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Hydrogen Automotive Testing, Inspection, and Certification (TIC) Market by Service (Testing, Certification, Inspection, and Other Services), Region (Asia Pacific, North America, Europe) - Forecast to 2030

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Abstracts

The hydrogen automotive testing, inspection, and certification (TIC) market is estimated to reach USD 35.8 million by 2030 from an estimated value of USD 18.3 million in 2024, at a CAGR of 11.8% during the forecast period. The market is driven by increasing adoption of hydrogen fuel cell vehicles, stringent safety and emission regulations, and rising investments in hydrogen infrastructure. Government incentives, growing environmental concerns, and advancements in hydrogen technology are boosting demand for quality assurance. Additionally, global standardization efforts and the expansion of hydrogen refueling networks are accelerating the need for TIC services.

“Inspection segment is expected to remain the second-largest, by service.”

Based on service, the hydrogen automotive testing, inspection, and certification (TIC) market has been segmented into testing, inspection, and certification. The inspection segment is projected to be the second-largest segment in the hydrogen automotive testing, inspection, and certification (TIC) market. This growth is driven by the increasing need to ensure the integrity, safety, and performance of hydrogen-powered vehicles and infrastructure throughout their lifecycle. As hydrogen vehicles operate under high-pressure systems and involve complex components such as fuel cells, tanks, and pipelines, regular inspection is critical to detect wear, corrosion, or potential failures. Regulatory bodies across regions are implementing stricter safety mandates, requiring routine inspection for certification and compliance. Moreover, the rapid deployment of hydrogen refueling stations and the growing production of hydrogen-

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powered fleets have increased the demand for on-site and in-service inspection solutions. These factors collectively drive the expansion of inspection services within the hydrogen automotive TIC ecosystem.

“Buses: The second-largest segment of the hydrogen automotive testing, inspection and certification (TIC) market, by vehicle type.”

By vehicle type, the hydrogen automotive testing, inspection, and certification (TIC) market has been segmented into five categories: passenger cars, buses, light commercial vehicles, medium duty vehicles, heavy duty vehicles, and ICE hydrogen vehicles. The segment, buses, is expected to capture the second-largest share of the market by vehicle type. This growth is driven by increasing government support for zero-emission public transportation and rising investments in sustainable urban mobility. Hydrogen-powered buses offer longer range and faster refueling than battery-electric counterparts, making them ideal for intercity and high-frequency routes. Several countries, particularly in Europe and Asia, are deploying hydrogen buses as part of their clean energy transition strategies. Additionally, the need for rigorous testing, inspection, and certification of fuel cell systems, storage tanks, and safety protocols is growing to ensure regulatory compliance and operational safety, further boosting TIC service demand in this segment.

“Asia Pacific is expected to be the second-fastest-growing region in the hydrogen automotive testing, inspection, and certification (TIC) market.”

Asia Pacific is expected to be the second-fastest-growing region in the hydrogen automotive testing, inspection, and certification (TIC) market, driven by strong government initiatives, expanding hydrogen infrastructure, and increasing deployment of hydrogen-powered vehicles. Countries like Japan, South Korea, and China invest heavily in hydrogen mobility through national roadmaps, subsidies, and infrastructure development, including the rollout of hydrogen refueling stations and fuel cell vehicle fleets. Japan and South Korea are global pioneers in hydrogen fuel cell technologies. China is rapidly scaling up its production and adoption of hydrogen commercial vehicles, particularly in logistics and public transportation. The region’s focus on energy security and emission reduction aligns with the broader push for hydrogen adoption. Additionally, Asia Pacific has a strong automotive manufacturing base, fostering innovation and the integration of hydrogen systems into various vehicle types. As a result, there is a rising need for reliable testing, inspection, and certification services to ensure safety, performance, and regulatory compliance across the hydrogen automotive ecosystem.

