# Semiconductor Metrology and Inspection Market Forecast to 2028 - COVID-19 Impact and Global Analysis By Type (Wafer Inspection System, Mask Inspection System, and Thin Film Metrology), Technology (Optical and E-Beam), and Organization Size (Large Enterprises and SMEs)

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**Report description:**

The Semiconductor Metrology and Inspection Market is projected to reach US$ 8,288.55 million by 2028, growing at a CAGR of 6.6% from 2022 to 2028.

In the last few years, the consumer electronics industry has been continuously increasing and evolving. Adoption of electronic devices is increasing due to the rise in disposable income, evolution of technologies, and improved access of internet. Consumer electronics include computers, mobile phones, earbuds, smartwatches, smartphones, washing machines, and air conditioners. Additionally, smart home devices have been witnessing unprecedented growth rates in the past few years. Rise in demand for consumer electronics is a key driving factor for the growing demand for semiconductors, thereby catalyzing the semiconductor metrology and inspection market. Various countries are adopting measures to reduce their dependence on other countries for procuring semiconductors. Hence they are framing policies to boost their internal semiconductor industry. In September 2021, the US agreed to aid Mexico in boosting the latter's semiconductor production. The move is expected to aid the US in reducing dependency on China. Similarly, in February 2022, European Union (EU) announced the Chips Act, through which they aim to boost semiconductor production in the region. With renewed interest in semiconductor production, the demand for semiconductor metrology and inspection equipment is expected bolster in the coming years. Therefore, all such factors are expected to boost the semiconductor metrology and inspection market during the forecast period.

Impact of COVID-19 Pandemic on Semiconductor Metrology and Inspection Market Growth

In Asia Pacific, the largest manufacturer and consumer of semiconductors, the COVID-19 pandemic caused severe disruptions. China, being the largest manufacturer of electronic devices, was affected severely since most countries closed their borders and shipments were delayed or cancelled. Similar situations were witnessed in Taiwan and South Korea. The pandemic and containment measures obstructed the supply chain and resulted in the huge backlog of orders among key market players, thereby negatively impacting the semiconductor metrology and inspection market growth. However, this scenario changed drastically post Q3 of 2020. Due to global semiconductor shortage, semiconductor manufacturers were forced to look for alternative measures to optimize their resource usage. Hence, they started adopting cutting edge metrology and inspection equipment to reduce wastage of raw materials. This strongly boosted the semiconductor metrology and inspection market size. Additionally, the shortage of semiconductor crippled several economies, which were strongly dependent on the same. Such countries started framing laws and granted incentives for boosting their internal semiconductor production. Hence, post Q3 of 2020, the market players witnessed a huge surge in demand for semiconductor metrology and inspection equipment. ASML Holding N.V. witnessed nearly 78% year on year growth for their metrology and inspection segment from 2020 to 2021. Similar growth rates have been witnessed for several other semiconductor metrology and inspection equipment market players as well. Hence, although the pandemic resulted in reduced revenue generation in the early periods of 2020, the semiconductor metrology and inspection market was positively impacted due to the pandemic.

China accounts for the largest share in the semiconductor metrology and inspection market in Asia Pacific due to the country's strong electronics and semiconductor manufacturing base. The country is the leading producer of consumer electronics, electric vehicles, and industrial electronic components. Additionally, China is the largest semiconductor consumer across the globe. A few of the semiconductor giants in the country are HiSilicon, SMIC, OmniVision, UNISOC, ZTE, and Nexperia. Moreover, the initiatives by Chinese government, including Made in China 2025, are expected to boost the country's self-reliance on semiconductor manufacturing. All such factors are expected to boost the revenue generation for semiconductor metrology and inspection market players in the country, during the forecast period.

The adoption of artificial intelligence (AI), deep learning, and big data analytics is continuously increasing across various applications in the aerospace, automotive, manufacturing, and military & defense sectors, which has propelled the demand for semiconductors. Such applications require complex semiconductors in a compact form. Shrinking feature sizes are driving demands for high accuracy, precision, sensitivity, and throughput. Special requirements, combined with the increased diversity and rapid evolution of advanced packaging (AP) processes, propel the demand for flexible measurement and inspection systems that can control a wide range of parameters, including two-dimensional (2D) and three-dimensional (3D) geometries, and can be adapted to new requirements as they arise. Combining various competencies into a single platform is the most economical and effective use of capital. Keeping up with the industry's roadmap necessitates novel solutions from equipment providers focusing on the unique requirements of AP operations. For example, in advanced wafer-level packaging (AWLP) applications, such as 3D IC and high-density fan-out, KLA Corporation offers Kronos 1190 patterned wafer inspection system with high-resolution optics. The system gives sensitivity to important flaws for process development and production monitoring. The above-mentioned factors drive the semiconductor metrology and inspection market growth globally.

KLA Corporation; ASML Holding N.V.; Applied Materials, Inc.; Onto Innovation, Inc.; and Hitachi High-Technologies Corporation are a few semiconductor metrology and inspection market players.

The overall semiconductor metrology and inspection market size has been derived using both primary and secondary sources. To begin the research process, exhaustive secondary research has been conducted using internal and external sources to obtain qualitative and quantitative information related to the market. The process also serves the purpose of obtaining an overview and forecast of the semiconductor metrology and inspection market size with respect to all market segments. Also, multiple primary interviews have been conducted with industry participants and commentators to validate the data and gain more analytical insights. Participants of this process include VPs, business development managers, market intelligence managers, national sales managers, along with external consultants such as valuation experts, research analysts, and key opinion leaders, specializing in

the semiconductor metrology and inspection market.

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