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Wind Turbine Forging Market Forecasts to 2034 – Global Analysis By Type (Seamless Rolled Rings, Open Die Forgings and Closed Die Forging), By Material Type (Steel, Aluminum and Other Material Types), Component, Application and By Geography

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Abstracts

According to Stratistics MRC, the Global Wind Turbine Forging Market is accounted for $10.90 billion in 2026 and is expected to reach $21.89 billion by 2034 growing at a CAGR of 9.1% during the forecast period. Wind turbine forging is the process of shaping and forming metal components, such as blades and hubs, through controlled heating and mechanical pressure. This ensures the creation of durable and high-performance parts for wind turbines. Forged components enhance the structural integrity and efficiency of wind turbines, contributing to the generation of clean and sustainable energy from wind power.

According to the Global Wind Energy Council, The global wind industry had a good year in 2021, with almost 94 GW of capacity added worldwide. Europe, South America, and the Middle East & Africa witnessed records for new onshore installations in 2021.

Market Dynamics:

Driver:

Transition towards renewable energy

The global shift towards renewable energy sources, driven by environmental concerns and the need for sustainable practices, is a key driver in the wind turbine forging market. As the demand for wind turbines rises to harness clean energy, there is a corresponding

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increase in the need for robust and efficient components. Wind turbine forging plays a vital role in producing durable parts, contributing to the overall growth of the renewable energy sector and reducing dependence on fossil fuels.

Restraint:

Fluctuations in raw material prices

Fluctuations in raw material prices act as a significant restraint in the wind turbine forging market. As wind turbine components require specialized alloys and metals, price volatility in these materials can impact manufacturing costs. Unpredictable market conditions and geopolitical factors can lead to supply chain disruptions and increased production expenses. This, in turn, challenges the cost-effectiveness of wind turbine forging, hindering market growth.

Opportunity:

Expansion of offshore wind farms

Offshore wind projects, due to their higher energy yield and reduced visual impact, are gaining momentum globally. This growth fuels the demand for robust forged components for offshore turbines, such as larger blades and durable foundations. Wind turbine forging manufacturers can capitalize on this trend by providing specialized components, thereby contributing to the increasing adoption of offshore wind energy.

Threat:

Shortage of skilled labour

Manufacturing wind turbine components requires specialized skills and knowledge. As the industry expands, demand for skilled labor in forging processes, metallurgy and precision machining increases. A shortage of qualified personnel may result in delays, quality issues and higher production costs. This challenge could impede the timely and efficient manufacturing of critical components, affecting the overall growth of the wind energy sector.

Covid-19 Impact:

The COVID-19 pandemic has impacted the wind turbine forging market, causing disruptions in the supply chain, workforce availability and project timelines. Lockdowns and restrictions have affected manufacturing operations, leading to delays in the production and delivery of wind turbine components. Economic uncertainties and financial constraints have further influenced investment decisions in renewable energy projects, affecting the overall growth and development of the wind turbine forging sector.

The steel segment is expected to be the largest during the forecast period

The steel segment is anticipated to be the largest in the wind turbine forging market during the forecast period due to the material's strength, durability and suitability for manufacturing critical components like turbine shafts, gears and hubs. Steel's resilience under extreme weather conditions and its ability to withstand the dynamic loads in wind turbines make it a preferred choice. Additionally, ongoing advancements in steel alloys enhance performance, which contributes to their growth.

The offshore installations segment is expected to have the highest CAGR during the forecast period

The offshore installations segment is poised for lucrative growth in the wind turbine forging market due to the increasing global focus on offshore wind energy. Offshore installations offer higher wind speeds and greater energy yield, driving demand for specialized forged components like larger blades and sturdy foundations. As technological advancements and government initiatives support offshore wind projects, the demand for forgings tailored to the challenges of offshore environments is expected to rise, making this segment a key contributor to market expansion.

Region with largest share:

North America is positioned to lead the wind turbine forging market with the largest share during the forecast period. This dominance can be attributed to increased investments in renewable energy projects, supportive government policies and a growing emphasis on reducing carbon emissions. Additionally, the region's commitment to expanding its wind energy capacity, coupled with advancements in wind turbine technology, positions North America as a key market player.

