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3D Weaving Market by Glass Fiber, Composite Textile, Spacer, Carbon Fiber, Customized 3D Weaving, Structural Components, Protective Materials, Reinforcements, Insulation, Thermal Protective Applications - Global Forecast to 2030

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Abstracts

The 3D weaving market is projected to grow from USD 32.8 million in 2025 to USD 59.7 million by 2030, at a CAGR of 12.7%. The increasing demand for lightweight and high-strength materials is a major factor driving the adoption of 3D weaving machines. In aerospace, defense, and automotive sectors, reducing structural weight while maintaining or improving mechanical strength is essential for better fuel efficiency, higher payload capacity, and improved overall system performance. Traditional composite manufacturing approaches often face challenges in producing complex, multi-directional reinforcements. However, 3D weaving machines enable the creation of fully integrated, multilayer woven structures that offer excellent strength-to-weight ratios, delamination resistance, and load-bearing capabilities. These features are especially valuable in aerospace components like wing spars, fuselage sections, military armor systems, and automotive body structures. As these industries continue to focus on performance and sustainability, the ability of 3D weaving machines to produce advanced, near-net-shape preforms efficiently and cost-effectively makes them a crucial technology for next-generation material manufacturing.

'Glass fiber weaving machines accounted for the largest market share in 2024'

In 2024, glass fiber weaving machines held the largest market share, driven by their wide industrial use, cost efficiency, and favorable material qualities. Glass fiber combines strength, durability, thermal stability, and lightness, making it ideal for automotive, construction, marine, and renewable energy sectors. Its ability to produce

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complex, high-performance composites at lower costs than carbon or aramid fibers has boosted adoption. Technological advances, like multi-axis control, automation, and improved precision, have increased efficiency and scalability, meeting the global demand for lightweight, sustainable materials. In regions like the Asia Pacific, with rapid industrial and infrastructure growth, the demand for affordable composite solutions sustains the dominance of glass fiber weaving machines.

'Aerospace & defense end-use industry is projected to register the highest CAGR during the forecast period.'

The aerospace and defense end-use industry is expected to see the highest CAGR during the forecast period in the 3D weaving market, driven by the sector's increasing dependence on advanced composite materials for high-performance and safety-critical applications. As aircraft manufacturers and defense contractors aim to improve structural efficiency, reduce weight, and enhance fuel economy, the demand for 3D woven composites has risen significantly. These materials provide superior mechanical properties, such as high strength-to-weight ratios, impact resistance, and reduced delamination, making them ideal for components like fuselage panels, wing spars, turbine blades, and ballistic armor.

3D weaving machines are essential for creating complex, multi-directional fiber structures with high precision and consistency. They support near-net-shape manufacturing and help reduce material waste. Additionally, increased investments in defense upgrades, growing production of next-generation aircraft, and a rising global focus on lightweight military gear further boost demand for specialized 3D weaving technology. As aerospace and defense fields expand material capabilities, the industry is expected to remain the most dynamic and fastest-growing segment for 3D weaving machine adoption in the coming years.

'China is estimated to lead growth in the Asia Pacific 3D weaving market during the forecast period.'

China is expected to dominate the growth of the Asia Pacific 3D weaving market during the forecast period, thanks to its robust industrial foundation, cost-effective manufacturing, and strategic investments in advanced sectors like aerospace, defense, automotive, and energy. Government initiatives such as “Made in China 2025” are boosting domestic innovation and the adoption of high-performance composite technologies. With increasing demand for lightweight, durable materials and a growing emphasis on R&D in material science and textile engineering, China remains well-

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positioned to be the leading force behind regional market growth.

Breakdown of Primaries

Various executives from key organizations operating in the 3D weaving market, including CEOs, marketing directors, and innovation and technology directors, were interviewed.

By Company Type: Tier 1–35%, Tier 2– 40%, and Tier 3–25%

By Designation: C-level Executives–30%, Directors–40%, and Others–30%

By Region: North America–40%, Asia Pacific–32%, Europe–23%, and RoW–5%

The 3D weaving market is led by globally established players such as Lindauer DORNIER GmbH (Germany), Staubli International AG (Switzerland), Unspun (US), Dashmesh Jacquard and Powerloom Pvt. Ltd. (India), VUTS a.s. (Czech Republic), Hefei Fanyuan Instrument Co., Ltd. (China), Sino Textile Machinery (China), Optima 3D Ltd (UK), Kale Texnique (India), Marjan Polymer Industries (Pakistan), Albany International Corp. (US), Tex Tech Industries (US), Texonic (Canada), Textum OPCO, LLC (US), Spirit AeroSystems, Inc. (US), Bally Ribbon Mills (US), Tantra Composite Technologies Pvt. Ltd. (India), Cetriko (Spain), EAT GmbH (Germany), and 3D Weaving (Belgium). The study provides an in-depth competitive analysis of these key players in the 3D weaving market, including their company profiles, recent developments, and major market strategies.

Study Coverage

The report segments the 3D weaving market and forecasts its size by product type, end-use industries, application, and region. It also discusses the drivers, restraints, opportunities, and challenges related to the market. Additionally, it provides a detailed view of the market across four main regions—North America, Europe, Asia Pacific, and RoW. A supply chain analysis is included, along with key players and their competitive analysis of the 3D weaving ecosystem.

Key Benefits of Buying the Report

Analysis of key drivers (enhanced structural integrity and minimized material

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waste), restraints (high capital investment and operational complexity), opportunities (emergence of hybrid composites and smart textiles), and challenges (extended product development and qualification cycles) influencing the growth of the 3D weaving market

Products/Solution/Service Development/Innovation: Detailed insights into upcoming technologies and R&D activities in the 3D weaving market

Market Development: Comprehensive information about lucrative markets–the report analyses the 3D weaving market across varied regions

Market Diversification: Exhaustive information about new products/solutions/services, untapped geographies, recent developments, and investments in the 3D weaving market

Competitive Assessment: In-depth assessment of market shares, growth strategies, and service offerings of leading players such as Lindauer DORNIER GmbH (Germany), Staubli International AG (Switzerland), Unspun (US), Hefei Fanyuan Instrument Co., Ltd (China), and VUTS a.s. (Czech Republic) among others

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