

# Material for the Explanation Meeting on the Engineered Materials Business

January 7, 2026

Engineered Materials Sector  
Mitsui Kinzoku Company, Limited



We promote the well-being of the world  
through a spirit of exploration  
and diverse technologies.



## Participants in Today's Meeting

- Masato Okabe, Senior Managing Director and Senior General Manager of the Engineered Materials Sector
- Shintaro Ishida, Executive Officer and Deputy Senior General Manager of the Engineered Materials Sector
- Tatsuya Sudo, Executive Officer and Director of the Copper Foil Division
- Takeshi Miyazono, Executive Officer and Director of the Engineered Powders Division
- Shinya Kagei, General Manager of the Engineered Liquids Commercialization Promotion Division

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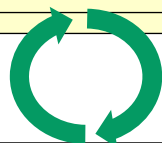


## Further Growth of the Engineered Materials Sector

Optimize working capital, reassess product value, and fundamentally improve productivity to generate cash, and continuously invest in AI infrastructure and advanced semiconductor-related fields with strong growth potential.

### Fundamental cash generation

1. Effective productivity improvement
2. Promotion of differentiation



### Accelerated growth through bold resource investment

3. Buy-side M&A
4. Proactive review of management resource allocation
5. Major investment plan

Incorporate external insights for the following:

- Reassess the value of products and conduct a comprehensive price review based on value-based pricing.
- Optimize inventories based on theoretical inventory levels to improve working capital efficiency.
- Implement bold productivity improvements.

Steadily execute these initiatives to achieve structural cash generation.

Implement large-scale investments, primarily in AI infrastructure and advanced semiconductor-related products.

- Functional powder / negative thermal expansion materials: Construction of a pilot plant (Dec. 15)
- Copper foil (VSP™ copper foil): Expand capacity to 1,200 tons per month (Nov. 11)
- HRDP®: Launch of the second production line and strengthening of collaboration (Nov. 11)
- Copper foil (FaradFlex®): Additional enhancement of the production system (Aug. 21)
- Engineered liquids (iconos™): Partnership with Gaianixx (Apr. 1)

Going forward, we will identify growth businesses and implement bold resource allocation, while considering M&A opportunities seriously.

# DX Initiatives of the Engineered Materials Sector (FY25 Medium-Term Business Plan Policy)

Evolve the DX initiatives implemented to date into more practical activities and contribute to enhancing corporate value by utilizing their effects.

## Mitsui Mining & Smelting DX Basic Strategy

**25–27 MTP (2025–2027)**  
**Digital proliferation period**

### Group-wide promotion of DX

#### ■ Group-wide use of digital technology

- Establish a system for group-wide coordination to accelerate the realization of value at each sector.
- Promote new common tools (generative AI, etc.).

#### ■ Group-wide deployment of digital infrastructure

- Expand and manage common infrastructure.
- Optimally allocate ICT talent and develop DX talent.

## DX Initiatives in the Engineered Materials Business

### Digital Utilization

Transition from digital adoption to digital utilization and pursue DX initiatives that contribute to enhancing business value.

#### Institutionalization

- Clearly define themes and requirements and manage progress rigorously.
- Leverage lessons learned from past failures to implement practical and user-friendly initiatives.

#### Contribution to business strategy

- Formulate DX initiatives that contribute to divisional business strategies.
- Translate strategies into concrete themes and ensure steady execution.

#### DX promotion framework

- Aim to achieve self-reliance, including the identification of optimal vendors.
- Strengthen collaboration with Mitsui Mining & Smelting Co., Ltd., our internal resource.

#### DX talent development

- Strengthen the use of AI.
- Enhance digital literacy through tiered DX talent development programs.



