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Global Ultra?heavy Steam Turbine Rotor Forgings for Generators above 1000MW Market 2026 by Manufacturers, Regions, Type and Application, Forecast to 2032

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Abstracts

According to our (Global Info Research) latest study, the global Ultra?heavy Steam Turbine Rotor Forgings for Generators above 1000MW market size was valued at US$ 360 million in 2025 and is forecast to a readjusted size of US$ 698 million by 2032 with a CAGR of 8.3% during review period.

Ultra?heavy steam turbine rotor forgings for generators above 1000MW refer to integral rotor blanks manufactured from vacuum?melted ingots of 600 metric tons or above, forged under a press of at least 10,000 metric tons, and intended for constructing 1000MW?class ultra?supercritical thermal turbine generators (full?speed units at 3000/3600 rpm). These forgings must operate continuously for decades under extreme conditions: temperatures up to 620?, pressures up to 35MPa, and centrifugal forces at 3000 rpm. They are typically made from advanced martensitic or modified ferritic heat?resistant steels (e.g., FB2, G115), requiring exceptional creep?rupture strength, low ductile?brittle transition temperature, excellent high?cycle fatigue resistance, and rigorous center soundness. This product category represents a pinnacle of global heavy?duty extreme manufacturing, as its domestic production capability directly determines a country’s ability to independently build ultra?supercritical coal plants and large nuclear stations, and serves as the ultimate yardstick for a nation‘s heavy forging industry.

Ultra-heavy rotor forgings for 1000MW and above thermal turbine generators represent the pinnacle of extreme manufacturing, characterized by high unit prices and extremely long lead times. In 2025-2026, imported FB2 HP?IP rotor forgings are priced at 3.0 to

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4.0 million US dollars per unit, while domestic equivalents range from 2.0 to 2.5 million US dollars per unit; LP rotor forgings (70 to 110 tons) command 3.5 to 5.0 million US dollars each. Gross margins diverge sharply: Japan Steel Works, with its long?standing monopoly and mature process database, maintains margins of 35% to 45%; China‘s First Heavy Industries and Erzhong Equipment, still in import?substitution ramp?up, achieve 20% to 25% but with room for improvement as batch orders and process stabilization progress. Cost structures are dominated by ingot melting (including specialty alloys and vacuum treatment), accounting for 40% to 50% of total cost; heavy forging and heat treatment account for 25% to 30%; NDT and rough machining account for 15% to 20%. Downstream, new 1000MW+ ultra?supercritical coal units absorb about 85% of annual rotor forging consumption, life?extension and efficiency upgrades (HP?IP rotor replacement) account for 10%, and strategic reserves and exports for 5%. The core driver of incremental demand is the baseload power necessity for AI data centers: in 2026, 104 coal projects are scheduled for commissioning globally (85 in China alone); GE Vernova’s heavy?duty gas turbine order book is sold out through 2031 with a 20% price hike; Siemens Energy‘s backlog stands at 60 billion US dollars. These directly boost procurement of 1000MW class turbine generators, cascading to rotor forgings. Supply?side rigidities are stark: only five companies globally have proven capacity – Japan Steel Works, CFHI, Erzhong Equipment, France’s Creusot Forge, and Doosan Enerbility – but the latter two have significantly reduced influence. JSW plans to raise capacity to 1.5 times by fiscal year 2028, but this will take years to materialize, leaving a supply gap throughout. The competitive landscape features a “one superpower, two challengers” structure: JSW remains the high?end monopolist thanks to its decades?long process database; CFHI and Erzhong are rapidly catching up, having achieved full import substitution for FB2 series forgings. In the first quarter of 2026, Erzhong secured batch orders for both thermal and nuclear rotor forgings, while CFHI completed its first 620°C FB2 forging for Shanghai Electric, and G115 novel martensitic steel saw engineering application in the world‘s first 630°C double?reheat unit – signaling Chinese firms taking early lead in next?generation material grades. Key uncertainties include: first, the speed of yield learning curve for CFHI and Erzhong from prototype to stable mass production; second, whether AI data center build?out accelerates beyond current projections, widening the supply?demand imbalance; third, the pace of commercialization of materials for 630°C+ advanced ultra?supercritical units, which will determine the timeline for next?generation material transition. In summary, rotor forgings above 1000MW will face sustained supply shortages over the next five years, with pricing power shifting upward. The pace of import substitution will determine downstream turbine manufacturers‘ bargaining power and supply chain security, while the inherently time?consuming nature of extreme manufacturing process accumulation (not replicable by short?term capital investment) will keep strategic value

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persistently high.

This report is a detailed and comprehensive analysis for global Ultra?heavy Steam Turbine Rotor Forgings for Generators above 1000MW market. Both quantitative and qualitative analyses are presented by manufacturers, by region & country, by Type and by Application. As the market is constantly changing, this report explores the competition, supply and demand trends, as well as key factors that contribute to its changing demands across many markets. Company profiles and product examples of selected competitors, along with market share estimates of some of the selected leaders for the year 2025, are provided.

