

Metrology Software Market - Growth, Trends, Covid-19 Impact, and Forecasts (2023 - 2028)

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Report description:

The global metrology software market is expected to register a CAGR of 7.44% during the forecast period. Metrology solutions are witnessing a shift from merely a tool that gathers or collects data to one capable of data analysis and processing. Measurements are conducted in the production process rather than in measuring rooms, fostering the demand for metrology used in a modularized method in plants and production lines and impacting the demand for standard measuring instruments.

Key Highlights

The use of metrology software to inspect manufactured products is one of the critical factors expected to drive the growth of the global metrology software market in the next five years. Advanced nanotechnology, smart materials, flexible electronics, and green manufacturing are the principal factors driving demand for metrology solutions in electronic manufacturing.

Due to the ongoing digitalization trend across all sectors, the metrology field has noticed the need to change digitally. As the world shifts toward digital transformation, the industry also embraces the transformation, allowing the metrology software market to grow more during the forecast period.

Metrology software connects the dots among CAD, ERP, MRP, and PLM. Metrology is one of the first challenges when working down the design/build process. Post-CAD measurement data is often necessary to collect missing feature data, create geometry for complex surface profiles, and support manufacturing, engineering, toolmaking, assembly guidance, and quality verification. Metrology solutions are expected to become indispensable to electronic manufacturing quality inspection activities. In the rapidly-growing electronic manufacturing industry, end users aim to undertake projects involving new product designs and development.

Statistical process control for semiconductor manufacturing enables the company to maximize yield and quality by simply sampling a small number of wafers out of thousands processed daily. Thus, revenue growth in metrology/inspection systems lags behind the increase in overall equipment.

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With the outbreak of COVID-19, there has been a significant impact on the technology sector. Disruptions of an electronic supply-value chain and raw material supply have adversely impacted the technology industry. However, the pandemic compelled industries to find safer and more innovative ways to operate smoothly and effectively. On the other hand, the market was hampered due to limited manufacturing activities carried out due to covid lockdown.

Metrology Software Market Trends

Aerospace Sector to Witness Significant Growth

Since the dawn of flying, technology has advanced at a breakneck pace, and planes are now vastly more sophisticated. The use of metrology in aerospace has been critical to this progress. Metrology's importance is expected to only rise in the following decades, thus driving the metrology software market.

Aircraft that are lighter, more efficient, and safer are made with composite materials, essential to the continued development of aerospace production. Composite materials are light, incredibly robust, and long-lasting. They may also be molded into more intricate shapes than metals like steel and aluminum, which has two benefits. Companies profit from fewer fasteners and joints, resulting in fewer weak places. Because there are fewer components, assembly time is also minimized.

To construct lighter, more efficient planes, the usage of composite parts is critical in the future of aerospace manufacturing. While composite-part airplanes have reduced operational costs, their production costs are often higher. Composites are more expensive than steel and aluminum because they are lighter, stronger, and more durable, and metrology-assisted assembly is crucial for keeping the production process cost-effective. As composite parts grow increasingly common, metrology's significance as a value-added component is becoming more widely recognized.

The disadvantage of composite materials is that they are more expensive than their metallic counterparts. However, metrology comes into play here, supporting the assembly process in developing more cost-effective production procedures. The crucial significance of metrology in aircraft is expected to only grow as the usage of composite materials develops among the significant commercial plane builders.

Despite its numerous advantages, composite is tough to work with material requiring precise assembly with very tight tolerances. Using metrology in manufacturing helps avoid costly mistakes and scrap or rework material. Also, with the aerospace industry demanding 100% inspection from their Tier-1 suppliers, companies must deliver accuracy, repeatability, and dependability for the most challenging measurement tasks. According to Boeing, in 2022, the market demand for Civil Aviation Services in North America is approximately USD 1045 billion.

Asia-Pacific Occupies the Largest Market Share

Due to the presence of various automotive giants and aerospace establishments in the region and their increasing interest in high-accuracy metrology solutions, Asia-Pacific is expected to have the highest growth of metrology software solutions.

China is a global manufacturing hub. Since the precision and complexity in manufacturing processes have been increasing rapidly, the metrology software market is expected to boost this area, as China currently has several national and international manufacturing facilities.

