

X-ray Tube - Market Share Analysis, Industry Trends & Statistics, Growth Forecasts (2025 - 2030)

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Report description:

The X-ray Tube Market size is estimated at USD 3.63 billion in 2025, and is expected to reach USD 4.45 billion by 2030, at a CAGR of 4.19% during the forecast period (2025-2030).

Key Highlights

- X-rays have found applications in security, metallurgy, non-destructive testing, and other industrial applications. Technological advancement is one of the primary factors driving the growth of the market studied. Over the past few decades, the application of X-rays has drastically expanded beyond the field of medicine.
- With electronic innovations, these systems' sizes have significantly decreased. With the availability of compact systems, X-ray machines are now used in various fields, such as airport security, baggage scanning, and metallurgical applications. In addition, increasing medical cases and accidental injuries worldwide are influencing the growth of the market studied.
- For instance, recently, Excillum launched its latest development-a new generation of high-resolution X-ray tubes. The Excillum NanoTube N3, initially available in 3 different versions, enables the world's best resolution up to 160 kV. The NanoTube N3 targets advanced industries' metrology and non-destructive testing (NDT) components, e.g., automotive, aerospace, medical, electronics, and semiconductor back ends.
- The pandemic scenario benefited medical and healthcare applications greatly. Several associations and governing bodies have globally established CT and X-ray imaging as a primary mode of examination to check a patient for the presence of COVID-19-related symptoms. According to Siemens Healthineers, the studies conducted by multiple researchers found that the X-ray examinations had a lower sensitivity for COVID-19-related lung shadowing of 25% to 69%.
- In the near future, the high-demand regions, such as Asia-Pacific and North America, are expected to revise their safety regulations, leading to stricter rules and industrial standards. This scenario also makes it hard for new players to enter the market. Therefore, stringent regulations and validity guidelines restrain the market's growth.

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X-Ray Tube Market Trends

Healthcare Sector Holds the Largest Market Share

- In the medical sector, dental applications that require smaller and shorter scans are found to be using stationary x-ray tubes for imaging. Oral conditions are the most common health issues, affecting an estimated 3.9 billion people worldwide, according to Listerine Professional. Therefore, in the dental sector, the primary demand for x-ray imaging, which does not require rotating anode x-ray tubes, is due to stationary tubes that are suitable for imaging purposes.
- Many advances in medical radiation equipment and techniques have been seen as a result of technological advancements and increased adoption of technology in the healthcare industry. Over the past few years, one of the significant advancements in interventional x-ray has been an increased focus on core and supporting technologies to provide high-quality, high-resolution images without a corresponding increase in radiation dose. This has been a key driver behind technology advancements such as Siemens' Artis Q, Philips' ClarityIQ technology, Q.zen technology, GE Healthcare's Image Guided Systems (IGS), and Toshiba's Infinix Elite product line.
- The medical devices industry is witnessing a growth in the number of imaging and diagnostic tests performed every year owing to various factors, such as an increasing focus on radiological diagnostic tests, rising chronic disease burdens, and the introduction of efficient X-ray devices through market consolidation and mergers.
- The number of people over the age of 65 is steadily increasing, according to UN data from the World Population Prospects. By 2050, the world's population aged 60 years and older is predicted to reach 2 billion, of which 80% may live in low- and middle-income countries. Hence, the rising geriatric population and the increasing number of orthopedic and cardiovascular procedures may further drive the adoption of X-ray tubes in medical applications.
- The x-rays are generated using the x-ray tubes, and in the pharmaceutical industry, these tubes are used with tungsten, especially when softer x-rays are required in mammography applications. The specialized x-ray sources used in the research are known as synchrotron radiation, generated by the radiation process in particle accelerators in which high-magnitude x-ray tubes are used.

North America Accounts for a Significant Share

- The United States is witnessing an increase in the geriatric population as well as a surge in the incidence of chronic diseases because of sedentary lifestyles and unhealthy eating habits. According to census data, as of July last year, 16.5% of the US population of 328 million people, i.e., 54 million, were over the age of 65. It is estimated that by 2030, the number will increase to 74 million. The number of people over the age of 85 is growing even faster. Moreover, rising medical infrastructure developments with the increase in medical facilities are expected to propel the demand for the medical X-ray tube market in America.
- For instance, EOS imaging, a medical device company, has installed its fourth EOS system at the Hospital for Special Surgery (HSS) in New York City, United States, which offers low-dose full-body, stereo-radiographic images of a patient in a functional position.
- Additionally, in the United States alone, over 30% of emergency department visits by the chronically ill are preventable, resulting in avoidable costs of over USD 9 billion each year. The rise in chronic diseases is pushing up the importance of screening techniques for the right and timely treatment and care. X-ray continues to play a vital role in chronic disease diagnosis, like diseases of the exocrine pancreas, lungs, bones, and abdomen.
- Also, the X-ray tube is being deployed significantly in the region for inspection purposes. According to the Drug Enforcement Administration (DEA), most of the fentanyl, heroin, and methamphetamine are trafficked across the southwest border. It is

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primarily smuggled into the United States through legal ports of entry, i.e., it comes within feet of the Customs and Border Protection (CBP) officer. Additionally, CBP has acknowledged that it currently scans only 2% of all private passenger vehicles and 16% of commercial vehicles at land borders.

- Airport security is also a major user of X-ray systems. For instance, recently, the TSA awarded an order worth USD 198 million to Analogic Corporation for the procurement of mid-sized computed tomography X-ray systems for TSA checkpoints.

X-Ray Tube Industry Overview

The presence of major players governs competitive rivalry in this industry. The market can attain a sustainable competitive advantage through innovation, owing to the growing need for differentiated products. For instance, in January 2022, Fortress Technology launched a new x-ray tube named raptor for food packs. The Raptor X-Ray inspects and rejects packaged meat, cheese, chilled, and confectionery products with metal, glass, wood, rubber, high-density plastic, stone, and calcified bones.

In May 2022, Aidoc, a provider of healthcare AI solutions, announced an agreement with Gleamer, a French MedTech company focused on using AI technology in radiology to integrate Gleamer's BoneView solution for X-rays. The onboarding of Gleamer's AI BoneView X-ray solution aimed to expand Aidoc's venture into the X-ray modality.

In March 2022, Canon Medical Systems Corporation announced that it entered an agreement to acquire Nordisk Røntgen Teknik A/S, a Danish company with advanced technology for developing and manufacturing diagnostic X-ray systems. Through this acquisition, Canon Medical opened up access to European-based technology, development, and manufacturing for advanced imaging solutions.

In January 2022, Malvern acquired Creoptix AG in order to strengthen and expand its affinity offering. Creoptix is a kinetics measuring company that develops and manufactures analytical equipment, software, and consumables. By leveraging Malvern Panalytical's enormous client base, the partnership presents an exciting potential to quickly scale Creoptix's superior technology in terms of speed and sensitivity.

Additional Benefits:

- The market estimate (ME) sheet in Excel format
- 3 months of analyst support

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