

What are the patents for portable energy storage lithium batteries





Overview

Mobile lithium-ion battery energy storage systems Abstract An example of a system to provide energy storage capacity moveable between multiple locations is provided. The system.

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In particular, lithium-ion batteries provide a high energy efficiency, long cycle life, and high energy density storage platform. Due to the weight and safety issues associated with moving charged utility-scale lithium-ion batteries, they are generally shipped in a partially charged and non-racked.

Numerous patents focus on innovations in mobile energy storage, addressing efficiency, capacity, and integration with electric vehicles, 2. Leading technologies include battery advancements, energy management systems, and portable energy solutions, 3. The patent landscape reveals trends such as.

In the first part of a two-part article, Dr Dustin Bauer, Associate, and Dr Paul Loustalan, Partner, Reddie & Grose, examine what developments in patent strategies can tell us regarding the battery energy storage sector. Battery electric vehicles (BEVs) are continuing to displace fossil fuel.

From the development of novel materials to the refinement of energy storage mechanisms, the landscape for patenting battery technologies is complex and requires a strategic approach. Battery technologies have seen unprecedented growth over the past decade, becoming a critical component in global.

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A particularly noteworthy development is that sodium-ion battery patents



have surpassed 20% of total filings for the first time, nearly doubling from 12% in 2023. This milestone indicates sodium-ion technology's transition from laboratory research to industrial application, positioning it to play a. What are the goals of a lithium battery patent?

According to the United States national blueprint for lithium batteries , one of the main goals is stated as to maintain and advance United States battery technology leadership by strongly supporting scientific R&D, STEM education, and workforce development which is directly aligned with the claim with the patent [109, 174, 176].

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.

How many patents are there in energy storage system?

Firstly, using the "energy storage system" a total of 847,461 (n = 847,461) patents were found. Secondly, "battery" was used and a total of 272,904 (n = 272,904) patents were obtained.

When was lithium ion first used in battery storage?

According to , the first mention of lithium-ion in battery storage is published in 1976 . After that, several decades have passed and many researchers have developed and published various processes or ideas regarding LIB construction and application.

What are the components of a lithium battery design system?

LIB has several components of the design system that are multi-component artefacts that enable us to track the growth of expertise at several stages . According to Malhotra et al. , LIBs are composed of three major systems such as; battery chemistry (cell), battery internal system and battery integration system as shown in Fig. 2.

Is Dalian flow battery energy storage the world's largest grid-connected battery storage system?



Recently, Dalian Flow Battery Energy Storage Peak-shaving Power Station situated in Dalian, China was connected to the grid with a capacity of 400 MWh and an output of 100 MW is considered the world's largest grid-connected battery storage system .



What are the patents for portable energy storage lithium batteries



Patent-based technological developments and surfactants ...

However, the above-mentioned methods will to some extent reduce the energy density of lithium-ion batteries [31], increase the difficulty of battery production, and raise ...

Mobile energy storage technologies for boosting carbon neutrality

Compared with traditional energy storage technologies, mobile energy storage technologies have the merits of low cost and high energy conversion efficiency, can be flexibly ...

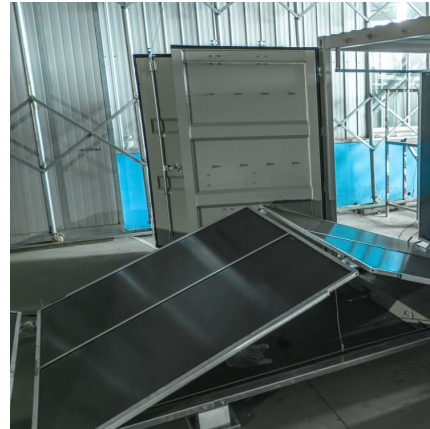


[Custom Battery Pack Manufacturer & Supplier . Gushine](#)

At Gushine, we continuously strive to meet the evolving needs of our clients by providing reliable and safe energy storage solutions. As a company established in 2011 and recognized as a ...

US20100052615A1

The introduction of rechargeable lithium ion batteries opens new possibilities of performances. Lithium technologies offer several advantages where maximum operating time ...



Strategic IP Considerations of Batteries and Energy Storage ...

Introduction The lithium-ion battery, introduced commercially in 1991, revolutionized the consumer electronics industry. Compared with older battery technologies, ...



INSIGHTS , Ironclad future: LFP powers past patent expiration

The early growth of the energy storage market was plagued by fires, precipitating a directive from China's National Energy Administration for medium-to-large ...



[10 Patent Highlights in Emerging Battery Technology ...](#)

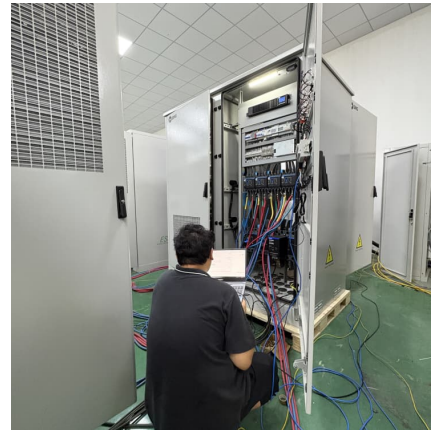
Patent filings can be an important harbinger of a coming technology shift. Let's look at the patent activity and associated development ...





US7388348B2

The portable solar energy system stores electrical energy generated by a solar panel, which is made of an array of photovoltaic cells, in a dc storage battery, and upon demand converts the ...



