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Global Nuclear Reactor Control Rod Drive Mechanism Supply, Demand and Key Producers, 2026-2032

https://marketpublishers.com/r/GCFD1ABB2A25EN.html
Date: December 2025
Pages: 119
Price: US$ 4,480.00 (Single User License)
ID: GCFD1ABB2A25EN

Abstracts

The global Nuclear Reactor Control Rod Drive Mechanism market size is expected to reach $ 7233 million by 2032, rising at a market growth of 7.3% CAGR during the forecast period (2026-2032).
The control rod drive mechanism of a nuclear reactor is a specialized integrated mechanical-electrical-hydraulic (or electromagnetic) device responsible for inserting, lifting, and precisely positioning control rods to regulate core reactivity and achieve rapid shutdown when necessary. It typically consists of a drive unit (electromagnet, stepper motor + lead screw, hydraulic/pneumatic cylinder, etc.), transmission and guiding mechanisms, position and status detection elements, and control and interlocking circuits connected to the reactor protection system. During normal operation, it finely adjusts power and power distribution by slowly moving the control rods. In abnormal conditions or during a SCRAM (Survival, Reaction, and Randomization) emergency shutdown, it rapidly and reliably inserts the neutron-absorbing control rods into the core using spring energy storage, gravity-assisted rod dropping, or hydraulic rapid insertion, ensuring timely suppression of the chain reaction. It is one of the core components for reactivity control and intrinsic safety protection in nuclear power plants.
A key judgment is that nuclear reactor control rod drive mechanisms are not 'high-frequency consumer goods,' but rather 'small-batch, high-price, high-barrier-to-entry, and strongly tied' engineering equipment. The key to the market is not 'how large the volume,' but 'who can get into the list of key models and key projects.' On the one hand, while the pace of new global nuclear power installations isn't particularly rapid, the demand for new/exported units in China, Russia, Eastern Europe, the Middle East, and South Asia is rising under the logic of 'carbon reduction + energy security.' This, coupled with life extensions and major overhauls of existing reactors, results in a slow but stable demand for highly reliable CRDM (Reactive Reactor Design Model). On the other hand, with the continuous advancement of third-generation, fourth-generation, and

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small modular reactors (SMR), countries are increasingly favoring their own or allied supply chains. This provides localized CRDM suppliers with a window of opportunity for domestic substitution and upgrades?as long as they can pass long-term testing, type certification, and code (ASME, etc.) systems, they can secure a specific reactor type and work with a project for ten or twenty years.

Another important point is that the real focus of competition is not just on individual drive mechanisms, but on the entire reactive control and safety system solution. For nuclear power plant owners and EPC contractors, the control rod drive mechanism is only one part of the 'nuclear island + instrumentation and control' system. Their decision-making focuses more on: consistency with the reactor design, inherent safety mechanisms under extreme conditions such as power outages/depressurization, maintenance accessibility, lifetime failure rate, and integration difficulty within the digital instrumentation and control system. From a business model perspective, CRDM (Research, Design, and Manufacturing) is more like part of a 'reactor technology package'?whoever controls the reactor design discourse often brings their own CRDM system with them. For new entrants, the most realistic path is to first verify the technology and reliability in research reactors, experimental reactors, and small modular reactor (SMR) demonstration projects, and then gradually form a comprehensive capability encompassing 'reactor design + CRDM + instrumentation and control + operation and maintenance services' through deep collaboration with mainstream reactor design firms, rather than simply relying on low prices to win contracts.

This report studies the global Nuclear Reactor Control Rod Drive Mechanism demand, key companies, and key regions.

This report is a detailed and comprehensive analysis of the world market for Nuclear Reactor Control Rod Drive Mechanism, and provides market size (US$ million) and Year-over-Year (YoY) growth, considering 2025 as the base year. This report explores demand trends and competition, as well as details the characteristics of Nuclear Reactor Control Rod Drive Mechanism that contribute to its increasing demand across many markets.

Highlights and key features of the study

Global Nuclear Reactor Control Rod Drive Mechanism total market, 2021-2032, (USD Million)

Global Nuclear Reactor Control Rod Drive Mechanism total market by region & country, CAGR, 2021-2032, (USD Million)

U.S. VS China: Nuclear Reactor Control Rod Drive Mechanism total market, key domestic companies, and share, (USD Million)

Global Nuclear Reactor Control Rod Drive Mechanism revenue by player, revenue and market share 2021-2026, (USD Million)

Global Nuclear Reactor Control Rod Drive Mechanism total market by Type, CAGR,

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2021-2032, (USD Million)
Global Nuclear Reactor Control Rod Drive Mechanism total market by Application, CAGR, 2021-2032, (USD Million)
This report profiles major players in the global Nuclear Reactor Control Rod Drive Mechanism market based on the following parameters - company overview, revenue, gross margin, product portfolio, geographical presence, and key developments. Key companies covered as a part of this study include Framatome, General Atomics, Mitsubishi Nuclear Energy Systems, Inc, SKODA JS, Curtiss-Wright, OKB GIDROPRESS, Larsen & Toubro Limited, Westinghouse Electric Company LLC, GE Hitachi Nuclear Energy, Zhefu Holding, etc.
This report also provides key insights about market drivers, restraints, opportunities, new product launches or approvals.
Stakeholders would have ease in decision-making through various strategy matrices used in analyzing the world Nuclear Reactor Control Rod Drive Mechanism market
Detailed Segmentation:
Each section contains quantitative market data including market by value (US$ Millions), by player, by regions, by Type, and by Application. Data is given for the years 2021-2032 by year with 2025 as the base year, 2026 as the estimate year, and 2027-2032 as the forecast year.
Global Nuclear Reactor Control Rod Drive Mechanism Market, By Region:

United States

China

Europe

Japan

South Korea

ASEAN

India

Rest of World

Global Nuclear Reactor Control Rod Drive Mechanism Market, Segmentation by Type:

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Magnetic Lifting

Ball Nut Screw

Rack and Pinion

Global Nuclear Reactor Control Rod Drive Mechanism Market, Segmentation by Arrangement Method:

Top-mounted CRDM

Bottom-mounted CRDM

Global Nuclear Reactor Control Rod Drive Mechanism Market, Segmentation by Reactor Type:

PWR CRDM

BWR CRD

Global Nuclear Reactor Control Rod Drive Mechanism Market, Segmentation by Application:

Nuclear Reactor

Nuclear Power Unit

Others

Companies Profiled:

Framatome

General Atomics

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Mitsubishi Nuclear Energy Systems, Inc

SKODA JS

Curtiss-Wright

OKB GIDROPRESS

Larsen & Toubro Limited

Westinghouse Electric Company LLC

GE Hitachi Nuclear Energy

Zhefu Holding

Shanghai No.1 Machine Tool Works Co.,Ltd.

Key Questions Answered

1. How big is the global Nuclear Reactor Control Rod Drive Mechanism market?
2. What is the demand of the global Nuclear Reactor Control Rod Drive Mechanism market?
3. What is the year over year growth of the global Nuclear Reactor Control Rod Drive Mechanism market?
4. What is the total value of the global Nuclear Reactor Control Rod Drive Mechanism market?
5. Who are the Major Players in the global Nuclear Reactor Control Rod Drive Mechanism market?
6. What are the growth factors driving the market demand?

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