Region with highest CAGR:

The Asia-Pacific region is poised for rapid growth in the wind turbine forging market due to escalating demand for renewable energy and increasing investments in wind power projects. Governments in countries like China and India are actively promoting sustainable energy sources, fostering a conducive environment for wind energy development. With a burgeoning population and rising energy needs, the region presents significant opportunities for wind turbine forging, making it a key contributor to the industry's expansion.

Key players in the market

Some of the key players in Wind Turbine Forging Market include Bharat Forge Limited, Dongkuk Steel Mill Co., Ltd., Enercon GmbH, Energia, Forgemasters, GE Energy Infrastructure, Goldwind Science & Technology Co., Ltd., MHI Vestas Offshore Wind, Nordex SE, Senvion S.A., Shanghai Electric, Shanghai Taisheng Wind Power Equipment Co., Ltd., Siemens Gamesa Renewable Energy, Sinovel Wind Group Co., Ltd., Suzlon Energy Limited, TotalEnergies, Vestas Wind Systems, Wuxi Turbine Blade Co., Ltd. and ZF Wind Power.

Key Developments:

In January 2024, GE Vernova and mining billionaire forge $1.8bn wind turbine supply pact. Squadron Energy – the Australian renewables group owned by mining billionaire Andrew Forrest – said it has forged a A$2.27bn ($1.8bn) “green strategic alliance for wind turbine supply” with manufacturer GE Vernova. The pair kicked off the latest stage of their partnership with an A$1bn deal for GE to equip with its 6MW turbines and supply EPC services to Squadron’s 414MW Uungula Wind Farm, said to be the largest underway in the state of New South Wales.

In August 2023, Energia Renewables and Vargronn have partnered to advance offshore wind projects in Ireland, with the potential to deliver up to 1800MW of capacity by 2030. The Irish renewables-focused integrated utility and Norwegian joint venture between Plenitude (Eni) and HitecVision will co-develop projects that can contribute to the Irish government’s target of at least 5GW of new offshore wind by 2030, initially.

In June 2023, TotalEnergies and Galp forge alliance on offshore wind in Portugal. The country aims to develop 10GW of offshore wind capacity in the coming years, utilising its long coastline, favourable weather conditions and existing industrial infrastructure. TotalEnergies and Galp will develop offshore wind projects along the country’s coast.

Types Covered:

Seamless Rolled Rings

Open Die Forgings

Closed Die Forging

Material Types Covered:

Steel

Aluminum

Other Material Types

Components Covered:

Flanges

Bearings

Blades

Gears

Shafts

Other Components

Applications Covered:

Onshore Installations

Offshore Installations

Regions Covered:

- North America
  - US
  - Canada
  - Mexico
- Europe
  - Germany
  - UK
  - Italy
  - France
  - Spain
  - Rest of Europe
- Asia Pacific
  - Japan
  - China
  - India
  - Australia
  - New Zealand
  - South Korea
  - Rest of Asia Pacific
- South America

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Argentina

Brazil

Chile

Rest of South America

Middle East & Africa

Saudi Arabia

UAE

Qatar

South Africa

Rest of Middle East & Africa

What our report offers:
- Market share assessments for the regional and country-level segments
- Strategic recommendations for the new entrants
- Covers Market data for the years 2023, 2024, 2025, 2026, 2027, 2028, 2030, 2032 and 2034
- Market Trends (Drivers, Constraints, Opportunities, Threats, Challenges, Investment Opportunities, and recommendations)
- Strategic recommendations in key business segments based on the market estimations
- Competitive landscaping mapping the key common trends
- Company profiling with detailed strategies, financials, and recent developments
- Supply chain trends mapping the latest technological advancements

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Company Profiling

Comprehensive profiling of additional market players (up to 3)

SWOT Analysis of key players (up to 3)

Regional Segmentation

Market estimations, Forecasts and CAGR of any prominent country as per the client's interest (Note: Depends on feasibility check)

Competitive Benchmarking

Benchmarking of key players based on product portfolio, geographical presence, and strategic alliances

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