

BOLETÍN DE VIGILANCIA TECNOLÓGICA E INTELIGENCIA COMPETITIVA

ALMACENAMIENTO DE ENERGÍA

ENERO - FEBRERO 2021



BATTERYPLAT



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State of Batteries Report 2020

Publicada en <https://www.batterybrunch.org>, 16/02/2021.

BatteryBits In this inaugural report, we summarize what we consider to be the most significant developments in the battery industry in 2020. This report seeks to provide a comprehensive and accessible overview of the current state of battery research, industry, talent, and policy. We hope to catalyze in-depth conversations on the state of batteries and trajectory for the future



[ver más...](#)

Los costos de almacenamiento en Asia Pacífico disminuirán un 30% para 2025

Publicada en <https://elperiodicodelaenergia.com>, 20/01/2021.

Los costos del sistema de almacenamiento en batería enfrente del contador (FTM) en los mercados de Asia Pacífico podrían disminuir en más del 30% para 2025, dice la consultora Wood Mackenzie. Los precios de los sistemas de almacenamiento cayeron más rápido de lo previsto en 2020, y el principal factor fue la reducción del precio de la batería. Las mejoras en la densidad de energía de la batería también contribuyeron a reducir el equilibrio general de los componentes del sistema (BOS) y los costos asociados.



[ver más...](#)

Inexpensive battery charges rapidly for electric vehicles, reduces range anxiety

Publicada en Eurekalert technology & engineering, 18/01/2021.

(Penn State) Range anxiety, the fear of running out of power before being able to recharge an electric vehicle, may be a thing of the past, according to a team of Penn State engineers who are looking at lithium iron phosphate batteries that have a range of 250 miles with the ability to charge in 10 minutes.



[ver más...](#)

US\$47m funding from US Department of Energy for disruptive tech mostly goes to batteries, smart grid

Publicada en Energy Storage news, 15/01/2021.

The lion's share of new funding announced this week to help scale-up potentially disruptive technologies by the Advanced Research Projects Agency - Energy (ARPA-E) of the US government Department of Energy (DOE) will go to battery and smart grid technologies.

[ver más...](#)

‘Rapid scale-up of battery storage is key’ to preventing costly waste of wind energy in the UK

Publicada en Energy Storage news, 14/01/2021.

Wind curtailments between Scotland and England are expected to cost consumers £1 billion (US\$1.36 billion) per year by 2025, a figure that will continue to grow as the nation works towards the UK government’s 40MW by 2030 target. This figure highlights how “rapidly scaling up battery storage capacity is key” LCP said.

[ver más...](#)

Goldman Sachs buys California solar-plus-storage plant from Canadian Solar

Publicada en Energy Storage news, 14/01/2021.

Canadian Solar said that construction has begun on a large-scale solar PV project combined with a four-hour duration battery storage system in California which the company has just sold to Goldman Sachs Renewable Power.



[ver más...](#)

El proyecto de planta británica de baterías para automoción cambia de emplazamiento

Publicada en Revista Dyna - Ingeniería e Industria , 04/01/2021.

Sin embargo, la realidad inmediata ha forzado, en los últimos cinco años, a los constructores de automoción europeos, a acelerar la propuesta de coches eléctricos y, por consiguiente, la erección de plantas que aportasen las baterías necesarias. Las de Northvolt en Suecia y Alemania, las coreanas en Hungría, la china CATL también en Alemania o la de TESLA cerca de Berlín son algunos de los proyectos en marcha. Sus principales problemas están en que, para ofrecer la deseada competitividad, necesitan una dimensión considerable (recomendable que esté hacia los 30 GWh de capacidad) y una inversión, que puede situarse para alcanzar esa capacidad en unos 4.500 millones de euros.

[ver más...](#)

Monetising battery storage in the UK and Europe in 2021: New opportunities and a new way of thinking

Publicada en <https://www.energy-storage.news>, 04/01/2021.

Energy storage is poised to play a much bigger role this year in balancing electricity market volatility, accelerating the transition to renewable energy and providing economic benefits to those willing to invest, says Aaron Lally, managing partner at UK-based cleantech trading house VEST Energy. 2021 will finally be the breakthrough year for battery storage in the UK after several years of false starts with investors sitting on the side-lines reluctant to sink in the required £20-25 million (US\$27.4 million - US\$34.24 million) for their first site

[ver más...](#)

EMPRESAS Y MERCADOS

Tesla Energy Generation And Storage Business: Q4 2020 Results

Publicada en Inside EVS, 27/01/2021.

Megapacks drive Tesla's energy storage business up to a new record of over 3 GWh in 2020. Tesla's battery energy storage business is booming, while the solar branch is showing signs of improvement. In Q4, Tesla Energy revenues amounted to \$752 million (new record), while the cost of revenues stands at \$787 million. It, unfortunately, means a negative \$35 million result and a gross margin of negative 4.7%, but as long as the company is expanding the business, we assume it's under control.



[ver más...](#)

EV Battery Market Expanded To 116 GWh In January-November 2020

Publicada en Inside EVS, 25/01/2021.

CATL and LG Chem are the top xEV battery suppliers this year, although outside China, it's still Panasonic. Despite all the challenges of 2020, the global xEV battery market (BEVs, PHEVs, HEVs) is expanding noticeably. The data for January-November 2020, provided by SNE Research, reveals that the overall market increased by over 15% year-over-year to 116.5 GWh. After including December, it should not be bad at all. The most interesting thing is which battery manufacturers are actually increasing their sales, and which are struggling. Let's take a look.

[ver más...](#)

Global Passenger xEV Battery Market Is Booming: November 2020

Publicada en Inside EVS, 23/01/2021.

Global battery deployment for passenger xEVs (BEVs, PHEVs, HEVs) is accelerating. New all-time records were set first in September, and recently also in November. We guess that once all the data will come in, December will become even better.

[ver más...](#)

Siemens Launches 96% Efficient Sicharge D Fast Charger

Publicada en Inside EVS, 23/01/2021.

Siemens introduces a new Sicharge D fast charger, marketing it as one of the most efficient DC charger on the market. The rated efficiency is 95.5%, but at peak, it's 96%. The Sicharge D is modular and upgradable, with several power outputs - 160 kW, 180 kW, 240 kW and 300 kW. The cool thing about it is the dynamic power allocation between the two DC outputs (plus an optional AC output).



[ver más...](#)

Electric car batteries with five-minute charging times produced

Publicada en <https://www.theguardian.com>, 19/01/2021.

Batteries capable of fully charging in five minutes have been produced in a factory for the first time, marking a significant step towards electric cars becoming as fast to charge as filling up petrol or diesel vehicles. Electric vehicles are a vital part of action to tackle the climate crisis but running out of charge during a journey is a worry for drivers. The new lithium-ion batteries were developed by the Israeli company StoreDot and manufactured by Eve Energy in China on standard production lines.



[ver más...](#)

'Great Western Battery' 1,000MWh project proposed to aid reliability in Australia's post-coal age

Publicada en Energy Storage news, 18/01/2021.

Renewable energy developer Neoen last month published its plan for a new project in New South Wales, Australia, called the 'Great Western Battery' which will be among the country's largest battery energy storage system facilities to date.

