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South Korea Centrifugation Market: Focus on Product, Model Type, Application, and End User - Analysis and Forecast, 2025-2035

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Abstracts

Centrifugation is a core separation technology used across life sciences, pharmaceuticals, biotechnology, diagnostics, chemicals, and industrial processing. By applying centrifugal force, centrifuges efficiently separate substances based on density, enabling critical applications such as blood component separation, cell harvesting, protein purification, vaccine production, and wastewater treatment. With the rapid growth of biologics, cell and gene therapies, and precision diagnostics, centrifugation has evolved from basic laboratory equipment into highly automated, GMP-compliant systems integrated into large-scale manufacturing workflows.

The South Korea centrifugation market is expanding steadily, driven by the country's strong biopharmaceutical manufacturing base, advanced clinical research ecosystem, and government-backed life sciences investments. South Korea is a global hub for biologics production, led by companies such as Samsung Biologics and Celltrion, where high-capacity industrial centrifuges are essential for upstream and downstream bioprocessing, including cell culture clarification and protein purification. Growth is further supported by rising demand for clinical diagnostics, hospital laboratories, and blood banks, where benchtop and high-speed centrifuges are widely used. The South Korea centrifugation market is also benefiting from increased adoption of automated and continuous centrifugation systems to improve efficiency, reduce contamination risk, and meet strict regulatory standards. Additionally, South Korea's expanding cell and gene therapy pipeline and vaccine development programs are accelerating demand for precision centrifugation technologies. Key challenges in South Korea centrifugation market include high equipment costs and reliance on imported advanced centrifuge systems, but ongoing investments in domestic manufacturing and R&D are strengthening the country's long-term market position.

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Market Introduction

The South Korea centrifugation market is expected to witness substantial growth, projected to reach $92.7 million by 2035. The South Korea centrifugation market is anchored in the country's advanced life sciences, biopharmaceutical manufacturing, and clinical diagnostics ecosystem, where centrifugation serves as a foundational technology for separation, purification, and quality control processes. Centrifuges are widely used across blood banking, hospital laboratories, vaccine production, biologics manufacturing, and cell-based research, supporting applications such as plasma separation, cell harvesting, and protein clarification. South Korea's emergence as a global biologics manufacturing hub driven by companies such as Samsung Biologics, Celltrion, and SK Bioscience has reinforced demand for high-capacity, GMP-compliant industrial centrifuges integrated into upstream and downstream bioprocessing workflows.

Technological progress and industry needs are shaping South Korea's centrifugation market dynamics. The growing focus on biologics, biosimilars, vaccines, and cell and gene therapies has increased adoption of automated, closed, and continuous centrifugation systems that enhance throughput, minimize contamination risk, and meet stringent regulatory standards set by the Ministry of Food and Drug Safety (MFDS). In parallel, South Korea's strong diagnostics sector supported by large hospital networks and reference laboratories is driving sustained demand for benchtop and high-speed centrifuges, particularly following increased diagnostic testing capacity established during and after the COVID-19 pandemic.

While rising R&D investment, government support for biohealth industries, and expanding clinical trial activity support long-term growth, challenges remain around high capital costs, energy efficiency, and reliance on imported advanced centrifuge systems. These pressures are encouraging local distributors and manufacturers to invest in service capabilities, digital monitoring, and incremental localization of production. Overall, South Korea's centrifugation market is positioned as a stable, technology-driven segment, closely tied to the country's ambition to lead in biologics manufacturing, precision medicine, and advanced healthcare infrastructure.

Industrial Impact

The centrifugation sector in South Korea significantly reinforces the country's status as a global biopharmaceutical and life sciences manufacturing hub. Industrial centrifuges

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are essential for high-volume biologics processing used in cell harvesting, clarification, and downstream purification of vaccines, monoclonal antibodies, and recombinant proteins. South Korean biopharma giants like Samsung Biologics, Celltrion, and SK Bioscience rely on high-capacity, automated centrifugation systems to ensure scalable, GMP-compliant manufacturing. At the same time, domestic equipment and services providers support local adoption by supplying benchtop and large-scale systems, after-sales service, and customization for regional production needs. This industrial backbone not only improves production efficiency and consistency but also bolsters South Korea's competitiveness in contract development and manufacturing (CDMO) services for global clients.

