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Robotic Radiotherapy Market Forecasts to 2032 – Global Analysis By Product (Radiotherapy Systems, Software, 3D Cameras (Surface Guided Radiation Therapy - SGRT) and Other Products), Technology (Linear Accelerators (LINACs), Stereotactic Radiation Therapy (SRT) Systems, Particle Therapy, Image-Guided Radiation Therapy (IGRT), Intensity-Modulated Radiation Therapy (IMRT) and Other Technologies), Application, End User and By Geography

https://marketpublishers.com/r/RBB72A87675AEN.html
Date: June 2025
Pages: 150
Price: US$ 4,150.00 (Single User License)
ID: RBB72A87675AEN

Abstracts

According to Stratistics MRC, the Global Robotic Radiotherapy Market is accounted for $1.4 billion in 2025 and is expected to reach $3.5 billion by 2032 growing at a CAGR of 13.8% during the forecast period. Robotic radiotherapy is an advanced cancer treatment method that utilizes robotic systems to deliver precise, high-dose radiation to tumors while minimizing exposure to surrounding healthy tissues. Integrating real-time imaging and adaptive motion tracking, it ensures accurate targeting even in dynamic anatomical regions. This technology enhances treatment efficacy and reduces side effects, making it ideal for complex or hard-to-reach tumors. Commonly used in stereotactic body radiotherapy (SBRT), robotic radiotherapy improves patient outcomes through increased precision, efficiency, and personalized treatment delivery.

According to the National Center for Biotechnology Information (NCBI), from 2010 to 2014, 12 centers practicing robotic surgery represented 18% of the total while by 2014 this number grew to 39 centers which made up 71% of centers utilizing robotic surgery thus demonstrating rapid industry-wide adoption.

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Market Dynamics:

Driver:

Increasing global cancer prevalence

The advancements in early diagnosis and an aging population susceptible to various cancer types, healthcare providers are increasingly adopting precision-driven treatment methods. Robotic radiotherapy enables targeted radiation delivery, minimizing damage to healthy tissues while improving therapeutic efficacy. Additionally, the growing awareness of personalized oncology care is prompting hospitals and research centers to integrate robotic-assisted solutions into conventional radiotherapy protocols.

Restraint:

Complexity of operation

The integration of real-time imaging, adaptive motion tracking, and automated precision control requires specialized expertise for seamless operation. Healthcare facilities often struggle with the high initial investment and extended learning curve associated with robotic systems. Moreover, maintenance and calibration procedures demand technical proficiency, limiting accessibility in regions with constrained medical infrastructure.

Opportunity:

Increasing use of robotic radiotherapy for non-cancerous conditions

Beyond oncology, robotic radiotherapy is gaining traction in treating non-cancerous conditions such as arteriovenous malformations, trigeminal neuralgia, and functional disorders. Its ability to deliver high-dose radiation with millimeter precision makes it suitable for cases requiring minimally invasive intervention. Research in neurology and orthopedic applications is expanding the scope of robotic radiotherapy, with promising outcomes for chronic pain management and vascular abnormalities boost the market growth.

Threat:

Competition from alternative therapies

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Technologies like proton therapy, immunotherapy, and advanced surgical robotics are emerging as viable alternatives for cancer and neurological disorders. Additionally, traditional radiotherapy methods continue to improve, incorporating AI-driven optimization and enhanced imaging techniques. Healthcare institutions weigh factors such as cost-effectiveness, patient outcomes, and infrastructure compatibility when selecting treatment approaches hamper the market growth.

Covid-19 Impact:

The pandemic reshape healthcare priorities, temporarily affecting the demand for robotic radiotherapy due to resource allocation towards emergency care and infection control. However, the crisis also accelerated telemedicine adoption and remote patient monitoring, indirectly boosting interest in robotic-assisted treatment. As hospitals resumed elective procedures, the need for precision-driven radiotherapy gained momentum.

The radiotherapy systems segment is expected to be the largest during the forecast period

The radiotherapy systems segment is expected to account for the largest market share during the forecast period driven by widespread adoption in oncology centers and hospitals. These systems integrate robotic precision, real-time imaging, and automated treatment planning, enhancing therapeutic accuracy. Their ability to streamline workflows and reduce patient discomfort makes them a preferred choice for radiation oncology.

