

Staying ahead of what's next

A strategic expansion

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Cautionary note regarding forward-looking statements

All matters discussed in this presentation, except for any historical data, are forward-looking statements. Forward-looking statements involve risks and uncertainties that could cause actual results to differ materially from those in the forward-looking statements. These include, but are not limited to, economic conditions and trends in the semiconductor industry generally and the timing of the industry cycles specifically, currency fluctuations, corporate transactions, financing and liquidity matters, the success of restructurings, the timing of significant orders, market acceptance of new products, competitive factors, litigation involving intellectual property, shareholders or other issues, commercial and economic disruption due to natural disasters, terrorist activity, armed conflict or political instability, changes in import/export regulations, epidemics and other risks indicated in the Company's reports and financial statements. The Company assumes no obligation nor intends to update or revise any forward-looking statements to reflect future developments or circumstances.

Who we are



We are a leader in Atomic Layer Deposition (ALD) hold a growing position in Epitaxy and niche positions in Plasma Enhanced Chemical Vapor Deposition (PECVD) and Vertical Furnaces. ASM supplies deposition equipment to the leading semiconductor manufacturers For over 50 years ASM has been ahead of what's next, at the forefront of innovation and what's technologically possible. Our silicon carbide (SiC) epitaxy product line addresses the market for SiC devices, driven by increasing EV penetration. What we do at ASM has positively impacted the lives of people for decades. Our advanced semiconductor processes play a crucial role in trends such as 5G, cloud computing, AI and autonomous vehicles.

Our history





55+ years driving innovation in the semiconductor industry

WFE spending expected to grow in 2024-2027

WFE market forecast

(US\$ billion)



WFE growth driven by secular trends of AI, EV, edge computing etc.

- Multi-year investments announced across all market segments
- Further scaling, 3D transitions and GAA driving investments in advanced CMOS
- Government sovereign efforts could add further investments

GAA investment contributes to WFE growth

WFE market forecast

(US\$ billion)



TechInsights



- GAA transition beginning in 2024 expected to grow to >40% of WFE by 2027
- GAA is seen as the largest and fastest growing part of the WFE market



Logic

3D scaling accelerating in logic and memory technologies



3D scaling accelerating in logic and memory technologies





FLASH

3D scaling accelerating in logic and memory technologies





Logic GAA creates new ALD/Epi opportunities



Simplified Schematic. Not all layers are shown, and each layer may consist of few individual ones.

New interconnect metals: Molybdenum replacing CVD Tungsten and PVD Copper

Selective deposition processes for performance and Yield: DoD and MoD

Increasing embedded functionality:

- a) additional memory with MIMCAP (Hf-based ALD dielectrics) and
- b) Power Management using IGZO channels for TFT

Increasing ALD and Epi opportunities in DRAM/ HBM



New ALD and Epi processes for continued scaling of 6F² architecture

- · Low resistance word line metals
- Low-k spacers and airgaps to reduce parasitic capacitance
- High quality gate oxide for cell transistor
- Epi layers to enable low resistance contacts

Periphery:

- ALD High-k (HfSiO, HfO), dipoles (LaO) and work function metals (TiN).
- Epi c-SiGe, and SiGeB for strain enhancement

Many additional ALD and epi opportunities in 3D-DRAM



Example applications expected to drive ASM growth



New technology from ASM

Moly metal ALD

Molybdenum simplifies process flow and lowers resistance ASM engaged in all applications for Mo inflection



Simplified schematic of interconnect hierarchy MOL: Middle-end of line BEOL: Back-end of line

New technology from ASM

Turino[™] CL for silicon Epi

Monolayer Productivity control in super improvement lattice structures Sustainability: ~35% less energy consumption

Intrepid[®] mono layer control

Energy consumption reduction





Our locations worldwide

- Corporate, sales and service offices
 Research and product development
- Manufacturing facilities

	Belgium
$\bullet \bullet \bullet$	China
	Finland
$\bullet \bullet \bullet$	France
$\bullet \bullet \bullet$	Germany
$\bullet \bullet \bullet$	Ireland
$\bullet \bullet \bullet$	Israel
• • •	Italy
$\bullet \bullet \bullet$	Japan
• • •	Korea
$\bullet \bullet \bullet$	Malaysia
	the Netherlan
$\bullet \bullet \bullet$	Taiwan
• • •	Singapore
	North America



Key locations where we're active

Countries/ regions we supply to

20

3 Manufacturing

facilities

(V.S

Key markets: Asia, US and Europe

3

For a complete overview of all our locations, please visit our corporate website: www.asm.com.

Continue investment and expansion of R&D and manufacturing

Когеа

Investment & expansion of the facility started in 2023.

Signed an MOU with the Ministry of Trade, Industry and Energy Korea, and announced investment of around \$100 million for expansion of manufacturing and innovation center in Dongtan, South Korea.



US

€300 million expansion of US operations in Scottsdale, Arizona

250,000 square feet (20,000 m²). Bringing technology development, research, design and engineering capabilities, and pilot manufacturing capacities under one roof.

AS





A closer look: Investment in the US

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What the data show

Global semiconductor industry sales were \$46.4 billion during the month of April 2024, an increase of 15.8% compared to the April 2023 (SIA)

America projected to triple semiconductor manufacturing capacity by 2032, the largest rate of growth in the world (<u>SIA)</u>







Arizona is the nation's leader in new semiconductor jobs, investment, and supplier expansions. (ACA)



SEMICON West will relocate to Arizona every other year, starting in 2025.

Major semiconductor companies are making significant investments in Arizona, including ASM.





Did you know?

ASM first established its North American headquarters in Phoenix, Arizona, in 1976 and was one of the first semiconductor equipment companies in the state.





Growth through Innovation strategy

ALD is the new CVD



Core strengths

- >30 years of ALD precursors and materials research
- Deep precursor chemistry, materials and plasma expertise in geographically diverse R&D teams
- Largest product portfolio to meet diverse needs
- Strong impactful IP portfolio

ASM has the strongest patent portfolio in ALD





Epi layers growing in numbers and complexity across market segments

	1 st Gen GAA		2 nd Gen GAA			1 st Gen CFET	
Advanced Logic and Foundry	3-4x Si/SiGe Channel Superlattice				12-16x Si/SiGe Channel Superlattice		
	SiAs/SiAsP NMOS S/D			LT NMOS S/D		LT NMOS S/D	
	SiGe:B PMOS S/D			LT PMOS S/D		LT PMOS S/D	
				LT SiP Contact		LT SiP Contact	
				LT SiGe:B Contact		LT SiGe:B Contact	
	HVM	N+1		N+2		N+3	N+4
	HVM ↑	N+1		N+2 SiGe Channel		N+3	N+4
	HVM HVM High performance CMOS	N+1		N+2 SiGe Channel	SiGe	N+3 B S/D PMOS	N+4
DRAM Memory	HVM High performance CMOS	N+1		N+2 SiGe Channel	SiGe	N+3 B S/D PMOS: SiP S/D	N+4 NMOS
DRAM Memory	HVM High performance CMOS	N+1		N+2 SiGe Channel	SiGe SiP Cor	N+3 B S/D PMOS SiP S/D tact Application 1	N+4 NMOS
DRAM Memory	HVM High performance CMOS	N+1		N+2 SiGe Channel	SiGe SiP Cor	N+3 B S/D PMOS SiP S/D tact Application 1 SiP Contact A	N+4 NMOS Application 2



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It has never been a better time to be in the semiconductor industry.

With our innovative ALD and Epi technologies, ASM is in the midst of it all - developing disruptive technologies enabling the amazing revolution unfolding in front of our eyes.

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Thank you

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