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Modular Nuclear Components Market Forecasts to 2034 – Global Analysis By Component Type (Reactor Pressure Vessels, Steam Generators, Control Rod Assemblies, Containment Structures, Cooling Systems, Fuel Assemblies, and Turbine Generator Modules), Reactor Type, Material, Manufacturing Technology, Application, End User, and By Geography

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Abstracts

According to Stratistics MRC, the Global Modular Nuclear Components Market is accounted for $9.1 billion in 2026 and is expected to reach $12.3 billion by 2034 growing at a CAGR of 3.8% during the forecast period. Modular nuclear components are factory-fabricated structural and mechanical parts used in the construction of small modular reactors and advanced nuclear power systems. These include reactor pressure vessels, steam generators, control rod assemblies, containment modules, cooling systems, and fuel handling hardware manufactured to high precision standards for assembly at nuclear sites. By shifting production from on-site construction to controlled factory environments, modular nuclear components reduce costs, improve quality consistency, shorten deployment timelines, and enable the standardized, scalable rollout of next-generation nuclear power capacity globally.

Market Dynamics:

Driver:

Rising global demand for clean baseload power

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Rising global demand for clean baseload power is a key driver for the Modular Nuclear Components Market. As nations seek reliable, low-carbon energy sources to meet climate goals, modular nuclear reactors offer scalable solutions. Their ability to provide consistent electricity, unlike intermittent renewables, makes them attractive for industrial and urban applications. This demand is further strengthened by the global push toward energy independence and sustainability, positioning modular nuclear components as a critical technology in the clean energy transition.

Restraint:

Lengthy regulatory approval and licensing processes

Lengthy regulatory approval and licensing processes remain a major restraint for the market. Nuclear technologies face stringent safety standards and complex compliance requirements, often leading to delays in deployment. These processes can extend project timelines and increase costs, discouraging investment. While necessary for public safety, the slow pace of approvals limits the speed at which modular nuclear components can be commercialized. This challenge underscores the need for streamlined regulatory frameworks to balance safety with innovation and timely energy expansion.

Opportunity:

Government commitments to expand nuclear energy

Government commitments to expand nuclear energy present significant opportunities for the Modular Nuclear Components Market. Many countries are pledging investments in advanced nuclear technologies as part of their clean energy strategies. Modular designs align with these commitments by offering flexibility, reduced construction times, and enhanced safety features. Supportive policies, funding programs, and international collaborations further encourage adoption. As governments prioritize decarbonization and energy security, modular nuclear components are well-positioned to benefit from long-term opportunities in global energy infrastructure.

Threat:

High public concern over nuclear safety

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High public concern over nuclear safety continues to pose a threat to market growth. Despite technological advancements, public perception of nuclear energy is often shaped by past accidents and fears of radiation risks. This skepticism can hinder policy support, delay projects, and reduce investor confidence. Addressing these concerns through transparent communication, improved safety designs, and community engagement is essential. Without tackling public resistance, the market risks slower adoption, even as demand for clean and reliable energy sources increases.

Covid-19 Impact:

The Covid-19 pandemic disrupted supply chains and delayed nuclear construction projects, slowing short-term growth in the Modular Nuclear Components Market. However, the crisis highlighted the importance of resilient and reliable energy systems. Governments and utilities began reassessing energy strategies, with modular nuclear solutions gaining attention for their scalability and ability to provide stable baseload power. Post-pandemic recovery has accelerated interest in clean energy, positioning modular nuclear components as a vital part of future energy infrastructure focused on sustainability and reliability.

The reactor pressure vessels segment is expected to be the largest during the forecast period

The reactor pressure vessels segment holds the largest share in the modular nuclear components market. As the primary containment structure for nuclear fuel and coolant, reactor pressure vessels represent the highest-value and most technically demanding component in any nuclear power system. Their specialized manufacturing requirements, stringent safety certifications, and critical function in every reactor design make them the dominant revenue contributor. Growing investment in small modular reactor projects worldwide is driving sustained demand for advanced reactor pressure vessel manufacturing.

The small modular reactors segment is expected to have the highest CAGR during the forecast period

The small modular reactors segment is expected to register the highest CAGR in the modular nuclear components market. SMRs are attracting unprecedented government and private investment globally as a flexible, lower-cost alternative to conventional large-scale nuclear plants. Their factory-fabricated design, scalability for diverse energy applications, and shorter construction timelines are driving accelerated component

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demand. As first-of-a-kind SMR projects begin commercial deployment, the supply chain for specialized SMR components is entering a phase of rapid and sustained growth.

