

FRP Pipe in Oil and Gas Market Report: Trends, Forecast and Competitive Analysis to 2030

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Abstracts

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FRP Pipe in Oil and Gas Trends and Forecast

The future of the global FRP pipe in the oil and gas market looks promising with opportunities in the onshore and offshore markets. The global FRP pipe in the oil and gas market is expected to grow with a CAGR of 5.1% from 2024 to 2030. The major drivers for this market are the increasing demand for corrosion-resistant pipes in harsh oil & gas environments, the growing focus on cost-efficiency and sustainability, and the expansion of oil & gas exploration activities worldwide.

Lucintel forecasts that, within the resin type category, epoxy composite will remain the largest segment over the forecast period.

Within the application category, onshore is expected to witness higher growth.

In terms of regions, APAC is expected to witness the highest growth over the forecast period.

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Emerging Trends in the FRP Pipe in Oil and Gas Market

The FRP pipe in the oil and gas market has been characterized by certain

developments that are continuing to redefine the market. These developments have been triggered by the quest to have faster oil and gas exploration, extraction, and transportation at reasonable budgets with an eco-friendly approach.

Focus on the Low Weight and High Strength Materials: The oil and gas sector has been adopting the use of lightweight materials such as FRP pipes that are known to resist corrosion, be strong, and be used for a longer time. There are no such transportation and installation difficulties for FRP pipes as compared to metal pipes and this has great value for remote and off-shore use. This transformation is improving operational productivity and lessening the total expenditure on the project.

Design of New Generation Resins: Recent developments in these new generation resins have been making great advances in the utilization of the FRP pipes, making those developments that are appropriate for the particular environments of offshore oil platforms and deep water drilling more readily possible. The Advanced resin systems including vinyl ester and epoxy bonding systems therefore have more tolerance to hot temperatures, hostile chemical environments, and high pressure.

Sustainability and Regulatory Compliance: With stricter measures in place to regulate the environment, the oil and gas industry has felt the demands to be more ecological. Because of these features of FRP pipes, sustainability issues include recyclability, low health hazards, and long service life, they are acceptable with fewer worries relative to the stakeholders who discourage the use of traditional materials. The companies are adopting the integration of these solutions to achieve their objectives in terms of sustainability and compliance with legal requirements.

Expansion of Offshore Oil and Gas Exploration: Moving towards the ocean has increased operational efficiency thus even offshore oil and gas exploration is receiving some attention. Even the European Offshore Oil & Gas Exploration and Development Health Safety Environmental and Regulatory Developmental (HSED) Project, around these regions such as the Gulf of Mexico, South China Sea, and North Sea are considerably pressing demand for corrosion-resistant and accelerated materials, for instance, FRP pipes. These types of pipes can be used in a corrosive marine environment because they are resistant to saltwater, withstand temperature changes, and withstand physical forces.

Integration of Smart Monitoring Systems in FRP Pipes: The inclination to integrate smart sensors and monitoring systems into FRP-based pipe systems is a new trend. Hence, an alarm can be activated in case of alterations in the operational status of the layer such as in pressure, temperature, and basic chemical structures. This increases the efficiency and safety of the FRP pipes systems in her critical oil and gas infrastructural development.

Thus, these ramifications are redefining the factors within the fiberglass reinforced polymer (FRP) in the oil and gas market by the factors of performance, sustainability, and technology adoption. The continuation of lightweight materials, advanced resin systems, and smart technology into the designs will help the market more and create FRP pipes being a technology for future oil and gas infrastructures.

Recent Developments in the FRP Pipe in Oil and Gas Market

There are several important advancements in the FRP pipe in oil and the gas market have improved the characteristics, effectiveness, and economy of the pipes significantly. Here are five key developments shaping the market.

High-Performance Resin Systems: Over the years, the development of internal structure resins such as epoxy and vinyl ester resins has improved the performance of FRP pipes and made them able to withstand aggressive objects corrosion, high temperature, and pressure. This has increased the area of FRP pipe applications in challenging conditions like deepwater drilling rigs and offshore oil sites.

Manufacturing Process Improvement: Coupons for FRP pipes are comparatively low owing to speedy techniques implemented such as automated winding as well as pultrusion. These processes have resulted in better uniformity of the pipes made, increased their tensile strength as well better durability of the FRP pipes making them competitive in the oil and gas economy.

