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Global Solid-state Hydrogen Storage Equipment Supply, Demand and Key Producers, 2026-2032

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Abstracts

The global Solid-state Hydrogen Storage Equipment market size is expected to reach $ 543 million by 2032, rising at a market growth of 31.3% CAGR during the forecast period (2026-2032).
Solid-state hydrogen storage equipment refers to equipment or systems that use solid carriers such as metal hydrides, hydrogen storage alloys, Mg-based hydrogen storage materials, and rare earth hydrogen storage materials as the core to adsorb/absorb hydrogen into the solid phase, store it at high density under low pressure, and are equipped with thermal management, pipelines and valves, and monitoring and control to realize a complete set of hydrogen supply/storage functions.
For solid-state hydrogen storage equipment based on metal hydrides, the upstream mainly covers metal and alloy materials (Mg, Ti, rare earth, Ni-based systems), hydrogen storage alloy powders, pressure vessels and machining, plus valves, piping, heat-exchangers, sensors and control electronics. System integrators turn these into complete solid-state storage tanks or containerized units. Downstream, the equipment is used in renewable-hydrogen energy storage systems, backup power and microgrids, industrial hydrogen buffering and recycling, hydrogen refueling stations (as low-pressure buffer), special vehicles and portable/emergency power for telecom, remote sites and military applications.
Global sales of solid-state hydrogen storage equipment reached 52,717 kgH? in 2025, with an average price of $1,445 per kgH?.
As a key carrier connecting hydrogen production and hydrogen utilization in the hydrogen energy industry chain, solid-state hydrogen storage equipment has gained momentum due to the in-depth alignment between its technical characteristics and industrial demands, with multiple driving forces jointly promoting its development from demonstration applications to large-scale implementation. Compared with traditional high-pressure gaseous and low-temperature liquid hydrogen storage methods, solid-

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state hydrogen storage takes low-pressure working status as its core advantage, fundamentally avoiding safety risks such as high-pressure leakage and low-temperature thermal insulation failure. This feature enables it to accurately adapt to scenarios with strict safety requirements, such as new energy vehicles and distributed energy systems. As an important part of the clean energy transition, policy support for hydrogen energy and the improvement of the hydrogen energy industry chain have further amplified the value of solid-state hydrogen storage in the energy storage field?it can effectively absorb the intermittent power from renewable energy generation, realize cross-temporal and spatial energy allocation through hydrogen storage, and form a closed loop of 'production-storage-utilization'. At the same time, breakthroughs in hydrogen storage material research and development, including the performance optimization of metal hydrides, organic liquids and porous adsorption materials, have continuously improved the equipment's hydrogen storage density and hydrogen charging-discharging convenience, providing technical support for the adaptation of different scenarios. However, the large-scale development of solid-state hydrogen storage equipment still faces multiple challenges. Technically, the performance bottleneck of hydrogen storage materials is particularly prominent. Some metal hydrides require high-temperature assistance to achieve efficient hydrogen desorption, while organic liquid hydrogen storage relies on expensive precious metal catalysts and is prone to deactivation, which restricts the response speed and use cost of the equipment. The cycle life of materials also needs to be solved urgently. The lattice distortion or pulverization phenomenon during repeated hydrogen charging and discharging will lead to continuous attenuation of hydrogen storage capacity. In terms of cost, the core hydrogen storage materials have high synthesis energy consumption and complex preparation processes. Coupled with the fact that equipment production has not yet formed economies of scale, the initial purchase cost is much higher than that of traditional hydrogen storage equipment. At the industrial chain level, the poor compatibility between the equipment and upstream hydrogen production devices and downstream fuel cells, the lack of unified interfaces and safety standards, make it difficult for products from different enterprises to achieve interconnection. The dependence on external supply in some links of key materials and precision components also increases the uncertainty of industrial development. In addition, there are still gaps in relevant safety testing and control standards for the release of harmful substances that may occur during hydrogen storage, which has become an important obstacle to its entry into civil and public fields.

