



New energy lithium battery energy storage patent

Are lithium-ion battery energy storage systems sustainable?

Presently, as the world advances rapidly towards achieving net-zero emissions, lithium-ion battery (LIB) energy storage systems (ESS) have emerged as a critical component in the transition away from fossil fuel-based energy generation, offering immense potential in achieving a sustainable environment.

When did lithium-ion batteries become patentable?

Figure E-1 reveals that there was very little DOE-funded advanced batteries (i.e. lithium-ion related) patenting through 1995. This is not surprising, given that the commercialization of lithium-ion batteries did not start until the early to mid-1990s. Note: The data collection period for this analysis ended with 2018.

What are some patents based on lithium ion cells?

They include patents describing lithium metal oxide electrodes from Argonne National Laboratory; metal sulfur cells from Lawrence Berkeley National Laboratory; non-aqueous electrolytes from Covalent Associates; and methods for packaging lithium-ion cells from Alcatel.

Are advanced batteries patents linked to earlier VTO-funded research?

They also highlight which advanced batteries patents owned by these leading companies are linked particularly extensively to earlier VTO-funded research. In the organizational level results, we first compare the influence of VTO-funded and Other DOE-funded advanced batteries research against the influence of leading companies in this technology.

What is the learning rate of lithium-ion battery storage?

Figure 1: Learning rates using the traditional one-factor learning curve model for lithium-ion battery storage. a, Learning rate of economies of scale at 17.31%. b, Experience curve approach with a learning rate of 15.47% for cumulative production. c, Learning rates for cumulative patents, amounting to 31.43%.

How many advanced batteries patents are granted by DoE?

Following this review, and based on feedback from VTO, the initial list of advanced batteries patents funded by DOE contained a total of 723 granted U.S. patents. Defining VTO-funded vs. Other DOE-funded Advanced Batteries Patents As noted above, linking DOE-funded patents to individual offices is often a difficult task.

6 · Huawei has recently issued a new patent regarding solid-state battery tech. It would be a wonderful implementation in the energy storage sector. It will further act as a vital element for lithium-ion cells, ensuring faster charging and higher energy efficiency. A solid-state battery is an electrical cell that contains a solid electrolyte instead of any [...]

Mumbai, March 14, 2022, Reliance New Energy Limited ("Reliance"), a wholly owned subsidiary of Reliance



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Industries Ltd, has today signed definitive agreements to acquire substantially all of the assets of Lithium Werks BV ("Lithium Werks") for a total transaction value of US\$ 61 Million including funding for future growth. The assets include the entire patent portfolio of Lithium ...

advanced batteries patents into 256 patent families. o In addition, we identified a further 603 advanced batteries patents (434 U.S. patents, 56 EPO patents and 113 WIPO patents) that ...

Presently, as the world advances rapidly towards achieving net-zero emissions, lithium-ion battery (LIB) energy storage systems (ESS) have emerged as a critical component in the transition away from fossil fuel-based energy generation, offering immense potential in ...

3 ¶; On November 7, Talent New Energy and Changan Automobile held a joint conference on diaphragm-free solid-state lithium battery technology in Chongqing. At the conference, it was announced that the diaphragm-free solid-state lithium battery technology, which was jointly launched by the two sides, has been evaluated and appraised by the China ...

To enhance the capacity for new-energy consumption using cost-effective power systems, the energy storage system ... by 2030, the global energy storage capacity will expand by 42-68%. By 2025, energy storage installations will increase most rapidly in India and China, ... Figure 5 shows a diagrammatic representation of a lithium-ion-GO battery.

Dragonfly Energy to be granted a new U.S. patent addressing the streamlined production of conventional Li-ion ion batteries and nonflammable solid-state lithium batteries in the U.S. The to be granted patent is another significant milestone toward realizing the Company's mission to provide safe, affordable and effective energy storage solutions The to be granted ...

The Joint Center for Energy Storage Research (JCESR), a DOE Energy Innovation Hub, is a major partnership that integrates researchers from many disciplines to overcome critical scientific and technical barriers and create new breakthrough energy storage technology. Led by the U.S. Department of Energy's Argonne National Laboratory, partners ...

One aspect of the present invention is an energy storage device including a positive electrode containing: first positive active material particles containing a metal element capable of forming a conductive metal oxide; and second positive active material particles not containing the metal element, in which the first positive active material particles include a nickel-cobalt-manganese ...

But, in a solid state battery, the ions on the surface of the silicon are constricted and undergo the dynamic process of lithiation to form lithium metal plating around the core of silicon. "In our design, lithium metal gets wrapped around the silicon particle, like a hard chocolate shell around a hazelnut core in a chocolate truffle," said Li.



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According to GNE, this new battery not only far exceeds the energy density of existing lithium-ion batteries but also offers substantial improvements in both mileage and safety. Lithium-sulfur batteries, which use sulfur as the cathode and lithium metal as the anode, represent a promising alternative to traditional lithium-ion batteries.

Researchers at the Joint Center for Energy Storage Research have invented a wide and diverse range of technologies in the "beyond lithium-ion" space, including 30-plus ...

