

Semiconductor Packaging Training Centre



Breakdown of Operational Expenditure



How to achieve budget goals?

Focus on High-Value Products

Increase revenue with high-value, low-volume products

Negotiate Material Costs

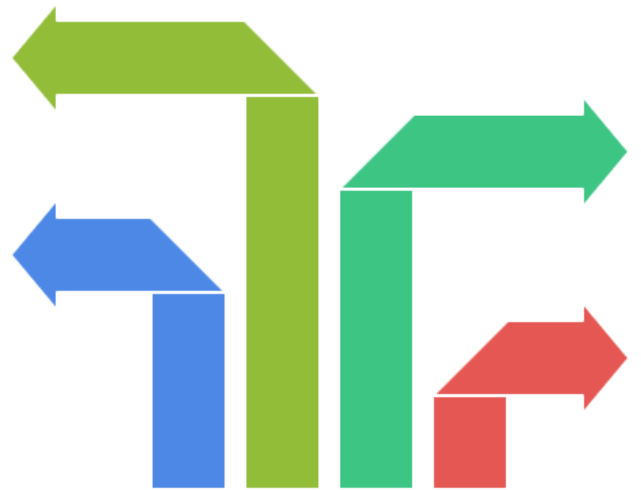
Lower raw material expenses through negotiation

Minimize Non-Essential Spending

Cut costs by reducing spending on R&D and marketing

Reduce Employees

Decrease labor costs by reducing workforce size



Semiconductor Facility Requirements



Facility Size

A medium-scale facility ranges from 5,000 to 20,000 square meters. It should include cleanroom areas, testing labs, office spaces, and warehousing.



Cleanroom

The cleanroom should be Class 100 or Class 1000 to meet production needs while managing complexity and energy costs.



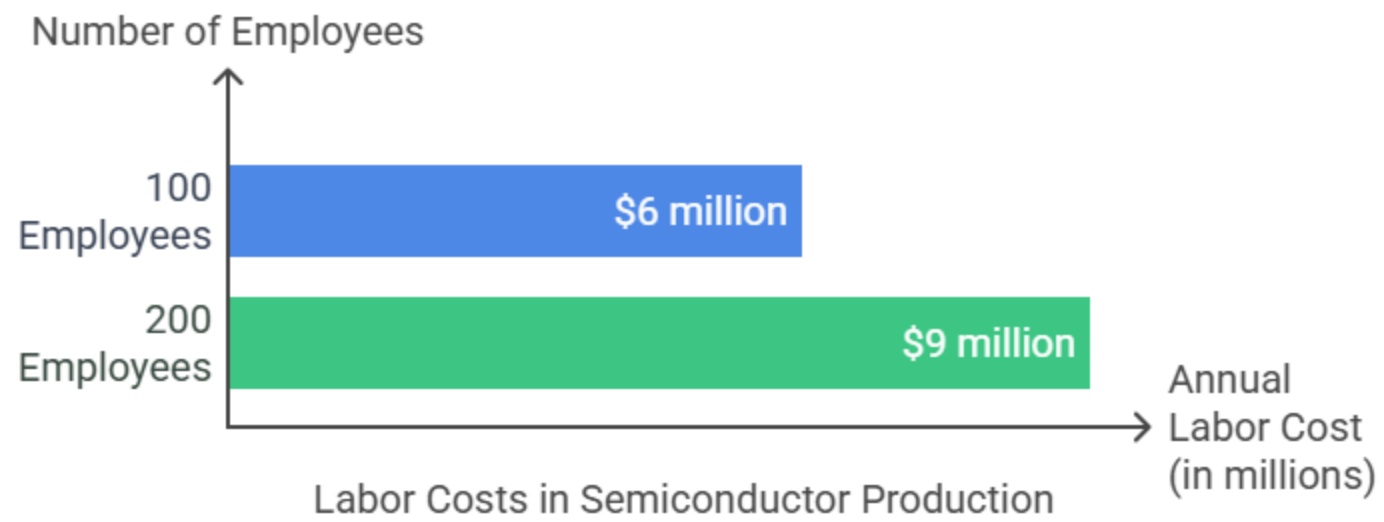
Location

Choose locations with lower operational costs, ensuring proximity to suppliers and customers.

