

Wafer Process Control Equipment Market to Reach USD 14.06 Billion by 2032 | SNS Insider

The increasing complexity of semiconductor designs and the need for high-precision process control are driving the growth of the wafer process control equipment

AUSTIN, TX, UNITED STATES, February 27, 2025 /EINPresswire.com/ -- Market Size & Industry Insights

As Per the SNS Insider, "The [Wafer Process Control Equipment Market](#) size was valued at USD 7.93 billion in 2023 and is estimated to reach USD 14.06 billion by 2032, growing at a CAGR of 6.52% during the forecast period of 2024-2032."

The Wafer Process Control Equipment Market is expanding with demand for precision monitoring in semiconductor manufacturing, driven by advancements in AI, automation, and next-generation chip technologies.

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SWOT Analysis of Key Players as follows:

- Thermo Fisher Scientific
- ASM Technologies
- NXP Semiconductor
- Lasertec Corporation
- Toray Engineering
- Brodcom Inc
- KLA Corporation
- ASML Holding NV
- Hitachi High-Tech Corporation
- Applied Materials



Key Market Segmentation:

By Product Type: Inspection Equipment Dominates, Metrology Equipment Registers the Fastest Growth

Inspection equipment dominated the market and accounted for a significant revenue share of 39% in 2023, due to its functions of defect detection and process integrity in semiconductor manufacturing. It has dominated due to the need for high-resolution imaging and automated defect detection. With an IC manufacturer playing the role of both an end-user and a merchant supplier, particularly as semiconductor nodes continue to shrink, important inspection tools are being leveraged to help maintain yield rates and improve product reliability.

The metrology equipment segment is anticipated to witness the fastest growth rate during the forecast period, due to the adoption of accurate measurement tools for nanoscale chips by semiconductor manufacturers. With the increasing complexity of semiconductor structures needing to measure critical dimensions and overlay accuracy, a highly accurate metrology solution is required. New optical and X-ray metrology technologies are increasingly needed for wafer uniformity and process stability monitoring.

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By Application: Foundries Lead, Memory Manufacturers See Rapid Growth

The foundries segment dominated the market and accounted for a significant revenue share in 2023, With the rise of advanced semiconductor chips for smart devices such as AI and 5G, the manufacturing plants that make these semiconductor solutions are dominating the market for future technology innovations. The constant need for tech giants to up the ante for faster processors and GPUs continues to give the foundries their money-maker.

The memory manufacturer is expected to have the fastest CAGR growth with the increased necessity of DRAM and NAND flashes storage resulting in the need for investment in high-precision wafer process control solutions. the memory suppliers need to further strengthen their wafer processing technology. To decrease defects and increase efficiency for memory chips, these companies are leveraging advanced metrology and inspection tools.

By Region: North America Dominates, Asia-Pacific Registers Fastest Growth

North America Dominated the market and accounted for a significant revenue share in 2023, backed by extensive semiconductor R&D investments, an existing fab infrastructure, and legislation focused on boosting local chip production. This is mainly due to the presence of semiconductor manufacturing companies and process control equipment companies in the region. The U.S. CHIPS Act, in addition, has added to the incentives for taking semiconductor

investments at home, reinforcing North America's leadership.

Asia-Pacific is expected to be the fastest-growing region owing to the growing number of semiconductor fabrication plants in countries such as China, Taiwan, and South Korea, and large investments in AI and IoT-driven semiconductor applications. Governments across the region are taking bold steps to diversify domestic semiconductor manufacturing capability away from foreign supply chains. In Taiwan and South Korea, the leading semiconductor foundries are also expanding their production capacity, driving demand for equipment to control wafer processing.

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Recent Developments in the Wafer Process Control Equipment Market

-In January 2024, KLA Corporation introduced an AI-powered metrology tool designed to enhance precision in wafer inspection and process control. This innovation leverages artificial intelligence to improve defect detection and classification, thereby optimizing semiconductor manufacturing processes.

-In February 2024, Applied Materials unveiled the SEMVision H20, an advanced defect review system that utilizes deep learning algorithms to accelerate chip defect analysis. This system combines cutting-edge electron beam technology with AI-driven image recognition to identify and categorize nanoscale defects more efficiently, enhancing yield and performance in semiconductor fabrication.

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