

# BOLETÍN DE VIGILANCIA TECNOLÓGICA E INTELIGENCIA COMPETITIVA

## ALMACENAMIENTO DE ENERGÍA

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**BATTERYPLAT**

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## NOTICIAS

### **NRG Energy and Smart Energy Decisions Publish 2021 State of Distributed Energy Resources Study**

Publicada en altenergymag, 03/12/2021.

Smart Energy Decisions published new research that shows cost savings and sustainability continue to top the list for customer needs when considering distributed energy resources (DERs). The goal of the 2021 State of Distributed Energy Resources Study was to better understand DER energy trends with the nation's largest electric power users.

[ver más...](#)

### **Mosaic Surpasses \$6 Billion in Loans Funded for Residential Solar and Sustainable Home Improvements**

Publicada en altenergymag, 01/12/2021.

Welcomes New Board Member Rayman Mathoda. Mosaic, a leading financing platform for U.S. residential solar and energy-efficient home improvements, today announced it has surpassed \$6 billion in loans funded through the company's platform. This announcement comes just four months after the company surpassed \$5 billion in loans, and nine months since \$4 billion in loans was announced.



[ver más...](#)

## Lithium from German geothermal plants could supply a million electric vehicles a year from 2025

Publicada en [www.euractiv.com](http://www.euractiv.com), 01/12/2021.

Batteries made with zero-emission lithium from geothermal plants in Germany could power one million vehicles per year by the mid-2020s, according to Vulcan Energy, a company setting out to produce climate neutral lithium in Europe.



[ver más...](#)

## Call for Abstracts for the International Renewable Energy Storage Conference (IRES 2022)

Publicada en [altenergymag](http://altenergymag), 29/11/2021.

EUROSOLAR organises the International Conference on Renewable Energy Storage (IRES) every year. The conference highlights the current state of research and the social, political and legal framework conditions of energy storage technologies. Speakers on storage and renewable energies are cordially invited to give presentations themselves or to participate in the poster exhibition with their own poster.



[ver más...](#)

## Energy Storage in 2021: Challenges and Opportunities

Publicada en <https://www.idtechex.com>, 23/11/2021.

Energy storage technologies are undergoing a challenging transformation, vital in an emerging climate that increasingly necessitates renewable energies and recyclable hardware. Energy storage sectors such as Li-ion batteries are forecast to experience rapid growth, while supply chain restraints mean new alternative energy storage technologies are under development, creating fresh opportunities.



[ver más...](#)

## IEA Energy Storage tracking report November 2021

Publicada en <https://www.iea.org>, 15/11/2021.

Battery storage capacity additions in 2020 rose to a record-high 5 GW, up 50% after a mediocre 2019, when installations failed to rise for the first time in a decade. China and the United States each registered gigawatt-scale additions. Utility-scale installations continue to dominate the market, accounting for around two-thirds of total added capacity. Although new policies and projects in key markets are set to accelerate growth, an even faster rise is needed to align with the Net Zero Emissions by 2050 Scenario, which sees nearly 600 GW of battery storage capacity installed by 2030.

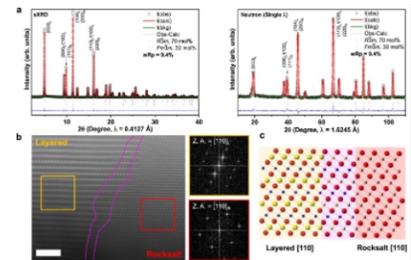


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## Layered rocksalt a better material for li-ion cathodes

Publicada en Electronics Weekly, 12/11/2021.

Lawrence Berkeley National Laboratory has developed a material for cathodes in li-ion batteries called Layered-Rocksalt Intergrown Battery Electrode Material which ensures high capacity, fast charging time and energy transfer, and superior cycling and thermal stability. The material can be synthesised under ambient atmosphere, easing processing and reducing production costs. Its thermal stability and minimal gas release reduce fire ... This story continues at Layered rocksalt a better material for li-ion cathodes Or just read more coverage at Electronics Weekly



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## EMPRESAS Y MERCADOS

### Q CELLS to showcase Q.HOME CORE storage solution and new low-carbon footprint module at Energaia, France

Publicada en altenergymag, 07/12/2021.

Q CELLS' latest integrated inverter and battery system, Q.HOME CORE, will jointly be showcased at the exhibition with the new Q.TRON n-type module. Q CELLS will also exhibit its new low-CFP Q.PEAK DUO M-G11 solar module in Montpellier. Energaia, one of the largest solar and renewable energy trade shows in France, returns this year after its COVID-enforced hiatus in 2020, with Q CELLS thrilled to welcome expectant crowds eager to get back down to business in Montpellier on December 8 & 9.



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### Gridtential Partners with India Battery Maker Luminous Power Technologies to Provide Affordable Residential Power

Publicada en altenergymag, 07/12/2021.

Luminous Power Technologies — a subsidiary of Schneider Electric — today announced a formal evaluation agreement with Gridtential Energy, the inventor of Silicon Joule® bipolar battery technology. The partnership is another milestone in the continued adoption of Silicon Joule in the fast-growth residential energy storage solutions market. The demand and growth of energy storage in the Indian market will drive the need for low-cost, safe and recyclable storage batteries for years to come.

[ver más...](#)

## EVLO Selects Nuvation Energy Battery Management Systems for their Energy Storage Solutions

Publicada en altenergymag, 02/12/2021.

EVLO Energy Storage, Hydro-Québec's energy storage subsidiary, has selected Nuvation Energy's battery management systems for EVLO's energy storage product line. The EVLO energy storage systems will be used for applications such as utility grid support and demand charge management.