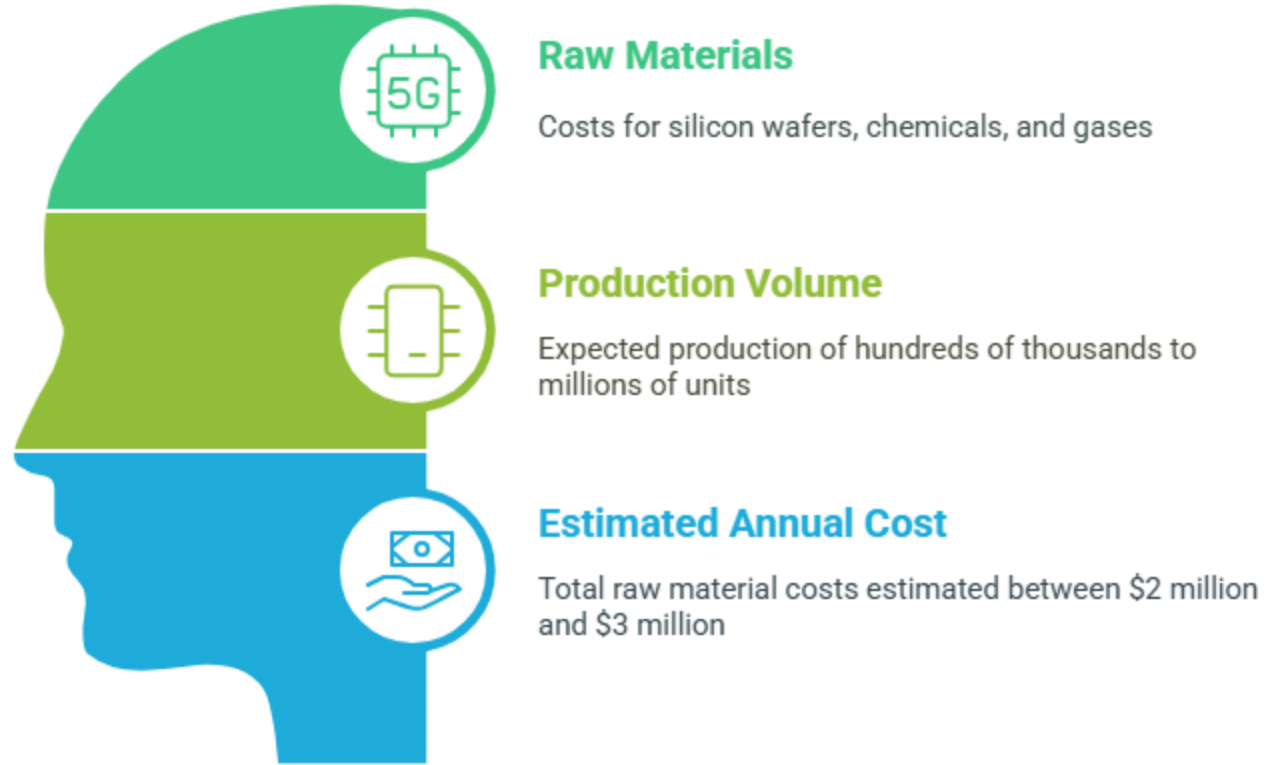


Estimated Annual Cost

Facility setup costs range from \$1.5 million to \$4 million annually, influenced by location and scale.



Breakdown of Semiconductor Raw Material Costs



Production Equipment Management

Estimated Annual Costs

Annual expenses for maintenance and consumables range from \$1 million to \$2 million.