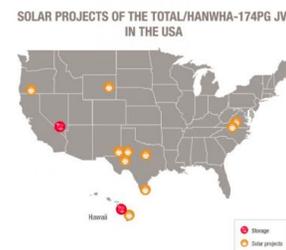


[ver más...](#)

1.6GW of US solar and energy storage projects in the works from Total and Hanwha Group JV

Publicada en Energy Storage news, 18/01/2021.

Energy company Total and solar-plus-storage developer 174 Global, a division of Hanwha Group, have formed a joint venture to develop utility-scale solar and storage projects with a total capacity of 1.6GW in the US.



[ver más...](#)

Siemens signs technology deal with Britishvolt to create 'most efficient' UK battery gigafactory

Publicada en Energy Storage news, 18/01/2021.

Siemens has partnered with the company behind what is to be the UK's first lithium-ion battery gigafactory, providing it with its Digital Enterprise Technology, which can simulate gigaplant production processes and flows ahead of construction.



[ver más...](#)

Engie, Neoen building subsidy-free 1GW solar project with storage, electrolyser in France

Publicada en Energy Storage news, 15/01/2021.

Multinational utility Engie and renewables developer Neoen are to invest €1.2 billion (US\$1.46 billion) in a large-scale solar-plus-storage project in south eastern France, which includes a 1GW solar system and 40MW of battery energy storage.

[ver más...](#)

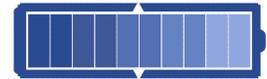
Wind, solar to make up 70% of new US generation in 2021 while batteries gain momentum: EIA

Publicada en <https://www.utilitydive.com>, 13/01/2021.

Wind and solar will represent more than two-thirds of new energy production to come online in 2021, while battery storage capacity is set to quadruple over the next year, according to the U.S. Energy Information Administration (EIA).



[ver más...](#)



Trafigura clean energy JV's first project will be 25MW / 100MWh battery storage system in Belgium

Publicada en Energy Storage news, 11/01/2021.

Commodities trading company Trafigura has said that it is building a large-scale battery storage plant in Belgium through a newly-launched renewable energy joint venture (JV) company. Located at the site of a zinc smelting facility in the northeastern Belgian municipality of Balen, owned and operated by metals company Nyrstar, construction on the project is expected to begin in the first half of this year for completion during 2022. Trafigura said in a press release last week that the project will use lithium-ion batteries with 25MW rated output and 100MWh capacity (four hours duration).

[ver más...](#)

PATENTES

Battery charging management method, terminal device, and storage medium

Publicada en Tecnologías asociadas a baterías, supercapacitadores, supercondensadores, acumuladores, 20/01/2021.

Solicitante: PAX COMPUTER TECHNOLOGY (SHENZHEN) CO., LTD. [CN]

The present application is suitable for the technical field of battery charging and discharging management. Provided are a battery charging management method, a terminal device, and a storage medium. The method comprises: when a preset battery charging mode switching condition is met, acquiring the current time and historical power supply data; determining a corresponding predicted charging mode according to the historical power supply data; and updating the current charging mode of a terminal according to the predicted charging mode. In the battery charging management method, the terminal device, and the storage medium which are provided in the embodiments of the present application, according to the historical power supply data that can represent a usage habit of a user, the power supply condition of the terminal at the current time is rationally predicted to thus obtain the predicted charging mode, and the current charging mode of the terminal is updated to the predicted charging mode, thereby reducing a battery fault or risk caused by misuse by the user, and solving the problem of existing battery charging management technology being unable to prevent battery damage caused by improper operations of the user.

[ver más...](#)

CT device provided with energy storage system

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

Solicitante: DACHENG MEDICAL TECHNOLOGY CO., LTD. [CN]

Provided is a CT device provided with an energy storage system. The CT device comprises an energy storage system (1), a scanning gantry (2), a diagnostic couch (3) and a console (4), wherein the energy storage system (1) is respectively connected to the scanning gantry (2), the diagnostic couch (3) and the console (4), and can provide a power supply for the scanning gantry (2), the diagnostic couch (3) and the console (4). The energy storage system is used for supplying power to the whole CT device, such that the problem of it only being possible to mount a traditional CT device at a fixed place due to same being powered by a mains network is solved; a DC-AC inverter is used to convert a direct current of the energy storage system into an alternating current for power supply, such that the problem of it not being possible to directly power some components of the CT device by means of a direct-current power supply is solved; and a DC-DC converter is used to convert the voltage of the energy storage system into different voltages for power supply, such that the problem of some components of the CT device needing to be powered by a low-voltage and safe direct-current power supply is solved.

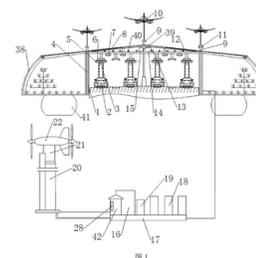
[ver más...](#)

Electrified smart transport system having wind and solar bio-energy storage, supply, and charge

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

Solicitante: ZHOU, Lianhui [CN]

An electric and smart transport system having wind and solar bio-energy storage, supply, and charge, comprising a perovskite power generation film (12), and a wind power generator set (22); a moving vehicle (2) travels on a road, and a vehicle-mounted automatic telescopic smart pantograph (5) is fixed to the top of the moving vehicle (2) by means of an insulating terminal and a screw. A photovoltaic ceiling is laid out on roads and farmland on two sides of the roads to make reasonable use of space and photovoltaic ceiling may both conduct photovoltaic power generation and keep out rain and snow to ensure normal driving under adverse weather



[ver más...](#)

Energy storage connected to a plurality of power busses

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

Solicitante: KK WIND SOLUTIONS A/S [DK]

The invention relates to an energy storage comprising a plurality of energy modules arranged in one or more energy module strings. A string controller is configured for controlling a current path through the energy module strings by controlling the status of a plurality of semiconductor switches. A first end of a current path is electrically connectable to a first electric system of a first electric bus via a first bus switch and to a second electric system of a second electric bus via a second bus switch. A second end of the current path is electrically connectable to a first reference potential being the same as the reference potential of the electric systems connected to the first end of the current path. An energy storage controller is configured for controlling the status of the first bus switch and of the second bus switch in dependency of the received power status.

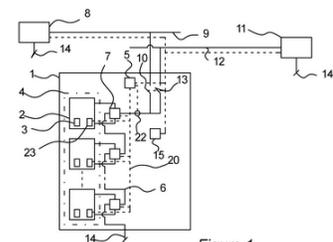


Figure 1

[ver más...](#)

Hybrid energy storage device

Publicada en Tecnologías asociadas a baterías, supercondensadores, supercondensadores, acumuladores, 20/01/2021.

Solicitante: QUEEN'S UNIVERSITY AT KINGSTON [CA]

A hybrid energy storage device has at least two half cells, wherein each half cell includes an electrode comprising an electrically conductive high surface area material incorporating an electrolyte comprising a dissolved species that can exist in more than two redox states, and at least one separator that separates the at least two half cells and allows transfer of selected charge carriers between the half cells. After an initial charging, a redox pair of one half cell is different from the redox pair of the other half cell. The hybrid energy storage device operates as a battery for low power applications, and as a supercapacitor for high power applications. The hybrid energy storage device may be flexible.