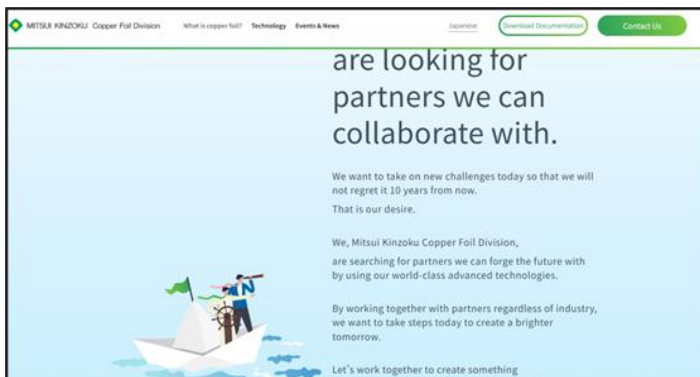
# DX Initiatives of the Engineered Materials Sector (Examples of Future Initiatives)

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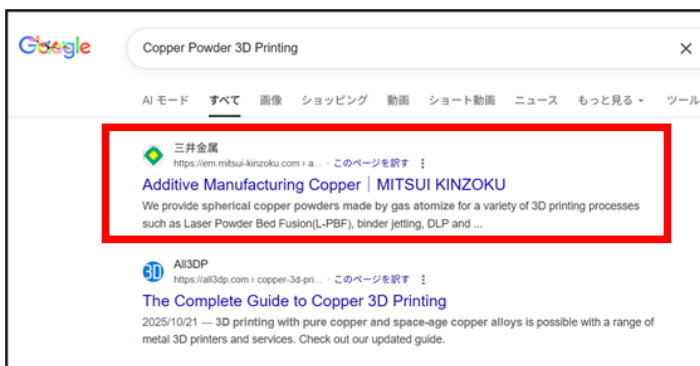
## New customer acquisition through enhanced digital marketing

Explore new applications that cannot be fully covered by conventional sales approaches and create customer-oriented websites and advertising content, while strengthening AI-enabled initiatives.



### Copper Foil Division co-creation website

Recruit partners to **explore new applications** and connect these efforts to new product development.

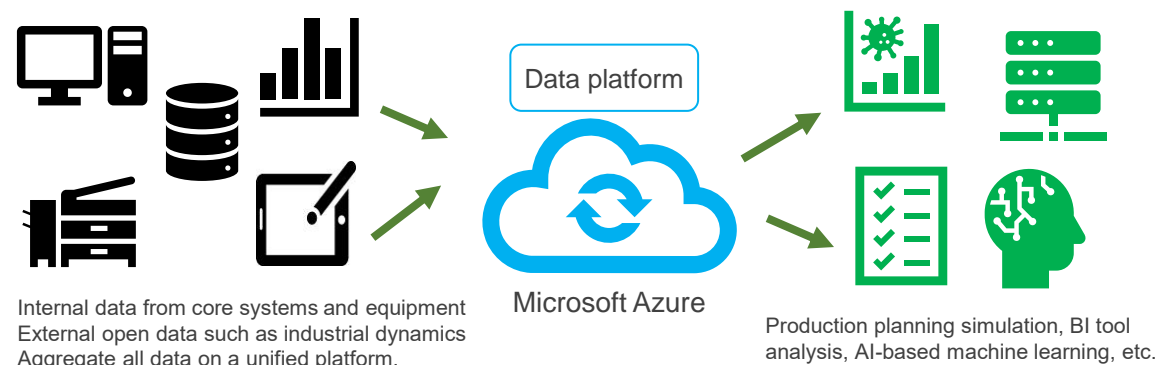


### Search optimization

Enhance product web pages and share technical information for engineered materials products to **improve search engine visibility and ensure compatibility with AI-based summarization and information gathering.**

## Strengthening of production capabilities in the Copper Foil Division

Integrate all relevant data into the cloud (Azure) and accelerate productivity improvements using AI and data science based on the data obtained.



### Past

#### Production Plan

- Share information among responsible parties and formulate plans.
- Consider the risks of uneven workload distribution and over-reliance on specific individuals.