The first step on the road to today's Li-ion battery was the discovery of a new class of cathode materials, layered transition-metal oxides, such as Li_xCoO_2 , reported in 1980 by Goodenough and collaborators. 35 These layered materials intercalate Li at voltages in excess of 4 V, delivering higher voltage and energy density than TiS_2 . This higher energy density, ...

RENO, Nev., Dec. 21, 2022 (GLOBE NEWSWIRE) - Dragonfly Energy Holdings Corp. (Nasdaq: DFLI) ("Dragonfly Energy" or the "Company"), an industry leader in energy storage and producer of deep cycle lithium-ion storage batteries, announced it has been awarded patent number US11,491,508 by the United States Patent and Trademark Office (USPTO). The patent is for ...

DFD Energy specializes in producing battery energy storage system with many years of industry experience. ... and provides overall new energy solutions from photovoltaic power generation to lithium battery energy storage. The company has applied for 68 patents and possesses independent intellectual property rights and core technologies.

Cloud New Energy Co., Ltd established in 2015, mainly engaged in lithium iron phosphate batteries, energy storage battery packs, portable power supplies, mainly providing new energy battery products related to home solar energy storage and outdoor electrical power supply for responding to the national goal of achieving carbon neutrality, reducing carbon emissions and ...

To create a sodium battery with the energy density of a lithium battery, the team needed to invent a new sodium battery architecture. Traditional batteries have an anode to store the ions while a ...

Research into energy storage solutions has resulted in high levels of innovation across multiple technology fields, which in turn has significantly increased global patent activity. Energy storage solutions encompass numerous technologies, including batteries, such as lithium-ion batteries for electric mobility, grid-scale electricity storage ...

Tulip Innovation Launches New Patent Licensing Program based on LG Energy Solution and Panasonic Energy Lithium-Ion Battery Technologies Battery manufacturers now have an efficient and flexible way to access rights under broad patent portfolios of more than 5,000 patents encompassing critical IP from two



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industry pioneers. BUDAPEST - MAY 30, ...

Most battery-powered devices, from smartphones and tablets to electric vehicles and energy storage systems, rely on lithium-ion battery technology. Because lithium-ion batteries are able to store a significant amount of energy in such a small package, charge quickly and last long, they became the battery of choice for new devices.

RENO, Nev., June 15, 2023 (GLOBE NEWSWIRE) -- Dragonfly Energy Holdings Corp. (Nasdaq: DFLI) ("Dragonfly Energy" or the "Company"), an industry leader in energy storage and ...

Advancing portable electronics and electric vehicles is heavily dependent on the cutting-edge lithium-ion (Li-ion) battery technology, which is closely linked to the properties of cathode materials. Identifying trends and prospects of cathode materials based on patent analysis is considered a kernel to optimize and refine battery related markets. In this paper, a patent ...

Based on current price trajectories and a patent activity level of 444 patents per year using our model, battery prices will fall from 2016 to 2020 by 39%, which puts utility-scale ...

12V 100Ah Lifepo4 Battery Patent design lithium battery. TOPAK RV Lifepo4 Battery 12V 400ah Energy Storage Lithium iron Phosphate RV Battery. 51.2V20AH Lithium battery for electric bicycle battery converter. 10.8V2.1AH Massager lithium battery. 29.6V7.5AH Reserve power supply lithium battery. 64V100Ah electric tricycle lithium battery

The patent is for "systems and methods for dry powder coating layers of an electrochemical cell" and is a major step forward in the Company's mission to provide affordable and effective energy storage solutions, including the domestic manufacturing of all solid-state battery cells. This new patent adds to the Company's extensive ...

Rechargeable lithium ion battery (LIB) has dominated the energy market from portable electronics to electric vehicles, but the fast-charging remains challenging. The safety concerns of lithium deposition on graphite anode or the decreased energy density using Li₄Ti₅O₁₂ (LTO) anode are incapable to satisfy applications.

In terms of innovation it will not be a surprise that Lithium-Ion battery technology has been the main focus. ... Turning to liquid air energy storage (LAES) or cryogenic energy storage, fewer patent applications are filed. The leading innovative companies are Xi'an Thermal Power Research Institute, The Technical Institute of Physics and ...

This joint study by the International Energy Agency and European Patent Office underlines the key role that battery innovation is playing in the transition to clean energy ...



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MIT engineers designed a battery made from inexpensive, abundant materials, that could provide low-cost backup storage for renewable energy sources. Less expensive than lithium-ion battery technology, the new architecture uses aluminum and sulfur as its two electrode materials with a molten salt electrolyte in between.

RENO, Nev., Dec. 21, 2022 (GLOBE NEWSWIRE) -- Dragonfly Energy Holdings Corp. (Nasdaq: DFLI) ("Dragonfly Energy" or the "Company"), an industry leader in energy storage and ...

General patent portfolio characteristics 7 new patent families by Umicore have been published since 2022 that are related to high-energy Li-ion battery anodes (without lithium metal anodes). 3 new lithium metal anode patent families have been published since 2022. Example from the patent portfolio

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