[ver más...](#)

## Sungrow Displays the Liquid Cooled Energy Storage Systems at ESA 2021

Publicada en altenergymag, 02/12/2021.

Sungrow, the global leading inverter and energy storage solution supplier for renewables, premiered its brand-new liquid cooled Energy Storage System (ESS) solutions at ESA on Dec. 1-3, 2021, further addressing the energy storage demand in the US and enabling more profitability, flexibility, and safety. With falling battery costs and a surge in renewables, energy storage is a flexible and attractive resource in many power systems across the US.

[ver más...](#)

## What are The Considerations for Using 48V 50Ah Telecom Battery Backup Systems?

Publicada en altenergymag, 02/12/2021.

The rapid development of 5G has led to the expansion of the network scale, lithium iron phosphate battery pack with its excellent characteristics (high energy density, strong safety, high temperature performance, high power output, long cycle life, environmental protection), has gradually come into the people's view.



[ver más...](#)

## Electrify America Installed ESS At 140 Stations: 30 MW Output

Publicada en insideevs.com, 02/12/2021.

Electrify America, one of the largest fast-charging networks in the U.S. (part of the Volkswagen Group), announced that it installed onsite, behind-the-meter battery energy storage systems (ESS) at over 140 DC fast charging stations around the country, including more than 90 installations in California.



[ver más...](#)

## Powin Announces New Centipede Battery Energy Storage Platform

Publicada en altenergymag, 30/11/2021.

With safety validation completed, first deliveries of the Centipede are scheduled for Q2 2022. Powin LLC (Powin), a global leader in the design and manufacture of safe and scalable battery energy storage solutions, announced its new Centipede battery energy storage platform. Centipede is the company's first fully modular design, complete with pre-integrated segments containing batteries, thermal management equipment, and essential safety systems.

[ver más...](#)

## Sunverge and LG Partner on Residential Virtual Power Plant Project

Publicada en altenergymag, 30/11/2021.

Solution Offers Holistic Flexible Load Management and Local System Resiliency, Features Sunverge Real-time DER Control, Orchestration and Aggregation Platform; LG ESS; LG ThinQ Energy App; and Eaton Energy Management Circuit Breakers. LG Electronics USA and Sunverge Energy are collaborating on a groundbreaking residential virtual plant project with customers in Northern and Central California - one of the first pilot programs in the United States to incorporate both load control and PV/energy storage control holistically.

[ver más...](#)

## Li-Cycle Partners with Arrival to Advance EV Battery Recycling

Publicada en altenergymag, 29/11/2021.

Li-Cycle Holdings Corp. (NYSE: LICY) ("Li-Cycle" or "the Company"), an industry leader in lithium-ion battery resource recovery and the leading lithium-ion battery recycler in North America, today announced a collaboration with Arrival (NASDAQ: ARVL), a global company that is on a mission to make air clean by replacing all vehicles with affordable electric solutions produced by local microfactories.

[ver más...](#)

## Home-and-portable battery Mango Power Union to be launched, featuring world's first built-in dual PV Inverte

Publicada en altenergymag, 29/11/2021.

-Mango Power opens distribution and consumer sales on Indiegogo for the most exciting home and portable battery product in recent years. -The home-and-portable hybrid battery, with 4.35kW capacity, and 19 output ports promises fast charging through roof or portable solar panels



[ver más...](#)

## How Whoop landed a fancy new battery for its fitness trackers

Publicada en <https://www.silanano.com>, 11/11/2021.

Thanks to Sila's energy-dense battery, Whoop shrunk its device 33% while maintaining battery life. For you and I, battery selection is a matter of AA, AAA—maybe C or D here and there. For a wearables startup with a valuation of \$3.6 billion and looking to rival Fitbit, the process is a little more complex.



[ver más...](#)

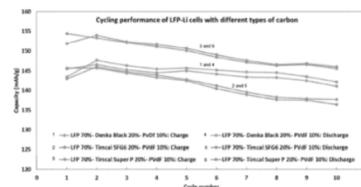
## PATENTES

### A power optimized lithium ion energy storage device

Publicada en Tecnologías asociadas a almacenamiento de energía, 09/12/2021.

Solicitantes: COMMONWEALTH SCIENTIFIC AND INDUSTRIAL RESEARCH ORGANISATION [AU]/[AU]

A lithium ion energy storage cells having a high rate capability as the cell is power optimised, comprising one or more cathodes, each cathode comprising a current collector substrate and an electrode material mixture comprising LMP electroactive material or a derivative thereof, wherein M is Fe, Mn or a mixture, and wherein the LMP electroactive material is present on the substrate at a loading of about 10 mg cm<sup>-2</sup> or less



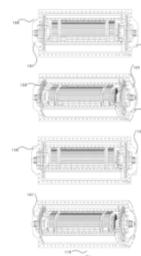
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### Maglev flywheel energy storage motor/power generator

Publicada en Tecnologías asociadas a almacenamiento de energía, 09/12/2021.

Solicitantes: QIU, Genfu [CN]/[CN]

A Maglev flywheel energy storage motor/power generator, comprising a vacuum case, a flywheel assembly, radial and axial Maglev bearing motor systems, an electric motor/power generator, a hollow shaft of a stator core, a moving sealing ring, an auxiliary bearing, a cooling system, and a self-vacuum pumping apparatus, which form a vacuum cavity; the flywheel assembly integrates permanent magnet outer rotors of a plurality of Maglev bearing motors and of the electric motor/power generator; stator core windings of the plurality of Maglev bearing motors are powered up to generate radial and axial levitation support of the flywheel assembly.



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## Process for physically separating and recovering various components from spent lithium ion batteries

Publicada en Tecnologías asociadas a baterías, supercondensadores, acumuladores, 09/12/2021.

