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Global 3D Optical Metrology Market Size Study, by Type (3D Automated Optical Inspection System, Coordinate Measuring Machine, Laser Scanning, Optical Digitizer), by Component (Hardware, Software), by Industry (Aerospace & Defense, Architecture & Construction, Automotive & Transportation, Energy & Utilities, Manufacturing, Medical & Pharmaceuticals, Semiconductor & Electronics), by Application (Quality Control, Rapid Prototyping, Reverse Engineering, Virtual Assembly), and Regional Forecasts 2024-2032

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Abstracts

Global 3D Optical Metrology Market is valued at approximately USD 7.57 billion in 2023 and is anticipated to grow with a healthy growth rate of more than 8.44% over the forecast period 2024-2032. 3D optical metrology leverages light as an information carrier to measure physical properties such as dimensions, distances, and temperatures of manufacturing products and components. With the rise of Industry 4.0 and the shift towards automation, there is a growing demand for advanced technologies like 3D optical metrology. This technology enhances precision in measurement and analysis, making it invaluable for mapping complex products in three-dimensional space.

3D optical metrology is increasingly adopted in the industrial sector due to its efficient and cost-effective inspection capabilities for intricate products. It captures detailed data points and provides precise measurements, thereby improving product design, manufacturing processes, and quality control. This technology also offers significant

insights into process optimization, helping companies reduce costs while enhancing efficiency, safety, and product quality. Despite its advantages, the high setup costs of 3D optical metrology systems can hinder its widespread adoption. However, ongoing advancements and the increasing need for improved traceability are expected to drive the technology's uptake in manufacturing sectors globally.

The high adoption of automated optical inspection (AOI) systems across the manufacturing sector highlights the growing significance of 3D optical metrology. AOI systems, coordinate measuring machines (CMMs), laser scanning, and optical digitizers each play crucial roles in ensuring the accuracy and reliability of measurements in various applications. These tools not only facilitate rapid defect detection and quality assurance but also support complex geometric measurements and reverse engineering processes.

The availability of advanced 3D optical metrology hardware products, such as portable measuring arms, laser trackers, and optical scanners, is crucial for precise measuring purposes. These components cater to a wide range of precision measurement applications, ensuring comprehensive data capture and accurate interpretation. The accompanying software modules optimize meshes, prepare 3D scans for 3D printing, and enable quality control professionals to perform detailed inspections and generate comprehensive reports.

Industries such as aerospace & defense, automotive, manufacturing, and semiconductor sectors are significantly benefiting from 3D optical metrology. These sectors rely on the technology for dimensional inspection, quality control, and process optimization. Additionally, the pharmaceutical industry utilizes 3D optical metrology for analyzing components like tablets and capsules, ensuring they meet stringent specifications.

The key regions considered for the global 3D Optical Metrology study include Asia Pacific, North America, Europe, Latin America, and Rest of the World. North America is a dominating region in the 3D Optical Metrology in terms of revenue. The market growth in the region is being attributed to factors including the increasing shift towards automation and innovation in manufacturing. The APAC region is also experiencing rapid expansion, driven by industrial growth, government initiatives to boost local production, and the adoption of advanced manufacturing technologies. Whereas, the market in Asia Pacific is anticipated to grow at the fastest rate over the forecast period fueled by industrial growth, government initiatives to boost local production, and the adoption of advanced manufacturing technologies. Also, well-established manufacturing

sectors and substantial investments in innovative technologies are further fostering the regional market growth.

Major market players included in this report are:

Advantest Corporation

AMETEK, Inc.

Artec Europe, S.a.r.l.

Atlas Copco AB

Baker Hughes Company

Bruker Corporation

Carl Zeiss AG

Cognex Corporation

FARO Technologies, Inc.

Hexagon AB

InnovMetric Software Inc.

Jenoptik AG

Keyence Corporation

KLA Corporation

Mahr GmbH

The detailed segments and sub-segment of the market are explained below:

By Type:

3D Automated Optical Inspection System

Coordinate Measuring Machine

Laser Scanning

Optical Digitizer

By Component:

Hardware

Software

By Industry:

Aerospace & Defense

Architecture & Construction

Automotive & Transportation

Energy & Utilities

Manufacturing

Medical & Pharmaceuticals

Semiconductor & Electronics

By Application:

Quality Control

Rapid Prototyping

Reverse Engineering

Virtual Assembly

By Region:

North America

U.S.

Canada

Europe

UK

Germany

France

Spain

Italy

ROE

Asia Pacific

China

India

Japan

Australia

South Korea

RoAPAC

Latin America

Brazil

Mexico

RoLA

Middle East & Africa

Saudi Arabia

South Africa

RoMEA

Years considered for the study are as follows:

Historical year – 2022

Base year – 2023

Forecast period – 2024 to 2032

Key Takeaways:

Market Estimates & Forecast for 10 years from 2022 to 2032.

Annualized revenues and regional level analysis for each market segment.

Detailed analysis of geographical landscape with Country level analysis of major

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regions.

Competitive landscape with information on major players in the market.

Analysis of key business strategies and recommendations on future market approach.

Analysis of competitive structure of the market.

Demand side and supply side analysis of the market.

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