



Hydrogen energy storage patent japan

Why do Japanese companies use hydrogen turbines?

Japanese companies hold an unmatched number of patents for hydrogen-related technologies, and are working hand-in-hand with international firms like HydrogenPro to further innovation. Turbines such as MHI's are just one way to turn hydrogen into useful energy.

Which technologies generate the most hydrogen patents?

Hydrogen production technologies accounted for the largest number of hydrogen patents overall in the 2011-2020 period, and the report finds that across all segments of the hydrogen value chain, low-emission innovations generated more than twice the number of international patents than established technologies.

What is a hydrogen Innovation Report?

The report uses global patent data to provide a comprehensive, up-to-date analysis of innovation in hydrogen technologies. It is the first study of its kind and covers the full range of technologies, from hydrogen supply to storage, distribution and transformation, as well as end-use applications.

What is the global patent trend of green hydrogen?

The global patent trend of green hydrogen by technology areas (or technology subtypes) during the recent 20 years has been presented. The technology type of the system operation showed a ratio of 53% as shown in Fig. 2 (a), while that of the water electrolysis has less than 50%.

How many patents are there in Green Hydrogen Energy?

Comprehensive analysis of 5,471 patents in the areas of green hydrogen energy from year 2002 to 2022. Classification of water electrolysis (ALK, PEM, AEM, SO, ALL) and system operation (BOP, CON). Natural Language Process (NLP) method for automatic parsing of the patent database.

Are patents a technical barrier in green hydrogen technologies?

The network analysis was utilized to understand high-impact patents as a technical barrier in green hydrogen technologies. A Python script was developed to identify forward and backward relations of a specific patent to others, which was cited by patents in the following years.

Patents are strong indicators of innovation activity which can give very detailed insights into the state and direction of the science. This study, which combines the expertise of the International Energy Agency ...

Discover how Toyota's advanced fuel cell technology provides reliable, scalable, and efficient hydrogen solutions to meet commercial and industrial power needs.

Among hydrogen's many potential end-use applications, the automotive sector has long been the focus for innovation, and patenting in this sector continues to grow, led mainly by Japan.



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Abstract Technology trend studies on patent analyses of hydrogen technology are critical in understanding the status of present and future technology, as well as, its market ...

On 10 January 2023, the European Patent Office (EPO) and the International Energy Agency (IEA) have published a joint study analysing the innovation along hydrogen value chains. The report uses ...

Findings reveal energy storage's dominance, with water energy storage and emerging hydrogen technology leading the trajectory. Global energy patent scrutiny ...

As the photovoltaic (PV) industry continues to evolve, advancements in Japanese hydrogen energy storage patent have become critical to optimizing the utilization of renewable energy ...

Accelerating the research and demonstration of safe, economical, and efficient hydrogen storage technologies is essential for the development of the hydrogen energy industry. This study examines the ...

This study, which combines the expertise of the International Energy Agency and the European Patent Office, is the most comprehensive, global and up-to-date investigation of hydrogen ...

The report uses global patent data to provide a comprehensive, up-to-date analysis of innovation in hydrogen technologies. It is the first study of its kind and covers the full range of technologies, from hydrogen supply to ...

Using the Derwent World Patents Index (DWPI), the study includes bibliometric analysis, technology evaluation, and technology updates in the field of hydrogen production. ...

The novelties of this study are (1) the quantitative analysis of the staged hydrogen economy scenario potential in Japan; (2) presenting the performance of hydrogen and ...

This study examines the development and evolution patterns of hydrogen storage technologies through bibliometric analysis and the latent Dirichlet allocation (LDA) topic model, utilizing ...

Hazer Group Ltd awarded a significant patent by the Japanese Patent Office for its hydrogen and graphitic carbon production process using iron ore as a catalyst.

Abstract Hydrogen is a promising future energy carrier due to its high energetic content and sustainable appeal when produced via clean manufacturing processes. One of the ...

Japanese companies hold an unmatched number of patents for hydrogen-related technologies, and are working hand-in-hand with international firms like HydrogenPro to further innovation. Turbines such as MHI's are just ...



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o The government agency, the Japan Organisation for Metals and Energy Security (JOGMEC), provides equity capital and liability guarantees for the production and storage of decarbonised ...

Japan is transforming its energy landscape, positioning hydrogen technology as a key component in its strategy to meet its commitment to net-zero emissions by 2050. To achieve its ambitious goals, the Japanese ...

Source:Hydrogen Fuel News Expanding Intellectual Property in a Strategic Market Hazer Group Ltd., an Australian-based clean-tech innovator, has achieved significant progress with the ...

A hydrogen storage system may include a storage container storing liquid hydrogen, a supply line connected to the storage container and to a fuel cell system, the supply line supplying gaseous ...

The European Patent Office (EPO) and the International Energy Agency (IEA) have released the latest data on patent focusing on the hydrogen technology development. Leader in global patenting in hydrogen ...

Japan is transforming its energy landscape, positioning hydrogen technology as a key component in its strategy to meet its commitment to net-zero emissions by 2050. To achieve its ambitious ...

Hydrogen fuel cell vehicle (FCV) technology is of great significance to energy security and environmental protection. With the rapid development of automotive hydrogen ...

Hazer Group has obtained a significant patent in Japan for its innovative technology that produces hydrogen and graphitic carbon from hydrocarbons. Hazer's ...

Accelerating the research and demonstration of safe, economical, and efficient hydrogen storage technologies is essential for the development of the hydrogen energy ...

To collect patents related to green hydrogen technologies, a wide range of research and development (R& D) projects concerning hydrogen are extensively searched as ...

The study, conducted by Astamuse, analyzed approximately 180,000 patents in the hydrogen energy sector between 2013 and 2022. These patents cover five major areas: production, storage, transportation ...

Patent documents provide knowledge about which countries are investing in certain technologies and make it possible to identify potential innovation trends. The aim of this ...

In 2017, Japan unveiled the "Basic Hydrogen Strategy", aiming to establish a leading hydrogen-centric society. In 2020, the European Union and China successively ...

Energy consumption is an essential issue for all human beings. With the emerging threat of environmental



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crisis, determining the most efficient and effective way to use the limited energy ...

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