This report studies the global Solid-state Hydrogen Storage Equipment production, demand, key manufacturers, and key regions.

This report is a detailed and comprehensive analysis of the world market for Solid-state Hydrogen Storage Equipment and provides market size (US$ million) and Year-over-

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Year (YoY) Growth, considering 2025 as the base year. This report explores demand trends and competition, as well as details the characteristics of Solid-state Hydrogen Storage Equipment that contribute to its increasing demand across many markets.

Highlights and key features of the study

Global Solid-state Hydrogen Storage Equipment total production and demand, 2021-2032, (kgH?)

Global Solid-state Hydrogen Storage Equipment total production value, 2021-2032, (USD Million)

Global Solid-state Hydrogen Storage Equipment production by region & country, production, value, CAGR, 2021-2032, (USD Million) & (kgH?), (based on production site)

Global Solid-state Hydrogen Storage Equipment consumption by region & country, CAGR, 2021-2032 & (kgH?)

U.S. VS China: Solid-state Hydrogen Storage Equipment domestic production, consumption, key domestic manufacturers and share

Global Solid-state Hydrogen Storage Equipment production by manufacturer, production, price, value and market share 2021-2026, (USD Million) & (kgH?)

Global Solid-state Hydrogen Storage Equipment production by Type, production, value, CAGR, 2021-2032, (USD Million) & (kgH?)

Global Solid-state Hydrogen Storage Equipment production by Application, production, value, CAGR, 2021-2032, (USD Million) & (kgH?)

This report profiles key players in the global Solid-state Hydrogen Storage Equipment market based on the following parameters - company overview, production, value, price, gross margin, product portfolio, geographical presence, and key developments. Key companies covered as a part of this study include Lavo, Hydrexia, GKN Hydrogen, H-brick, McPhy, Grimat, GRZ Technologies, Hystorsys, Whole Win (Beijing) Advanced Materials, Methydor SRL, etc.

This report also provides key insights about market drivers, restraints, opportunities, new product launches or approvals.

Stakeholders would have ease in decision-making through various strategy matrices used in analyzing the World Solid-state Hydrogen Storage Equipment market

Detailed Segmentation:

Each section contains quantitative market data including market by value (US$ Millions), volume (production, consumption) & (kgH?) and average price (USD/ kgH?) by manufacturer, by Type, and by Application. Data is given for the years 2021-2032 by year with 2025 as the base year, 2026 as the estimate year, and 2027-2032 as the forecast year.

Global Solid-state Hydrogen Storage Equipment Market, By Region:

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United States

China

Europe

Japan

South Korea

ASEAN

India

Rest of World

Global Solid-state Hydrogen Storage Equipment Market, Segmentation by Type:

Mobile Cart Type

Fixed Type

Global Solid-state Hydrogen Storage Equipment Market, Segmentation by Capacity:

10-100Nm3

100-500Nm3

500-1000Nm3

Others

Global Solid-state Hydrogen Storage Equipment Market, Segmentation by Hydrogen Storage Materials:

Metal Hydrides

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Others

Global Solid-state Hydrogen Storage Equipment Market, Segmentation by Application:

Transportation Sector

Energy Storage and Power Sector

Industrial Production Sector

Other

Companies Profiled:

Lavo

Hydrexia

GKN Hydrogen

H-brick

McPhy

Grimat

GRZ Technologies

Hystorsys

Whole Win (Beijing) Advanced Materials

Methydor SRL

Key Questions Answered:

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1. How big is the global Solid-state Hydrogen Storage Equipment market?
2. What is the demand of the global Solid-state Hydrogen Storage Equipment market?
3. What is the year over year growth of the global Solid-state Hydrogen Storage Equipment market?
4. What is the production and production value of the global Solid-state Hydrogen Storage Equipment market?
5. Who are the key producers in the global Solid-state Hydrogen Storage Equipment market?
6. What are the growth factors driving the market demand?

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