Increased Offshore Adoption: The WHF pipe was also made use of in oil and gas offshore activities as it is relatively lighter and does not corrode. CRS are increasingly opting for FRP pipes in their offshore platforms to save on the installation period, as well as make maintenance as well as service interventions over the minimum period as is needed in the tough marine environment.

Integration with Smart Technology: The combination of FRP pipes with sensors and monitoring systems is changing the landscape in the oil and gas industry. These systems bring the operational capabilities of the pipes to a new level enabling continuous surveillance of the pipe's end state parameters such as pressure, temperature, and environmental conditions. It is especially useful for identifying leaks or wear, where damage hasn't yet progressed to a major problem.

Enhanced Focus on Sustainability: Due to the ever-increasing regulatory pressure, the adoption of sustainable practices is now a way of life. Therefore, FRP pipes are now the order in the oil and gas industry following the consideration of the recyclability and service life. As if that is not enough, during production and maintenance aspects, they release less radiative carbon thus more environmentally friendly compared to the metallic piping systems.

Such developments are increasing the competitiveness of FRP pipes in the oil and gas market thereby positioning them as a durable, economical, and green solution for contemporary oil and gas infrastructures. Advanced materials, advanced manufacturing technologies, and integration with smart systems are fueling different acceptance rates.

Strategic Growth Opportunities for FRP Pipe in Oil and Gas Market

The FRP pipe-in for the oil and gas market possesses many strategic growth opportunities in key areas of application. With the rising demand for tough, lightweight, and corrosion-resistant materials, the opportunity exists for the manufacturers.

Offshore oil and gas platforms: Due to the properties of FRP components to resist saltwater erosion, the demand is expected to increase rapidly for use in offshore oil and gas operations. The sea floor, from offshore oil and gas platforms, has many applications for FRP pipes which include transportation of oil, gas, and water. This area offers attractive opportunities for manufacturers in the form of tailored FRP materials designed for offshore projects.

Role of Pipeline Transport in Development of the Areas with Difficult Access: Given their lightweight characteristics, FRP pipes are bluff in remote areas for oil and gas pipelines as they are more rapid in terms of installation than metal pipes. In addition, the target companies can focus on opportunities in pipeline construction areas within the conflict zones, as the use of FRP pipes remains a

cheaper option with a longer duration of service.

Refineries and Processing Plants: The application of FRP pipes in the oil and gas industry is growing, especially in refineries and processing plants because these pipes are corrosion-resistant and withstand harsh chemicals. There are opportunities to seize in this niche market, given manufacturers offer super low cost and low maintenance structural piping systems that minimize infrastructure downtime and further enhance its longevity.

Enhanced Oil Recovery (EOR) Projects: With the penetration of EOR technologies into the oil industry, there has been a corresponding demand for hoses, specifically FRP ones that are capable of enduring high pressures and highly corrosive substances. Where high-performance FRP has been implemented in chemical or fluid transportation processes, it has exhibited durability against corrosion in EOR processes.

Intelligent Piping Systems Which are incorporated with the Internet of Things: The coupling of smart monitoring systems with FRP pipes is one new growth prospect on the market. The systems may even allow monitoring of the health and integrity of pipes to increase safety and operational effectiveness. It is likely that those manufacturers which can create smart FRP pipes, fully integrated into the oil and gas infrastructure, will benefit from the competition.

These strategic growth opportunities indicate that FRP pipes have gained significant positions in the oil and gas market. Concentrating on offshore platforms, remote pipelines, and smart monitoring systems, manufacturers will be able to respond to an increasing offer of effective and inexpensive goods and services.

FRP Pipe in Oil and Gas Market Driver and Challenges

The FRP pipe market in the oil and gas industry is influenced by major drivers, including technological changes, market economics, and legal aspects. Companies will also need to understand the other factors that could hinder them from fully exploiting these opportunities.

The factors responsible for driving the FRP pipe in the oil and gas market include:

Corrosion Resistance in Harsh Environments: FRP pipes are not affected by

aggressive chemicals and salt water, which makes them useful in the construction of offshore platforms and deep-water drilling. This promotes the use of FRP pipes in areas where all-metal pipes would fail.