Solicitante: XPROEM LTD. [CA]

A process of physical separation of spent lithium ion batteries to recover valuable components by using vacuum treatment to separate and recover volatile matter such as electrode binder, electrolyte solvent and salt followed by crushing and comminution to disintegrate and shred the electrolyte-depleted battery pack and reduce the size of shredded particles of enclosed components such as casing, current collectors, separator and other materials, which are subsequently separated using a series of physical separation techniques.

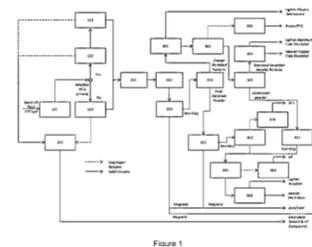


Figure 1

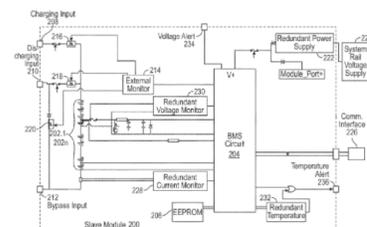
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## BMS architecture for energy storage

Publicada en Tecnologías asociadas a almacenamiento de energía, 02/12/2021.

Solicitantes: Analog Devices International Unlimited Company

Embodiments of the present invention provide improved fault detection and mitigation systems, methods, and techniques used in a BMS in an energy storage system (for example, grid energy storage). Embodiments of the present invention may detect battery malfunction in a battery stack and take quick corrective and preventative measures accordingly.



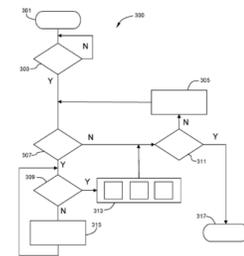
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## Battery electric vehicle energy storage system and method

Publicada en Tecnologías asociadas a almacenamiento de energía, 02/12/2021.

Solicitantes: GM GLOBAL TECHNOLOGY OPERATIONS LLC

A battery electric vehicle includes a high voltage rechargeable energy storage system (RESS). The RESS includes several battery modules reconfigurable among parallel and series arrangements. During reconfiguration transitions, a low voltage battery services low voltage loads of the battery electric vehicle. The low voltage battery is preconditioned in advance of reconfigurations.



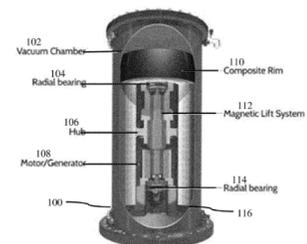
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## Flywheel energy storage system

Publicada en Tecnologías asociadas a almacenamiento de energía, 02/12/2021.

Solicitante: KAZAK TECHNOLOGIES, INC.

Flywheel system properties are enhanced with rim designs that control stress at operational rotational velocities. The tensile strength of fiber-resin composites can be aligned with radial forces to improve radial stress loading. Loops with composite casings can be arranged around the flywheel circumference with a majority of the fibers being aligned in the radial direction.



[ver más...](#)

## **Lithium-ion battery, power battery module, battery pack, electric vehicle, and energy storage device**

Publicada en Tecnologías asociadas a almacenamiento de energía, 02/12/2021.

Solicitante: BYD COMPANY LIMITED [CN]

The present application provides a lithium-ion battery, a power battery module, a battery pack, an electric vehicle, and an energy storage device. The lithium-ion battery comprises a housing and a cell encapsulated in the housing; the cell comprises a positive plate, a negative plate, and a separator located between the positive plate and the negative plate; the positive plate comprises a positive electrode current collector and a positive electrode material layer loaded on the positive electrode current collector

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## **Power supply system for energy storage intermittent vehicle, and power supply method**

Publicada en Tecnologías asociadas a almacenamiento de energía, 02/12/2021.

Solicitante: NINGBO CRRC NEW ENERGY TECHNOLOGY CO., LTD [CN]

A power supply system for an energy storage intermittent vehicle, comprising: a transformer, a rectifier, a first DC/DC module, an energy storage device, a second DC/DC module, a plurality of isolation switches, and power supply rails correspondingly connected to the isolation switches. The first DC/DC module is used for charging the energy storage device at a preset small power when a vehicle does not enter a station, and the second DC/DC module is used for outputting, when a vehicle to be charged enters the station, an electrical energy to said vehicle.

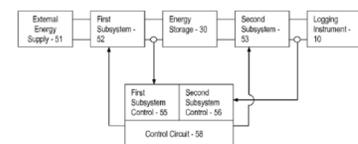
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## Power system for high temperature applications with rechargeable energy storage

Publicada en Tecnologías asociadas a almacenamiento de energía, 02/12/2021.

Solicitante: FASTCAP SYSTEMS CORPORATION

A power system adapted for supplying power in a high temperature environment is disclosed. The power system includes a rechargeable energy storage that is operable in a temperature range of between about seventy degrees Celsius and about two hundred and fifty degrees Celsius coupled to a circuit for at least one of supplying power from the energy storage and charging the energy storage; wherein the energy storage is configured to store between about one one hundredth (0.01) of a joule and about one hundred megajoules of energy



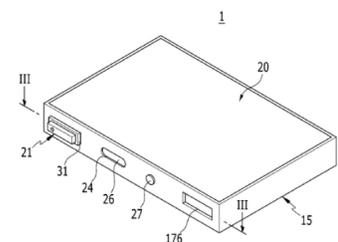
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## Rechargeable battery and pack of the same

Publicada en Tecnologías asociadas a baterías, supercondensadores, supercondensadores, acumuladores, 02/12/2021.

Solicitante: SAMSUNG SDI CO., LTD.