Maintenance Costs

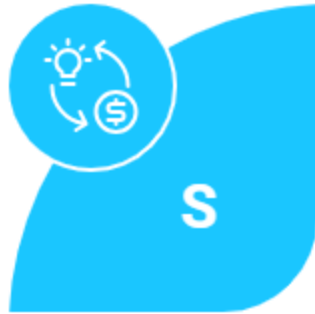
Regular maintenance is essential to prevent downtime and ensure quality control.

Calibration Costs

Ensuring precise operation through regular calibration is crucial for quality control.

Energy Efficiency Analysis

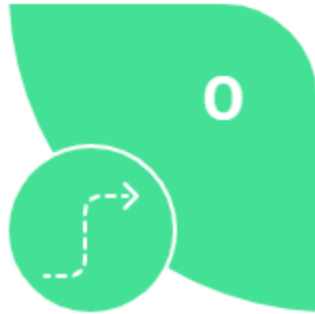
Cost Management
Optimizing energy and water usage



High Utility Costs
Annual costs range \$500k-\$1M



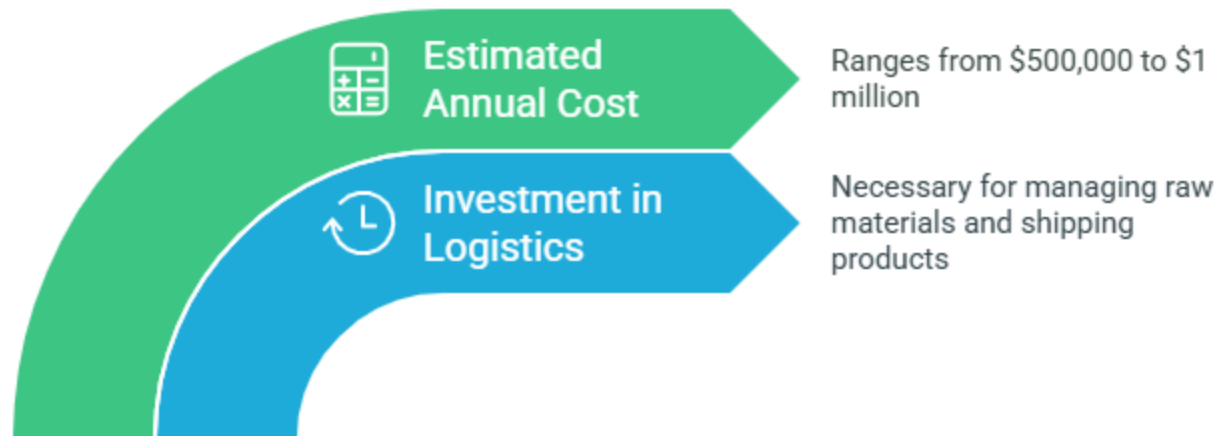
Efficiency Improvements
Potential for significant savings



