Printed Circuit Board Inspection Equipment - Market Share Analysis, Industry Trends & Statistics, Growth Forecasts (2025 - 2030)

Market Report | 2025-04-28 | 125 pages | Mordor Intelligence

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Report description:

The Printed Circuit Board Inspection Equipment Market is expected to register a CAGR of 6.8% during the forecast period.

Key Highlights
- The density and diversity of printed circuit boards are increasing due to improvements in production technology. As such, there is a need for accurately identifying defects on PCBs, apart from manual vision inspection. Machine inspection methods help in better quality and higher yield of the PCB. In addition, the growing production of printed circuit boards (PCB) and increasing complexity in PCB manufacturing due to the growing industrial adoption are some of the major factors driving the demand for PCB inspection equipment over the forecast period. The ever-increasing product advancement motivates companies to invest in the market studied.
- In August 2021, Nordson Corporation announced plans to acquire NDC technologies, a provider of precision measurement solutions and in-line manufacturing process control, to expand the formers test and inspection platform. Thus, favoring technological advancements for PCB inspection equipment.
- According to the Consumer Technology Association, U.S. tech industry revenue will reach a record-breaking USD 487 billion in 2021, a 7.5% jump YoY. Moreover, Smartwatches demand is projected to grow by 8% in unit shipments, essentially driven by tech-savvy and fashion-conscious consumers, likely contributing to the overall PCB demand.
- Further, the market-studied players are also investing in product innovation, as the need for PCBs for different industries is dynamic. This is also expected to expand the scope of the market studied. For instance, in November 2021, Omron launched the PCB inspection system VT-S10 Series which features AI to automate high-precision inspection processes for PCB sub-assemblies. This helps the users to eliminate the need for special operator skills.
- Moreover, According to a report published by Sullivanmaine.org in June 2021, the interest in smartwatches among the 65+ population is expected to increase in the coming years. According to an Apple Watch insider, the report also mentioned that at

least 3-5 million Apple Watches have been purchased by adults age 65+. Thus, driving the need for PCB inspection equipment.
- The growing demand for miniaturization has led to the increasing PCB design complexity. This has led to a proportional PCB inspection failure rate, challenging the market demand.
- Furthermore, the electronics device sector is anticipated to be impacted significantly by the COVID-19 outbreak, as China is one of the major suppliers of raw materials and finished products. The industry faced a reduction in production, disruption in the supply chain, and price fluctuations. Further, the sales of prominent electronic companies were affected during the period. The travel restriction on both people and products hampered the market's growth in the short run.

PCB Inspection Equipment Market Trends

X-Ray Inspection to Gain Majority Share

- X-ray is the most widely available and cost-effective diagnostic imagining technique preferred among the population. In PCB inspection, X-ray is massively used in the process of PCB assembly to test the quality of PCBs, which is one of the essential steps for quality-oriented PCB manufacturers.
- PCBs are fundamentally critical in the fields of healthcare and medicine. The movement of innovation into the future, making the diagnostic, treatment, and research strategies progress towards becoming automated. This means there is more work for PCBs in medical devices and equipment. Further, according to IMF, the revenue from X-ray diagnostic imaging is anticipated to grow by USD 58.27 billion in 2027. Such developments in medical devices will further drive market growth.
- In November 2021, OMRON Corporation announced the expansion of a new VT-X750-V3 system, the world's fastest CT-type X-ray inspection device. The VT-X750-V3 delivers advanced 3D inspection of electronic substrates to meet the growing requirements of fifth-generation mobile communication systems (5G), electric automobiles, and autonomous driving application products.
- ViTrox provides advanced 3D X-Ray Inspection (V810i Series), designed to cater to different sizes of PCB assembly. It enables examination at the micron level with maximum throughput. Moreover, Viscom offers a 3D AXI system distinguished by fast handling and 3D image quality of up to 3 PCBs. It is ideal for use in production lines that require high throughput despite an extensive inspection of hidden solder joints.
- In October 2021, VJ Electronix, Inc., a pioneer in rework technologies and a global provider of advanced X-ray inspection and component counting systems, is planning to give SMTAI attendees a preview of a new x-ray inspection system available in the first half of 2022.
- Further, in May 2021, Nordson DAGE, the major player in X-ray inspection for the electronics industry, offered the highest feature recognition and resolution X-ray systems within failure analysis laboratories and the production environment. It is launching its 4th generation, ultra-high resolution, off-line X-ray system, the Quadra Series. The latest Quadra series X-ray inspection delivers unbeatable image quality in the shortest possible time. With its revolutionary QuadraNT X-ray tube and Aspire FP detector.

Asia Pacific to Witness the Significant Market Growth

- Asia-Pacific is a significant PCB inspection equipment market across regions, mainly due to the large number of PCB manufacturing and electronic products manufacturing companies in the region.
- China, among other Asian countries, is one of the significant countries influencing the importance of PCB inspection equipment in the region. According to a report published by IPC in January 2022, the worldwide demand for PCBs was USD 64.0 billion. U.S. PCB production met 4% of the total demand (approximately USD 2.9 billion), while China accounted for more than 56%, and the

entire Asia-Pacific region provided 90% of PCB fabrication.
- Increasing smartphone adoption rates have made Asia-Pacific one of the largest mobile markets in the world. This is due to increasing population growth and urbanization. As per GSM Association, more than 4 out of 5 connections will be smartphones by 2025. This trend is expected to increase PCB usage in this region, thus increasing the use cases of PCB inspection.
- In addition, China is home to many PCB production facilities. AT&S' largest production unit is located in Shanghai, focusing on multi-layer PCB. This is because the company focuses on large volumes of mobile communications customers in China.
- Other countries are also aiming to increase market adoption. Taiwan Printed Circuit Association (TPCA) works with its 650 member companies to provide: development material on domestic and overseas printed circuit boards. In recent years, they have promoted the circular economy and smart manufacturing with members to enhance the competitiveness of the PCB industry.
- Companies such as Omron are also collaborating with inspection equipment manufacturers to design testing equipment with no human interaction, which further increases the products' accuracy. For instance, Cisel, a company developing FPCBs, has recently chosen an OMRON TM5 collaborative robot (cobot) to automate the electrical testing of boards used in the power steering system of a leading automotive manufacturer.

PCB Inspection Equipment Industry Overview

The PCB inspection equipment market is concentrated, with few players occupying the majority market share. Vendors are slowly emerging with offerings related to PCB inspection. Existing competitors are fiercely competitive. Further, large companies' innovation strategies will drive the studied market.

- October 2021 - Omron launched the PCB inspection system "VT-S10 series," which features an industry-first imaging technique and AI best to automate the high-precision inspection process for electronic assemblies, maximize performance and minimize skill-level requirements.
- January 2021 - CADY, an Israeli-based company, raised USD 3 million to develop automatic PCB inspections. The company developed an automated PCB design inspection software that parses the datasheets of electrical components and chips in the electrical schematic and cross-checks them against connections in the design to detect errors at early stages. Such companies would help to support the growth and development of PCBs inspection equipment.

Additional Benefits:

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

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