

What is a hydrogen storage power system?

The power system containing hydrogen storage can be divided into power generation, energy storage, or load according to the different parts. Ensuring the system's safe operation and achieving the system's operating goals requires an appropriate energy management control strategy.

What is a hydrogen patent?

Their patent portfolios are mainly focused on production by electrolysis and applications based on fuel cells but also extend to established technologies for the storage and distribution of liquid or gaseous hydrogen, an area of focus for these countries which plan to import stored hydrogen in the near future.

Is hydrogen storage a viable energy management system?

The development of the current energy management system containing hydrogen storage is promising. Future research will focus on multi-energy complementary energy management systems combined with big data and intelligent autonomous optimization design.

What happened to hydrogen patenting in the US?

By contrast, hydrogen patenting decreased significantly in the US after 2015, and the US was a distant third to the EU and Japan in 2020, despite being the main innovator in hydrogen in 2011 in terms of volume of international patent families.

Why do we need patents for hydrogen energy?

Through patenting, inventors seek to ensure that they can recoup these investments in innovation. Coordinating the deployment of the full hydrogen energy value chain is perhaps the most complex of all the technical challenges facing energy engineers and it is sometimes hard to discern the status of all the underpinning technology areas.

Which companies have patented hydrogen technology?

Two Japanese companies - Toyota and Honda - as well as R. Korea's Hyundai stand out. All three feature in this list thanks to patent portfolios in established technologies for the storage, distribution and transformation of gaseous or liquid hydrogen.

Highlights o Zero carbon technologies facilitate the clean energy transition on specific technology trajectories.
o Hydrogen electrolyser benefits energy storage technologies ...

Figure 3: International patenting trends in gaseous hydrogen storage, ammonia production, methanol production and alternative hydrogen-based fuels (IPFs, 2001-2020) ...

This study by the EPO and IEA is the most comprehensive, global and up-to-date investigation of

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hydrogen-related patenting so far. It covers technologies for the full range ...

This chapter provides an overview of the various energy management strategies used in US patents for hydrogen-containing energy storage power systems and analyzes the ...

Storing energy in the form of hydrogen is a promising green alternative. Thus, there is a high interest to analyze the status quo of the different storage options. This paper ...

Abstract Safe and flexible hydrogen storage technology (HST) emerges as a crucial element in driving the industrialization of hydrogen energy. Consequently, HSTs are ...

This report describes the results of an analysis tracing the technological influence of hydrogen and fuel cell research funded by the Hydrogen and Fuel Cell Technologies Office (HFTO) in the ...

To fill this gap, this paper reviews relevant US patents to find potential and industrial hydrogen applications and energy management strategies in renewable energy ...

Beginning in FY2008, PNNL has conducted an annual review of patents related to fuel cells, hydrogen production, delivery, and storage resulting from HFTO R& D funding*

This article comprehensively reviews hydrogen production technologies, storage technologies, and end-use applications of hydrogen, based on the input energy source, ...

4 · New Breakthrough for Hydrogen Energy Vehicles: Fushi Automotive Applies for High-Pressure Valve Patent 2025-09-13 17:35 Have you ever wondered if the hydrogen storage ...

The future is bright for hydrogen as a clean, mobile energy source to replace petroleum products. This paper examines new and emerging technologies for hydrogen ...

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 ...

The hydrogen energy industry is a typical strategic emerging industry with high complexity, integration, and uncertainty [5]. The development of strategic emerging industries ...

To make the patent database for the analysis, first, a comprehensive survey on green hydrogen projects worldwide was conducted and hydrogen-related technologies were classified into two ...

The system comprises a hydrogen generation module for producing hydrogen through electrolysis of water wherein the hydrogen generation module is powered by one or more renewable ...

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However, this report also flags some blind spots where more innovation is needed to unlock new applications of green hydrogen. By giving decision-makers an unparalleled perspective of ...

The system includes a hydrogen generation module for producing hydrogen through electrolysis of water, with the hydrogen generation module powered by one or more renewable energy ...

A patent titled "Hydrogen Storage Material Including Metal-Organic Frameworks," filed on June 27, 2024, by LG Chem, Ltd., introduces a novel method for hydrogen storage. ...

This invention introduces a hydrogen fuel storage system that uses metal-organic frameworks (MOFs) to efficiently store molecular hydrogen. The MOFs are designed ...

Published Patent Application Number: WO2024163543A1 Problem Stationary hydrogen-powered fuel cells are emerging as a solution for delivering clean and flexible power. ...

By integrating this innovative on-line measurement method, the patent seeks to optimize the hydrogen production process from biomass, contributing to the advancement of ...

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