An aspect of the present invention provides a rechargeable battery which makes placement of the electrode assembly in the case during assembly easy. The rechargeable battery includes an electrode assembly including a first electrode, a separator, and a second electrode, a case housing the electrode assembly and having an opening in a plane parallel to a flat side surface of the electrode assembly, the case being electrically connected to the first electrode, a cover closing the opening in the case, and an electrode terminal mounted to a terminal opening in the case and connected to the second electrode, wherein the electrode terminal and the second electrode are insulated from the case.



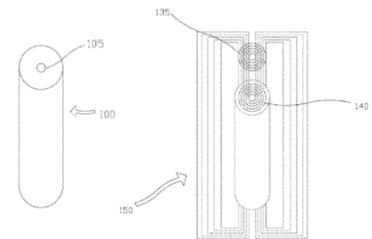
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## Remote Structural Reinforcement of the Flywheel Energy Storage System

Publicada en Tecnologías asociadas a almacenamiento de energía, 02/12/2021.

Solicitante: Christopher Hugh Powell

Here, we have devised a system that utilizes Flux-Pinning (or quantum locking) to provide Remote Structural Reinforcement to the rotor of a Flywheel Energy Storage System (FESS). This system utilizes superconducting materials to produce: (i) levitation of the rotor, (ii) a frictionless hinge to hold the rotor in place during operation, and (iii) a series of contactless quantum bonds that provide a reinforcing mechanism. This contactless reinforcement strengthens the rotor against centrifugal forces during operation.



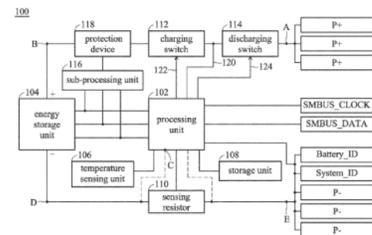
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## Smart battery device

Publicada en Tecnologías asociadas a almacenamiento de energía, 02/12/2021.

Solicitantes: Quanta Computer Inc.

The battery device includes an energy storage unit, a temperature sensing unit, a storage unit, and a processing unit. The processing unit calculates the internal resistance of the energy storage unit to obtain a first increment corresponding to the internal resistance, and detects the charging voltage that is charging the battery device to obtain a second increment that corresponds to the charging voltage. The processing unit detects the discharging current of the energy storage unit to obtain a third increment corresponding to the discharging current.



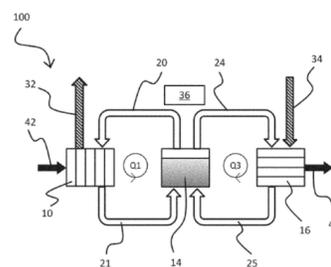
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## Systems and methods for fuel cells energy storage and recovery

Publicada en Tecnologías asociadas a almacenamiento de energía, 02/12/2021.

Solicitante: ZINC8 ENERGY SOLUTIONS INC.

Systems and methods for energy storage system are provided. The system includes a particle regeneration subsystem for applying electrical energy to regenerate metallic particulate fuel; a fuel storage subsystem for storing metallic particulate fuel, the fuel storage subsystem in fluid communication with the particle regeneration subsystem; and a power generation subsystem for producing electrical energy from the metallic particulate fuel, the power generation subsystem in fluid communication with the fuel storage subsystem; a bearer electrolyte for transporting the metallic particulate fuel through the particle regeneration subsystem.



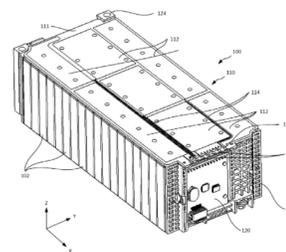
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## Thermal and electrical management of battery packs

Publicada en Tecnologías asociadas a baterías, supercondensadores, supercondensadores, acumuladores, 02/12/2021.

Solicitantes: QUANTUMSCAPE BATTERY, INC.

Provided are battery packs and interface modules for electrically interconnecting electrochemical cells in the packs and for providing heat distribution with the packs. An interface module interfaces one side of all electrochemical cells in a battery pack. The interface module may have a substantially planar shape such that the space occupied by the module in the battery pack is minimal. Most, if not all, conductive components of the interface module may be formed from the same sheet of metal. In some embodiments, the interface module includes multiple bus bars such that each bus bar interconnects two or more terminals of different electrochemical cells in the battery pack.



[ver más...](#)

## Energy storage system for a load handling device

Publicada en Tecnologías asociadas a almacenamiento de energía, 01/12/2021.

Solicitantes: OCADO INNOVATION LTD

A load handling device for lifting and moving one or more containers stacked in a storage system comprising a grid framework supporting a pathway arranged in a grid pattern above the stacks of containers, comprises a vehicle body housing a driving mechanism operatively arranged for moving the load handling device on the grid framework. Lifting device comprising a lifting drive assembly and a grabber device configured, in use, to releasably grip a container and lift the container from the stack into a container-receiving space.

[ver más...](#)

## Advanced battery charging on modular levels of energy storage systems

Publicada en Tecnologías asociadas a almacenamiento de energía, 26/11/2021.

Solicitantes: TAE TECHNOLOGIES, INC.

Embodiments that provide advanced charging of energy source arrangements for energy storage applications are disclosed. The embodiments can be used within energy storage systems having a cascaded arrangement of converter modules. The embodiments can include the application of pulses to an energy source of each module of the system. The pulses can be applied for a duration sufficient to initiate an electrochemical reaction. Feedback based pulse control embodiments are also disclosed.