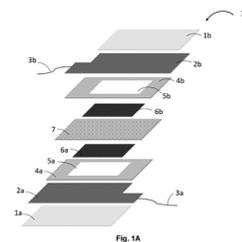


Fig. 1A

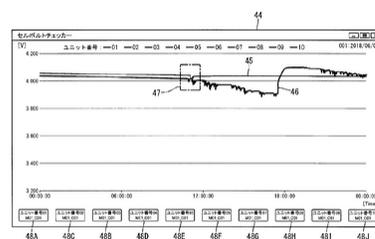
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Maintenance method for power storage device and maintenance program

Publicada en Tecnologías asociadas a baterías, supercapacitores, supercondensadores, acumuladores, 20/01/2021.

Solicitante: GS YUASA INTERNATIONAL LTD. [JP]

A maintenance method for a power storage device 1 in which a plurality of power storage units 9 in which a plurality of battery cells 11 are connected in series are connected in parallel. The maintenance method includes a comparison step for comparing log data for battery cells 11 that are at the same series connection positions in the power storage units 9 and a determination step for determining, on the basis of comparison results from the comparison step, the power storage unit 9 at which an abnormality has occurred.



[ver más...](#)

Method for determining the state of charge of the cells of a battery

Publicada en Tecnologías asociadas a baterías, supercapacitores, supercondensadores, acumuladores, 20/01/2021.

Solicitante: COMMISSARIAT A L'ENERGIE ATOMIQUE ET AUX ENERGIES ALTERNATIVES [FR]

The present description concerns a method for determining, for each cell of a battery of cells connected in series, an indicator QCi representative of the charge stored in the cell, this method comprising: a) after a phase (101) of partially discharging or recharging the battery, measuring (102) the voltage Ui at the terminals of each cell of the battery; b) calculating (103), for each cell, an interpolation coefficient Xi from a value C_rate representative of the discharge or recharge rate of the battery during the partial discharge or recharge phase (101), and the voltages Ui measured in step a)

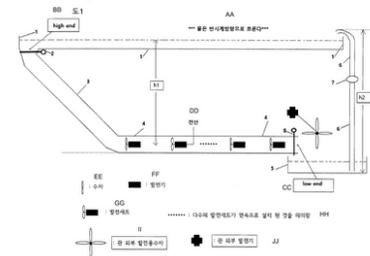
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Pumped-storage hydroelectric power station having pipe installed such that both ends of pipe have different heights, thereby inducing fluid flow inside pipe, and utilizing fluid flow

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

Solicitante: HEO, Kyu-hwe [KR]

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



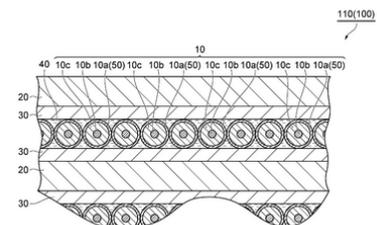
[ver más...](#)

Active material holding member, method for producing same, electrode, lead acid storage battery and electric vehicle

Publicada en Tecnologías asociadas a baterías, supercapacitores, supercondensadores, acumuladores, 13/01/2021.

Solicitante: SHOWA DENKO MATERIALS CO., LTD. [JP]

A lead acid storage battery 100 according to the present invention is provided with a positive electrode 10 that comprises an active material holding member 50. The active material holding member 50 is provided with a tube (glass tube) 10a that contains a paraffin; and the content of the paraffin is more than 0% by mass but less than 1.2% by mass based on the total mass of the tube 10a.



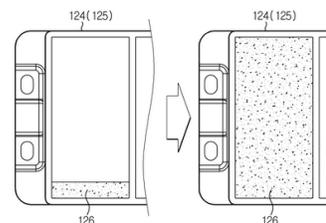
[ver más...](#)

Battery module having structure into which cooling water can be introduced when thermal runaway phenomenon occurs, and battery pack and energy storage device comprising same

Publicada en Tecnologías asociadas a baterías, supercapacitadores, supercondensadores, acumuladores, 13/01/2021.

Solicitante: LG CHEM, LTD. [KR]

A battery module, according to an embodiment of the present invention, comprises: a plurality of battery cells; a module housing for accommodating a cell stack formed by stacking the plurality of battery cells; an air inlet formed through the module housing on one side in the stacking direction of the cell stack; an air outlet formed through the module housing on the other side in the stacking direction of the cell stack; and an expansion pad disposed inside the air inlet and the air outlet, and expanding according to contact with cooling water introduced into the battery module to close the air inlet and the air outlet.



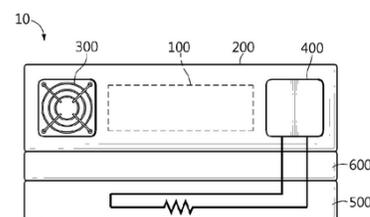
[ver más...](#)

Battery module, battery rack comprising such battery module, and power storage device

Publicada en Tecnologías asociadas a baterías, supercapacitadores, supercondensadores, acumuladores, 13/01/2021.

Solicitante: LG CHEM, LTD. [KR]

A battery module, according to one embodiment of the present invention, comprises: at least one battery cell; a module case for receiving the battery cell; a relay unit provided to the module case and electrically connected to the at least one battery cell; and a shunt unit provided on the outer side of the module case and electrically connected to the relay unit.



[ver más...](#)

Composite phase-change materials with active supporting media for thermal energy storage applications

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

Solicitante: FUNDACIÓN CENTRO DE INVESTIGACIÓN COOPERATIVA DE ENERGÍAS ALTERNATIVAS CIC ENERGIGUNE FUNDAZIOA [ES]

The invention relates to a composite phase-change material (PCM) comprising a non-polymeric solid-solid PCM and a solid-liquid PCM, wherein the solid-liquid PCM occupies an internal volume of the solid-solid PCM. This material takes full advantage of the latent heat of both PCMs, while avoiding seepage of the inner solid-liquid PCM. A method for the preparation of these materials is also within the scope of the invention as well as its use and applications. The invention further relates to a thermal energy storage device comprising the composite PCM.

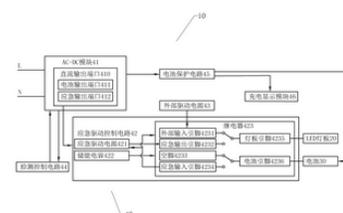
[ver más...](#)

Emergency lamp, control circuit and control method therefor, and storage method

Publicada en Tecnologías asociadas a baterías, supercondensadores, supercondensadores, acumuladores, 13/01/2021.

Solicitante: SHENZHEN MERRYTEK TECHNOLOGY CO., LTD [CN]

Disclosed are an emergency lamp, a control circuit and a control method therefor, and a storage method. The emergency lamp comprises an LED lamp panel, a battery and a control circuit, wherein the control circuit comprises an AC-DC module and an emergency drive control circuit electrically connected to the AC-DC module; the emergency drive control circuit comprises an energy storage capacitor and a relay electrically connected to the energy storage capacitor; the relay has a normal state and an emergency state



[ver más...](#)

Methods for the production of nanocomposites for high temperature electrochemical energy storage devices

Publicada en Tecnologías asociadas a baterías, supercondensadores, supercondensadores, acumuladores, 13/01/2021.