Key Features:

Global Ultra?heavy Steam Turbine Rotor Forgings for Generators above 1000MW market size and forecasts, in consumption value ($ Million), sales quantity (Units), and average selling prices (US$/Unit), 2021-2032

Global Ultra?heavy Steam Turbine Rotor Forgings for Generators above 1000MW market size and forecasts by region and country, in consumption value ($ Million), sales quantity (Units), and average selling prices (US$/Unit), 2021-2032

Global Ultra?heavy Steam Turbine Rotor Forgings for Generators above 1000MW market size and forecasts, by Type and by Application, in consumption value ($ Million), sales quantity (Units), and average selling prices (US$/Unit), 2021-2032

Global Ultra?heavy Steam Turbine Rotor Forgings for Generators above 1000MW market shares of main players, shipments in revenue ($ Million), sales quantity (Units), and ASP (US$/Unit), 2021-2026

The Primary Objectives in This Report Are:

To determine the size of the total market opportunity of global and key countries

To assess the growth potential for Ultra?heavy Steam Turbine Rotor Forgings for Generators above 1000MW

To forecast future growth in each product and end-use market

To assess competitive factors affecting the marketplace

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This report profiles key players in the global Ultra?heavy Steam Turbine Rotor Forgings for Generators above 1000MW market based on the following parameters - company overview, sales quantity, revenue, price, gross margin, product portfolio, geographical presence, and key developments. Key companies covered as a part of this study include Japan Steel Works, China First Heavy Industries, China Erzhong Equipment (DEC), France Creusot Forge (ex?Areva/Le Creusot), Doosan Enerbility, etc.

This report also provides key insights about market drivers, restraints, opportunities, new product launches or approvals.

Market Segmentation

Ultra?heavy Steam Turbine Rotor Forgings for Generators above 1000MW market is split by Type and by Application. For the period 2021-2032, the growth among segments provides accurate calculations and forecasts for consumption value by Type, and by Application in terms of volume and value. This analysis can help you expand your business by targeting qualified niche markets.

Market segment by Type

Traditional Ferritic Steel (30Cr1Mo1V, max service temp 535-566°C, 10?h creep strength 80-120 MPa)

Advanced Ferritic Steel (FB2, 10%Cr, max service temp 600-620°C, 10?h creep strength 130-160 MPa)

Novel Martensitic Steel (G115, MarBN, max service temp 630-650°C, 10?h creep strength ?180 MPa)

Market segment by Ultrasonic Testing Acceptance Levels

Class 1 (single flat-bottom hole equivalent ?1.0mm, no clustered indications, no cracks)

Class 2 (equivalent flat-bottom hole ?2.0mm, isolated indications allowed, no cracks)

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Class 3 (equivalent flat-bottom hole ?3.0mm, limited cluster allowed, no linear defects)

Market segment by Application

New Ultra?supercritical Coal Power (1000MW+)

Existing Unit Life Extension & Efficiency Upgrade

Nuclear Half?speed Turbine Generators

Others

Major players covered

Japan Steel Works

China First Heavy Industries

China Erzhong Equipment (DEC)

France Creusot Forge (ex?Areva/Le Creusot)

Doosan Enerbility

Market segment by region, regional analysis covers

North America (United States, Canada, and Mexico)

Europe (Germany, France, United Kingdom, Russia, Italy, and Rest of Europe)

Asia-Pacific (China, Japan, Korea, India, Southeast Asia, and Australia)

South America (Brazil, Argentina, Colombia, and Rest of South America)

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Middle East & Africa (Saudi Arabia, UAE, Egypt, South Africa, and Rest of Middle East & Africa)

The content of the study subjects, includes a total of 15 chapters:

Chapter 1, to describe Ultra?heavy Steam Turbine Rotor Forgings for Generators above 1000MW product scope, market overview, market estimation caveats and base year.

Chapter 2, to profile the top manufacturers of Ultra?heavy Steam Turbine Rotor Forgings for Generators above 1000MW, with price, sales quantity, revenue, and global market share of Ultra?heavy Steam Turbine Rotor Forgings for Generators above 1000MW from 2021 to 2026.

Chapter 3, the Ultra?heavy Steam Turbine Rotor Forgings for Generators above 1000MW competitive situation, sales quantity, revenue, and global market share of top manufacturers are analyzed emphatically by landscape contrast.

Chapter 4, the Ultra?heavy Steam Turbine Rotor Forgings for Generators above 1000MW breakdown data are shown at the regional level, to show the sales quantity, consumption value, and growth by regions, from 2021 to 2032.

Chapter 5 and 6, to segment the sales by Type and by Application, with sales market share and growth rate by Type, by Application, from 2021 to 2032.

Chapter 7, 8, 9, 10 and 11, to break the sales data at the country level, with sales quantity, consumption value, and market share for key countries in the world, from 2021 to 2026.and Ultra?heavy Steam Turbine Rotor Forgings for Generators above 1000MW market forecast, by regions, by Type, and by Application, with sales and revenue, from 2027 to 2032.

Chapter 12, market dynamics, drivers, restraints, trends, and Porters Five Forces analysis.

Chapter 13, the key raw materials and key suppliers, and industry chain of Ultra?heavy Steam Turbine Rotor Forgings for Generators above 1000MW.

Chapter 14 and 15, to describe Ultra?heavy Steam Turbine Rotor Forgings for Generators above 1000MW sales channel, distributors, customers, research findings

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and conclusion.

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