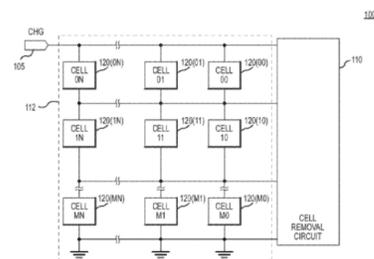
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## Apparatuses And Methods For Removing Defective Energy Storage Cells From An Energy Storage Array

Publicada en Tecnologías asociadas a almacenamiento de energía, 25/11/2021.

Solicitantes: Micron Technology, Inc.

Apparatuses and methods for removing a defective energy storage cell from an energy storage array is described. An apparatus includes an energy storage array including a plurality of energy storage cells, and a cell removal circuit coupled to the energy storage array. The cell removal circuit is configured to prevent a defective energy storage cell of the plurality of energy storage cells from causing other energy storage cells of the plurality of energy storage cells to become defective. A method includes receiving power at a charging node of an energy storage array, the energy storage array including a plurality of energy storage cells.



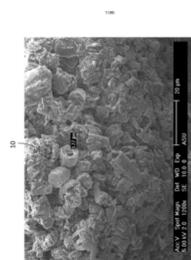
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## Diatomaceous energy storage devices

Publicada en Tecnologías asociadas a almacenamiento de energía, 25/11/2021.

Solicitantes: Printed Energy Pty Ltd

An energy storage device can include a cathode having a first plurality of frustules, where the first plurality of frustules can include nanostructures having an oxide of manganese. the energy storage device can include an anode comprising a second plurality of frustules, where the second plurality of frustules can include nanostructures having zinc oxide. a frustule can have a plurality of nanostructures on at least one surface, where the plurality of nanostructures can include an oxide of manganese. a frustule can have a plurality of nanostructures on at least one surface, where the plurality of nanostructures can include zinc oxide.



[ver más...](#)

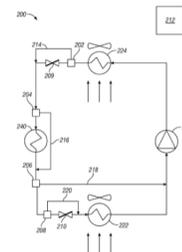
## Heating, Ventilation, and Air-Conditioning System with a Thermal Energy Storage Device

Publicada en Tecnologías asociadas a almacenamiento de energía, 25/11/2021.

Solicitantes: Goodman Global Group, Inc.

A heating, ventilation, and air-conditioning (“HVAC”) system for use with a refrigerant. The HVAC system includes a compressor, a condenser, an evaporator expansion device, and an evaporator. The HVAC system also includes a thermal energy storage device (“TESD”) including thermal energy storage media in line between the condenser and evaporator. A control system is programmed to operate the compressor and the evaporator expansion device to control the refrigerant flow through the HVAC system. The control system is also programmed to control the refrigerant flow through the TESSD to charge the TESSD with thermal energy.

[ver más...](#)



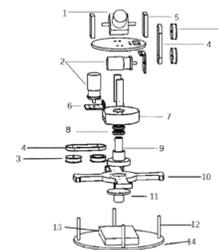
## Intelligent temperature measurement system for containerized energy storage battery modules and operation method thereof

Publicada en Tecnologías asociadas a almacenamiento de energía, 25/11/2021.

Solicitantes: Optim (Shanghai) New Energy Co., Ltd.

The present invention discloses an intelligent temperature monitoring system for containerized energy storage modules and operation method thereof, comprising a temperature measurement device, system hardware and system software, the temperature measurement device is provided in a central position of an energy storage container, the temperature measurement device comprises a sensor, harmonic synchronous motors, synchronizing wheels, a synchronizing belt, stopper plates, motor supports, a main bearing seat, a duplex bearing, a main rotating shaft, a fixing plate, a rotating cable joint box, fixing screw rods, control power and a pedestal.

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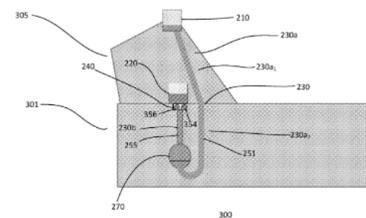


## Pumped Hydro Energy Storage System and Method

Publicada en Tecnologías asociadas a almacenamiento de energía, 25/11/2021.

Solicitantes: Magellan & Barents, S.L.

A pumped hydro energy storage system and method are disclosed. The system employs a high-density fluid, such as a slurry, to improve power output. In some cases, the fluid is a binary fluid system, with a high-density fluid and a lower-density fluid, such as water. The lower-density fluid flows through the turbine unit of the system, avoiding the need to modify the system to handle the high-density fluid, while achieving improved power output. The system can be configured with one atmospheric reservoir for a higher-density fluid and another one for a lighter-density fluid.



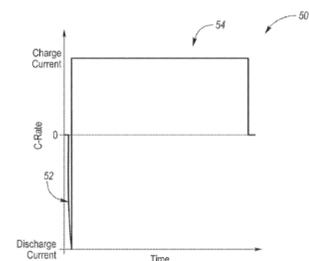
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## Systems and method of battery charging

Publicada en Tecnologías asociadas a baterías para transporte, 25/11/2021.

Solicitante: FORD GLOBAL TECHNOLOGIES, LLC

A method for charging a traction battery of an electric vehicle includes, in response to a request to charge a traction battery, initially discharging the traction battery, for a first duration of time, according to a discharge stage having a constant power; subsequently charging the traction battery, for a second duration of time, according to a charge stage having a constant current; and repeating the discharge stage and the charge stage in sequence until the battery is charged.



[ver más...](#)

## Thermal management system of high-power energy storage device, and control method therefor

Publicada en Tecnologías asociadas a almacenamiento de energía, 25/11/2021.

