. In one example an energy storage system includes a housing enclosing a battery cell array, an evaporator, and a circulating pump. In another example, an evaporator is adjacent to battery cells to facilitate heat transfer. In another example, thermoelectric elements are positioned adjacent to battery cells to facilitate heat transfer.



ver más...

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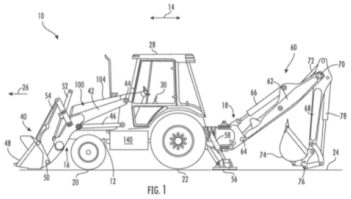
An electric work vehicle having an electric drivetrain and storage component configuration

Publicada en Tecnologías asociadas a baterias para transporte, 02/09/2021.

Solicitante: CNH INDUSTRIAL AMERICA LLC [US]
In one aspect, an electric work vehicle includes a chassis extending in a longitudinal direction between a first end and an opposed second end, and a cab supported between the first and second ends of the chassis. The work vehicle also includes a work implement assembly positioned at the first end or the second end, and a storage compartment defining a storage volume extending in the longitudinal direction between the cab and the first end or the second end.

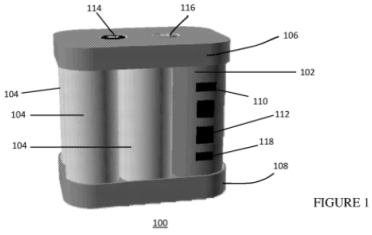


ver más...

Modular ultracapacitor energy storage/power delivery apparatus and methods

Publicada en Tecnologías asociadas a almacenamiento de energía, 02/09/2021.

Solicitante: ULTRACAPACITOR POWER SOLUTIONS, INC. [US]
A modular integrated ultracapacitor-based energy storage and power delivery apparatus (UCAP module) is described. In some embodiments, the UCAP module comprises: at least one ultracapacitor cell coupled together in a series, parallel, or combination of both series and parallel configuration; an integrated charging unit; conductive hardware electrically coupling the ultracapacitors cells together; at least one UCAP terminal rod extending throughout the UCAP module and used to route power within the UCAP module and in some embodiments to other UCAP modules; and a protective casing.



ver más...

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Separator for closed lead acid storage batteries, said separator using glass fibers and thermally fusible organic fibers

Publicada en Tecnologías asociadas a baterias para transporte, 02/09/2021.

Solicitante: NIPPON SHEET GLASS COMPANY, LIMITED [JP]
To provide a separator (an AGM separator) for closed lead acid storage batteries, said separator being free from separation due to bonding between separators even under harsh conditions (such as pressure application during winding, and high temperature and high humidity during transportation and storage). [Solution] A separator (an AGM separator) for closed lead acid storage batteries, said separator (AGM separator) being composed of glass microfibers and thermally fusible organic fibers, wherein: the thickness upon pressure application of 20 kPa is more than 0.50 mm but less than 1.80 mm; and the bonding strength between the separators after being left to stand for 48 hours at a temperature of 70°C at a humidity of 75% under a pressure of from 5 to 10 kPa is less than 0.10 N.

ver más...

Systems and methods for adaptive energy storage in an illumination system

Publicada en Tecnologías asociadas a almacenamiento de energía, 02/09/2021.

Solicitante: ZEBRA TECHNOLOGIES CORPORATION [US]
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; and (4) control, by one or more processors, a voltage controller to convert an input voltage to the voltage controller to the determined minimum capacitor voltage, wherein the voltage controller is configured to apply the determined minimum capacitor voltage to a capacitor.

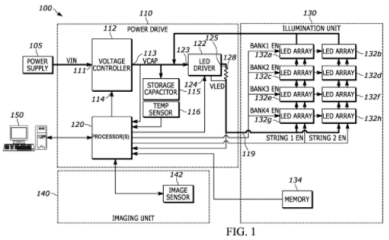

FIG. 1

ver más...

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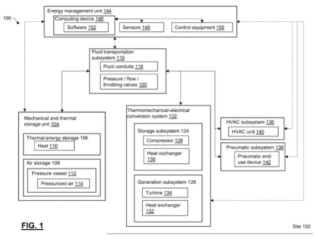
Systems and methods for compressed air energy storage and control thereof

Publicada en Tecnologías asociadas a almacenamiento de energía, 02/09/2021.