Solicitante: SAUDI ARABIAN OIL COMPANY [SA]

Presented here are nanocomposites and electrochemical storage systems (e.g., rechargeable batteries and supercapacitors), which are resistant to thermal runaway and are safe, reliable, and stable electrode materials for electrochemical storage systems (e.g., rechargeable batteries and supercapacitors) operated at high temperature and high pressure, and methods of making the same.

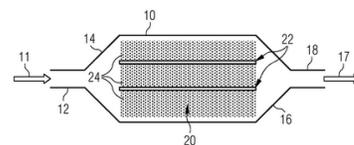
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Thermal energy storage

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

Solicitante: SIEMENS GAMESA RENEWABLE ENERGY GMBH & CO. KG [DE]

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



[ver más...](#)

Use of 2,3,3,3-tetrafluoropropene for heating a lithium battery

Publicada en Tecnologías asociadas a baterías para transporte, 13/01/2021.

Solicitante: ARKEMA FRANCE [FR]

The invention relates to the use of a refrigerant comprising 2,3,3,3-tetrafluoropropene for heating a battery of an electric vehicle, comprising at least one electrochemical cell having a negative electrode, a positive electrode and an electrolyte, wherein the electrolyte comprises a lithium salt and the negative electrode comprises lithium metal as an electrochemically active material.

[ver más...](#)

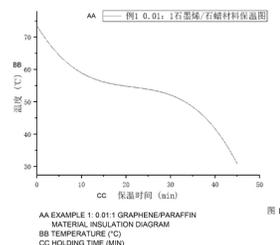
Composite phase change material for microwave heating energy storage and preparation and energy storage method therefor

Publicada en Tecnologías asociadas a almacenamiento de energía, 06/01/2021.

Solicitante: XI'AN JIAOTONG UNIVERSITY [CN]

A composite phase change material for microwave heating energy storage and a preparation and energy storage method therefor, the composite phase change material having excellent thermal conductivity, a stable heat absorption and release cycle, high latent heat storage density, simple preparation and energy storage operations, and being convenient and reliable. The composite phase change material comprises a uniformly dispersed phase change material and graphene. The mass ratio of the phase change material to the graphene is 1:(0.01-0.05).

[ver más...](#)

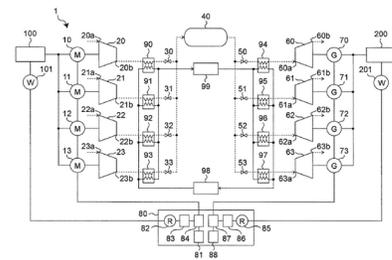


Compressed air energy storage power generation apparatus and compressed air energy storage power generation method

Publicada en Tecnologías asociadas a almacenamiento de energía, 06/01/2021.

Solicitante: KABUSHIKI KAISHA KOBE SEIKO SHO (KOBE STEEL, LTD.)

A compressed air energy storage power generation device includes motors, compressors that compress air, an accumulator tank that accumulates compressed air, expanders to driven by the compressed air supplied from the accumulator tank, generators, and a control device that controls driving of the motors. The control device includes a power supply command receiver that receives a power supply command, a priority setting unit that sets priority to the motors so that the motor whose elapsed time from stop is shorter has higher priority, a number-of-units determination unit that determines the number of the motors to be driven on the basis of an amount of input power indicated by the power supply command, and a drive unit that drives the motors in the descending order of the priority until the number of the driven motors becomes equal to the number of motors to be driven determined by the number-of-units determination unit.



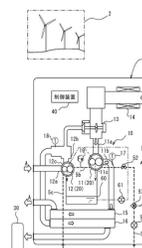
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Compressed air storage electricity generating device

Publicada en Tecnologías asociadas a almacenamiento de energía, 06/01/2021.

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

A compressed air energy storage (CAES) electricity generating device 1 is provided with: a combined compressor/expander 10 which functions as a compressor and an expander and includes a cooling jacket; a combined electric motor/electricity generator 20 which is mechanically connected to the combined compressor/expander 10, and which functions as an electric motor for driving the combined compressor/expander 10 and as an electricity generator that is driven by the combined compressor/expander 10; a pressure accumulating unit 30 which is fluidly connected to the combined compressor/expander 10, and which stores compressed air generated by the combined compressor/expander 10; a cooling liquid pump 51 for adjusting the flow rate of the cooling liquid to the cooling jacket; and a control device 40 for controlling the cooling liquid pump



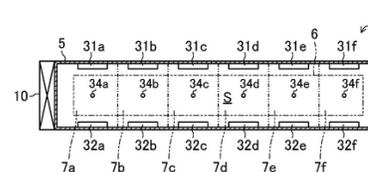
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Electrical field generator and cold storage equipped with same

Publicada en Tecnologías asociadas a almacenamiento de energía, 06/01/2021.

Solicitante: DAIKIN INDUSTRIES, LTD. [JP]

This electrical field generator (30), which includes electrodes (31a-31f, 32a-32f) and a voltage applying device (33) for applying a voltage to the electrodes (31a-31f, 32a-32f), and generates an electrical field in the space (S) of the storage (5), is provided with an electrical field controller (35) for controlling the voltage applied to the electrodes (31a-31f, 32a-32f). The electrical field controller (35) increases and decreases the voltage to be applied to the electrodes (31a-31f, 32a-32f) according to the state of the electrical field generated in the space (S) of the storage (5).



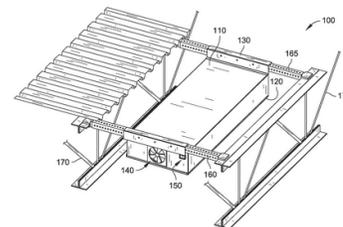
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Energy storage device enclosure system

Publicada en Tecnologías asociadas a almacenamiento de energía, 06/01/2021.

Solicitante: GLOBAL GRID ENERGY [US]

In an example implementation, an energy storage device storage system is disclosed. The energy storage device storage system may include an energy storage device enclosure configured to be disposed between a first longitudinal support structure and a second longitudinal support structure. The first and second longitudinal support structures can extend between first and second support structures. The energy storage device enclosure may include one or more slots configured to receive an energy storage device. The one or more slots each include one or more ports configured to provide an electrical connection to the energy storage device. The energy storage device enclosure may further include one or more jammers attached to outer sidewalls of the energy storage device enclosure. The one or more jammers configured to hold the energy storage device enclosure between the first and second support structures.



[ver más...](#)

Energy storage parallel operation system

Publicada en Tecnologías asociadas a almacenamiento de energía, 06/01/2021.

Solicitante: ALPHA ESS CO., LTD. [CN]

Provided is an energy storage parallel operation system. The energy storage parallel operation system is composed of a meter, an EMS and a plurality of energy storage units; the EMS is in communication with the meter in an RS485 communication mode; and the EMS is in communication with the plurality of energy storage units in a CAN communication mode. According to the energy storage parallel operation system, the requirements of users with regard to devices with different power ranges are met, and the cost is also reduced.

[ver más...](#)

Improved management of an energy storage system of a vehicle

Publicada en Tecnologías asociadas a almacenamiento de energía, 06/01/2021.

Solicitante: VOLVO TRUCK CORPORATION [SE]

The present invention relates to a method of managing an energy storage system (ESS) of a vehicle, wherein the energy storage system has a beginning of life (BOL). The vehicle has at least a first application and a second application, and the energy storage system has a first end of life (EOL 1) for the first application and a second end of life (EOL 2) for the second application. Further, the ESS has a first lifetime between the BOL and the EOL and a second lifetime between the BOL and the EOL 2.