Solicitante: SHANGHAI AOWEI TECHNOLOGY DEVELOPMENT CO., LTD. [CN]

Provided are a thermal management system of a high-power energy storage device, and a control method therefor. The control method comprises: respectively collecting the temperatures of a plurality of energy storage devices; if the temperature of at least one energy storage device exceeds a first preset condition, adjusting an operation parameter of a temperature control module with the lowest temperature control level, wherein the first preset condition comprises a preset temperature difference and a preset time

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## Thermal management of vehicle energy storage means

Publicada en Tecnologías asociadas a baterías para transporte, 17/11/2021.

Solicitantes: JAGUAR LAND ROVER LTD

A thermal control apparatus 204 is configured for thermal control of an energy storage means 202 (e.g. battery) of a vehicle. A parameter is obtained by a control system 210. The parameter is indicative of a state of health (SOH) of the energy storage means, e.g. a measured variable, such as; capacity, power capability, internal resistance, self-discharge, or charge acceptance of the energy storage means. The control system controls operation of the thermal control apparatus in dependence on a difference between the parameter and a target (e.g. )

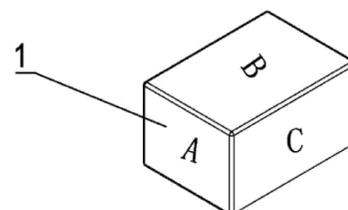
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## Quick-change universal power battery for new energy vehicles

Publicada en Tecnologías asociadas a baterías para transporte, 11/11/2021.

Solicitante: Ninghao WANG

Disclosed herein is a quick-change universal power battery for a new energy vehicle. A battery body is provided with a quick-change connection port, a recessed structure, an independent liquid temperature-control loop and a multi-connection port structure. The battery body is provided with a recessed area, and the quick-change connection port is arranged in the recessed area. A power battery system is composed of no more than eight main models of quick-change universal power batteries to achieve battery selection and replacement of most new energy vehicles, and the power battery system is combined with charging to facilitate an electrical-energy supplement of the new energy vehicle. A vehicle and a replacement station are also disclosed.



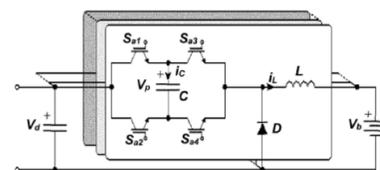
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## Transformerless partial power converter (ppc) for the dc-dc stage of rapid-charging stations for electric vehicles (ev)

Publicada en Tecnologías asociadas a consumo y reciclaje de energía, 11/11/2021.

Solicitante: UNIVERSIDAD TÉCNICA FEDERICO SANTA MARÍA

Described is a new partial power converter (PPC) for the DC-DC stage of rapid-charging stations for electric vehicles (EV). The proposed converter manages only a fraction of the total power delivered from the grid to the battery, which increases the general efficiency of the system and the power density while potentially reducing the cost of the charger. The proposed topology is based on a switched capacitor between the AC terminals of a bridge converter H and does not require high-frequency isolation transformers in order to provide a source of controllable voltage between the CC link and the battery.



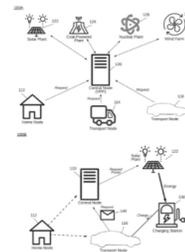
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## Transport battery recharging via virtual power plant

Publicada en Tecnologías asociadas a baterías para transporte, 11/11/2021.

Solicitante: TOYOTA MOTOR NORTH AMERICA, INC.

An example operation includes one or more of establishing a communication channel between a computing system associated with a plurality of available power sources and a transport comprising a rechargeable battery that is configured to power the transport, determining a value of charge power for the rechargeable battery, generating a request that identifies the value of charge power in a first field and identifies a power source in a second field from among a plurality of available power sources to source the charge power for the rechargeable battery, and transmitting the request from the transport to a computing system via the established communication channel.



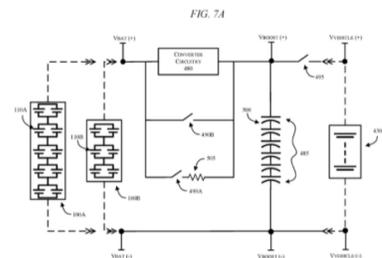
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## Vehicle battery jump starter with multiple battery pack compatibility

Publicada en Tecnologías asociadas a baterías para transporte, 11/11/2021.

Solicitante: MILWAUKEE ELECTRIC TOOL CORPORATION [US]

A vehicle battery jump starter including a battery pack interface configured to receive at least one of a first rechargeable battery pack having a first nominal voltage and a second rechargeable battery pack having a second nominal voltage different from the first nominal voltage, a power boost module including one or more energy storage devices, and terminal clamps configured to electrically connect the vehicle battery jump starter to a vehicle battery.



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## Method for charging an energy storage system using a wind turbine

Publicada en Tecnologías asociadas a consumo y reciclaje de energía, 05/11/2021.

Solicitante: VESTAS WIND SYSTEMS A/S

A method of charging an energy storage system, such as a battery, a capacitor, or a super capacitor, using a wind turbine is described. The method comprises establishing if turbine power production can be increased and establishing if the energy storage system is capable of taking a charge. If both conditions are met, the power generated by the wind turbine is increased above a rated power of the wind turbine and the additional power is used to charge the energy storage systems. A method of control is also disclosed.

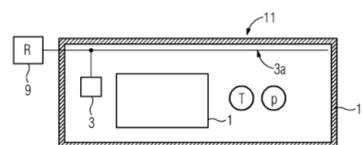
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## Storage unit for electric energy, method for controlling such storage unit and vehicle

Publicada en Tecnologías asociadas a consumo y reciclaje de energía, 02/11/2021.