Rising Utility Prices
Potential increase in costs over time



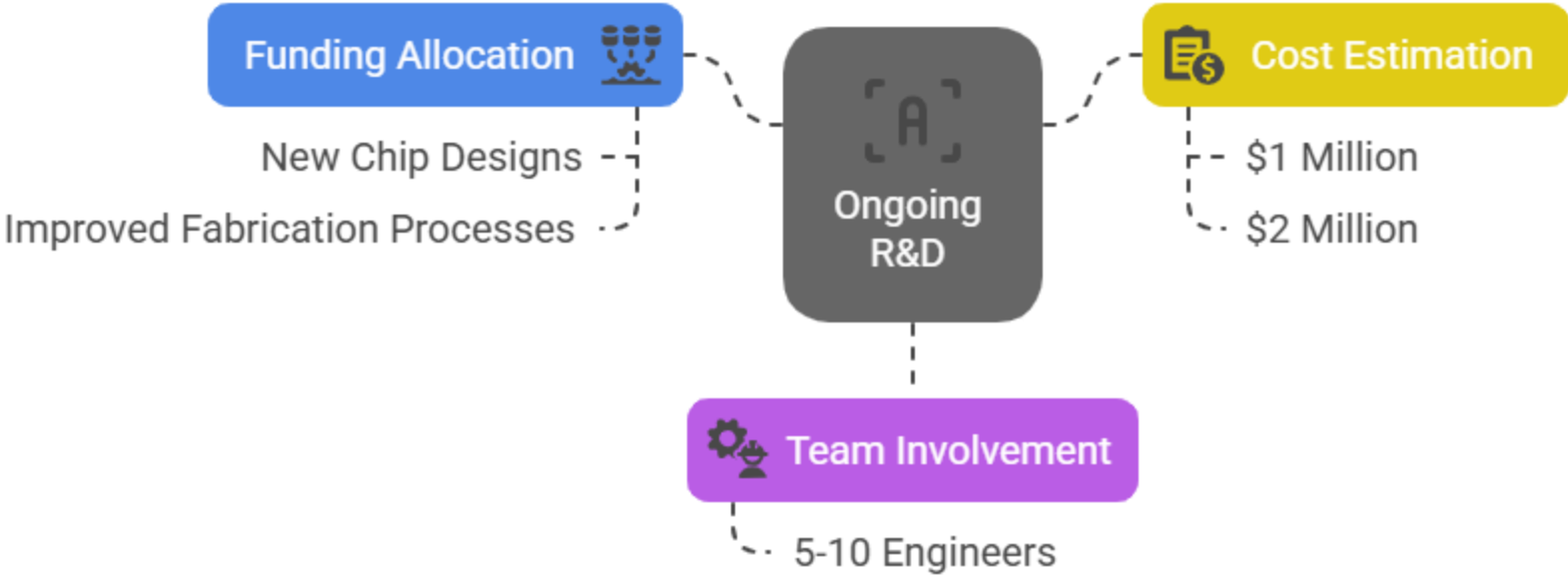
Breakdown of Logistics Costs



Breakdown of Sales and Marketing Costs



R&D Investment in Semiconductor Industry



Miscellaneous Costs
(Legal, Compliance,
Insurance)



**Legal
Compliance**

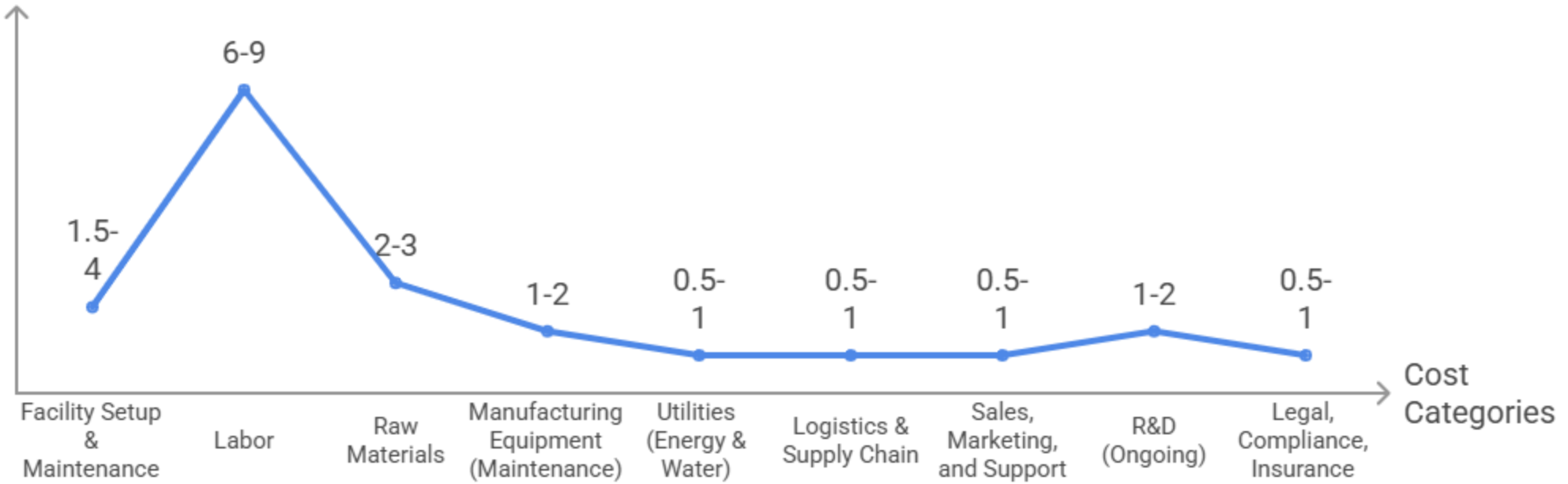
Compliance with
regulations and
intellectual property
rights.