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Breakdown of Primaries:

In-depth interviews have been conducted with various key industry participants, subject-matter experts, C-level executives of key market players, and industry consultants, among other experts, to obtain and verify critical qualitative and quantitative information, as well as to assess future market prospects. The distribution of primary interviews is as follows:

By Company Type: Tier 1 - 65%, Tier 2 - 24%, and Tier 3 - 11%

By Designation: C-Level Executives - 30%, Managers - 25%, and Others - 45%

By Region: North America - 21%, Europe - 25%, and Asia Pacific - 54%

Note: Others include product engineers, product specialists, and engineering leads.

Note: The tiers of the companies are defined based on their total revenues as of 2023. Tier 1: > USD 1 billion, Tier 2: From USD 500 million to USD 1 billion, and Tier 3:
The hydrogen automotive testing, inspection, and certification (TIC) market is dominated by a few major players with a wide regional presence. The leading players are T?V S?D (Germany), UL LLC (US), Applus+ (Spain), T?V Rheinland (Germany), Kiwa (Netherlands), Intertek Group plc (UK), DEKRA IN (Germany), Soci?t? G?n?rale de Surveillance (SGS) SA (Switzerland), Southwest Research Institute (SwRI) (US), and Apave (France).

Research Coverage:

The report defines, describes, and forecasts the hydrogen automotive testing, inspection, and certification (TIC) market by vehicle type and service for various regions. It also offers a detailed qualitative and quantitative analysis of the market. The report provides a comprehensive review of the major market drivers, restraints, opportunities, and challenges. It also covers various important aspects of the market. These include an analysis of the competitive landscape, market dynamics, market estimates in terms of value, and future trends in the hydrogen automotive testing, inspection, and certification (TIC) market.

Key Benefits of Buying the Report

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The hydrogen automotive testing, inspection, and certification (TIC) market is influenced by the accelerating shift toward clean mobility, stringent environmental regulations, and the rapid deployment of hydrogen fuel cell vehicles across various transportation sectors. Growing investments in hydrogen infrastructure, coupled with government incentives for zero-emission vehicles, are propelling the need for rigorous testing, inspection, and certification services. As automotive manufacturers scale up hydrogen vehicle production, ensuring safety, performance, and compliance with international standards becomes critical. The expansion of hydrogen refueling networks, technological advancements in fuel cell systems, and the need for lifecycle quality assurance further fuel market growth.

Product Development/Innovation: The hydrogen automotive testing, inspection, and certification (TIC) market is focused on enhancing safety, accuracy, and efficiency in testing, inspection, and certification processes. Companies invest in advanced diagnostic tools, real-time monitoring systems, and automated testing technologies to meet evolving regulatory standards. Innovations include non-destructive testing methods for high-pressure hydrogen components and digital platforms for compliance tracking. The integration of AI and IoT into TIC services is improving data-driven decision-making. These advancements support the growing complexity of hydrogen-powered vehicles and infrastructure, ensuring reliability and accelerating global adoption of hydrogen mobility solutions..

Market Development: Hyundai Motor Company unveiled its new XCIENT Fuel Cell tractor, a commercialized Class 8 6x4 fuel cell electric model, for the North American commercial vehicle market at the Advanced Clean Transportation (ACT) Expo.

Market Diversification: Nikola Corporation, a global company in zero-emissions transportation, and E. ON SE, an energy supply and infrastructure solution provider, signed an agreement with The Richter Group, a leading provider of individual logistics services, to decarbonize Richter Group’s vehicle fleet by supplying hydrogen-electric trucks, the necessary green hydrogen, and the refueling infrastructure.

Competitive Assessment: Assessment of rankings of some of the key players, including T?V S?D (Germany), UL LLC (US), Applus+ (Spain), T?V Rheinland (Germany), Kiwa (Netherlands), Intertek Group plc (UK), DEKRA IN (Germany), Soci?t? G?n?rale de Surveillance (SGS) SA (Switzerland), Southwest Research

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