Cost Efficiency Achievable in the Long Term: FRP pipes lead to lower installation and maintenance costs compared to metals. In addition, their long service life and minimal maintenance requirements make them a better option for oil and gas multinationals looking to minimize operational expenditure.

Technological Advancements in Resin and Fiber Systems: Advancements in resin and fiber-reinforced polymer technology have significantly improved the performance of FRP pipes. New resin systems have enhanced temperature, pressure, and chemical resistance, making these pipes more effective and versatile for use in oil, gas, and other critical applications.

Sustainability and Environmental Factors: There is a gradual shift in the FRP pipe market due to changing attitudes toward products derived from FRP materials. As environmental laws become more stringent, FRP pipes are preferred because they have a minimal environmental impact and are highly recyclable.

Offshore and Remote Areas Oil Exploration: As exploration and extraction move into riskier regions like the deep sea and remote locations, there is a need for stronger, lighter, and corrosion-resistant pipes. FRP pipes are ideally suited for such environments, as they present fewer logistical issues compared to traditional materials.

Challenges in the FRP pipe in the oil and gas market include:

High Initial Cost: The main downside of FRP pipes, which compromises long-term savings, is the initial cost. This can be especially challenging for small and mid-sized operators in developing regions.

Limited Awareness in Certain Regions: Some regions fail to recognize the long-term economic advantages of adopting FRP pipes. Efforts to raise awareness among all stakeholders are needed to encourage broader adoption.

Competition from Alternative Materials: Competition for the FRP installation

market comes from other corrosion-resistant materials, such as stainless steel and titanium. Given the strong competition, companies must highlight the benefits of FRP pipes, such as their lightweight nature, superior corrosion resistance, and low maintenance costs.

The drivers of growth in the FRP pipe market within the oil and gas industry are based on technological development, environmental sustainability, and cost efficiency. However, fundamental issues such as high initial costs and competition from alternative materials need to be addressed to fully tap into the potential of FRP pipes in this specific industry.

List of FRP Pipe in Oil and Gas Companies

Companies in the market compete on the basis of product quality offered. Major players in this market focus on expanding their manufacturing facilities, R&D investments, infrastructural development, and leverage integration opportunities across the value chain. Through these strategies FRP pipe in oil and gas companies cater increasing demand, ensure competitive effectiveness, develop innovative products & technologies, reduce production costs, and expand their customer base. Some of the FRP pipe in oil and gas companies profiled in this report include-

Future Pipe Industries

National Oilwell Varco

Hengrun Group

Amiblu Holding

Amaintit

Farassan

Kinflare Group

FRP Pipe in Oil and Gas by Segment

The study includes a forecast for the global FRP pipe in oil and gas by resin type, diameter, pressure rating, application, and region.

FRP Pipe in Oil and Gas Market by Resin Type [Analysis by Value from 2018 to 2030]:

Polyester Composites

Epoxy Composites

Vinyl Ester Composites

FRP Pipe in Oil and Gas Market by Diameter [Analysis by Value from 2018 to 2030]:

Small(60")

FRP Pipe in Oil and Gas Market by Pressure Rating [Analysis by Value from 2018 to 2030]:

Less than 150 psi

150-300 psi

More than 300 psi

FRP Pipe in Oil and Gas Market by Application [Analysis by Value from 2018 to 2030]:

Onshore

Offshore

FRP Pipe in Oil and Gas Market by Region [Analysis by Value from 2018 to 2030]:

North America

Europe

Asia Pacific

The Rest of the World

Country Wise Outlook for the FRP Pipe in Oil and Gas Market

The FRP pipe market in oil and gas is experiencing a gradual increase due to the demand for lighter, stiffer, and corrosion-resistant materials for the transportation of crude oil, natural gas, and chemical particulates. As exploration for oil and gas expands to more remote locations suitable for offshore platforms and deep-water drilling operations, the need for sophisticated piping has increased significantly.

United States: In the U.S. oil and gas downstream sector, offshore operations are increasingly becoming hubs for FRP pipes, particularly in the Gulf of Mexico. As American businesses look for new options to replace conventional metal piping systems, the trend toward more environmentally friendly and long-lasting materials is gaining momentum. Recent developments in resin technology have improved the strength and resistance of FRP pipes, making them applicable in high-stress situations. The growing market is also driven by more stringent environmental laws that require safer and less corrosive materials.