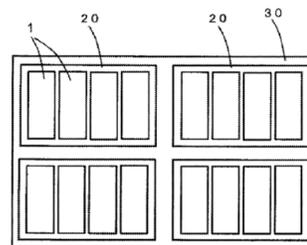
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Nonaqueous electrolyte, energy storage device, and method for producing energy storage device

Publicada en Tecnologías asociadas a almacenamiento de energía, 06/01/2021.

Solicitante: GS Yuasa International Ltd.

Provided is a nonaqueous electrolyte capable of suppressing swelling of an energy storage device caused by repeated charge-discharge, an energy storage device including the nonaqueous electrolyte, and a method for producing the energy storage device. One aspect of the present invention is a nonaqueous electrolyte which is used for an energy storage device and contains halogenated toluene and halogenated nitrotoluene. Another aspect of the present invention is an energy storage device including the nonaqueous electrolyte. Another aspect of the present invention is a method for producing an energy storage device, which uses the nonaqueous electrolyte.



[ver más...](#)



Phase change heat storage rubber, preparation method and application thereof

Publicada en Tecnologías asociadas a almacenamiento de energía, 06/01/2021.

Solicitante: ZHANG, Liqiang [CN]

Phase change heat storage rubber, comprising the following components according to parts by weight: 20-70 parts rubber and 10-68 parts of a modified phase change powder. The rubber contains a suitable amount of the modified phase change powder, so that the rubber has excellent heat absorption and heat storage performance. The phase change enthalpy reaches 15-200 J/g, the specific heat capacity exceeds 2.0 J/g·K, and the requirements of batteries and capacitors for heat absorption and heat storage performance are met.

[ver más...](#)

Reconfigurable Energy Storage Module and Optimum Power Transfer Algorithm for Distributed and Modular Energy Storage Systems

Publicada en Tecnologías asociadas a almacenamiento de energía, 06/01/2021.

Solicitante: X-wave Innovations, Inc.

Systems and methods are disclosed that are related to a set of reconfigurable energy storage modules that can be assisted by an algorithm used to create larger energy storage systems in a flexible and efficient manner. The modules can interconnect in series, parallel or series/parallel and achieve balancing of the energy in every module while providing terminal voltage and/or current control and regulation. The modules can reconfigure on-the-fly and behave as a regular battery, a by-passing unit with a very low resistance, or a module capable of bucking or boosting voltage.

[ver más...](#)

Separator for rechargeable battery, method of preparing the same and rechargeable lithium battery including the same

Publicada en Tecnologías asociadas a baterías de litio y sodio, 06/01/2021.

Solicitante: SAMSUNG SDI CO., LTD.[KR]

A separator for a rechargeable battery, a method of preparing a separator, and a rechargeable lithium battery, the separator including a porous substrate; and at least one coating layer on one surface of the porous substrate, wherein the coating layer includes a fluorine-containing binder, a filler, and an additive, the fluorine-containing binder has a concentration gradient in which a concentration thereof in the coating layer increases toward an outer surface of the separator in a thickness direction of the separator, an infrared spectral intensity of a C-F group of the fluorine-containing binder is greater than 0.0030 to less than 0.0050, the additive is a hydrocarbon polymer compound that includes a carboxyl group, and a weight average molecular weight of the hydrocarbon polymer compound is about 5,000 g/mol to about 15,000 g/mol.

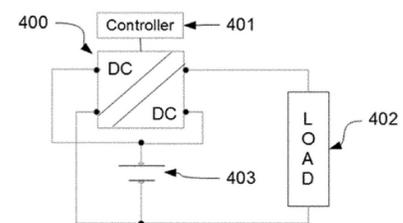
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Source bootstrap power conversion for the safe and efficient interconnection of homogeneous or heterogeneous energy storage modules

Publicada en Tecnologías asociadas a almacenamiento de energía, 06/01/2021.

Solicitantes X-wave Innovations, Inc. [US]

The present disclosure comprises devices and methods used to regulate the power, voltage and/or current out of an individual energy storage module. A plurality of energy storage modules and/or individual interconnected energy storage modules can form an energy storage system when interconnected in series, parallel or series/parallel. The present disclosure also provides a method for storing and delivering energy, comprising providing an energy storage module for boosting the voltage of the energy storage component while delivering power to a load.



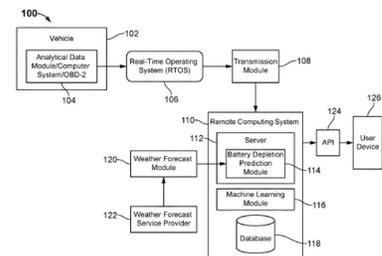
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System and method for battery maintenance management

Publicada en Tecnologías asociadas a baterías para transporte, 06/01/2021.

Solicitante: Daniel Handiaz, QodeLogix Systems Inc.

A system and method for predicting a battery charge depletion of a vehicle are disclosed. The system further configured to classify the vehicles according to the extracted data and generate a battery maintenance schedule for each vehicle. The system comprises an analytical data module, a remote computing system, and a weather forecast module. The analytical data module is configured to extract data, for example, battery status, from the vehicle. The weather forecast module is configured to detect weather forecasts for an area in which the vehicle is located. The remote computing system comprises a battery depletion prediction module, a machine learning module, and a database. The battery depletion prediction module is configured to predict the battery charge depletion based on the extracted data and weather forecasts using the machine learning algorithm. The remote computing system is connected to a user device to transfer the predicted battery status of the vehicle.



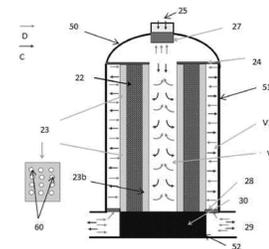
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System and method for storing and recovering heat, comprising a radial passage within storage particles

Publicada en Tecnologías asociadas a almacenamiento de energía, 06/01/2021.

Solicitante: IFP ENERGIES NOUVELLES [FR]

The present invention relates to a system and a method for storing and recovering heat, wherein a fluid passes transversely, preferably radially, through a heat storage means (22) which comprises at least one bed of storage particles, from a first volume (V1, V2) to a second volume (V1, V2). Each volume (V1, V2) is connected to a different injection/filling means (25, 29). This system and this method allow an improvement in the heat storage capacity compared to the systems of the prior art. The invention also relates to a system and a method for storing and recovering energy using compressed gas, comprising a system or a method for storing and recovering heat as described. Thus, the performance levels are improved.



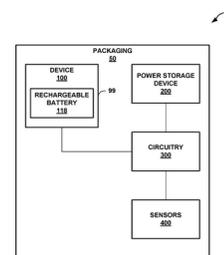
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System configured to decrease battery ageing of ear wearable device due to transportation or storage of the device while ensuring high charge before initial use

Publicada en Tecnologías asociadas a almacenamiento de energía, 06/01/2021.

Solicitante: STARKEY LABORATORIES, INC. [US]

An example system includes an ear-wearable device comprising a housing and a rechargeable battery located within the housing; a supplemental power storage device configured to provide electrical energy; and circuitry configured to transfer, responsive to occurrence of an event, electrical energy from the supplemental power storage device to the rechargeable battery prior to an initial use of the ear-wearable device.