Solicitante: ROUINDEJ, Kamyar [CA]



Systems, methods, and devices for energy storage are provided. A system for energy storage includes a thermomechanical-electrical conversion subsystem for converting energy formats and a mechanical and thermal storage unit for storing energy formats. The thermomechanical-electrical conversion subsystem includes a storage subsystem including a compressor and a first thermal energy exchanger and a generation subsystem including a power generator and a second thermal energy exchanger. The storage subsystem compresses a fluid to generate compressed fluid and thermal energy. The generation subsystem generates power from the compressed fluid and the thermal energy.

ver más...

Systems and methods for energy storage and management

Publicada en Tecnologías asociadas a almacenamiento de energía, 02/09/2021.

Solicitante: BLUE PLANET ENERGY [US]

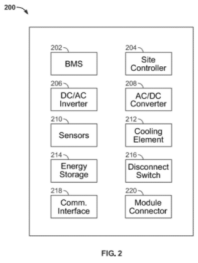


FIG. 2

An energy storage system (ESS) including a battery management system (BMS) arranged to monitor and control operations associated with charging and discharging electrical current from a storage element where the BMS is positioned within a cavity of a housing. A site controller coordinates operations of the ESS with a component of a power distribution system where the site controller is positioned within the housing's cavity. The storage element may include one or more battery cells. The ESS may include a frame defining the housing's cavity and including first and second side panels and a front access panel. The access panel may include at least one hinge in proximity to the first side panel where the hinge is arranged to prevent a portion of the hinge from extending beyond an edge of the first side panel as the access panel rotates from a closed position to an open position.

ver más...

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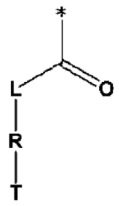
Thin film forming composition for energy storage device electrodes

Publicada en Tecnologías asociadas a almacenamiento de energía, 02/09/2021.

Solicitante: NISSAN CHEMICAL CORPORATION [JP]



(P1)

The present invention provides a thin film forming composition for energy storage device electrodes, said composition containing a conductive carbon material, a dispersant, a solvent and a polymer that has a partial structure represented by formula (P1) in a side chain. (In the formula, L represents -O- or -NH-; R represents an alkylene group having from 1 to 20 carbon atoms; T represents a substituted or unsubstituted amino group, a nitrogen-containing heteroaryl group having from 2 to 20 carbon atoms or a nitrogen-containing aliphatic heterocyclic group having from 2 to 20 carbon atoms; and * represents a bonding hand.)

ver más...

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Bougainvillea derived porous carbons and their performance in magnetic field as supercapacitor electrodes

Publicada en https://arxiv.org, 20/10/2021.

With the increase in demand of electrical energy storage devices such as batteries and supercapacitors, considerable effort is being put to increase the efficiency and applications of current technology while keeping it sustainable. Keeping this in mind we have persued the preparation and charatization of waste biomass derived carbon powders as supercapacitor/battery electrodes. Additionally, we have evaluated the performance of such carbons in the presence of an external magnetic field as we expect the graphene like structures to possess intrinsic magnetic nature.

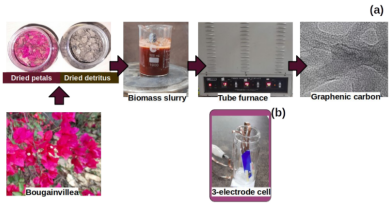


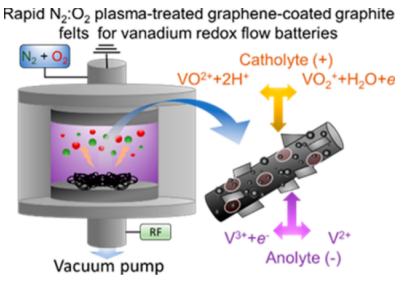
Fig. 1: (a) Schematic illustrating the synthesis procedure for bougainvillea petal and detritus derived graphenic carbon, and (b) screen-printed 3-electrode assembly for electrochemical measurements

ver más...

Graphene-Based Electrodes in a Vanadium Redox Flow Battery Produced by Rapid Low-Pressure Combined Gas Plasma Treatments

Publicada en https://arxiv.org, 19/10/2021.

The development of high-power density vanadium redox flow batteries (VRFBs) with high energy efficiencies (EEs) is crucial for the widespread dissemination of this energy storage technology. In this work, we report the production of novel hierarchical carbonaceous nanomaterials for VRFB electrodes with high catalytic activity toward the vanadium redox reactions (VO2+/VO2+ and V2+/V3+).