Centrifugation also has deep impact across clinical diagnostics, research, and academic institutions in South Korea. Leading diagnostics players like Seegene and GC Labs, along with major hospital networks, depend on centrifuges for routine clinical testing, blood component separation, and molecular diagnostics workflows. Regional manufacturers in South Korea's centrifugation market such as Hanil Scientific provide locally configured high-speed and microcentrifuge models to meet demand in clinical labs and research settings. Rising investment in regenerative medicine, genomics, and precision health research is driving increased uptake of ultracentrifuges and higher-throughput systems at universities and biotech startups. By enabling faster turnaround times, improved sample integrity, and stronger integration with automated platforms, centrifugation technology remains a core enabler of South Korea's evolving healthcare infrastructure and life sciences industrial growth.

Market Segmentation:

Segmentation 1: By Product Type

Equipment

Accessories

In the South Korea centrifugation market, as of 2024, the equipments holds the largest share at 74.44%. due to the country's strong push toward automated, digital, and GMP-compliant laboratory and manufacturing environments. Life sciences and biopharma facilities increasingly prioritize advanced centrifuges with IoT-enabled monitoring, programmable workflows, and enhanced biosafety features to support high-throughput operations while minimizing human error. Stringent MFDS, GMP, and international

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biosafety regulations further drive demand for certified, high-performance systems with sealed rotors and containment capabilities, particularly in vaccine manufacturing, cell and gene therapy, and regenerative medicine. In addition, centrifuges represent long-term infrastructure assets with extended life cycles, making them essential capital investments as South Korea expands its biotechnology footprint through new research centers, CDMO facilities, and precision medicine initiatives. Together, automation trends, regulatory rigor, and sustained infrastructure expansion reinforce equipment as the primary revenue driver in the country's centrifugation market.

Segmentation 2: By Model Type

Bench-top Centrifuges

Floor Standing Centrifuges

As of 2024, the bench-top centrifuges dominated the South Korea centrifugation market as they offer the ideal balance of performance, flexibility, and cost-efficiency for the majority of laboratory workflows in South Korea. These systems are widely used across clinical diagnostics, hospital laboratories, academic research institutes, and biotech R&D centers, where space constraints and moderate sample volumes make compact, high-speed benchtop units more practical than large industrial systems. Their ability to support diverse applications such as blood separation, molecular diagnostics, cell pelleting, and nucleic acid extraction drives high adoption across routine and specialized testing environments.

In addition, the rapid growth of molecular diagnostics, genomics, and infectious disease testing has increased demand for reliable, easy-to-use centrifuges that can be quickly deployed and scaled across multiple labs. Benchtop models require lower upfront investment, simpler installation, and minimal maintenance, making them attractive for both public and private laboratories. Local manufacturers in South Korea centrifugation market further strengthen this segment by offering cost-competitive, locally serviced benchtop centrifuges tailored to domestic lab needs. Together, high utilization frequency, broad application range, affordability, and ease of integration make benchtop centrifuges the dominant model type in the market.

Segmentation 3: By Application

Clinical

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Research

Biotherapeutic Manufacturing

Others

In 2024, research applications dominates the South Korea centrifugation market as centrifuges are foundational tools across virtually every stage of life science and biomedical research, from basic cell biology to advanced genomics and cell therapy development. In South Korea, heavy investment in biotechnology, precision medicine, and translational research has significantly expanded the number of academic labs, government research institutes, and private R&D centers that rely on centrifugation for routine sample preparation, cell separation, protein purification, and nucleic acid isolation. Institutions such as KAIST, Seoul National University, Yonsei University, and the Korea Research Institute of Bioscience and Biotechnology (KRIBB) operate high-throughput research laboratories where centrifuges are used continuously, driving sustained demand.

