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Laser Interferometer Market with COVID-19 Impact Analysis by Interferometer Type (Michelson, Fabry-Perot, Fizeau, and Twyman-Green), Type, Application (Surface Topology, Engineering, and Science), End-User Industry, and Geography - Global Forecast to 2026

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Abstracts

The global laser interferometer market size is expected to grow from USD 245 million in 2021 to USD 335 million by 2026, at a CAGR of 6.5%. The market has a promising growth potential due to several factors, including growing demand for 3D metrology services, rising focus on quality control through automation in the manufacturing industry, and increasing expenditure on R&D activities. The tolerance level in the manufacturing industry is very low. Hence, there is a significant need for documentation and product tracking, which makes a surface measurement in the manufacturing process essential to enhance product durability and quality. The measurement of surface displacement is one of the quality control processes and is usually not a part of the actual production line. The contact-type surface measurement method is commonly used in quality control. The processes consume a lot of time in the case of human interaction. Therefore, to reduce or eliminate nonvalue-added time, effective measurement tools, quality inspection tools, and automation processes have been utilized. Companies are focusing on automating the measurement and production processes with the integration of laser interferometers that can capture accurate measurements. Thus, the quality control of each component surface measurement is ensured in a production line. For instance, in October 2021, Zygo Corporation (US), a provider of optical metrology solutions, launched Verifire Asphere+, an addition to its Verifire series of laser Fizeau interferometers. The Verifire Asphere+ (VFA+) builds upon the success of the Verifire Asphere Interferometer, which was made specifically

for fast, non-contact, high-resolution 3D metrology of aspheric surfaces. The VFA+ leverages the benefits of Fizeau interferometry through a unique combination of precise, high-resolution, fast, and full aperture metrology for axisymmetric aspheres.

The major factor restraining the growth of the laser interferometer market includes price sensitivity associated with laser interferometer solutions and using the white light interferometry method. The costs associated with setting-up measurement and calibration tools make it difficult to achieve the targeted ROI that fits within a business plan. Different types of measurements require various measuring devices that are expensive. Specialized professionals are required to operate this measuring equipment and measure the device under test in accordance with the applicable regulations and directives. Consumers in the measurement ecosystem usually opt for cost-effective, technologically-advanced measurement equipment. The demand for advanced specifications and features, as well as the increase in the number of applications, has compelled engineers and manufacturers to upgrade existing technologies on a wide scale. The laser interferometer market faces challenges during measurement and testing processes, due to the need for qualified operators and the associated high labor costs. Decreasing testing time, which produces substantial cost savings for OEMs, acts as a restraint for measurement equipment vendors. Moreover, measurement tools need high capital expenditure. In order to stay in line with innovative technologies, companies need to expand their product range, which results in recurrent software and hardware advancements, thereby increasing the overall maintenance costs.

The market declined in 2020, mainly due to the impact of COVID-19. The supply chains were disrupted in 2020 due to the lockdown imposed by various governments and labor shortages in these industries due to travel restrictions, which would affect the laser interferometer market. Though the market has been impacted in 2020, it is expected to fully recover by 2022.

“Heterodyne Interferometer: The larger segment of the laser interferometer market, by type”

A heterodyne interferometer measures mirror displacement by measuring phase change due to the Doppler effect, similar to a radar that measures the speed of a car. The heterodyne interferometer has emerged as a favorable option for geometric error measurement equipment, owing to its high resolution, high precision, and less sensitivity to environmental variations. Heterodyne interferometers are mostly used in precision instruments for modern industrial and scientific applications, which is expected to propel the growth of the laser interferometer market. In heterodyne interferometers,

only a single detector is required to measure both the displacement and the direction, which makes the alignment of an object easier. However, it requires a highly stabilized two-frequency-laser source and more sophisticated detector electronics. These features of the heterodyne interferometer give it an advantage over homodyne interferometers.

“Industrial: The fastest-growing segment of the laser interferometer market, by end-user industry”

The industrial segment is expected to grow at the highest CAGR during the forecast period. The manufacturing industry focuses on delivering high-quality machinery parts on time. Laser interferometers are used to inspect and measure integrated data in production processes and for quality control in general manufacturing and precision machining. The major industrial applications include in-process surface metrology, roughness measurement, 3D surface metrology in hard-to-reach spaces and in hostile environments, profilometry of surfaces with high aspect ratio features (grooves, channels, holes), and film thickness measurement.