China: In China, FRP pipes are extensively used in the well-developed oil and gas industry, particularly for offshore oil drilling and transportation pipelines. The rapid pace of industrial development and the search for new oil deposits have created a demand for new corrosion-resistant, lightweight pipes. New improvements include polymer systems that enhance the pipes' performance in terms of heat resistance and chemical stability. China is one of the fastest-growing regions for this application, as it has launched a construction spree with a heavy emphasis on infrastructure projects, making it an attractive market for FRP pipe manufacturers in the oil and gas sector.

Germany: With its well-known engineering strength, Germany has been working on the application of FRP systems in offshore oil platforms and refineries. While the country has focused on advanced technologies, American companies have started enhancing the chemical resistance of FRP pipes using special epoxy resins. In addition, FRP pipelines are becoming more popular in the oil and gas industries in Germany as the country moves toward greener infrastructures. The

consumption of FRP pipes is growing as they are increasingly used in processing and storing oil as well as natural gas.

India: As in other parts of the world, India's oil and gas sector is expanding, and the trend to utilize FRP pipes is also growing. This growth is particularly evident in the oil and gas transportation business, driven by the increased demand for economical, long-lasting, and anti-corrosive piping systems, with a special focus on the coastal basin region. In the target market, Indian companies are seeking ways to reduce the costs of producing FRP pipes without compromising quality. Recently, FRP pipes have been increasingly used to explore both onshore and offshore oil fields within India.

Japan: For quite some time now, Japan has been using FRP pipes in the oil and gas sector, particularly in offshore oil rig construction and refining facilities. Recent developments in Japan's FRP pipe market include the creation of new glass-fiber-reinforced polymers that offer higher chemical and environmental resistance. The demand for FRP pipes in Japan is driven by both domestic and international offshore oil markets, including exploration and the demand for high-performance corrosion-resistant pipes for the transportation of oil and gas.

Features of the Global FRP Pipe in Oil and Gas Market

Market Size Estimates: Frp pipe in oil and gas market size estimation in terms of value (\$B).

Trend and Forecast Analysis: Market trends (2018 to 2023) and forecast (2024 to 2030) by various segments and regions.

Segmentation Analysis: Frp pipe in oil and gas market size by various segments, such as by resin type, diameter, pressure rating, application, and region in terms of value (\$B).

Regional Analysis: Frp pipe in oil and gas market breakdown by North America, Europe, Asia Pacific, and Rest of the World.

Growth Opportunities: Analysis of growth opportunities in different resin type, diameter, pressure rating, application, and regions for the FRP pipe in oil and gas market.

Strategic Analysis: This includes M&A, new product development, and competitive landscape of the FRP pipe in oil and gas market.

Analysis of competitive intensity of the industry based on Porter's Five Forces model.

If you are looking to expand your business in this or adjacent markets, then contact us. We have done hundreds of strategic consulting projects in market entry, opportunity screening, due diligence, supply chain analysis, M & A, and more.

This report answers following 11 key questions:

Q.1. What are some of the most promising, high-growth opportunities for the FRP pipe in oil and gas market by resin type (polyester composites, epoxy composites, and vinyl ester composites), diameter (small(60")), pressure rating (less than 150 psi, 150-300 psi, and more than 300 psi), application (onshore and offshore), and region (North America, Europe, Asia Pacific, and the Rest of the World)?

Q.2. Which segments will grow at a faster pace and why?

Q.3. Which region will grow at a faster pace and why?

Q.4. What are the key factors affecting market dynamics? What are the key challenges and business risks in this market?

Q.5. What are the business risks and competitive threats in this market?

Q.6. What are the emerging trends in this market and the reasons behind them?

Q.7. What are some of the changing demands of customers in the market?

Q.8. What are the new developments in the market? Which companies are leading these developments?

Q.9. Who are the major players in this market? What strategic initiatives are key players pursuing for business growth?

Q.10. What are some of the competing products in this market and how big of a threat do they pose for loss of market share by material or product substitution?

Q.11. What M&A activity has occurred in the last 5 years and what has its impact been on the industry?

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- 7.7: Kinflare Group

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