**Estimated
Costs**

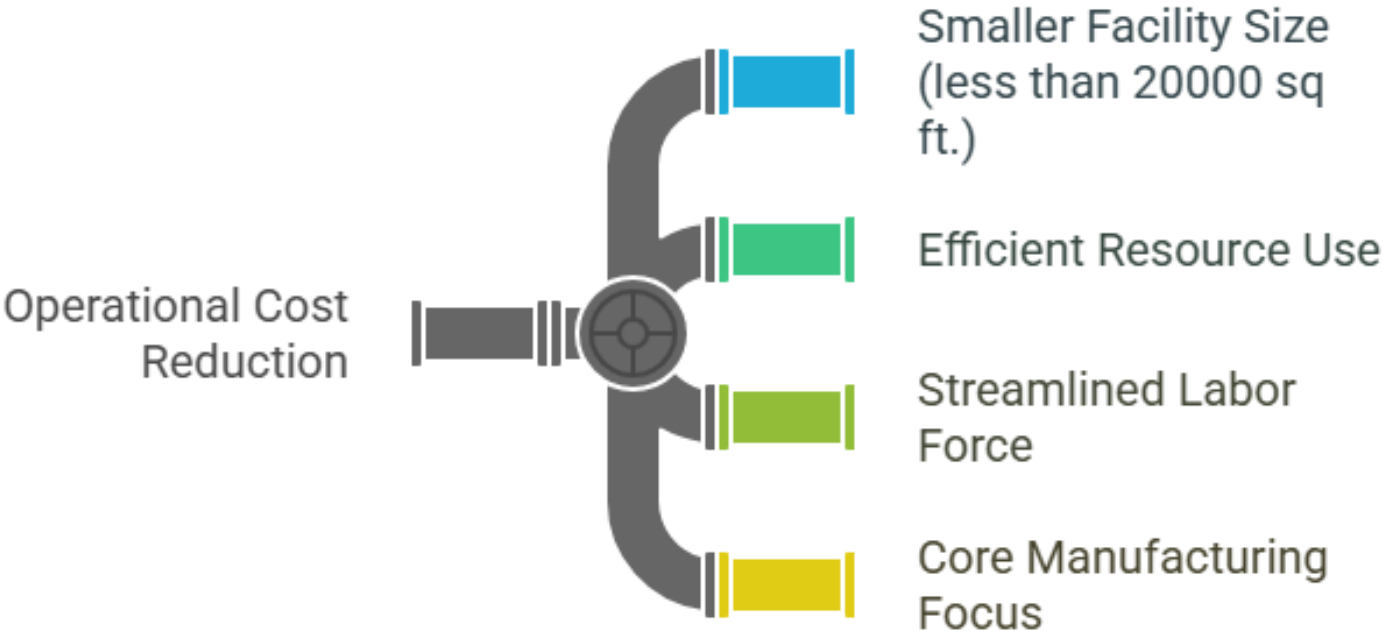
Miscellaneous costs
estimated between
\$500,000 and \$1
million.

