

# Hydrogen Internal Combustion Engine Market Size, Share | Toyota's Liquid Hydrogen Internal Combustion Engine Launch

*Hydrogen Internal Combustion Engine Market is set to grow rapidly, driven by clean energy demand and major OEM innovations.*

AUSTIN, TX, UNITED STATES, July 23, 2025 /EINPresswire.com/ -- Hydrogen Internal Combustion Engine Market Gains Momentum as Zero-Emission Transport Becomes a Global Priority

## Market Overview

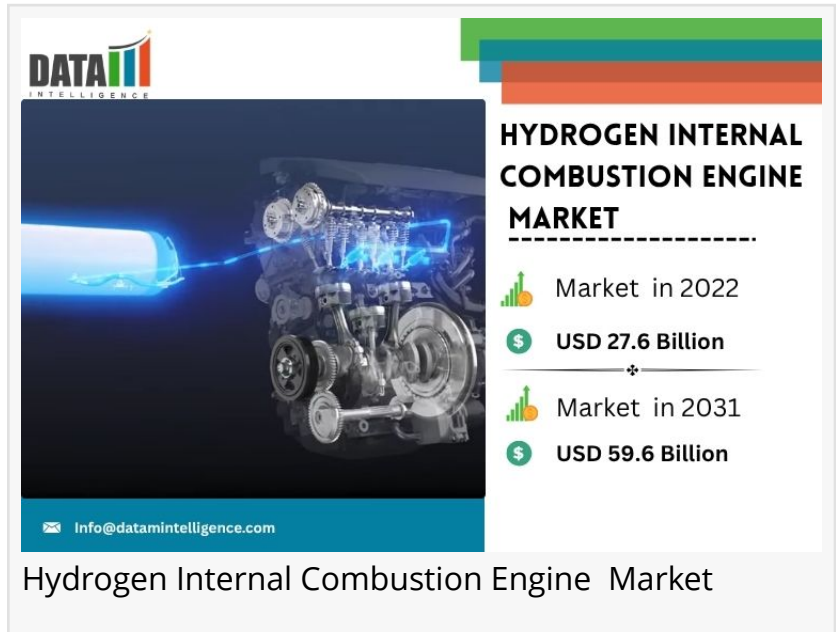
The global market for [Hydrogen Internal Combustion Engines Market](#)

[Size](#) was valued at USD 27.6 Billion in 2022 and is projected to grow significantly, reaching around USD 59.6 Billion By 2031, the market is projected to expand at a compound annual growth rate (CAGR) of 10.1% throughout the forecast period spanning from 2024 to 2031.



In 2023, the U.S. saw rising adoption of Hydrogen Internal Combustion Engines Market, fueled by decarbonization goals and investments in clean mobility technologies, an industry analyst stated"

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## Latest News:

Toyota and Isuzu Drive Hydrogen Innovation with Next-Gen Fuel Cell and Combustion Technologies

Hydrogen Fuel Cell Truck Launch: Toyota and Isuzu join forces to mass-produce a light-duty hydrogen fuel cell truck, merging Isuzu's platform with Toyota's cutting-edge fuel cell tech.

**Accelerating Green Transport:** The collaboration targets rapid adoption of hydrogen-powered mobility, helping decarbonize commercial fleets globally.

**Prototype Hydrogen Combustion SUV:** Toyota reveals a Corolla Cross hydrogen prototype using GR Corolla's turbo engine and Mirai's tank tech real-world testing underway in Japan.

**Hydrogen in Motorsports:** Toyota tests hydrogen combustion in race cars like the Yaris, showcasing high performance and quick refueling without relying on critical battery materials.

**Battery-Free, Future-Ready:** Hydrogen combustion engines reduce the need for lithium and nickel, offering a viable, scalable alternative to electric vehicle batteries.

**Low-Tech Transition Advantage:** Hydrogen combustion engines require minimal adjustments from traditional internal combustion engines making them cost-effective to adapt.