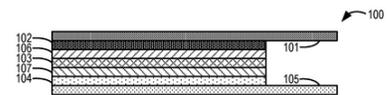
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Systems and methods for a composite solid-state battery cell with an ionically conductive polymer electrolyte

Publicada en Tecnologías asociadas a baterías para transporte, 06/01/2021.

Solicitante: A123 SYSTEMS LLC [US]

Systems and methods are provided for a slurry for coating an electrode structure. In one example, a method may include dispersing, by mixing at one or both of a high shear and a low shear, a solid ionically conductive polymer material in at least a first portion of a solvent to form a suspension, then dispersing, by mixing at the one or both of the high shear and the low shear, one or more additives in the suspension, and then mixing, at the one or both of the high shear and the low shear, a second portion of the solvent with the suspension to form a slurry. As such, the slurry including the solid ionically conductive polymer material may be applied as a coating in a solid-state battery cell, which may reduce resistance to Li-ion transport and improve mechanical stability relative to a conventional solid-state battery cell.



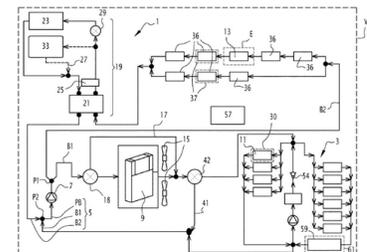
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Thermoregulation system and electrically driven vehicle comprising such a system

Publicada en Tecnologías asociadas a baterías para transporte, 06/01/2021.

Solicitante: VOLVO TRUCK CORPORATION

This thermoregulation system (1) is for an electrically driven vehicle (V), the vehicle comprising at least one battery (30). The thermoregulation system (1) comprises a coolant circuit (5) in which circulates a coolant, a pump (7) for circulating the coolant, and a at least one battery exchanger (11), connected to the coolant circuit (5) so that the coolant may circulate through the battery exchanger (11), and configured for exchanging heat between the coolant and said at least one battery (30). The coolant circuit (5) comprises a bypass line (41) allowing isolation of the battery exchanger (11) from the coolant circuit (5).



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Development of TiO₂/RT–35HC based nanocomposite phase change materials (NCPCMs) for thermal management applications

Publicada en Sustainable Energy Technologies and Assessments, 19/01/2021.

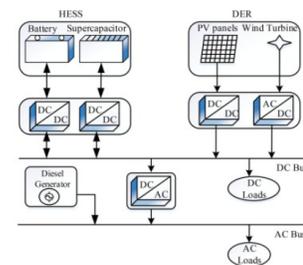
Publication date: Available online 7 December 2020 Source: Sustainable Energy Technologies and Assessments Author(s): Adeel Arshad, Mark Jabbal, Lei Shi, Jo Darkwa, Nicola J. Weston, Yuying Yan

[ver más...](#)

Power management and control of a grid-independent DC microgrid with hybrid energy storage system

Publicada en Sustainable Energy Technologies and Assessments, 19/01/2021.

Publication date: February 2021 Source: Sustainable Energy Technologies and Assessments, Volume 43 Author(s): Prashant Singh, Jagdeep Singh Lather. In this paper, a novel power management strategy (PMS) for power-sharing among battery and supercapacitor (SC) energy storage systems has been proposed and applied to resolve the demand-generation difference and DC bus voltage regulation.



[ver más...](#)

Thermal constant analysis of phase change nanocomposites and discussion on selection strategies with respect to economic constraints

Publicada en Sustainable Energy Technologies and Assessments, 19/01/2021.

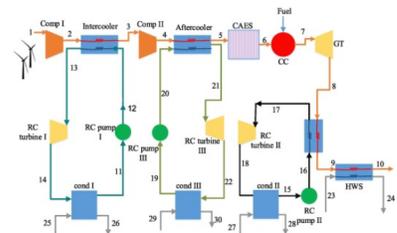
Publication date: February 2021 Source: Sustainable Energy Technologies and Assessments, Volume 43 Author(s): Mišo Jurevi, Sandro Nižeti, Müslüm Arc, Anh Tuan Hoang, Effrosyni Giama, Agis Papadopoulos. This paper reports an experimental investigation focused on nano-enhanced phase change materials (NEPCM). Two different types of phase change materials (RT28 HC and RT26) with relatively low thermal conductivity and reasonable volumetric specific heat capacity were utilized as the base for NEPCMs with four types of nanoparticles (CuO, ZnO, Ag, and graphene).

[ver más...](#)

Thermal modeling and triple objective optimization of a new compressed air energy storage system integrated with Rankine cycle, PEM fuel cell, and thermoelectric unit

Publicada en Sustainable Energy Technologies and Assessments, 19/01/2021.

Publication date: February 2021 Source: Sustainable Energy Technologies and Assessments, Volume 43 Author(s): Shoaib Khanmohammadi, Mohammad Rahmani, Farayi Musharavati, Saber Khanmohammadi, Quang-Vu Bach

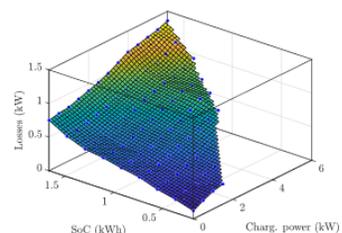


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Modelling and energy management of a flywheel storage system for peak shaving applications

Publicada en BASE Bielefeldt Energy Storage, 19/01/2021.

Peak shaving applications provided by energy storage systems are sustainable solutions for enhancing the existing capacity of distribution feeders and transformers in order to maintain their safe and reliable operation under an increased penetration of renewable energy sources and load demand growth. This work investigates the integration of a flywheel energy storage system installed in a feeder of a distribution network to provide peak shaving services. An empirical model is defined to determin[...]



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Stress- and Interface-Compatible Red Phosphorus Anode for High-Energy and Durable Sodium-Ion Batteries

Publicada en ACS Energy Letters, 15/01/2021.

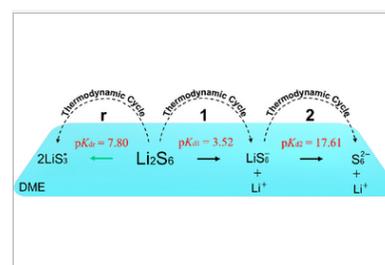
Sodium-ion batteries are promising candidates for energy storage application, but the absence of high-capacity and low-cost anode materials significantly limits their practical specific energy and cost. Red phosphorus (RP) possesses a high theoretical specific capacity but suffers from large volume change, low electronic conductivity, and unstable solid-electrolyte interphase (SEI).

[ver más...](#)

The Fundamental Understanding of Lithium Polysulfides in Ether-Based Electrolyte for Lithium–Sulfur Batteries

Publicada en ACS Energy Letters, 15/01/2021.

The liquid electrolyte in a lithium–sulfur battery is important for the dissolution–deposition reaction through the solubility of polysulfides.



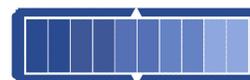
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Bioenergy with Carbon Capture and Storage (BECCS) : Finding the win–wins for energy, negative emissions and ecosystem services—size matters

Publicada en BASE Bielefeld Energy Storage, 14/01/2021.