The particle therapy segment is expected to have the highest CAGR during the forecast period

Over the forecast period, the particle therapy segment is predicted to witness the highest growth rate propelled by innovations in proton and heavy-ion therapy. These modalities offer superior tumor targeting with reduced side effects, making them increasingly favorable for sensitive cancer cases. Robotic precision further enhances treatment delivery in particle therapy, ensuring consistent radiation dosing. As research validates its advantages, market expansion is expected, with hospitals and research institutions incorporating particle therapy systems into oncology programs.

Region with largest share:

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During the forecast period, the Asia Pacific region is expected to hold the largest market share owing to expanding healthcare infrastructure, and technological advancements. Countries such as China, Japan, and India are investing heavily in oncology solutions, fostering demand for robotic radiotherapy. Government initiatives promoting early cancer detection and non-invasive treatment approaches are further strengthening adoption. Additionally, collaborations between medical device manufacturers and healthcare providers are accelerating the development and deployment of robotic radiotherapy systems across the region.

Region with highest CAGR:

Over the forecast period, the North America region is anticipated to exhibit the highest CAGR driven by continuous innovation in radiotherapy technologies and strong research investments. The region’s well-established healthcare ecosystem supports the integration of robotic precision in oncology treatments. Leading institutions are actively conducting clinical trials to enhance the efficacy of robotic radiotherapy, contributing to market expansion.

Key players in the market

Some of the key players in Robotic Radiotherapy Market include Accuray Incorporated, Varian Medical Systems, Elekta AB, Mevion Medical Systems, Hitachi Ltd., ViewRay Inc., IBA Group, Reflexion Medical, Theragenics Corporation, Medtronic, CIVCO Radiotherapy, Bionix Radiation Therapy, Zap Surgical Systems, Mitsubishi Electric Corporation, RaySearch Laboratories, Sumitomo Heavy Industries, Nordion Inc., and P-Cure Ltd.

Key Developments:

In May 2025, Varian Medical Systems expanded its ten-year strategic collaboration with MedServe #- #NSIA Advanced Medical Services Limited to enhance cancer care services in Nigeria.

In May 2025, IBA Group signed a contract with PET Pharm Bio to install a Cyclone® IKON in Taiwan, expanding its cyclotron technology footprint in Asia.

In April 2025, Mitsubishi Electric Corporation signed an agreement with HD Renewable Energy to establish a joint venture in Japan, focusing on renewable energy solutions.

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Products Covered:

- Radiotherapy Systems
- Software
- 3D Cameras (Surface Guided Radiation Therapy #- #SGRT)
- Other Products

Technologies Covered:

- Linear Accelerators (LINACs)
- Stereotactic Radiation Therapy (SRT) Systems
- Particle Therapy
- Image-Guided Radiation Therapy (IGRT)
- Intensity-Modulated Radiation Therapy (IMRT)
- Other Technologies

Applications Covered:

- Lung Cancer & Prostate Cancer
- Breast Cancer & Colorectal Cancer
- Brain Tumors & Spinal Tumors
- Liver Cancer & Pancreatic Cancer
- Other Applications

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End Users Covered:

- Hospitals
- Cancer Research Institutes
- Ambulatory Surgical Centers
- Specialty Clinics
- Academic & Research Institutions
- Other End Users

Regions Covered:

- North America
  - US
  - Canada
  - Mexico
- Europe
  - Germany
  - UK
  - Italy
  - France
  - Spain
  - Rest of Europe

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- Asia Pacific
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  - India
  - Australia
  - New Zealand
  - South Korea
  - Rest of Asia Pacific
- South America
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  - Brazil
  - Chile
  - Rest of South America
- Middle East & Africa
  - Saudi Arabia
  - UAE
  - Qatar
  - South Africa
  - Rest of Middle East & Africa

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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 2024, 2025, 2026, 2028, and 2032
- 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 Middle East & Africa Regions are also represented in the same manner as above.

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