EPO-IEA study: rapid rise in battery innovation playing ...

Electricity storage inventions show annual growth of 14% over past decade, joint study by European Patent Office (EPO) and International ...

US6617075B2

Lithium-based battery cells are an attractive energy source for portable applications, due in part to their ability to provide relatively high energies and long cycle life. Lithium is the lightest of all ...



Patents

To meet the growing demand in portable electronic equipment and devices subjected to sporadic power-source connection, energy storage batteries with high specific energy, high power ...



Development of the Lithium-Ion Battery and Recent

Lithium-ion batteries (LIBs) feature high energy density, high discharge power, and long service life. These characteristics facilitated a remarkable advance in portable ...



US9871392B2

The battery is generally comprised of one or more batteries having the type of primary lithium-metal, rechargeable lithium-ion, and/or lithium-polymer and more specifically preferably ...

Battery revolution to evolution

While portable electronics have successfully been powered by graphite-LCO batteries, vehicle electrification craves for much more energy-dense power sources.





Grid-connected lithium-ion battery energy storage system towards

The research highlights two prominent factors in the field of grid-connected LIB ESS patents. Firstly, a detailed patent bibliometric analysis including patent growth trends, ...

What are the patents for mobile energy storage? , NenPower

Through patent protection, companies are incentivized to invest in research and development, leading to pioneering technologies that enhance battery performance, such as ...



Advancements in large-scale energy storage technologies for ...

The articles cover a range of topics from electrolyte modifications for low-temperature performance in zinc-ion batteries to fault diagnosis in lithium-ion battery energy ...



Lithium-Ion Battery

The lithium-ion (Li-ion) battery is the predominant commercial form of rechargeable battery, widely used in portable electronics and electrified transportation. The rechargeable battery was ...



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 ...

[Lithium Storage Solutions: The Future of Energy Storage](#)

Explore the future of energy storage with lithium storage solutions, examining innovations in lithium-ion batteries and emerging long-duration technologies. Discover ...



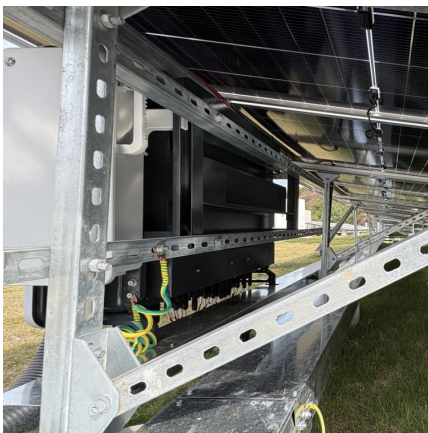
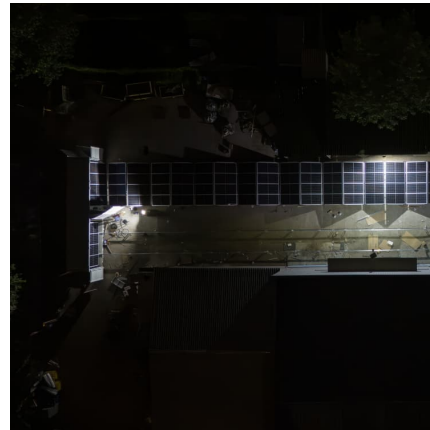
[Mobile lithium-ion battery energy storage systems](#)

Mobile lithium-ion battery energy storage systems Abstract An example of a system to provide energy storage capacity moveable between multiple locations is provided. The system



[Top 10: Energy Storage Companies , Energy Magazine](#)

Thanks to its knowledge in batteries spanning back more than 100 years, its experience in consumer batteries and portable power solutions has positioned it as one of the ...

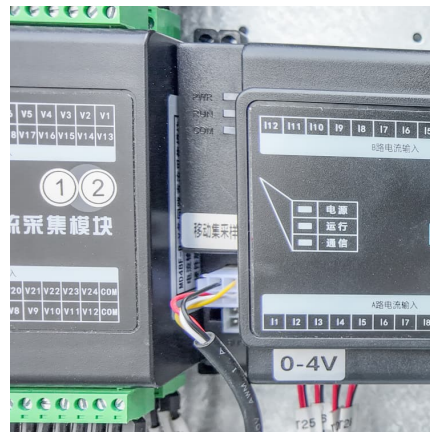


[A Patent Landscape Analysis on the Recycling of ...](#)

The massive production and utilization of lithium-ion batteries (LIBs) has intensified concerns about raw material shortage and end-of-life ...

Nobel Prize of Chemistry 2019 for Lithium-ion Batteries that

Nobel Prize of Chemistry 2019 for Lithium-ion Batteries that Revolutionised Lives of Humankind. Power source for portable electronics, electric vehicles, and storage of energy from renewable ...



Energy Storage Solutions: Patent Law Challenges in Battery ...

For businesses developing battery technologies, this shift represents a massive opportunity, but also requires a keen understanding of where the industry is headed. New ...



What is a portable energy storage patent

The first rechargeable lithium batteries were built 50 years ago, at the same time as the Materials Research Society was formed. Great strides have been made since then taking a dream to ...



Innovation in batteries and electricity storage

Our first joint report provides an overview of the innovation landscape in the booming electric storage industry. Specifically, we reveal that patent filings in batteries and electricity storage ...

The Patent Landscape of Silicon Nanowire Energy Storage ...

Abstract Lithium ion batteries are used in portable electronic devices, power tools, and electric vehicles. Recently, substantial venture capital and private equity investments have been made ...



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