Funding information Natural Environment Research Council, Grant/Award Number: NE/M019764/1
 ACKNOWLEDGEMENTS This work was supported by the NERC-funded UK Energy Research Centre, by the NERC project Addressing the Valuation of Energy and Nature Together (ADVENT, NE/M019764/1) and by The University of California, Davis with CD the recipient of a NERC PhD studentship (1790094). It also contributed to the NERC FAB-GGR project (NE/M019691/1). ; Peer reviewed ; Publisher PDF

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Advanced materials and technologies for supercapacitors used in energy conversion and storage: a review

Publicada en BASE Bielefeldt Energy Storage, 14/01/2021.

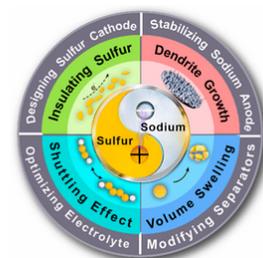
Supercapacitors are increasingly used for energy conversion and storage systems in sustainable nanotechnologies. Graphite is a conventional electrode utilized in Li-ion-based batteries, yet its specific capacitance of 372 mA h g⁻¹ is not adequate for supercapacitor applications. Interest in supercapacitors is due to their high-energy capacity, storage for a shorter period and longer lifetime. This review compares the following materials used to fabricate supercapacitors: spinel ferrites, e.g., M[...]

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Frontiers for Room-Temperature Sodium–Sulfur Batteries

Publicada en ACS Energy Letters, 14/01/2021.

Room-temperature (RT) sodium–sulfur (Na-S) systems have been rising stars in new battery technologies beyond the lithium-ion battery era. This Perspective provides a glimpse at this technology, with an emphasis on discussing its fundamental challenges and strategies that are currently used for optimization.



[ver más...](#)

Materials for hydrogen-based energy storage – past, recent progress and future outlook

Publicada en BASE Bielefeld Energy Storage, 13/01/2021.

Globally, the accelerating use of renewable energy sources, enabled by increased efficiencies and reduced costs, and driven by the need to mitigate the effects of climate change, has significantly increased research in the areas of renewable energy production, storage, distribution and end-use. Central to this discussion is the use of hydrogen, as a clean, efficient energy vector for energy storage. This review, by experts of Task 32, “Hydrogen-based Energy Storage” of the International Energy A[...]

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Optimal Energy Management in the Smart Microgrid Considering the Electrical Energy Storage System and the Demand-side Energy Efficiency Program

Publicada en BASE Bielefeld Energy Storage, 13/01/2021.

Smart MicroGrids (MGs) are known as a powerful platform for exploiting the Electrical Energy Storage Systems (EESSs). On the other hand, the Energy Efficiency Programs (EEPs) are recognized as an integral and highly valuable element of smart MGs investments and operations. While the EEPs are known to be long-term programs, they affect the short-term programs such as day ahead energy management. In this paper, the optimal energy management program model associated with EESSs and EEPs namely EMP E[...]

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Design trade-offs and feasibility assessment of a novel one-body, laminated-rotor flywheel switched reluctance machine

Publicada en BASE Bielefeldt Energy Storage, 13/01/2021.

In a bid to respond to the challenges being faced in the installation of flywheel-based electric energy storage systems (EESSs) in customer-side facilities, namely high safety, high energy/power densities and low cost, research work towards the development of a novel, one-body, laminated-rotor flywheel, based on a switched reluctance machine (OBOLAR-Fly SR machine) is presented, where the laminated rotor provides both the energy storage and motor/generator functions. The one-body architecture im[...]

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Thermodynamic simulation of compressed air energy storage systems ; Modélisation thermodynamique des systèmes de stockage d'énergie à air comprimé

Publicada en BASE Bielefeldt Energy Storage, 13/01/2021.

In the context of developing renewable energies, storing energy improves energy efficiency and promotes the insertion of intermittent renewable energies. It consists of accumulating energy for later use in a place that may be the same or different from the place of production. Converting electrical energy to high-pressure air seems a promising solution in the energy storage field: it is characterized by a high reliability, low environmental impact and a remarkable stored energy density (kWh/m³).[...]

[ver más...](#)



Impact of thermal storage modeling accuracy on the optimal strategy for its management ; Impact de la précision de modélisation du stockage thermique sur la stratégie optimale de sa gestion

Publicada en BASE Bielefeld Energy Storage, 13/01/2021.

International audience ; In a context of strong penetration of renewable energies, especially in a multi-energy network, thermocline thermal storage is a relevant solution. However, its operation using heat transfers between several phases is complex. Its precise modeling can therefore only with difficulty be taken into account within the problem of optimal management of a multi-energy network. In this work, we propose to analyze the impact of the precision of the thermal storage model on the ef[...]

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Experimental and numerical analysis of a packed-bed thermal energy storage system designed to recover high temperature waste heat: an industrial scale up

Publicada en BASE Bielefeld Energy Storage, 13/01/2021.

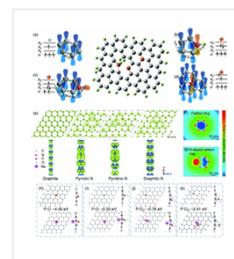
International audience ; An industrial-scale air-ceramic horizontal packed-bed thermal energy storage (Eco-Stock®) has been designed and built by Eco-Tech Ceram and tested during an experimental campaign of 500h. The goal is to provide experimental data and analysis of a horizontal and containerized packed bed TES at high temperature, with performance indicators specific to waste heat recovery. A single charge-discharge at 525°C and 3 cycles at 500°C were carried out (300 kWTh for charge, 350 kW[...]

[ver más...](#)

Sodium-storage behavior of electron-rich element-doped amorphous carbon

Publicada en AIP Scitation, 12/01/2021.

Applied Physics Reviews, Volume 8, Issue 1, March 2021. In recent years, sodium ion batteries (SIBs) have been widely investigated due to limited lithium resources. Though sodium and lithium elements have similar physical and chemical properties, some decently performing anodes of lithium ion batteries are problematic in SIBs. Hence, it is of great importance to develop suitable anodes for SIBs. In recent works, doped amorphous carbon has been considered a prospective and serviceable anode for the storage of sodium.

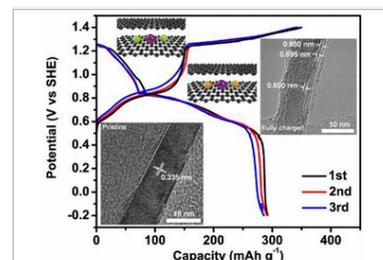


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Reversible Insertion of I–Cl Interhalogen in a Graphite Cathode for Aqueous Dual-Ion Batteries

Publicada en ACS Energy Letters, 10/01/2021.

Anion storage in cathode of dual-ion batteries provides leeway for new battery chemistries. For high energy density and better safety, it is desirable but challenging to reversibly intercalate chloride in a graphite cathode because either the oxygen or chlorine evolution reaction can prevail over chloride insertion.

