

# Development trend of hydrogen energy storage technology

What is the research status and development trend of hydrogen storage technology?

We use bibliometric analysis of hydrogen storage research in order to get a view of research status and development trend of hydrogen storage technology. The results show that the research on hydrogen storage technology has turned from the rapid growth stage to the in-depth research stage.

Why should we study hydrogen production & storage?

This study provides a comprehensive review of hydrogen production and storage and identifies research progress on future research trend in these fields. It would be helpful for policy-making and technology development and provide suggestions on the development of a hydrogen economy. Content may be subject to copyright.

What is the development trend of hydrogen energy?

However, with the progressive improvement of top-level design and the upgrading and progress of industrial technology, the application of hydrogen energy will show a diversified development trend such as hydrogen energy storage, transportation, power-to-gas, and cogeneration/cooling and combined heat and power supply.

## 4.1. Transportation

How has hydrogen storage technology changed over the years?

The results show that the research on hydrogen storage technology has turned from the rapid growth stage to the in-depth research stage. The basic discipline of hydrogen storage alloy, including the composition of its additives and catalyst, as well as its internal structure and ways of improving its performance.

How does hydrogen storage technology determine the large-scale application of hydrogen energy?

**ABSTRACT** Hydrogen storage technology, playing the role of connecting hydrogen energy production with application, determines the large-scale application of hydrogen energy. We use bibliometric analysis of hydrogen storage research in order to get a view of research status and development trend of hydrogen storage technology.

What are the environmental benefits of hydrogen storage technologies?

The environmental benefits of hydrogen storage technologies heavily depend on the method of hydrogen production. Green hydrogen, produced using renewable energy sources like wind or solar power through electrolysis, is considered environmentally friendly as it avoids carbon emissions associated with traditional production methods.

The development of energy storage technology (EST) has become an important guarantee for solving the volatility of renewable energy (RE) generation and promoting the transformation of the power system. ... These methods rely on expert and scholar experience to predict the future market conditions and development

trends, including Delphi survey ...

The entire industry chain of hydrogen energy includes key links such as production, storage, transportation, and application. Among them, the cost of the storage and transportation link exceeds 30%, making it a crucial factor for the efficient and extensive application of hydrogen energy [3]. Therefore, the development of safe and economical ...

By synthesizing the latest research and developments, the paper presents an up-to-date and forward-looking perspective on the potential of hydrogen energy storage in the ongoing global energy transition. Furthermore, emphasizes the importance of public perception and education in facilitating the successful adoption of hydrogen energy storage.

The motivation is to explore the future development trend of green hydrogen production technology by comparing the advantages and shortcomings of different ...

Hydrogen, a clean energy carrier with a higher energy density, has obvious cost advantages as a long-term energy storage medium to facilitate peak load shifting. Moreover, hydrogen has multiple strategic missions in climate change, energy security and economic development and is expected to promote a win-win pattern for the energy-environment ...

The EU has implemented a demonstration project on hydrogen production technology in Greece and Spain, and the project combined wind energy with hydrogen ...

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Discover the Top 10 Energy Storage Trends plus 20 Top Startups in the field to learn how they impact your business in 2025. ... The applications of hydrogen storage range from use in cars as a ...

The Energy Efficiency Directive 2012/27/EU has created a standardized framework for developing energy systems, particularly benefiting hydrogen storage technology. The region is experiencing a dramatic shift in electricity networks as it moves toward 100% renewables, accelerating hydrogen storage deployment.

The overview about the current situation and trends of Hydrogen Economy is presented. The prominent research on hydrogen technology, processes and their main characteristics are addressed as well. The uncertainties surrounding the implementation of hydrogen energy, based on renewable sources, require further studies regarding ...

Photocatalytic decomposition of water to hydrogen has attracted more and more research in hydrogen

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production research, and the development of new hydrogen storage materials has become a key theme ...

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