

Steam Turbine For Power Generation - Market Share Analysis, Industry Trends & Statistics, Growth Forecasts 2020 - 2029

Market Report | 2024-02-17 | 125 pages | Mordor Intelligence

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Report description:

The Steam Turbine For Power Generation Market size is estimated at USD 15.45 billion in 2024, and is expected to reach USD 18.34 billion by 2029, growing at a CAGR of 3.49% during the forecast period (2024-2029).

Key Highlights

- Over the medium term, factors such as upcoming natural gas combined cycle plants and thermal coal plants and growing emphasis on uninterrupted power supply are expected to drive the steam turbine for power generation market.
- On the other hand, the increasing adoption of renewable energy power generation and the demand for clean energy sources is expected to hinder the market growth during the forecast period.
- Nevertheless, increasing efficiency of combined cycle power plants with most of the demand coming from the North America and Asia Pacific region will likely create lucrative growth opportunities for the market during the forecast period.
- Asia-Pacific is the fastest-growing market during the forecast period due to the rising energy demand. This growth is attributed to increasing investments in the countries of this region, including India, China, and Australia.

Steam Turbine For Power Generation Market Trends

Natural Gas Plants to Witness Significant Growth

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- A gas combined-cycle power plant (CCP) uses gas and a steam turbine together to produce up to 50% more electricity from the same fuel than a traditional simple-cycle plant. The waste heat from the gas turbine is routed to the nearby steam turbine, which generates extra power.
- Compared to coal-fired power plants, natural gas combined cycle plants produce significantly lower emissions of greenhouse gases, such as carbon dioxide (CO₂), as well as other pollutants like sulfur dioxide (SO₂) and nitrogen oxides (NO_x). This makes them a cleaner option for electricity generation, contributing to improved air quality and reduced environmental impact.
- The rising global demand for renewable energy has increased the popularity of natural gas power plants. The demand for gas is increasing, especially in Asia-Pacific, due to the shift from coal to natural gas. For instance, according to the Energy Institute Statistical Review of World Energy statistics, in 2022, the total natural gas consumption recorded about 3941.3 billion cubic meters across the globe. This is expected to create significant demand for natural gas as a power generation source.
- Natural gas combined cycle plants offer operational flexibility, allowing them to respond quickly to changes in electricity demand. They can ramp up or down their power output relatively quickly, making them well-suited for balancing the intermittent nature of renewable energy sources like solar and wind.
- With growing urbanization, rising demand for energy, and government efforts to boost industrialization and infrastructure development activities, the need for a global gas-combined power cycle is increasing. Most countries invest in these generation facilities to meet the rising electricity demand.
- For instance, in the United States, as of 2021, approximately 32.3 GW of new natural gas-fired power plants are scheduled to begin operations in 2025 and are in advanced stages of development. 14.2 GW is currently under construction, 3.4 GW is in pre-construction, and 14.7 GW is in advanced permitting.
- Many natural gas combined cycle plants can be built or retrofitted at existing sites, leveraging the infrastructure for natural gas supply and electricity transmission. This can help to expedite the deployment of new power generation capacity.
- For instance, In March 2023, the Asian Development Bank announced that it would set up a 120 MW gas-fired combined cycle power plant in Tripura, India. Similarly, in the same month, the government of Montenegro signed an MoU with companies like Enerflex Energy Systems and Wethington Energy Innovation from the United States on the construction of a liquefied natural gas (LNG) terminal and a gas-fired power plant. The CCGP plant will likely have a capacity between 240 MW to 440 MW.
- Therefore, natural gas combined cycle power plants offer a balance between efficiency, lower emissions, flexibility, reliability, and cost-effectiveness, making them a popular choice for electricity generation and hence increasing the demand for steam turbines across the globe.

Asia-Pacific Expected to Dominate the Market

- Asia-Pacific is already the largest market for steam turbines and is expected to create significant demand for steam turbines over the coming years. Thermal power generation in the Asia-Pacific contributes to more than 50% of their electricity generation.
- As per the China Electricity Council (CEC), electricity generation from thermal power plants was around 5646.3 TWh, and nuclear was about 407.5 TWh in 2021, representing an electricity generation share of approximately 72.2% in 2021. Such a similar trend was witnessed during the past several years and is expected to have a similar growth trend during the upcoming years.
- As of January 2023, the country has the highest number of operating coal thermal power plants worldwide. Till January 2023, China has around 3092 units of operating coal thermal power plants, 499 under-construction coal power plants, and 112 announced coal power plants. Hence, such a trend would propel the steam turbine market in the upcoming years.
- As per the Central Electricity Authority (CEA), India has 205.2 GW of coal, 6.62 GW of lignite, 24.8 GW of natural gas, and 0.58 GW of diesel thermal power plants. Rest, 6.7 GW of nuclear and 172.5 GW of renewable power plants are present in India till April 2023.
- As per the Ministry of Power, there are nearly 28460 MW of under-construction thermal power plants in India, expected to come online during the next five years. Among all the under-construction, about 12830 MW is likely to be operated by the Central Ministry, while 15630 MW is expected to be operated by the State Ministry. Hence, such upcoming thermal power plants would

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increase demand for the steam turbine market in the forthcoming years.

