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Hydrogen-Fueled Ground Power Unit Market Forecasts to 2032 – Global Analysis By Power Rating (Below 50 kVA, 50–100 kVA, and Above 100 kVA), Mobility Type, Fuel Type, Distribution Channel, Application, End User and By Geography

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Abstracts

According to Stratistics MRC, the Global Hydrogen-Fueled Ground Power Unit Market is accounted for $448.81 million in 2025 and is expected to reach $1208.47 million by 2032 growing at a CAGR of 15.2% during the forecast period. A Hydrogen-Powered Ground Power Unit delivers electrical energy to stationary aircraft using hydrogen as its primary fuel. Unlike traditional diesel-powered units, it minimizes emissions and noise by generating electricity through hydrogen fuel cells. These systems offer dependable and sustainable power for aircraft pre-flight checks, maintenance tasks, and auxiliary functions, supporting eco-friendly and efficient airport operations while reducing the environmental footprint of ground support equipment.

Market Dynamics:

Driver:

Increasing demand for sustainable aviation

Hydrogen-fueled Ground Power Units (GPUs) offer a zero-emission alternative to conventional diesel-powered units, aligning with stringent environmental targets set by aviation authorities. Advancements in proton exchange membrane fuel cell technology are enhancing the efficiency and reliability of these hydrogen GPUs. Major airlines and airport operators are increasingly investing in green infrastructure to meet corporate sustainability goals and reduce their carbon footprint. Furthermore, government

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incentives and funding for clean energy adoption in the transport sector are bolstering market growth. The evolution of smart airport ecosystems is also integrating hydrogen refueling and power management systems seamlessly.

Restraint:

Limited hydrogen supply and refueling infrastructure

The current lack of widespread green hydrogen generation facilities limits the consistent and cost-effective supply needed for GPU operations. Establishing dedicated refueling infrastructure requires substantial capital investment and coordination between energy companies, airports, and regulatory bodies. Logistical complexities related to hydrogen transportation and on-site storage further impede rapid deployment. This infrastructural gap poses a considerable barrier for airports, especially in regions with slower adoption of hydrogen economies. Consequently, the operational scalability of hydrogen-fueled GPUs is currently constrained by these supply chain limitations.

Opportunity:

Advancements in hydrogen storage

The development of lighter and more compact Type IV composite pressure vessels is increasing the onboard storage capacity of GPUs without compromising safety. Emerging trends include research into solid-state hydrogen storage and cryo-compressed techniques, which promise higher energy density. These technological improvements are extending the operational runtime of hydrogen GPUs between refueling cycles, enhancing their practicality for continuous airport operations. Key developments also focus on integrated storage and dispensing systems that optimize refueling speed and safety protocols. Such progress is crucial for making hydrogen a viable and competitive energy source for ground support equipment.

Threat:

Lack of standardization and regulations

Different regions and aviation authorities are developing varying protocols for the handling, refueling, and maintenance of hydrogen GPUs. This lack of harmonization can create interoperability issues and complicate the operations for global airlines and ground handlers. Manufacturers face increased complexity and cost in designing

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products that comply with a fragmented regulatory landscape. Emerging safety concerns regarding hydrogen storage and fueling in the sensitive airport environment require clear, internationally recognized guidelines. Without standardization, the widespread adoption and seamless integration of this technology could be significantly delayed.

Covid-19 Impact:

The pandemic initially caused severe disruptions to airport operations and capital expenditure, delaying investments in new ground support equipment like hydrogen GPUs. Travel restrictions and reduced flight volumes diminished the immediate need for expanding GPU fleets, shifting airport priorities towards essential operational survival. However, the recovery phase has intensified the focus on building more resilient and sustainable airport infrastructure for the long term. The crisis underscored the importance of reducing operational emissions and has accelerated strategic planning for energy transition. Thus, post-pandemic strategies are increasingly aligning with environmental goals, potentially benefiting the hydrogen GPU market in the medium to long term.

The pure hydrogensegment is expected to be the largest during the forecast period

The pure hydrogen segment is expected to account for the largest market share during the forecast period, due to its capability to produce truly zero-emissions power with only water vapor as a byproduct. This segment primarily utilizes fuel cell technology, which is witnessing significant advancements in efficiency, durability, and cost reduction. Key developments include the integration of high-performance fuel cell stacks specifically designed for the high-power demands of aircraft on the ground. Emerging trends focus on hybrid systems that combine fuel cells with lithium-ion batteries to manage peak power loads effectively. The environmental benefits of pure hydrogen systems align perfectly with the aviation industry's ambitious net-zero targets. Furthermore, ongoing research into optimizing hydrogen consumption rates is enhancing the economic viability of these GPUs for airport operators.

The airport operators segment is expected to have the highest CAGR during the forecast period

Over the forecast period, the airport operators segment is predicted to witness the highest growth rate, due to their direct responsibility for achieving Scope 1 and 2 emission reductions within airport boundaries. Airports are increasingly investing in

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owned-and-operated fleets of green ground support equipment as part of their sustainability master plans. Technological trends include the deployment of IoT-enabled hydrogen GPUs that provide real-time data on fuel levels, performance, and maintenance needs. Key developments involve airports partnering with energy companies to establish on-site hydrogen production and refuelling stations, creating fully integrated ecosystems. The operational cost savings from transitioning away from diesel, coupled with potential carbon credits, are strong financial incentives.