Estimated Annual Cost Range (million dollars)



Estimated Annual Operational Costs for Semiconductor Company

Strategies for Cost-Effective Semiconductor Operations



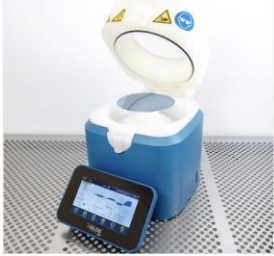
Precision Instruments



Photoresist Spin Coater



Photomask Handling



Coating



Mask Aligners



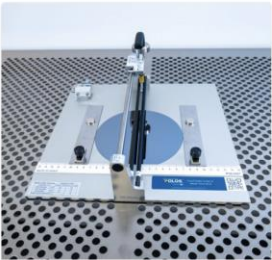
Maskless Lithography Systems



UV Exposure



Hotplates



Wafer Scribing



UV Meters



Reticle Storage



Photoresist

Lithography tool



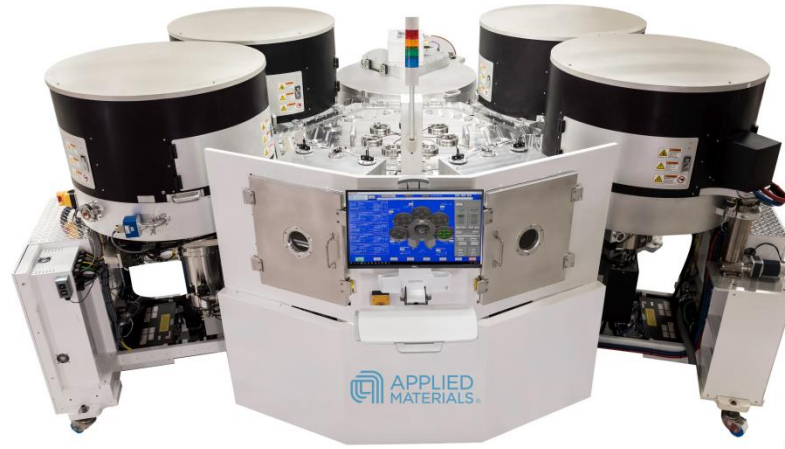
Developer tool



Wet/Dry etching tool
(Etching+ Implant+ planarization)