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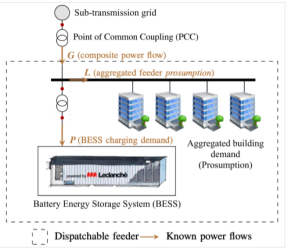
Optimal Grid-Forming Control of Battery Energy Storage Systems Providing Multiple Services: Modelling and Experimental Validation

Publicada en https://arxiv.org, 19/10/2021.

This paper proposes and experimentally validates a joint control and scheduling framework for a grid-forming converter-interfaced BESS providing multiple services to the electrical grid. The framework is designed to dispatch the operation of a distribution feeder hosting heterogeneous prosumers according to a dispatch plan and provide frequency containment reserve and voltage control as additional services. The framework consists of three phases. In the day-ahead scheduling phase, a robust optimization problem is solved to compute the optimal dispatch plan and frequency droop coefficient, accounting for the uncertainty of the aggregated prosumption.



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Methodology to identify the key variables driving the techno-economic feasibility of Trigeneration – Thermal Storage systems

Publicada en BASE Bielefelt Energy Storage, 13/10/2021.

Trigeneration systems with thermal storage (CCHP-TS) contribute to the distributed generation of energy and the reduction of greenhouse gas emissions. Nevertheless, it is important to assess their techno-economic feasibility to ensure long-term implementation. Moreover, determining and characterizing the influential variables is essential to identify the most viable application fields. Potentially, this could foster the interest of project managers, investors, and policymakers, therefore encoura[...]

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Energy-cost aware off-grid base stations with IoT devices for developing a green heterogeneous network

Publicada en https://arxiv.org, 12/10/2021.

Heterogeneous network (HetNet) is a specified cellular platform to tackle the rapidly growing anticipated data traffic. From communications perspective, data loads can be mapped to energy loads that are generally placed on the operator networks. Meanwhile, renewable energy aided networks offer to curtail fossil fuel consumption, so to reduce environmental pollution. This paper proposes a renewable energy based power supply architecture for off-grid HetNet using a novel energy sharing model.

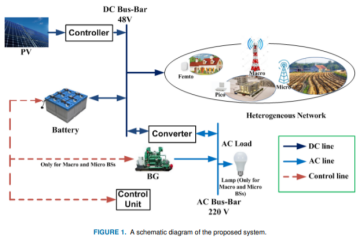

FIGURE 1. A schematic diagram of the proposed system.

ver más...

GridLearn: Multiagent Reinforcement Learning for Grid-Aware Building Energy Management

Publicada en https://arxiv.org, 12/10/2021.

Increasing amounts of distributed generation in distribution networks can provide both challenges and opportunities for voltage regulation across the network. Intelligent control of smart inverters and other smart building energy management systems can be leveraged to alleviate these issues. GridLearn is a multiagent reinforcement learning platform that incorporates both building energy models and power flow models to achieve grid level goals, by controlling behind-the-meter resources.

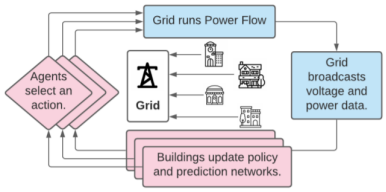

Fig. 1: Agent-environment interaction cycle

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Assessment of integrating hybrid solar-combined cycle with thermal energy storage for shaving summer peak load and improving sustainability

Publicada en Sustainable Energy Technologies and Assessments, 02/09/2021.

Publication date: October 2021 Source: Sustainable Energy Technologies and Assessments, Volume 47 Author(s): Yaman Mohammad Ali Manaserh, Ahmad M. Abubaker, Adnan Darwish Ahmad, Ammar Bany Ata, Yousef S.H. Najjar, Nelson K. Akafuah
In this study, the Al-Qatrana powerplant of Jordan, comprising a combined cycle, was integrated with a proposed solar power and thermal energy storage system. This study aims to conduct a comprehensive transient analysis and introduce an operating methodology for the smooth transition between the different system's operating modes.

ver más...

Dynamic simulation of an integrated energy system for buildings in cold climates with thermal energy storage

Publicada en Sustainable Energy Technologies and Assessments, 02/09/2021.

Publication date: October 2021 Source: Sustainable Energy Technologies and Assessments, Volume 47 Author(s): Meysam Farrokhi, Roghayyeh Motallebzadeh, Nader Javani, Abdolsalam Ebrahimpour
In the current study, a building of a Hotel in cold weather conditions is simulated to be powered by a Combined Cooling, Heating and Power (CCHP) system in a transient manner.

ver más...

