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Fiber Reinforced Polymer Composites Market Assessment, By Type [Carbon, Aramid, Glass, Hybrid Materials, Others], By Application [Aircraft Parts (Primary Structures, Secondary Structures), Windows, PC Chassis, Ballistic Pannels, Battery Covers, Sports Equipment, Rocket Nozzles], By End-user [Aviation & Aerospace Industry, Buildings & Constructions, Military & Defense, Sports & Leisure, Electronics, Others], By Region, Opportunities and Forecast, 2016-2030F

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Abstracts

Global Fiber Reinforced Polymer (FPR) Composites Market size was valued at USD 251.06 billion in 2022 which is expected to reach USD 362.54 billion in 2030 with a CAGR of 4.7% for the forecast period between 2023 and 2030. The advancement in technology and innovation over the last two decades has raised the demand for good materials with excellent strength and use in various applications. Fiber reinforced polymer composites are significantly stronger than steel and other hard materials and possess non-corrosive properties. A wide range of carbon fiber and its reinforced plastics are incorporated in numerous applications like aerospace, automotive, etc. Glass fiber reinforced plastics are gaining prominent importance in upgrading product design that offers high strength and moderate stiffness along with minimizing the weight of the components. These materials possess excellent damping characteristics and are resistant to chemicals and corrosion. With various effective properties fiber reinforced polymer composites have incredible market potential where its contribution to the market is significantly recognized.

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Growing Transportation Industry is Augmenting the Fiber Reinforced Polymer (FPR) Composites Market Growth

Fiber-reinforced polymer (FPR) composite materials are progressively replacing the conventional aluminum and steel-like components in the transportation industry, aircraft, helicopters, etc. There are advanced carbon fiber composites that are transforming the materials requirement for space and aircraft applications. FPR possesses unique characteristics like stiffness, strength, and fatigue resistance, which make them susceptible to aggressive environments. Curved parts of different aerodynamic vehicles are manufactured using fiberglass and carbon fiber composites, which are considered superlative materials. Such carbon fiber composites can easily be maintained and have fantastic fuel efficiency and reflect remarkable resistance to moisture, sun exposure, and thermal damage.

The International Organization of Motor Vehicle Manufacturers (OICA) estimates that in 2022, vehicle manufacturing will significantly increase by 6%, accounting for about 85 million automobiles. Boeing aviation company, which is leading the airline manufacturing unit, forecasts a commercial market outlook that will reach a market value of USD 7.2 trillion for new airplane deliveries through 2041, where the major deliveries will be to the Asia-Pacific regions.

Automotive Industry is Achieving Heights by Incorporating FPR Composites

Carbon fiber-reinforced plastic (CFRP) materials are changing the advancement in the automotive industry, which essentially develops lightweight parts. Structural components for the automotive industry that indispensably meet the requirement of mechanical strength and crash behavior while reducing the vehicle weight simultaneously are achieved by using carbon fiber-reinforced plastic materials. Rear seats, windshield frames, and pillar reinforcements are some prominent parts in lightweight vehicles that are substantially optimized using such materials. The reduction in weight of advanced vehicles significantly led to a reduction in energy consumption. Fiber-reinforced thermosets are equipped with EV-high voltage batteries that meet the highest standards for fire resistance, thermal, acoustics, and electromagnetic shielding.

A report stated by the International Energy Agency reflects the global electric vehicle outlook and represents that in 2022 over 10 million electric vehicles were sold, which is subsequently estimated to grow by 35% to reach around 14 million. Over half of all electric vehicles are from China, Europe, and the United States, where different

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ambitious policy programs in such countries are further expected to increase the market share for electric vehicles.

Applications of FPR Composites in Developing Electronics Industry

Frequent innovations in electronics are successfully accomplished using fiber reinforced polymer (FPR) composite materials. Without compromising the strength, these lightweight materials are leading to the production of consumer electronics. The significant benefits of using such thermoplastic composites in electronic casing are superior strength and can easily meet load-deflection requirements. Enormous wear and tear in consumer electronics are very common, which leads to unwanted scratches, and fiber-reinforced polymer composites are scratch-resistant and can withstand extremely unpredictable conditions. In addition to scratch resistance, these FPRs are also equipped with heat resistant and fire retardant properties that eradicate the frequent overheating problems that occur in consumer electronics.

Data released by the Consumer Technology Association states that in 2022, the United States consumer technology industry is estimated to generate over USD 505 billion in retail sales revenue. In 2022, IBM generated a revenue of USD 60.5 billion, consequently leading to a revenue growth of around 12%. They have successfully invested around USD 2 billion and assisted in acquiring 8 companies.

Impact of COVID-19

The outbreak of COVID-19 has severely impacted numerous sectors and human livelihoods, where every person was vulnerable to infectious disease. Construction and defense industries were the most important sectors due to the low demand and availability of workers and technology. The Automotive and aviation industries were totally shut down during the pandemic, which reduced the utilization of such composites and materials. The ease in restrictions over time has forced materials companies to invest and develop novel fiber-reinforced composite materials, which progressively led to the growth of the Fiber Reinforced Polymer (FPR) Composites market.

Key Players Landscape and Outlook

The Fiber Reinforced Polymer (FPR) Composites market is successfully growing with the increasing demand for effective material solutions that are equipped with incredible properties and carry lightweight. Hexcel Corporation has developed carbon fiber composite materials by the registered HexTow carbon fiber that has advanced

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applications in aerospace and industries. Hexcel manufactures lightweight, high-strength composite structures for commercial and military aircraft, business jets, and space modules. They also offer a wide range of globally certified aerospace products that vary according to the required types like glass, carbon, aramid, and specialty fibers.

Hexcel Corporation, in March 2023, commenced a new center for research and technology excellence in West Valley City, Utah, that substantially supports next-generation developments in advanced composites technologies.

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