Atomic Layer Deposition



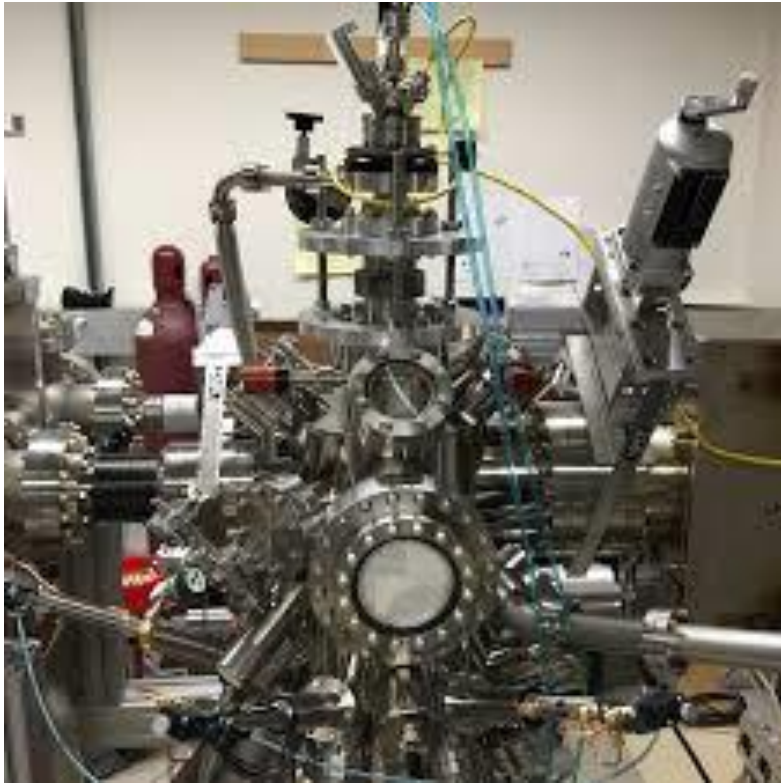
Physical Vapor deposition



Epitaxy



Chemical Vapor deposition



Molecular Beam Epitaxy



Scanning electron Microscopy



Analytic Tunneling electron
Microscopy



Raman Spectroscopy



nuclear magnetic resonance (NMR) spectroscopy



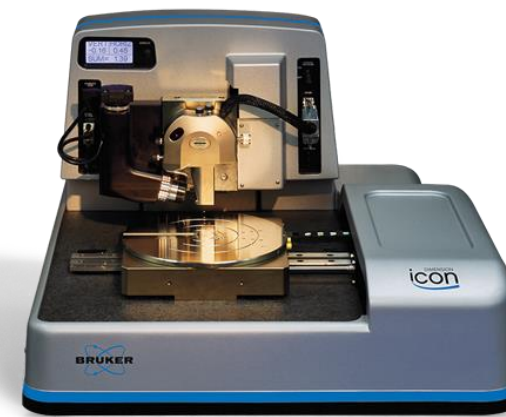
X-ray Diffractometer



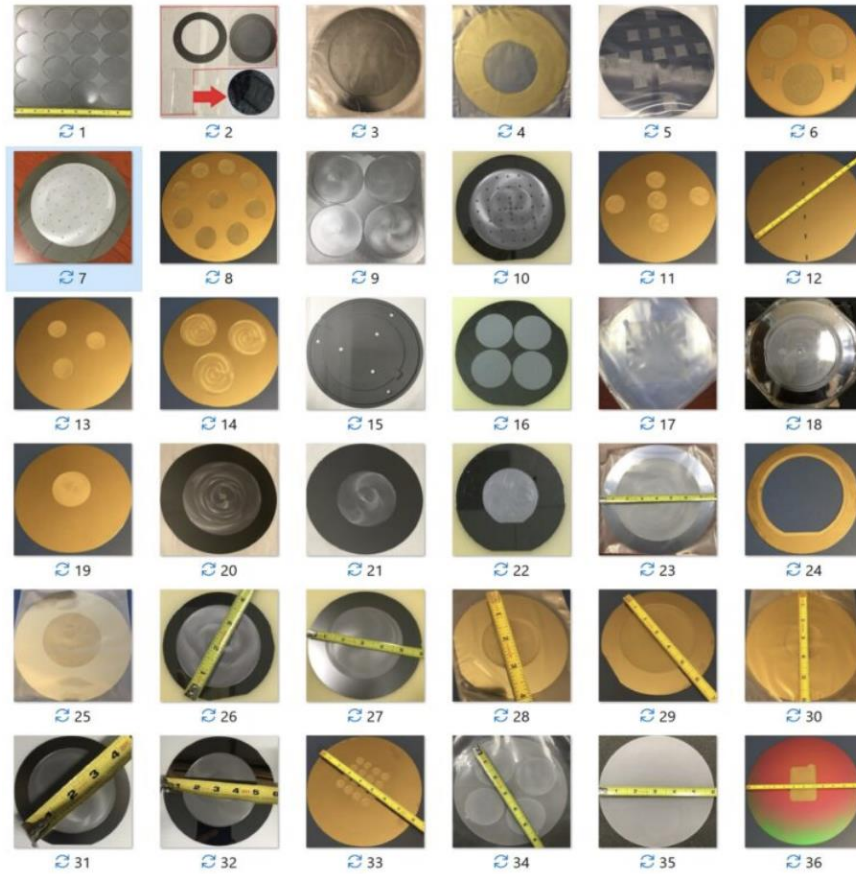
XRF



FTIR



AFM

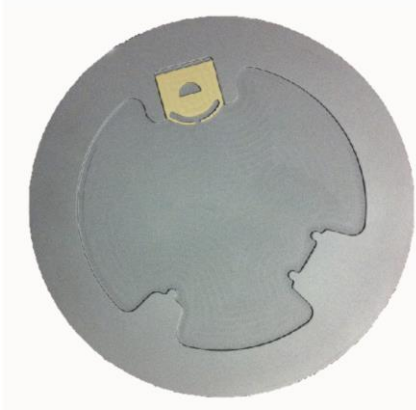


Si Wafer Carrier

Main New Equipment Parts

Main Refurbished Equipment

Categories: [New Wafer Carriers](#), [Quartz Ceramic Silicon](#)