Biopharma companies such as Samsung Biologics and Celltrion rely on research-scale centrifugation during early-stage biologics development, process optimization, and biosimilar characterization before transitioning to large-scale manufacturing. Similarly, South Korea’s growing cell and gene therapy research ecosystem supported by government-backed initiatives like the K-Bio Strategy requires specialized centrifugation for stem cell isolation, viral vector preparation, and regenerative medicine studies. Unlike clinical or industrial applications, research environments demand multiple centrifuge types across projects, protocols, and sample sizes, resulting in higher unit penetration and frequent equipment upgrades. This broad, continuous, and innovation-driven usage makes research the leading application segment in the South Korea centrifugation market.

Segmentation 4: By End User

Hospitals and Diagnostic Labs

Biotechnology and Pharmaceutical Companies

Academic and Research Institutes

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Others

Hospitals and diagnostic laboratories dominated the South Korea centrifugation market in 2024 because centrifuges are essential, high-frequency tools in routine clinical testing and patient care workflows. With rising patient volumes, aging populations, and increasing prevalence of chronic and infectious diseases, hospitals and diagnostic labs operate centrifuges continuously, creating stable and recurring demand for reliable, high-throughput systems.

This dominance is reinforced by the rapid expansion of advanced diagnostics and preventive screening programs. In South Korea, large hospital networks and reference labs such as Asan Medical Center, Seoul National University Hospital, GC Labs, and Seegene process thousands of samples daily, relying on benchtop and automated centrifuges to maintain fast turnaround times and diagnostic accuracy. The growth of molecular diagnostics, including PCR-based infectious disease testing and genetic screening, further increases centrifuge utilization. In addition, strict regulatory and quality requirements under MFDS and international laboratory standards push healthcare facilities to invest in certified, high-performance centrifugation equipment. Together, continuous clinical demand, diagnostic innovation, and regulatory compliance make hospitals and diagnostic laboratories the dominant end-user segment in the South Korea centrifugation market.

Recent Developments in the South Korea Centrifugation Market

In September 2025, Thermo Fisher Scientific has collaborated with South Korea’s Dr. Park CDMO to advance viral vector manufacturing through cutting-edge bioprocessing technologies, including the DynaSpin single-use centrifuge. This integration optimizes downstream processing by reducing manual interventions and enabling seamless scale-up from 5,000?L to 10,000?L batches. By enhancing efficiency, consistency, and process control, the DynaSpin centrifuge is instrumental in supporting large-scale, high-quality production of cell and gene therapies.

In April 2025, Beckman Coulter Life Sciences, a Danaher company, launched the OptiMATE Gradient Maker an automated system designed for density gradient ultracentrifugation. Specifically engineered for viral vector purification, the system significantly streamlined purification workflows by reducing run times

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by up to 75%, shortening processes from days to mere hours. It also minimized manual handling, improved process consistency, and delivered high-purity results.

In March 2025, Thermo Fisher Scientific Inc. introduced the Cryofuge, BIOS, and LYNX floor-model centrifuges, equipped with eco-friendly GreenCool natural refrigerant technology. These models deliver up to 15% energy savings while minimizing environmental impact. Manufactured in a zero-waste facility powered by renewable energy, the centrifuges offer quieter operation, lighter design, and dependable, user-friendly performance making them ideal for blood banking, bioprocessing, and research applications.

Demand – Drivers, Challenges, and Opportunities

Market Demand Drivers: Biopharmaceutical Innovation and R&D Investments Fueling Centrifuge Demand