Region with largest share:

During the forecast period, the North America region is expected to hold the largest market share owing to its established nuclear infrastructure, strong regulatory frameworks, and significant investment in advanced reactor technologies. The U.S. and Canada are actively pursuing modular nuclear projects to modernize aging plants and meet clean energy targets. Government-backed initiatives, research collaborations, and private sector innovation drive growth. With a focus on energy independence and carbon reduction, North America remains the dominant hub for modular nuclear component deployment.

Region with highest CAGR:

Over the forecast period, the Asia Pacific region is anticipated to exhibit the highest CAGR, due to rapid industrialization, rising electricity demand, and strong government support for nuclear expansion. Countries such as China, India, and South Korea are investing heavily in modular nuclear technologies to diversify energy sources and reduce reliance on fossil fuels. Ambitious nuclear programs, coupled with urbanization and sustainability goals, fuel adoption. With growing energy needs and emphasis on innovation, Asia Pacific emerges as the fastest-growing region in this market.

Key players in the market

Some of the key players in Modular Nuclear Components Market include Rolls-Royce Holdings plc, Westinghouse Electric Company, GE Vernova, Rosatom State Atomic Energy Corporation, China National Nuclear Corporation (CNNC), EDF Group, Mitsubishi Heavy Industries, Ltd., Hitachi-GE Nuclear Energy, Ltd., Framatome, NuScale Power, LLC, TerraPower, LLC, Korea Electric Power Corporation (KEPCO), Doosan Enerbility Co., Ltd., Brookfield Renewable Partners, Fluor Corporation, BWXT Technologies, Inc., Holtec International, and Aker Solutions ASA.

Key Developments:

In February 2026, Rosatom emphasized AI-enabled automation in modular nuclear systems, projecting up to 25% efficiency gains. The corporation highlighted

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sustainability at global energy summits, showcasing demand response solutions for factories, data centers, and urban infrastructure to reduce electricity consumption significantly.

In February 2026, NuScale Power reinforced its leadership in small modular reactors, integrating advanced AI for demand response automation. The company demonstrated flexible deployment for homes, industries, and data centers, highlighting sustainability, efficiency, and resilience in addressing surging global energy requirements.

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Component Types Covered:

- Reactor Pressure Vessels
- Steam Generators
- Control Rod Assemblies
- Containment Structures
- Cooling Systems
- Fuel Assemblies
- Turbine Generator Modules

Reactor Types Covered:

- Small Modular Reactors (SMRs)
- Microreactors
- Advanced Generation IV Reactors

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Pressurized Water Reactors (PWR)

Boiling Water Reactors (BWR)

Materials Covered:

High-Strength Steel

Zirconium Alloys

Nickel-Based Alloys

Advanced Composites

Concrete Modules

Manufacturing Technologies Covered:

Modular Fabrication

Advanced Welding

Additive Manufacturing

Precision Casting

Digital Twin Integration

Applications Covered:

Power Generation

Industrial Heat

District Heating

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- Desalination
- Hydrogen Production

End Users Covered:

- Utility Companies
- Government Energy Agencies
- Industrial Operators
- Research Institutions

Regions Covered:

- North America
  - United States
  - Canada
  - Mexico
- Europe
  - United Kingdom
  - Germany
  - France
  - Italy
  - Spain
  - Netherlands

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- Belgium
- Sweden
- Switzerland
- Poland
- Rest of Europe

Asia Pacific

- China
- Japan
- India
- South Korea
- Australia
- Indonesia
- Thailand
- Malaysia
- Singapore
- Vietnam
- Rest of Asia Pacific

South America

- Brazil

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- Argentina
- Colombia
- Chile
- Peru
- Rest of South America

Rest of the World (RoW)

- Middle East
  - Saudi Arabia
  - United Arab Emirates
  - Qatar
  - Israel
  - Rest of Middle East
- Africa
  - South Africa
  - Egypt
  - Morocco
  - Rest of 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

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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

Free Customization Offerings:

All the customers of this report will be entitled to receive one of the following free customization options:

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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Note: Tables for North America, Europe, APAC, South America, and Rest of the World (RoW) Regions are also represented in the same manner as above.

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