“Europe has the largest market share in the laser interferometer market”

Europe accounted for the largest share of the laser interferometer market in 2020. Rapid technological developments and increased adoption of automation in the automotive and aerospace & defense industries in the region are the key factors expected to drive the growth of the market in Europe. Laser interferometer manufacturers are using advanced technologies to support smooth industrial operations. The laser interferometer market in Europe has been segmented into Germany, France, the UK, and the rest of Europe (including Italy, Sweden, Switzerland, Norway, Netherlands, Austria, and Finland). Germany and the UK are the major countries contributing to the laser interferometer market in Europe. These countries have a major presence of end-user industries, such as automotive, biomedical, and aerospace & defense. Moreover, the use of laser interferometers in water treatment plants and the automotive industry is expected to boost the growth of the laser interferometer market in the region. Improving economic conditions, coupled with the rising demand for passenger cars, are projected to provide an impetus to the growth of the laser interferometer market in the region. Some of the major players in the region include Renishaw (UK), Carl Zeiss (Germany), SIOS Me?technik GmbH (Germany), Taylor Hobson Ltd. (UK), and Status Pro Maschinenmesstechnik GmbH (Germany).

The study contains insights from various industry experts, ranging from component suppliers to Tier 1 companies. The break-up of the primaries is as follows:

By Company Type: Tier 1 – 35%, Tier 2 – 40%, and Tier 3 – 25%

By Designation: C-level Executives – 25%, Directors – 30%, and Others – 45%

By Region: North America – 40%, Europe – 32%, APAC – 23%, and RoW – 5%

The report profiles key players in the global Laser Interferometer market with their respective market share analysis. Prominent players profiled in this report are Renishaw PLC (UK), Keysight Technologies (US), Carl Zeiss (Germany), SIOS Me?technik GmbH (Germany), AMETEK, Inc. (US), Mahr Inc. (Germany), TOSEI ENGINEERING CORP. (Japan), QED Technologies (US), M?LLER-WEDEL OPTICAL GmbH (Germany), SmarAct GmbH (Germany), Luna Innovations Incorporated (US), 4D Technology Corporation (US), ?PRE Instruments (US), Trioptics GmbH (Germany), AdlOptica Optical Systems GmbH (Germany), Logitech Limited (UK), Holmarc Opto-Mechatronics P Ltd (India), attocube systems AG (Germany), HighFinesse Laser and Electronics Systems GmbH (Germany), XONOX Technology GmbH (Germany), Thorlabs, Inc. (US), Automated Precision, Inc. (US), Lasertex Co. Ltd (Poland), and FUJIFILM Holdings Corporation (Japan).

Research Coverage:

The report segments the Laser Interferometer market and forecasts its size, by value, based on region (North America, Europe, APAC, and ROW), by Interferometer Type (Michelson Interferometer, Fabry-Perot Interferometer, Fizeau Interferometer, Mach-Zehnder Interferometer, Sagnac Interferometer, Twyman-Green Interferometer), by Type (Homodyne, Heterodyne), by Application (Surface Topology, Engineering, Applied Science, Biomedical, Semiconductor Detection), by End-User Industry (Automotive, Aerospace & Defense, Industrial, Life Sciences, Electronics Manufacturing, Telecommunication). The report also provides a comprehensive review of market drivers, restraints, opportunities, and challenges in the laser interferometer market. The report also covers qualitative aspects in addition to the quantitative aspects of these markets.

Key Benefits of Buying the Report

The report will help the leaders/new entrants in this market with information on the closest approximations of the revenue numbers for the overall market and the sub-segments. This report will help stakeholders understand the competitive landscape and

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gain more insights to better position their businesses and plan suitable go-to-market strategies. The report also helps stakeholders understand the pulse of the laser interferometer market and provides them information on key market drivers, restraints, challenges, and opportunities.

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*Details on Business overview, Products/Solutions/Services offered, Recent Developments, COVID-19 Related Developments, MNM view might not be captured in case of unlisted companies.

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