

Asia Pacific Wind Turbine Composites Market Forecast to 2030 - Regional Analysis - by Fiber Type (Carbon Fiber Composites, Glass Fiber Composites, and Others), Resin Type (Polyester, Epoxy, Polyurethane, Vinyl Ester, and Others), Technology (Resin Infusion, Prepreg, Lay Up, and Others), and Application (Blades and Nacelles)

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Abstracts

The Asia Pacific wind turbine composites market was valued at US\$ 3,698.92 million in 2022 and is expected to reach US\$ 9,064.64 million by 2030; it is estimated to record a CAGR of 11.9% from 2022 to 2030.

Adoption of Natural Fiber Reinforced Polymer (NFRP) Composites Boosts Asia Pacific Wind Turbine Composites Market

A wind turbine consists of several parts such as a hub, gearbox, blades, nacelle, and tower, among which wind turbine blades and nacelle are generally composed of composite materials, including glass and carbon fibers. However, these kinds of fibers are often associated with a certain set of limitations, which include their availability, nonbiodegradability, harmful impact on health, and the fabrication cost involved. The use of natural fibers can overcome all these challenges. The growing environmental issues have shifted the attention of researchers and technologists to the use of natural biodegradable materials, which has bolstered the use of natural fiber-reinforced polymer (NFRP) composites in wind turbine manufacturing.

Natural fibers are defined as those substances which are made from plants, animals, and minerals with the help of geological processes. Natural fibers obtained from kenaf,

bagasse, banana, sisal, flax, hemp, jute, abaca, and bamboo are easily available and need low processing costs. They can be spun together into filaments, threads, or ropes and can be knitted, woven, or matted.

The characteristic features of natural fibers might vary considerably according to their chemical composition and structure; fiber type; and fiber's growing conditions, harvesting time, manufacturing method, treatment, and storage processes. Such reinforced composites form a class of materials that exhibit superior mechanical features as well as potentially replace the conventional material systems in wind turbines.

The NFRP composites possess certain advantages as compared to synthetic fiber-reinforced composites. These benefits include low density, minimal cost, nonabrasive features, biodegradability, and renewable nature. Hence, the rising concern and awareness about the social and environmental impacts of conventional materials are resulting in the shift toward environment-friendly materials by manufacturers of composites, which is expected to fuel the wind turbine composites market growth during the forecast period.

Asia Pacific Wind Turbine Composites Market Overview

The wind turbine composites market in Asia Pacific is segmented into Australia, China, India, Japan, South Korea, and the Rest of Asia Pacific. China is a major contributor to the market growth in this region. The country has been the largest and fastest-growing renewable energy producer for more than a decade across the world. Moreover, it has the world's largest wind energy market. China remained the world's largest market for new onshore additions in 2020, driven by the feed-in tariff (FiT) cut-off. The wind power industry in India also records a remarkable growth due to policies and regulations adopted by the union and state governments. In Japan, the government has set the target of 10 GW of offshore wind installation by 2030 and 30-45 GW by 2040. According to the IEA Wind TCP, Japan's wind power capacity reached 4,581 MW in the end of 2021. The Japan Wind Power Association stated that the country installed 232.9 MW of new wind capacity in 2022, bringing the total capacity in operation to 4,802 MW. Thus, the increasing installed wind capacity in China, Japan, India, Australia, and others drives the demand for wind turbine composites. Countries such as Taiwan, South Korea, Vietnam, and the Philippines are also taking various initiatives to install new wind capacities, adding to the region's demand for wind turbine composites.

Asia Pacific Wind Turbine Composites Market Revenue and Forecast to 2030 (US\$)

Million)

Asia Pacific Wind Turbine Composites Market Segmentation

The Asia Pacific wind turbine composites market is segmented based on fiber type, resin type, technology, application, and country.

Based on fiber type, the Asia Pacific wind turbine composites market is segmented into carbon fiber composites, glass fiber composites, and others. The glass fiber composites segment held a larger share in 2022.

In terms of resin type, the Asia Pacific wind turbine composites market is segmented into polyester, epoxy, polyurethane, vinyl ester, and others. The epoxy segment held the largest share in 2022.

Based on technology, the Asia Pacific wind turbine composites market is segmented into resin infusion, prepreg, lay up, and others. The resin infusion segment held the largest share in 2022.

By application, the Asia Pacific wind turbine composites market is bifurcated into blades and nacelles. The blades segment held a larger share in 2022.

Based on country, the Asia Pacific wind turbine composites market is segmented into Australia, China, India, Japan, South Korea, and the Rest of Asia Pacific. China dominated the Asia Pacific wind turbine composites market in 2022.

Avient Corp, Toray Industries Inc, SGL Carbon SE, Owens Corning, Gurit Holding AG, Covestro AG, Hexion Inc, EPSILON Composite SA, Exel Composites Oyj, and Hexcel Corp are some of the leading companies operating in the Asia Pacific wind turbine composites market.

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