Region with largest share:

During the forecast period, the Asia Pacific region is expected to hold the largest market share, due to massive investments in modernizing airport infrastructure across China, India, and Southeast Asian nations. Governments in the region are actively promoting hydrogen as a key future energy source, launching national strategies and providing subsidies for hydrogen technology adoption. The presence of major aircraft manufacturers and a rapidly expanding aviation market are driving the demand for efficient and sustainable ground support solutions. Technological advancements are being embraced quickly, with several airports launching pilot projects for hydrogen-powered ground vehicles. Key developments include partnerships between local airports and international technology providers to accelerate deployment. The region's commitment to large-scale green hydrogen production also ensures a long-term, sustainable supply for airport operations.

Region with highest CAGR:

Over the forecast period, the North America region is anticipated to exhibit the highest CAGR, owing to strong regulatory support from agencies like the FAA and ambitious federal initiatives such as the Hydrogen Energy Earthshot. The region boasts a mature technological landscape with leading fuel cell and hydrogen storage companies driving innovation specifically for aerospace applications. High adoption rates of new technologies and the presence of major airlines committed to sustainability are key growth drivers. Emerging trends include the development of comprehensive "Hydrogen Hubs" that integrate airport demand into broader regional clean energy plans. Key developments are focused on standardizing safety protocols and operational procedures to facilitate widespread adoption. Significant venture capital and corporate investment in hydrogen start-ups are further accelerating the market's expansion pace in North America.

Key players in the market

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Some of the key players in Hydrogen-Fueled Ground Power Unit Market include Air Liquide, Cummins Inc., Ballard Power Systems, VivoPower International, Plug Power, Horizon Fuel Cell Technologies, Siemens Energy, Bharat Heavy Electricals Ltd (BHEL), Linde PLC, Honda Motor Co., ENGIE, General Motors (GM), Mitsubishi Power, Green Hydrogen Systems, and Enapter.

Key Developments:

In September2025, VivoPowerannounced a definitive partnership to power stablecoin-based employee payments. The program is designed to deliver near-instant, lower-cost payouts with enterprise-grade controls and will serve as the foundation for broader treasury and B2B payment use cases.Partnership is consistent with VivoPower’s digital asset strategy, which encompasses utility.

In August2025, Air Liquide announces that it has signed a binding agreement with Macquarie Asia-Pacific Infrastructure Fund 2, for the acquisition of DIG Airgas, a leading national player in South Korea. It is expected to close in the first semester of 2026. This major acquisition marks a significant strategic milestone for Air Liquide, substantially strengthening its market position in South Korea %- %the 6th largest manufacturing country by GDP, the 4th largest Industrial Gas market and the 2nd country in innovation spending ratio.

Power Ratings Covered:

- Below 50 kVA
- 50–100 kVA
- Above 100 kVA

MobilityTypes Covered:

- Mobile Ground Power Units
- Fixed Ground Power Units

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FuelTypes Covered:

- Pure Hydrogen
- Hydrogen Blends
- Other Fuel Types

Distribution Channels Covered:

- Direct Sales
- Third-Party Integrators
- Leasing and Rental Services

Applications Covered:

- Commercial Airports
- Urban Air Mobility (UAM) Hubs
- Military Airbases
- Remote Airstrips and Helipads
- Other Applications

End Users Covered:

- Airport Operators
- Ground Handling Companies
- Defense Agencies

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- OEMs and MROs
- Other End Users

Regions Covered:

- North America
  - US
  - Canada
  - Mexico
- Europe
  - Germany
  - UK
  - Italy
  - France
  - Spain
  - Rest of Europe
- Asia Pacific
  - Japan
  - China
  - India
  - Australia

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- New Zealand
- South Korea
- Rest of Asia Pacific

South America

- Argentina
- Brazil
- Chile
- Rest of South America

Middle East & Africa

- Saudi Arabia
- UAE
- Qatar
- South Africa
- Rest of Middle East & Africa

What our report offers:
- Market share assessments for the regional and country-level segments
- Strategic recommendations for the new entrants
- Covers Market data for the years 2024, 2025, 2026, 2028, and 2032
- Market Trends (Drivers, Constraints, Opportunities, Threats, Challenges, Investment Opportunities, and recommendations)
- Strategic recommendations in key business segments based on the market estimations
- Competitive landscaping mapping the key common trends
- Company profiling with detailed strategies, financials, and recent developments

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- Supply chain trends mapping the latest technological advancements

Free Customization Offerings:

All the customers of this report will be entitled to receive one of the following free customization options:

Company Profiling

Comprehensive profiling of additional market players (up to 3)

SWOT Analysis of key players (up to 3)

Regional Segmentation

Market estimations, Forecasts and CAGR of any prominent country as per the client's interest (Note: Depends on feasibility check)

Competitive Benchmarking

Benchmarking of key players based on product portfolio, geographical presence, and strategic alliances

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Note: Tables for North America, Europe, APAC, South America, and Middle East & Africa Regions are also represented in the same manner as above.

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