Solicitante: Siemens AG

FIELD: energy storage. SUBSTANCE: invention relates to a storage unit for electrical energy and a method for controlling such a storage unit. In addition, the invention relates to a vehicle, in particular a rail vehicle. The storage unit (11) contains at least one battery cell (1) for short-term storage of electrical energy, for example, a battery or a capacitor, while a means (3) for registering physical quantities, in particular pressure (p) or temperature (T), in the immediate environment of the battery cell (1) is correlated with the battery cell (1), and the means (3) for registering a physical quantity is made with the possibility, in particular, of registering a temporary change in the physical quantity, moreover, the means (3) for registering a physical quantity is made with the possibility of providing a signal when a given time change in the physical quantity is exceeded.



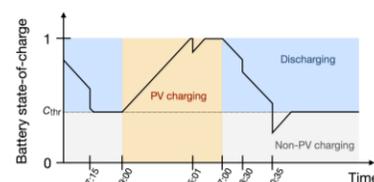
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## PUBLICACIONES CIENTÍFICAS

### Using Mobility Patterns for the Planning of Vehicle-to-Grid Infrastructures that Support Photovoltaics in Cities

Publicada en <https://arxiv.org>, 30/12/2021.

The vehicle-to-grid (V2G) concept utilises electric vehicles as distributed energy storage and thus may help to balance out the intermittent availability of renewable energy sources such as photovoltaics. V2G is therefore considered to play an important role for achieving low-carbon energy and transportation systems in cities



[ver más...](#)

### Potential utilization of Battery Energy Storage Systems (BESS) in the major European electricity markets

Publicada en <https://arxiv.org/>, 18/12/2021.

Given the declining cost of battery technology in the last decade, nowadays BESS becomes a more attractive solution in electrical power systems. The objective of this work is to analyze the potential utilization of BESS in the major European electricity markets. A general payoff model for BESS operation is proposed to correctly address the operational flexibility of battery systems. Utilization factors such as potentially profitable utilization time and rate are calculated for common applications including energy arbitrage and frequency support services using real market information.

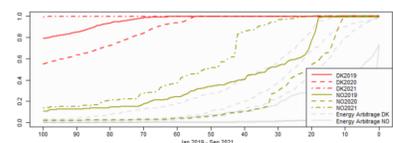


Figure 6. Potentially profitable utilization rate for the FCN-N market under different battery wear cost (in €/MWh, X-axis), Jan 2019 to Sep 2021.

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## Time-of-use Pricing for Energy Storage Investment

Publicada en <https://arxiv.org/>, 13/12/2021.

Time-of-use (ToU) pricing is widely used by the electricity utility to shave peak load. Such a pricing scheme provides users with incentives to invest in behind-the-meter energy storage and to shift peak load towards low-price intervals. However, without considering the implication on energy storage investment, an improperly designed ToU pricing scheme may lead to significant welfare loss, especially when users over-invest the storage, which leads to new energy consumption peaks.

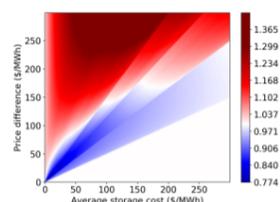


Fig. 5: Ratio  $\lambda$  with price difference and average storage costs.

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## Na<sub>2</sub>VO<sub>5</sub> from sodium ion-exchanged vanadium oxide nanotubes and its efficient reversible lithiation as a Li-Ion anode material

Publicada en BASE Bielefeldt Energy Storage, 02/12/2021.

peer-reviewed ; Efficient synthetic protocols for stable oxide materials as Li-ion battery electrodes are important not only for improving long-term battery performance but also for tackling potential material abundance issues and understanding the nature of ion intercalation for beyond lithium technologies. Oxide anodes are denser, typically, than graphite, leading to a doubling or more of the energy density. Using oxides as lower voltage battery anodes that efficiently and reversibly intercala[...]

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## **Selection of the initial state and duration of the planning period in the tasks of managing energy storage systems**

Publicada en BASE Bielefeld Energy Storage, 01/12/2021.

The large-scale use of renewable energy sources and combined heat and power plants and the unstable, poorly controlled nature of consumption aggravate the problem of energy storage. When designing and operating storage plants, the task is to ensure their profitability. Usually optimization tasks are formulated with the goal of maximizing profits. When solving these problems, significant difficulties may arise, since in the general case they are nonlinear, stochastic, multistage and contain a lar[...]

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## **Profitability study of floating PV and storage pumped hydropower plant**

Publicada en BASE Bielefeld Energy Storage, 01/12/2021.

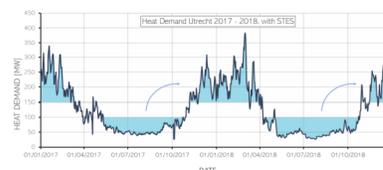
This article is devoted to the problems of management and profitability of large-scale hybrid photovoltaic and pumped storage power plants. The decision-making methodology for substantiating the taxation is proposed. An optimisation problem is solved. The rationality of changing the rules of payment for transmission grid services is shown. Based on long-term forecasts of photovoltaic generation and changes in electricity market prices, the NPV of the cash flow is estimated and the acceptable tim[...]

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## Seasonal thermal energy storage for large scale district heating

Publicada en BASE Bielefeldt Energy Storage, 01/12/2021.

Seasonal thermal energy storage (STES) systems in combination with heat pumps can significantly reduce the impact of peak loads in large scale district heating systems and allow for the application of renewable heat sources in these networks. This paper investigates technologies with the highest potential for implementation in large scale district heating networks and identifies high temperature aquifer thermal energy storage (HT-ATES) as the most suitable technology. The HT-ATES has been applied[...]



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## E-mobility

Publicada en BASE Bielefeldt Energy Storage, 01/12/2021.

