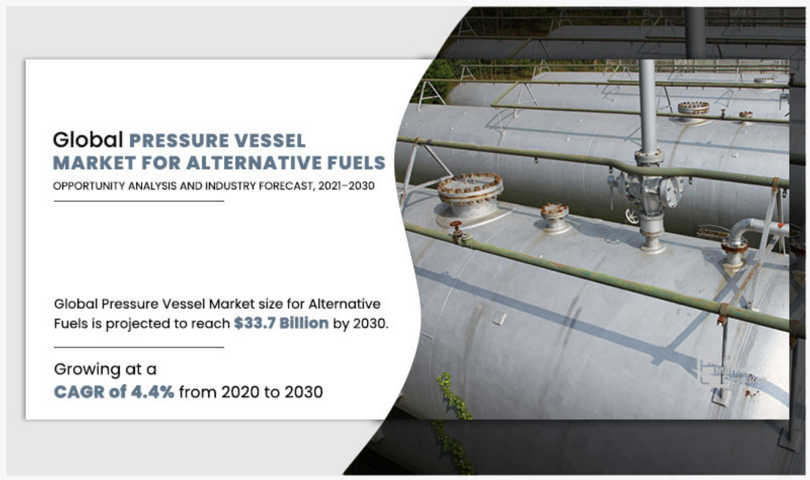
Steel Dominates Pressure Vessel Market for Alternative Fuel as Demand Rises Across Oil & Gas and Power Sectors

□ *Pressure Vessel Market for Alternative Fuel to Reach $33.7 Billion by 2030, Driven by Clean Energy Adoption*



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According to a recent report published by Allied Market Research, the global pressure vessel market for alternative fuel was valued at $21.9 billion in 2020 and is projected to reach $33.7 billion by 2030, growing at a CAGR of 4.4% from 2021 to 2030. The market's growth is primarily fueled by the increasing use of alternative fuels, advancements in industrial storage solutions, and the rising focus on energy efficiency and sustainability.

> The global pressure vessel market for alternative fuel to reach $33.7 billion by 2030, driven by cleaner energy demand and industrial growth."
>
> *Allied Market Research*

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□ What Are Pressure Vessels and Why They Matter

Pressure vessels are specialized containers designed to store gases or liquids under pressure that differs from the surrounding environment. These structures are critical in industries such as oil refineries, chemical plants, power generation, and nuclear reactors, where they ensure safe storage and transport of materials.

Modern vessels, particularly those used for compressed natural gas (CNG) and other alternative fuels, are engineered from durable materials and welded with precision to handle extreme pressure levels. The use of V-butt welded joints enhances their strength, while innovations in materials like steel, titanium, and nickel alloys improve longevity and resistance to corrosion.

Rising Demand from the Energy Sector

The shift toward cleaner energy sources such as CNG, hydrogen, and biofuels has significantly increased the need for safe and efficient storage systems. Pressure vessels play a vital role in supporting this transition by providing secure storage for compressed gases used in energy and transportation applications.

Countries worldwide are investing heavily in natural gas infrastructure. For instance, India’s demand for natural gas is largely driven by the fertilizer (28%), power (23%), city gas distribution (16%), and refinery (12%) industries. As nations ramp up their renewable and alternative fuel production, the requirement for high-quality pressure vessels continues to grow.

Future Outlook: A Push Toward Sustainability

The ongoing shift toward alternative fuels and green energy solutions offers strong opportunities for market expansion. The focus on LNG, hydrogen storage, and biofuel infrastructure will likely drive steady demand for advanced pressure vessels that can handle varied operational pressures and materials.

Moreover, as governments across the world promote energy diversification and carbon reduction, industries are expected to increasingly adopt sustainable pressure vessel systems that align with environmental goals.

Market Segmentation Insights

The global pressure vessel market for alternative fuel is segmented based on material, product, end use, and region, revealing key areas of growth:

By Material: Steel dominates the market, owing to its strength, affordability, and adaptability for large-scale industrial use.

By Product: Boilers lead the segment due to their extensive application in power generation and industrial processes.

By End Use: The oil & gas sector continues to be the largest consumer, driven by ongoing exploration, refining, and processing activities.

By Region: North America holds the highest market share and is expected to maintain dominance, followed by Asia-Pacific and Europe.

Key Industry Players Driving Innovation

Prominent companies shaping the market landscape include: Bharat Heavy Electricals Limited (BHEL), Doosan Heavy Industries, General Electric Company, Halvorsen Company, IHI Corporation, Larsen & Toubro Limited, Mitsubishi Heavy Industries, Samuel Pressure Vessel Group, and Westinghouse Electric Company LLC.

These industry leaders are focusing on expanding production capacities, forging strategic partnerships, and developing advanced vessel technologies to enhance operational efficiency and safety.

Impact of COVID-19 on the Pressure Vessel Market

The COVID-19 pandemic disrupted global manufacturing, logistics, and industrial operations, causing a temporary slowdown in the pressure vessel market. Demand for natural gas and related applications dropped as industrial and power generation activities decreased during lockdowns.

In India, for instance, the consumption of natural gas declined by 9.5% in FY21, while domestic production fell by 10.6%. Import and export restrictions also hindered the supply chain, adversely affecting the oil & gas sector — one of the major end users of pressure vessels.

However, as global economies recovered and industrial operations resumed, the market began to stabilize. With the growing emphasis on energy storage and clean fuel transition, demand for pressure vessels is anticipated to rise steadily in the coming years.

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Conclusion

The pressure vessel market for alternative fuel is on a promising growth trajectory, supported by technological advancements, industrial expansion, and the global pivot toward sustainable energy. As industries prioritize clean fuel adoption and safe storage systems, manufacturers will continue to innovate and expand to meet the evolving energy landscape.

With steel-based vessels dominating the market and North America leading the global share, the future of pressure vessels looks robust — paving the way for a greener, safer, and more energy-efficient world.

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David Correa
Allied Market Research
+ + + + + +1 800-792-5285
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