Wafer Carrier – Si Ingot

[Main New Equipment Parts](#)

[Main Refurbished Equipment](#)

Category: New Wafer Carriers



Carriers, Boxes, and Handles

[Main New Equipment Parts](#)

[Main Refurbished Equipment](#)

Category: New Wafer Carriers



Silica Susceptor for RTP

[Main New Equipment Parts](#)

[Main Refurbished Equipment](#)

Category: New Wafer Carriers



Super K-SiC RTP Susceptor

[Main New Equipment Parts](#)

[Main Refurbished Equipment](#)

Categories: New Wafer Carriers, Quartz Ceramic Silicon

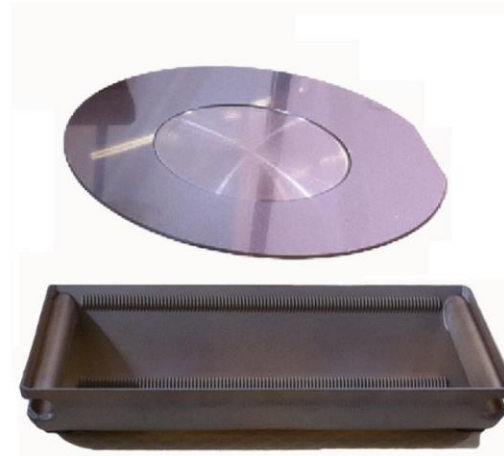


Sintered SiC (SSiC) Susceptor Tray

Main New Equipment Parts

Main Refurbished Equipment

Categories: New Wafer Carriers, Quartz Ceramic Silicon



CVD SiC Susceptor Carrier

Main New Equipment Parts

Main Refurbished Equipment

Category: New Wafer Carriers



quartz boats

Main New Equipment Parts

Main Refurbished Equipment

Category: New Wafer Carriers

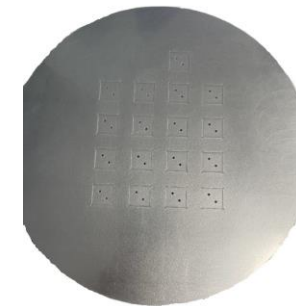


Graphite with SiC Coating Susceptor

Main New Equipment Parts

Main Refurbished Equipment

Categories: AG Associates, New Wafer Carriers



Metal Wafer Carrier

Main New Equipment Parts

Main Refurbished Equipment

Category: New Wafer Carriers

EXPERTS



Dr. Debabrata Mohanty
NSTC, Taiwan

FESEM, TEM, Lithography, ALD

EXPERTS



Derek Stein
Micron, USA

Photolithography

EXPERTS



Dr. Guan-Fu Sung
TSMC, Taiwan

Photolithography, Semicon technology

EXPERTS



Dr. Radha Raman
TSMC, Taiwan

Metrology

EXPERTS



Dr. Samuel Burt
TSMC, USA

MBE, Coating, Etching

EXPERTS



Dr. Yi-Hung Wang
Delta Electron., Taiwan

FESEM, Metrology

EXPERTS



Dr. Bharath Kumar Yadlapalli
NSTC, Taiwan

Semicon Technology

EXPERTS



Dr. Diksha Thakur
URTV, Rome, Italy

Metrology

EXPERTS



Dr. [Ndumiso Vukile Mdlovu](#)
YZU, Taiwan

ALD, Metrology, Characterization

EXPERTS



Ms, Hailey Lin
Micron, Taiwan

Photomask, Semicon, Etching

EXPERTS



Mr. Zhen-Lun Lu
TSMC, Taiwan

MBE, Epitaxy, Mask Cleaning

EXPERTS



Dr. Md Moniruzzaman
Gachon univ/Samsung, Korea

Metrology, Characterization

EXPERTS



Dr. Banendu Sundar Dash
NSTC, Taiwan

Raman, Characterization