**Safe and Sustainable Fuel:** Hydrogen is safe, abundant, and can be produced from water and renewable sources positioning it as a stable, long-term energy solution.

#### Latest Key Developments:

In October 2023, Austrian mobility technology firm AVL successfully demonstrated its prototype 2.0-liter turbocharged hydrogen racing engine, delivering over 200 horsepower per liter. The engine utilizes a water injection system alongside a turbocharger to optimize combustion, resulting in cleaner emissions and enhanced performance.

Also in October 2023, during the Japan Mobility Show, set to begin with its first press day on October 25, companies showcased innovative mobility solutions beyond traditional vehicles. Among them, Yamaha introduced a hydrogen-powered combustion engine buggy, highlighting the brand's push into alternative fuel technology.

In February 2023, British equipment manufacturer JCB reaffirmed its commitment to hydrogen as the next-generation fuel. The company announced plans to bring hydrogen-powered engines to India, aiming to equip its construction machinery with clean energy alternatives.

#### Market Drivers and Opportunities

**Global Push for Zero-Emission Technologies:** Regulatory mandates and climate goals are encouraging the shift toward hydrogen-powered alternatives, especially in hard-to-electrify sectors.

**Cost Advantage over Fuel Cells:** Hydrogen ICEs can be integrated into current engine platforms and manufacturing setups, offering lower upfront costs and faster adoption timelines.

Infrastructure Compatibility: Hydrogen ICEs work well with existing fueling and maintenance infrastructure, lowering barriers to entry for fleet operators and OEMs.

Applications Across Multiple Segments: From commercial trucks and buses to agricultural equipment and marine vessels, hydrogen ICEs offer a versatile decarbonization path.

### Geographical Market Share

Asia-Pacific leads the hydrogen ICE market, with Japan and South Korea investing heavily in hydrogen mobility strategies. Europe follows closely, driven by strong government initiatives to curb emissions. In North America, the United States is emerging as a key player, supported by funding through clean energy programs and interest from heavy-duty vehicle manufacturers.

### Key Market Players

Several global companies are at the forefront of hydrogen ICE development, including:

Toyota Industries Corporation

BMW Group

Hyundai Motor Company

Mazda Motor Corporation

JCB

ABB

Opel/Vauxhall (Stellantis Group)

Ballard Power Systems

Jaguar Land Rover Automotive Plc

Hyster-Yale Group

### Market Segments:

By Vehicle: (Passenger Cars, Commercial Vehicles)

By Hydrogen Source: (Green Hydrogen, Grey Hydrogen, Blue Hydrogen, Other Sources)

By Technology: (Internal Combustion Engine (ICE), Dual-Fuel Engines)

By Application: (Transportation, Power Generation)

By End-User: (Transportation, Industrial, Others)

By Region: (North America, Europe, South America, Asia Pacific, Middle East, and Africa)

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## Recent Developments – United States

February 2025 – Cummins Inc. successfully tested a 15-liter hydrogen internal combustion engine designed for long-haul trucks, demonstrating comparable performance to traditional diesel engines with near-zero emissions.

In August 2024, Westport Fuel Systems revealed a partnership with a leading U.S.-based company OEM to integrate hydrogen ICE technology into Class 8 trucks, targeting commercial deployment by 2026.

## Recent Developments – Japan

May 2025 – Yamaha and Kawasaki jointly revealed progress on their collaborative hydrogen ICE project for motorcycles and recreational vehicles, highlighting a new prototype optimized for performance and safety.

October 2024 – Toyota Motor Corporation expanded testing of its hydrogen-powered Corolla ICE variant, aiming to gather real-world data on durability, fuel efficiency, and scalability for mass production.

## Conclusion

The Hydrogen Internal Combustion Engine Market is on a transformative path, aligning with global ambitions to decarbonize transportation and industrial sectors. With ongoing advancements, supportive policy frameworks, and strong industry interest, hydrogen ICEs are poised to become a key component of the clean energy ecosystem. The coming years will be critical in shaping their role in achieving global sustainability goals.

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## Competitive Landscape

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