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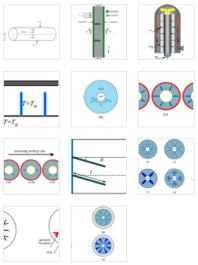
Effects of fin parameters on performance of latent heat thermal energy storage systems: A comprehensive review

Publicada en Sustainable Energy Technologies and Assessments, 02/09/2021.

Publication date: October 2021 Source: Sustainable Energy Technologies and Assessments, Volume 47 Author(s): M. Eslami, F. Khosravi, H.R. Fallah Kohan
Due to the low thermal conductivity of the available phase change materials (PCM), fins are usually incorporated into latent heat thermal energy storage (LHTES) systems. Although many different fin configurations have been proposed and investigated, each assessment is performed with its unique assumptions and limitations.

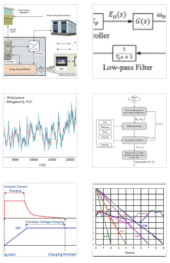


ver más...

Research on a real-time control strategy of battery energy storage system based on filtering algorithm and battery state of charge

Publicada en Sustainable Energy Technologies and Assessments, 02/09/2021.

Publication date: October 2021 Source: Sustainable Energy Technologies and Assessments, Volume 47 Author(s): Lianghong Zhu, Guoyun Lian, Songhua Hu
With the continuous development of battery technology, some practical problems are constantly emerging. How to improve the output power fluctuation of the power supply by improving the battery energy storage system, so as to obtain the output power of the battery power supply is an urgent need to solve The problem



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Thermal analysis of macro-encapsulated phase change material coupled with domestic gas heater for building heating

Publicada en Sustainable Energy Technologies and Assessments, 02/09/2021.

Publication date: October 2021 Source: Sustainable Energy Technologies and Assessments, Volume 47 Author(s): Fawad Ahmed, Mariam Mahmood, Adeel Waqas, Naveed Ahmad, Majid Ali
Rising concerns of environmental degradation and energy security particularly in developing countries like Pakistan has exhilarated the need for energy storage systems for efficient source utilization. Phase Change Material (PCM) based Thermal Energy Storage (TES) systems are used with air conditioning systems for thermal load management in buildings.

ver más...

Virtual battery storage service using hydropower plant with co-located floating solar and wind generation

Publicada en Sustainable Energy Technologies and Assessments, 02/09/2021.

Publication date: October 2021 Source: Sustainable Energy Technologies and Assessments, Volume 47 Author(s): Vatee Laoharojanaphand, Weerakorn Ongsakul
Despite the variability in the output, solar photovoltaic installations have steadily increased around the globe. To ensure the scheduled PV power output and reliability, the system should be grid-connected or have storage, of which grid is the cheaper option. Virtual Battery (VB) is the operational concept where utility allows the prosumer to export their surplus PV output to the grid

ver más...

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Suppressing the interlayer-gliding of layered P3-type K0.5Mn0.7Co0.2Fe0.1O2 cathode materials on electrochemical potassium-ion storage

Publicada en AIP Scitation, 01/09/2021.

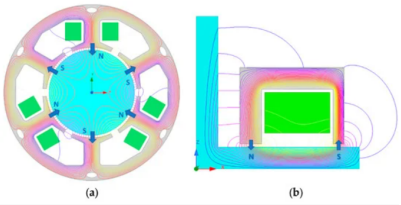
Applied Physics Reviews, Volume 8, Issue 3, September 2021. In recent years, potassium-ion batteries (KIBs) have emerged as a promising alternative candidate to replace lithium-ion batteries for large-scale energy storage devices owing to the natural abundance of potassium and similar mechanism as lithium-ion batteries. In particular, transition metal oxide cathode materials have attracted growing attention due to their high theoretical capacities and low cost compared with other cathode materials. Nevertheless, due to the larger ionic radius of K-ions, transition metal oxide cathode materials suffer from irreversible structural evolution and interlayer-gliding of transition metal layers in potassiation/depotassiation, which results in sluggish kinetics and structural instability. This limited capacity and unsatisfactory cycling properties inhibit the practical application of potassium-ion batteries.

ver más...

Design and modeling of an integrated flywheel magnetic suspension for kinetic energy storage systems

Publicada en BASE Bielefelt Energy Storage, 01/09/2021.

The paper presents a novel configuration of an axial hybrid magnetic bearing (AHMB) for the suspension of steel flywheels applied in power-intensive energy storage systems. The combination of a permanent magnet (PM) with excited coil enables one to reduce the power consumption, to limit the system volume, and to apply an effective control in the presence of several types of disturbances. The electromagnetic design of the AHMB parts is carried out by parametric finite element analyses with the pu[...]



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