The South Korean centrifugation market is being driven by the country's strategic focus on biopharmaceutical innovation and significant R&D investments, positioning it as a global leader in life sciences. Advanced research capabilities, cutting-edge manufacturing technologies, and supportive policies have created sustained demand for high-performance centrifuges, which are critical across early-stage research and large-scale production of biologics, biosimilars, and cell and gene therapies. Between 2016 and 2021, South Korea's biotechnology production more than doubled, with the biopharmaceutical segment leading in growth and exports, reflecting the technological sophistication required to sustain this momentum. High-performance centrifuges enable precision in cell separation, protein purification, and viral vector processing, ensuring reproducibility and regulatory compliance, as demonstrated in facilities like Dr. Park's Phase 1 viral vector production center, which integrates single-use DynaSpin centrifuges for cGMP-compliant workflows. Domestic leaders such as Samsung Biologics, Celltrion, and SK Biopharmaceuticals rely on advanced centrifugation systems to optimize cell harvesting, clarification, and purification, supporting portfolio expansion while maintaining stringent quality standards. Government initiatives like the "K-Bio Pharmaceutical Industry Leap Forward Strategy" further reinforce demand by promoting public-private collaboration, infrastructure modernization, and adoption of automated and single-use centrifuge systems. Collectively, South Korea's robust R&D, innovative biopharmaceutical ecosystem, and forward-looking policies create a strong and continuous demand for centrifugation equipment, establishing these systems as

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essential enablers of the country’s ambitions in next-generation therapeutics and long-term market growth.

Market Challenges: Intense Competition from Local and International Manufacturers and Suppliers

The South Korea centrifugation market is constrained by intense competition from both a growing domestic manufacturing base and established international suppliers, which affects pricing, market share, and growth potential, especially in mid- and low-tier segments. Between 2019 and 2022, domestic medical device production nearly doubled from $6,244 million to $12,186 million, while the overall Korean medical device market grew from $6,694 million to $9,198 million, reflecting the increasing capability of local manufacturers to produce high-quality alternatives to imported centrifuges. Companies such as Hanil Scientific, Daihan Scientific, and GYROZEN have leveraged proximity to domestic R&D hubs, competitive pricing, and strong distribution networks to capture significant market share, particularly in routine and mid-range laboratory applications. At the same time, international players like Thermo Fisher Scientific and Danaher Corporation dominate the premium and validated centrifuge segments, often integrated into large-scale bioprocessing and CDMO operations. The south korea centrifugation market also faces episodic low-cost competition from Chinese imports, which surged in 2021 before stabilizing in 2022, further intensifying pressure on international vendors. These dynamics compress margins, extend sales cycles, and force suppliers to focus on automation, single-use technologies, validated workflows, and localized support to remain competitive. As domestic manufacturers continue strengthening capabilities, global players must adopt strategic partnerships, innovation-driven differentiation, and superior service to maintain relevance in South Korea’s evolving centrifugation market.

Market Opportunities: Integration of Artificial Intelligence with Centrifugation Processes

The integration of artificial intelligence (AI) into centrifugation processes is emerging as a significant growth driver for South Korea’s pharmaceutical and biotechnology sectors, enhancing precision, efficiency, and scalability in bioprocessing and drug manufacturing. Supported by a strong innovation ecosystem, government AI initiatives, and a robust biopharmaceutical infrastructure, AI-enabled centrifuges such as GEA’s X Control platform allow real-time process optimization, predictive maintenance, and seamless integration into smart manufacturing networks. These systems improve operational reliability, reduce downtime, and optimize separation performance, critical for high-quality biologics, vaccines, and gene therapy production. Government policies, including South Korea’s national AI strategy and collaborations with regulatory bodies

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like MFDS and the FDA, further encourage adoption in highly regulated environments. Workforce adoption exceeding 63.5% demonstrates the tangible impact of AI, with predictive maintenance and machine learning-driven parameter optimization enhancing productivity, reproducibility, and yields. By accelerating upstream and downstream processes, supporting adaptive process control, and ensuring compliance with international quality standards, AI-driven centrifugation strengthens South Korea's biopharmaceutical competitiveness. Overall, the convergence of technological innovation, regulatory support, and workforce readiness positions AI-integrated centrifuges as a key enabler of operational excellence and market growth in the country's life sciences industry.

