Semiconductor Wafer Polishing And Grinding Equipment - Market Share Analysis, Industry Trends & Statistics, Growth Forecasts (2025 - 2030)

Market Report | 2025-06-01 | 120 pages | Mordor Intelligence

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Report description:

Semiconductor Wafer Polishing And Grinding Equipment Market Analysis

The semiconductor wafer polishing and grinding equipment market size stood at USD 1.58 billion in 2025 and is forecast to reach USD 2.13 billion by 2030, reflecting a 6.2% CAGR as device makers pursue smaller geometries and higher performance. During the period, capital spending on larger wafers, wide-bandgap materials, and automation tools has driven sustained order volumes for precision material-removal systems. Equipment suppliers scaled real-time process-control features to manage atomic-level tolerances, while AI-enabled diagnostics offset technician shortages and improved yield. Export-control rules reshaped sourcing strategies, prompting parallel investments in North America and Europe that reduced over-reliance on Asia and strengthened regional service footprints. Sustainability mandates also influenced tool selection, accelerating the shift toward slurry-free CMP pads and low-consumable grinding technologies.

Global Semiconductor Wafer Polishing And Grinding Equipment Market Trends and Insights

Growing consumption of consumer electronics with advanced-node chips in Asia

Rapid uptake of flagship smartphones and AI-enabled wearables across China, India, and Southeast Asia accelerated demand for sub-3 nm devices that require atomically smooth wafer surfaces and defect densities measured in parts per billion. Local foundries expanded CMP and fine-grinding capacity despite export-license uncertainty, while tool makers introduced chlorine-free pads that met strict environmental codes without compromising planarity. As multi-core SoCs proliferated, process uniformity across diverse

material stacks became critical, spurring investment in adaptive-control CMP systems tailored for heterogeneous layers.

Miniaturization push driving demand for 300 mm and 450 mm CMP tools

The search for cost-effective die density sustained 300 mm as the mainstream format, yet exploratory 450 mm development resurfaced because a larger blank yields 2.25 times more die area. Tool makers tackled the scale-up challenge by reinforcing platens, optimizing slurry distribution, and embedding in-situ metrology to maintain nanometer-level removal uniformity across wider surfaces. TSMC's prototype 510 mm ? 515 mm rectangular substrate hinted at an alternate path that could triple usable area without fully overhauling legacy tool architectures.

High capital cost and long ROI cycle for 300 mm tools

A single 300 mm CMP platform carried a USD 3-5 million price tag in 2024, with facility upgrades adding USD 1-2 million, stretching payback beyond 4 years in lower-volume fabs. Smaller players delayed expansion and opted for refurbished or shared-capacity models, slowing overall tool uptake despite clear cost-per-die advantages at scale.

Other drivers and restraints analyzed in the detailed report include:

Foundry capacity investments in the U.S. and Europe under the CHIPS Act / Transition to SiC/GaN power devices requires ultra-precision grinding / Export controls and IP barriers limiting shipments to China /

For complete list of drivers and restraints, kindly check the Table Of Contents.

Segment Analysis

CMP tools generated 56.4% of 2024 revenue and remained central to advanced-node planarity targets that mandate removal accuracy below 0.1 nm. The semiconductor wafer polishing and grinding equipment market benefited as fabs adopted abrasive-free slurries and AI-assisted endpoint detection to push sub-3 nm yields upward. Integrated grinder-polisher platforms reduced wafer transfers, trimming particle risks, and cutting queue time.

Integrated systems' 7.9% CAGR through 2030 outpaced standalone grinders as customers consolidated process steps to free cleanroom space. Vendors bundled closed-loop temperature control, predictive maintenance, and consumable-life analytics, enhancing OEE for high-mix production. Emerging lapping and slicing tools addressed diamond and other ultra-hard substrates, extending the semiconductor wafer polishing and grinding equipment market reach into niche photonics and quantum-device lines.

The 300 mm node held 62.4% of market revenue, underlining decades of process maturity, optimized consumables, and well-depreciated fab assets. Continuous enhancements in CMP pad texture and back-grinding wheel geometry further raised throughput, reinforcing the segment's economic moat within the semiconductor wafer polishing and grinding equipment market.

Conversely, the 450 mm and above category registered the fastest 11.2% CAGR, driven by pilot lines exploring rectangular formats that promise 3? more die per wafer. Equipment makers prototyped enlarged platens, robotic handlers, and high-capacity slurry-delivery systems adaptable to multiple diameters, positioning themselves for potential mass adoption beyond 2028 as the semiconductor wafer polishing and grinding equipment industry evaluates ROI at scale.

Semiconductor Wafer Polishing and Grinding Equipment Market is Segmented by Equipment Type (Wafer Grinding Machines, and More), Wafer Size (?150 Mm, 200 Mm, 300 Mm, and 450 Mm and Above), Technology (Back-Grinding, and More), Semiconductor

Type (Memory, Logic and SoC, and More), End-User (Integrated Device Manufacturers, and More), and Geography (North America, South America, Europe, Asia-Pacific, and Middle East and Africa).

Geography Analysis

Asia-Pacific retained 68.5% of global revenue in 2024, anchored by Taiwan, South Korea, Japan, and China, where integrated device roadmaps and foundry expansions sustained tool procurements. TSMC's chlorine-free pad rollout and Japan's subsidy-backed fab clusters reinforced a regional preference for environmentally optimized equipment. Export-control uncertainties nudged Chinese fabs to local suppliers, yet high-end CMP imports persisted via license exceptions, preserving baseline semiconductor wafer polishing and grinding equipment market demand.

North America experienced an investment renaissance following the 2022 CHIPS and Science Act, which mobilized USD 52 billion in incentives and prompted over 90 fab announcements worth nearly USD 450 billion through 2025. Capacity additions raised tool orders, although technician gaps of 67,000 positions by 2030 drove automation priorities and partnerships with academic consortia to accelerate workforce pipelines.

Europe followed with the EUR 43 billion (USD 49.83 billion) Chips Act that targeted a 20% global output share by 2030. Germany's precision-engineering firms, France's advanced-packaging hubs, and Nordic material-science institutes demanded CMP systems featuring energy-recovery pumps and water-recycling loops, aligning procurement with EU Green Deal objectives and fostering differentiated semiconductor wafer polishing and grinding equipment market solutions.

List of Companies Covered in this Report:

Applied Materials Inc. / Ebara Corporation / DISCO Corporation / Tokyo Seimitsu Co. Ltd (ACCRETECH) / Revasum Inc. / Komatsu NTC Ltd. / Okamoto Machine Tool Works Co. Ltd. / Lapmaster Wolters GmbH (Precision Surfacing Solutions) / Logitech Ltd. / Entrepix Inc. (Amtech Systems) / G&N Genauigkeits Maschinenbau Nurnberg GmbH / Hantop Intelligence Tech Co. Ltd. / CMP-Tec Inc. / Koyo Machinery Co. Ltd. / Shanghai ShinEne Technology Co. Ltd. / Qingdao Lapping & Polishing Equipment Co. Ltd. / Nagase Integrex Co. Ltd. / Strausbaugh Inc. (S-Cubed) / Pureon AG / Vibrantz Technologies Inc. / Axus Technology / SHANGHAI FAMOUS TRADE CO.,LTD (ZMSH) / Huahai Machinery Group / Hansung Engineering Co. Ltd. / GPMT Co. Ltd. /

Additional Benefits:

The market estimate (ME) sheet in Excel format /
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