Patent direction of energy storage industry

Understanding patent trends offers valuable insights into the likely future direction of energy storage developments and serves as a strategic lens for stakeholders in the sector. By ...

Who are the leading innovators in renewable energy storage for . The power industry continues to be a hotbed of patent innovation. Activity is driven by the increasing adoption of renewable energy, increasing retail tariffs and decline in incentives, and increasing government support, as well as growing importance of technologies such as pumped hydroelectricity, electrochemical, ...

Drifting toward Alliance Innovation: Patent Collaboration Relationships and Development in China""s Hydrogen Energy ... The hydrogen energy industry, as one of the most important directions for future energy transformation, can promote the sustainable development of the global economy and of society.

Japan solid-state batteries patent is currently leading the global market. Discover how this innovation is shaping and influencing the ASSB industry worldwide! ... it is projected to be much improved by ASSB, including consumer electronics, energy storage systems, and other industries depending on batteries. The Importance of Patents in ASSB ...

Through the global and Chinese patent application volumes, the research comparatively analyzes the application situations of the main source countries and main ...

US6995529B2 . A flywheel energy storage system (10) includes a vacuum enclosure (18) having a flywheel (12), motor/generator (14), and a shaft (16) enclosed within. 2005-02-24 Publication of US20050040776A1 publication Critical patent/US20050040776A1/en the cage pocket clearances are large in the orbiting direction and the guide lands have

Factually, patent information has high credibility and practicability, which is why it has been so often used for forecasting when it comes to technological scenarios (Yu and Zhang, 2019).According to Leten et al. (2016), a competition-based patent strategy can guide any entity, from a company to a country, to uniquely position itself in a market, identify new technological ...

As of the end of July 2021, the Qinghai shared energy storage market has accumulated 2648 transactions, and the new energy stations have increased power generation by 72.86 million kWh. It proves the market feasibility of shared energy storage and opens up new ideas for the technical development and commercialization of energy storage [59]. Due ...

Our focus is on storage technologies that benefit the electricity industry; those widely used in the supply side

of electricity market. 7 We review the most common methods of energy storage in appendix A, which we lean on to build a list of storage patents. Most of these patents are also electricity patents, however, this is not the case for ...

The main functions of energy storage include the following three aspects. (1) stable system output: to solve the distributed power supply voltage pulse, voltage drop and instantaneous power supply interruption and other dynamic power quality problems, the stability of the system, smooth user load curve; (2) Emergency power supply: Energy storage can play a ...

Energy prices promote the share of storage patents while electricity prices hinder it. Citation-adjusted past patents promote innovation in storage share. Using patent data from ...

Based on panel data of Chinese 101 energy storage enterprises from 2007 to 2022, this paper examines the effectiveness of government subsidies in the energy storage industry from the perspective of total factor productivity (TFP). The results unveil that government subsidies significantly increase the TFP of ESEs.

The omnipresent lithium ion battery is reminiscent of the old scientific concept of rocking chair battery as its most popular example. Rocking chair batteries have been intensively studied as prominent electrochemical energy storage devices, where charge carriers "rock" back and forth between the positive and negative electrodes during charge and discharge ...

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 ...

PURPOSE: To utilize a gyro effect of a flywheel in order to reduce the rocking of a ship, by locating on a ship two combination sets of a motor-generator and a flywheel so that the two sets will be mated and their respective flywheels will rotate in a reverse direction to each other. CONSTITUTION: Each of a No.1 energy storage equipment 2 and a No.4 energy storage ...

In November 2014, the State Council of China issued the Strategic Action Plan for energy development (2014-2020), confirming energy storage as one of the 9 key innovation fields and 20 key innovation directions. And then, NDRC issued National Plan for tackling climate change (2014-2020), with large-scale RES storage technology included as a preferred low ...

In-depth analysis! "Technical Panorama of the Global Energy Storage . 2. Types of patented technologies in the global energy storage industry (1) Patent type: invention patents account ...

The unit has an installed power of 24 MWh - (6MWx4h). This is a unique project, pending patent, which uses batteries produced locally by a Romanian company. ... the company is focused on adding value in the energy storage solutions industry. Energy storage projects developed by Simtel and Monsson ... With the launch of

the Power Cube 150 we ...

This paper explores global patent trends in energy storage. Growth and Global Distribution of Patent Publications in Energy Storage. Figure 1 shows the number of patent publications each ...

Patent transfer is a primary form and important component of technology transfer [12] and enables the commercialization and dissemination of technology [13].Over 90% of global scientific and technological advancements have been patented [14], making patents a crucial medium for technological innovation.With the progress of energy storage technology, the ...

On the agenda for COP29 is the Global Energy Storage and Grids Pledge - a pledge which targets a sixfold increase in global energy storage capacity to 1.5 TW by 2030. As reported by the Global Renewables Alliance, the pledge has gained traction, already winning support from multiple countries. This is just the start - the Long Duration Energy Storage Council envisages ...

The main types of energy storage technologies can be divided into physical energy storage, electromagnetic energy storage, and electrochemical energy storage [4].Physical energy storage includes pumped storage, compressed air energy storage and flywheel energy storage, among which pumped storage is the type of energy storage technology with the largest ...

He also finds that the quality of existing patent applications shapes the direction of innovation. We follow Popp (2002)"s methodology to study the determinants of innovation in electricity storage. ... including the potential for simulation models to improve our comprehension of the complex relations between energy storage and the power market.

This study investigated grid-connected LIB storage patents to comprehend the market. ... The research and innovation in the field of grid-connected ESS have also reflected the policy direction and market demand. ... In Table 9, a summary of patent documents related to Energy storage EMS and control strategy is provided. Table 9. The summary of ...

Its Report on Statistical Analysis of Green and Low-Carbon Patents this year shows a record high year-on-year growth of published applications worldwide since 2017. Energy-storage patents dominated, with a 37.2 percent share and a 19.8 percent growth rate, while carbon capture, utilization and storage lagged at 6.7 percent.

But when it comes to intellectual property, filings can, at the very least, suggest the directions in which the industry is moving, especially when it comes to new technologies. ... The patent filing data shows there has been a ...

Firstly, the technological development trend of the hydrogen energy industry chain is revealed from the

number of patents, and the impact of emergencies on the development of hydrogen energy technology is analyzed; secondly, to solve the problem that traditional keyword extraction algorithms cause the multi-vocabulary phrases to be segmented ...

Based on the Dimensions database of Digital Science, this study, combining bibliometric analysis, patent analysis and expert interviews, systematically analyses eight new energy fields, including ...

On an annual basis, the number of energy storage-related patent applications in the power industry witnessed a rise of 6% compared with Q2 2023. Strategic deal trends in energy ...

The need to modernise and expand energy transmission and distribution infrastructure is driving innovation, as shown in the fourth and most recent joint study by the ...

Energy storage technology has attracted high attention from the industry because it has direct or indirect regulatory capabilities for volatile clean energy such as wind power and photovoltaic [9], [10], [11], ensuring the balance between energy production and consumption, improving the overall economic level of energy systems, and reducing ...

In the realm of mechanical energy storage, it is clear that pumped hydroelectric (PSH), flywheel (FES), and compressed air energy storage (CAES) lead the way in patent publications.

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