Market Trend: Robotics and Automation Transforming Laboratory Workflows

Integration of Artificial Intelligence with Centrifugation Processes: Automation and robotics are reshaping South Korea's centrifugation market, transforming laboratory workflows across biopharmaceutical, clinical, research, and industrial applications. Demographic challenges, including a rapidly aging population and one of the world's lowest fertility rates, combined with labor regulations such as the 52-hour workweek, have made labor-intensive processes increasingly difficult, driving the adoption of automated centrifuges to maintain productivity, precision, and throughput. Advanced systems like the smart, modular centrifuge compatible with liquid handling robots, infrared sensors, and software-assisted calibration demonstrate how robotics integration enhances reproducibility, reduces manual intervention, and accelerates critical workflows such as cell separation, plasma processing, and sample purification. Strategic infrastructure investments, such as Merck's $324.2 million Bioprocessing Production Centre in Daejeon, further support large-scale adoption, while South Korea's global leadership in robotics density facilitates seamless integration with LIMS and MES platforms for real-time monitoring, predictive maintenance, and regulatory compliance. Overall, the convergence of robotics, automation, and high-performance centrifugation is transforming operational efficiency, enabling next-generation smart laboratories, and strengthening South Korea's position as a hub for advanced biomanufacturing.

How can this report add value to an organization?

Product/Innovation Strategy: The report offers in-depth insights into the latest technological advancements in centrifuges, enabling organizations to drive innovation and develop cutting-edge products tailored to market needs.

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Growth/Marketing Strategy: By providing comprehensive market analysis and identifying key growth opportunities, the report equips organizations with the knowledge to craft targeted marketing strategies and expand their market presence effectively.

Competitive Strategy: The report includes a thorough competitive landscape analysis, helping organizations understand their competitors' strengths and weaknesses and allowing them to strategize effectively to gain a competitive edge in the market.

Regulatory and Compliance Strategy: It provides updates on evolving regulatory frameworks, approvals, and industry guidelines, ensuring organizations stay compliant and accelerate market entry for new centrifuge products.

Investment and Business Expansion Strategy: By analyzing market trends, funding patterns, and partnership opportunities, the report assists organizations in making informed investment decisions and identifying potential M&A opportunities for business growth.

Methodology

Key Considerations and Assumptions in Market Engineering and Validation

The base year considered for the calculation of the market size is 2024. A historical year analysis has been done for the period FY2021-FY2023 The market size has been estimated for FY2024 and projected for the period FY2025-FY2035.

The scope of this report has been carefully derived based on interactions with experts in different companies across the world. This report provides a market study of centrifuges and its use for various application.

Revenues of the companies have been referenced from their annual reports for FY2023 and FY2024. For private companies, revenues have been estimated based on factors such as inputs obtained from primary research, funding history, market collaborations, and operational history.

The market has been mapped based on the available centrifuges products. All the key companies with significant offerings in this field have been considered and profiled in this report.

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Primary Research:

The primary sources involve industry experts in South Korea centrifugation market including the market players offering products. Resources such as CEOs, vice presidents, marketing directors, and technology and innovation directors have been interviewed to obtain and verify both qualitative and quantitative aspects of this research study.

The key data points taken from the primary sources include:

- Validation and triangulation of all the numbers and graphs
- Validation of the report's segmentation and key qualitative findings
- Understanding the competitive landscape and business model
- Current and proposed production values of a product by market players
- Validation of the numbers of the different segments of the market in focus
- Percentage split of individual markets for regional analysis

Secondary Research

Open Sources

- Certified publications, articles from recognized authors, white papers, directories, and major databases, among others
- Annual reports, SEC filings, and investor presentations of the leading market players
- Company websites and detailed study of their product portfolio
- Gold standard magazines, journals, white papers, press releases, and news articles

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Paid databases

The key data points taken from the secondary sources include:

Segmentations and percentage shares

Data for market value

Key industry trends of the top players of the market

Qualitative insights into various aspects of the market, key trends, and emerging areas of innovation

Quantitative data for mathematical and statistical calculations

Key Market Players and Competition Synopsis

Profiled companies have been selected based on inputs gathered from primary experts, as well as analyzing company coverage, product portfolio, and market penetration.

Some prominent names established in this market are:

Agilent Technologies, Inc.

Bio-Rad Laboratories, Inc.

Thermo Fisher Scientific, Inc.

Danaher Corporation

Corning Incorporated

Eppendorf SE

Hanil Scientific Inc.

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