With support from Huawei and China Mobile, Haier has successfully applied innovative manufacturing solutions combining 5G and mobile edge computing in its smart factories. These solutions integrate 5G edge computing with artificial intelligence and machine vision in manufacturing environments. These apply to various manufacturing scenarios where they can perform various functions. The metrology software solutions can save manufacturing costs by rapidly performing QC checks with over 99% accuracy, at least 10% more accurate than without the function. Such instances are expected to drive the market's growth in the region.

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Companies have had various partnerships and collaborations in Japan to enhance their measurement and inspection solutions further and improve their presence and customer base. Various companies have been seeking an effective technology that can help to fully automate and enhance better cost-effective visual inspection and measurement solutions that significantly improve quality control and reduce manufacturing costs.

For instance, in September 2021, Nikon Metrology NY released a new offset CT reconstruction algorithm with the latest version of its Inspect-X software. This software can scan more significant components and can be done at higher geometric magnifications. The Offset.CT module can be used with all Nikon Metrology X-ray CT systems from 180kV to 450kV. This combination of the latest Rotating.Target 2.0, adjustable FID, and Offset.CT significantly reduces cycle time and provides better resolution even when dealing with large and complex components.

Metrology Software Market Competitor Analysis

The metrology software market is moderately competitive with the presence of many players in the market. The key players in the market are adopting strategies such as partnerships, innovations, and acquisitions to enhance their product offerings and gain sustainable competitive advantage.

In September 2022: ZEISS Industrial Quality Solutions launched ZEISS 3D metrology software bundled on a single platform that additionally offers many digital services. ZEISS Quality Suite offers metrologists various software products to access current news, events, training offers, intuitive online help, and updates.

Additional Benefits:

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

Table of Contents:

1 INTRODUCTION

- 1.1 Study Assumptions and Market Definition
- 1.2 Scope of the Study

2 RESEARCH METHODOLOGY

3 EXECUTIVE SUMMARY

4 MARKET INSIGHTS

- 4.1 Market Overview
- 4.2 Industry Attractiveness - Porter's Five Forces Analysis
 - 4.2.1 Threat of New Entrants
 - 4.2.2 Bargaining Power of Buyers
 - 4.2.3 Bargaining Power of Suppliers
 - 4.2.4 Threat of Substitute Products
 - 4.2.5 Intensity of Competitive Rivalry
- 4.3 Assessment of the Impact of COVID-19 on the Industry

5 MARKET DYNAMICS

- 5.1 Market Drivers

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- 5.1.1 Increased Drive Toward Automation of Processes in Manufacturing Industry
- 5.1.2 Demand for High-quality Products from Consumers
- 5.1.3 Increasing Need for Intelligent and Effective Data Acquisition, Analysis, and Evaluation and Powerful Data Management and Reporting Tools
- 5.2 Market Restraints
- 5.2.1 Lack of Awareness to Challenge the Market Growth

6 MARKET SEGMENTATION

- 6.1 By End-user Vertical
 - 6.1.1 Automotive
 - 6.1.2 Aerospace
 - 6.1.3 Electronic Manufacturing
 - 6.1.4 Other End-user Verticals
- 6.2 By Geography
 - 6.2.1 North America
 - 6.2.2 Europe
 - 6.2.3 Asia Pacific
 - 6.2.4 Latin America
 - 6.2.5 Middle East & Africa

7 COMPETITIVE LANDSCAPE

- 7.1 Company Profiles*
 - 7.1.1 Nikon Metrology NV
 - 7.1.2 3D Systems Inc.
 - 7.1.3 Creaform Inc. (AMETEK Inc.)
 - 7.1.4 Faro Technologies
 - 7.1.5 Carl Zeiss AG
 - 7.1.6 Hexagon AB
 - 7.1.7 LK Metrology Ltd
 - 7.1.8 Renishaw PLC
 - 7.1.9 Perceptron Inc. (Atlas Copco)
 - 7.1.10 Innovmetric Software Inc.
 - 7.1.11 Fluke Corporation
 - 7.1.12 Metrologic Group (Sandvik AB)
 - 7.1.13 Autodesk Inc.

8 INVESTMENT ANALYSIS

9 FUTURE OF THE MARKET

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