- According to the Institute for Sustainable Energy Policies (ISEP), in 2022, fossil fuels constituted 72.4% of the overall electricity generation in Japan, marking a slight increase from the previous year's figure of 71.7%. The proportion of electricity generated from liquefied natural gas (LNG) decreased to 29.9%, down from 31.7% recorded in the previous year, partly influenced by price escalations.

- However, Japan's coal-based electricity generation saw an increase, rising to 27.8% compared to the previous year's 26.5%. Conversely, nuclear power contributed 4.8% to electricity generation, declining from the previous year's 5.9%.

- Thus, with the above developments and upcoming thermal power plants, the Asia-Pacific region is expected to dominate the market during the forecast period.

Steam Turbine For Power Generation Industry Overview

The steam turbine for power generation market is semi consolidated. Some of the major players in the market (in no particular order) include Siemens Energy AG, General Electric Company, Dongfang Turbine Company Limited, Bharat Heavy Electricals Limited, and Mitsubishi Heavy Industries Ltd.

Additional Benefits:

- The market estimate (ME) sheet in Excel format
- 3 months of analyst support

Table of Contents:

1 INTRODUCTION

1.1 Scope of the Study

1.2 Market Definition

1.3 Study Assumptions

2 RESEARCH METHODOLOGY

3 EXECUTIVE SUMMARY

4 MARKET OVERVIEW

4.1 Introduction

4.2 Market Size and Demand Forecast in USD, till 2028

4.3 Recent Trends and Developments

4.4 Government Policies and Regulations

4.5 Market Dynamics

4.5.1 Drivers

4.5.1.1 Need for Continuous 24/7 Supply of Electricity

4.5.1.2 Increasing Penetration of Natural Gas for Power Generation

4.5.2 Restraint

4.5.2.1 Coal Fired Power Plants Carbon Emissions

4.5.2.2 Increasing Share of Renewables in Energy Mix

4.6 Supply Chain Analysis

4.7 Porter's Five Forces Analysis

4.7.1 Bargaining Power of Suppliers

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- 4.7.2 Bargaining Power of Consumers
- 4.7.3 Threat of New Entrants
- 4.7.4 Threat of Substitute Products and Services
- 4.7.5 Intensity of Competitive Rivalry

5 MARKET SEGMENTATION

5.1 Plant Type

5.1.1 Gas

5.1.2 Coal

5.1.3 Other Plant Types (Nuclear, CHP, etc.)

5.2 Capacity

5.2.1 Less than 20 MW

5.2.2 20 - 40 MW

5.2.3 Above 40 MW

5.3 Geography (Regional Market Analysis {Market Size and Demand Forecast till 2028 (for regions only)})

5.3.1 North America

5.3.1.1 United States

5.3.1.2 Canada

5.3.1.3 Rest of North America

5.3.2 Asia-Pacific

5.3.2.1 China

5.3.2.2 India

5.3.2.3 Japan

5.3.2.4 Rest of Asia-Pacific

5.3.3 Europe

5.3.3.1 Germany

5.3.3.2 France

5.3.3.3 United Kingdom

5.3.3.4 Italy

5.3.3.5 Rest of Europe

5.3.4 Middle-East and Africa

5.3.4.1 Saudi Arabia

5.3.4.2 United Arab Emirates

5.3.4.3 South Africa

5.3.4.4 Qatar

5.3.5 South America

5.3.5.1 Brazil

5.3.5.2 Argentina

5.3.5.3 Rest of South America

6 COMPETITIVE LANDSCAPE

6.1 Mergers and Acquisitions, Joint Ventures, Collaborations, and Agreements

6.2 Strategies Adopted by Leading Players

6.3 Company Profiles

6.3.1 Siemens Energy AG

6.3.2 Mitsubishi Heavy Industries Limited

6.3.3 Bharat Heavy Electricals Limited

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- 6.3.4 General Electric Company
- 6.3.5 Dongfang Turbine Company Limited
- 6.3.6 Toshiba Corporation
- 6.3.7 Doosan Enerbility Co., Ltd.
- 6.3.8 Elliot Group
- 6.3.9 WEG S.A.
- 6.3.10 MAN Energy Solutions SE

7 MARKET OPPORTUNITIES AND FUTURE TRENDS

7.1 Increasing Efficiency of Combined Cycle Power Plants

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