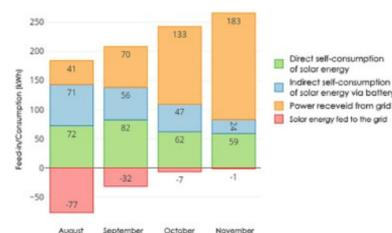
Title: E-mobility. Author: Bae, D. (TU Delft ChemE/Materials for Energy Conversion & Storage) ORCID 0000-0002-2832-1338. Date: 2020. Country: South Korea. Subject: Fuel-cell, Battery. EV, E-mobility, Energy storage. DOI: <https://doi.org/10.22800/kisti.kosenexpert.2020.364>

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## Low voltage power grid congestion reduction using a community battery: Design principles, control and experimental validation

Publicada en BASE Bielefeldt Energy Storage, 01/12/2021.

By installing a battery storage system in the power grid, Distribution Network Operators (DNOs) can solve congestion problems caused by decentralized renewable generation. This paper provides the necessary theory to use such a community battery for grid congestion reduction, backed up by experimental results. A simple network model was constructed by linearizing the load flow equations using a constant impedance load model. Using this model, an accurate estimate of voltage and overload problems [...]

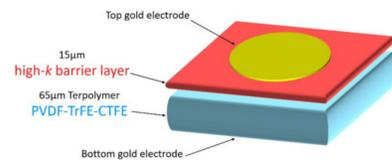


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## Boosted energy-storage efficiency by controlling conduction loss of multilayered polymeric capacitors

Publicada en BASE Bielefeldt Energy Storage, 01/12/2021.

International audience ; Among the organic dielectrics, polyvinylidene fluoride PVDF-based polymers present the highest level of polarizability with permittivity >35. Nonetheless, their applications in advanced electronics and industrial uses are limited by significant leakage current under high voltage, which is considered the principal cause of device energy consumption and short lifetime. Therefore, the main objective of this paper was to focus on alternative capacitor structure-based polyvin[...]



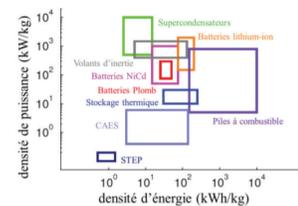
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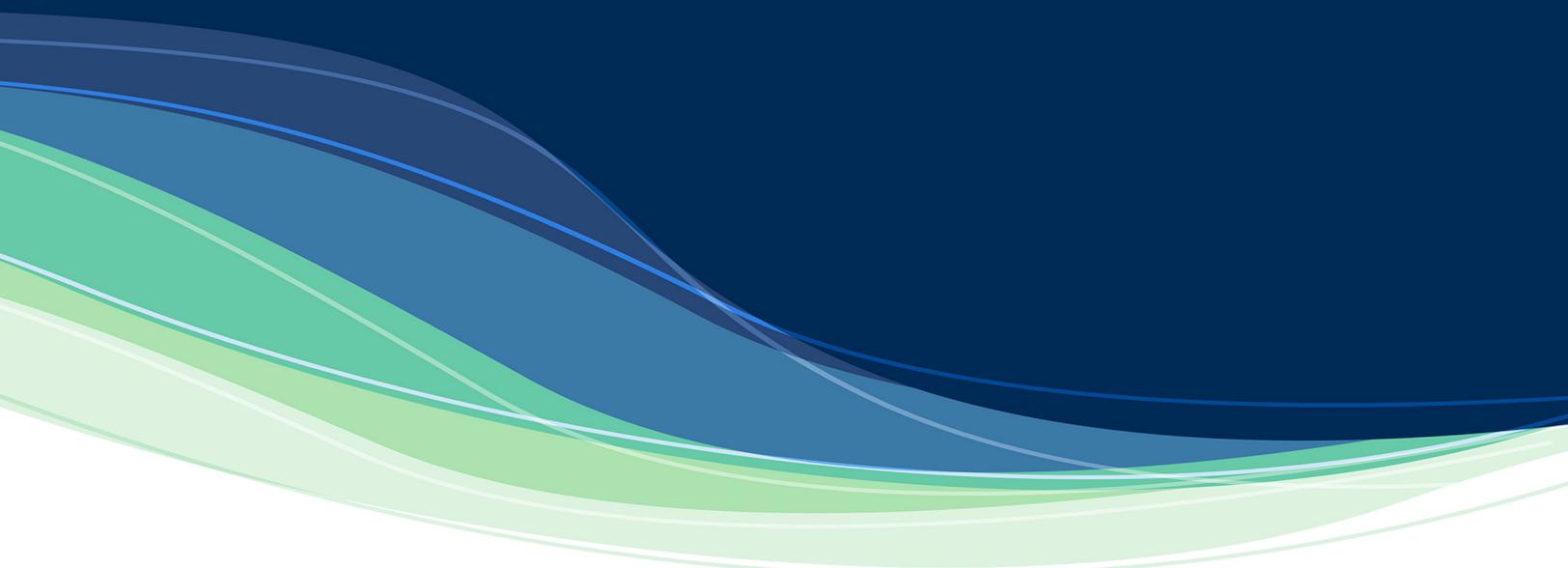
## Contribution of representative synthetic usage cycles for battery aging studies in new mobility uses

Publicada en BASE Bielefeldt Energy Storage, 01/12/2021.

Currently, most battery life predictions in electromobility applications are based on models and results from standardized cycling tests. The profiles used for this accelerated aging are made from charges / discharges, partial or total, at constant currents, or formed by simplified profiles inspired by real uses. They include simple impulses and only partially represent the diversity of uses. The specificity of this thesis lies in the fact that the battery aging study is based on data from sever[...]

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