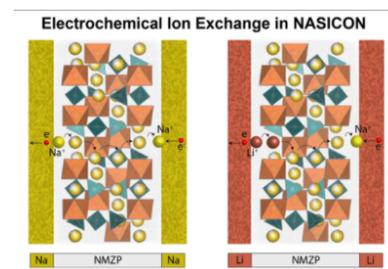


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[Na_{1+x}Mn_{x/2}Zr_{2-x/2}(PO₄)₃ as a Li⁺ and Na⁺ Super Ion Conductor for Solid-State Batteries

Publicada en ACS Energy Letters, 07/01/2021.

Here we report dual ion conduction capability of Na-based NASICON type super ion conductor materials using Na_{1+x}Mn_{x/2}Zr_{2-x/2}(PO₄)₃ (NMZP) as a candidate system. This method enables the use of Na-based NASICON material family in both Na as well as Li all solid-state batteries (SSBs). NZMPs with $x = 1.5$ and $x = 2$ showed the highest room-temperature conductivities of 2.86×10^{-5} and 2.82×10^{-5} S cm⁻¹, respectively. Crystallographic analysis using neutron diffraction revealed that conductivities observed in these materials are related to the variations in the Na–O bond length and the concentration of mobile sodium content.



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Performance optimization of latent heat storage by structural parameters and operating conditions using Al-based alloy as phase change material

Publicada en AIP Scitation, 07/01/2021.

Journal of Renewable and Sustainable Energy, Volume 13, Issue 1, January 2021. Heat storage technology can effectively solve the intermittency and instability of solar radiation and it also plays a vital role in solar thermal power generation. In this paper, Al-based alloys as candidates for high-temperature phase change material (PCM) with different Si/Cu content ratios are prepared. Thermal properties such as melting point, latent heat, specific heat, and thermal conductivity are investigated. A numerical model of phase change heat storage unit (PCHSU) is developed to analyze the heat transfer characteristics. The structural parameters are optimized by the PCM container structure, the surface to volume ratio, and inserted inner ring fins. The operating conditions are optimized by the flow direction, the inlet temperature, and the velocity of the thermal fluid.

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Confining Sulfur in Porous Carbon by Vapor Deposition to Achieve High-Performance Cathode for All-Solid-State Lithium–Sulfur Batteries

Publicada en ACS Energy Letters, 06/01/2021.

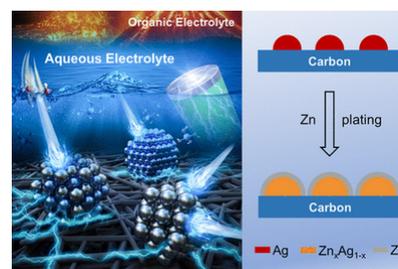
All-solid-state lithium–sulfur batteries (ASLBs) have the potential to achieve high energy density because of sulfur's high theoretical capacity (1672 mAh g^{-1}) while alleviating persistent polysulfide shuttling inherent to lithium–sulfur batteries based on liquid organic electrolyte. However, the homogenization of sulfur, carbon, and solid electrolyte is a challenge to achieving high-performance cathodes for ASLBs.

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Unveiling the Origin of Alloy-Seeded and Nondendritic Growth of Zn for Rechargeable Aqueous Zn Batteries

Publicada en ACS Energy Letters, 06/01/2021.

Rechargeable aqueous zinc anodes have gained tremendous attention because of their merits of intrinsic safety, low cost, and high theoretical volumetric capacity (5854 mAh cm^{-3} for Zn metal). In aqueous electrolytes, zinc anodes suffer from severe dendritic metal deposition. The regulation of Zn by inducing Zn-alloying metals has been reported.

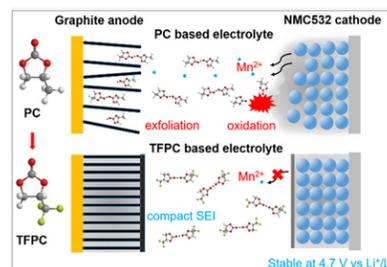


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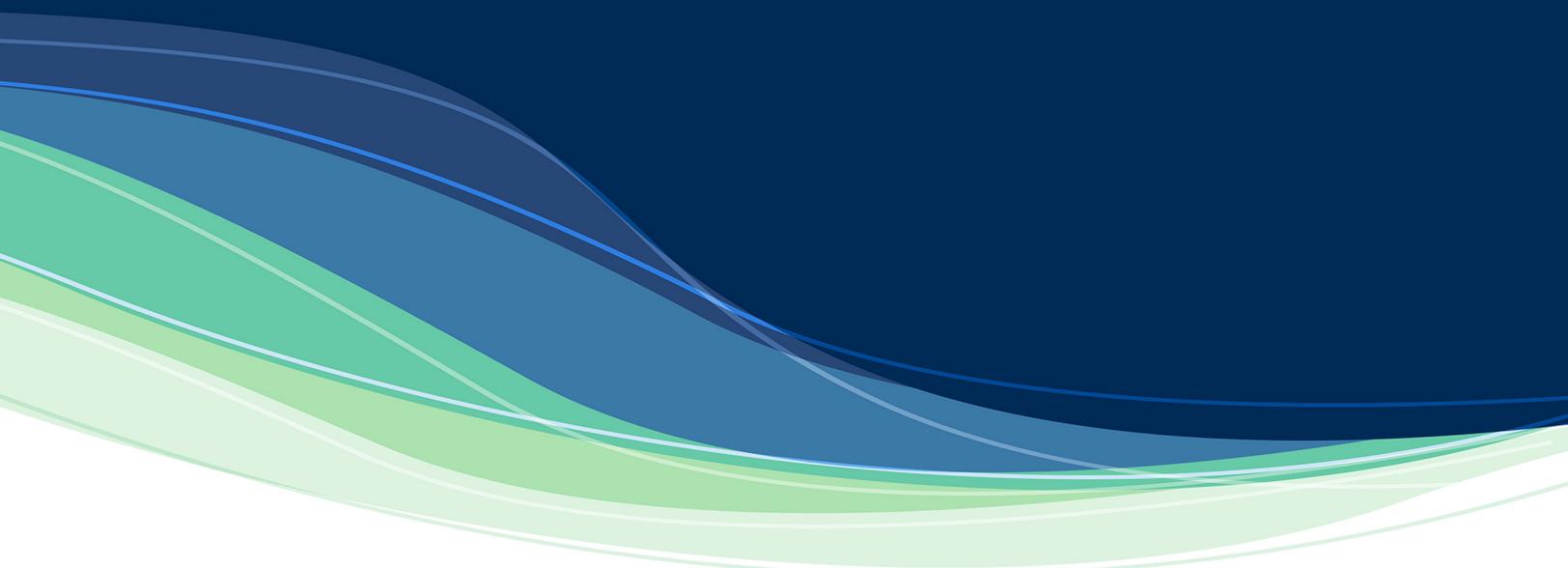
Molecular Engineering to Enable High-Voltage Lithium-Ion Battery: From Propylene Carbonate to Trifluoropropylene Carbonate

Publicada en ACS Energy Letters, 05/01/2021.

Molecular engineering of electrolyte structures has led to the successful application of trifluoropropylene carbonate (TFPC), a fluorinated derivative of propylene carbonate (PC), in next-generation high-voltage high-energy lithium-ion cell. In contrast to a PC-based electrolyte which cointercalates in the form of Li^+ -solvated species into the graphene layer and exfoliates a graphite anode, a TFPC-based electrolyte is highly compatible with a graphite anode at low potential.



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