#### Quality Analysis

- Manually collect the necessary data.

#### Manufacturing Conditions

- Set manufacturing conditions based on the operator's experience and past performance.

### Going forward

- Calculate optimal production plans from aggregated data, including sales information, equipment data, and inventory information.  
⇒ **Enhanced production capacity & standardization**

- Data is automatically collected and centrally managed, so that all data can be accessed.  
⇒ **Improved speed and quality**

- Analyze the correlation between conditions and quality using AI.  
⇒ **Calculation of optimal manufacturing conditions to improve quality**



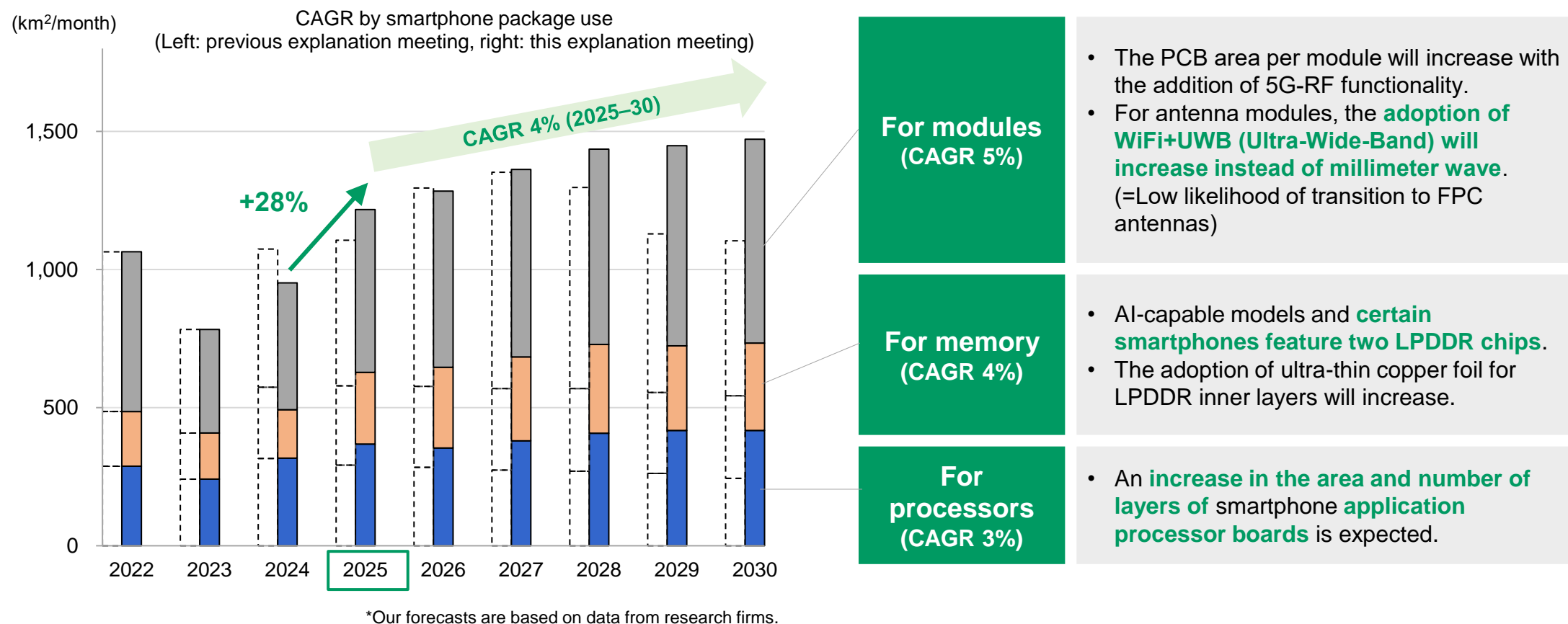
# Copper Foil Division





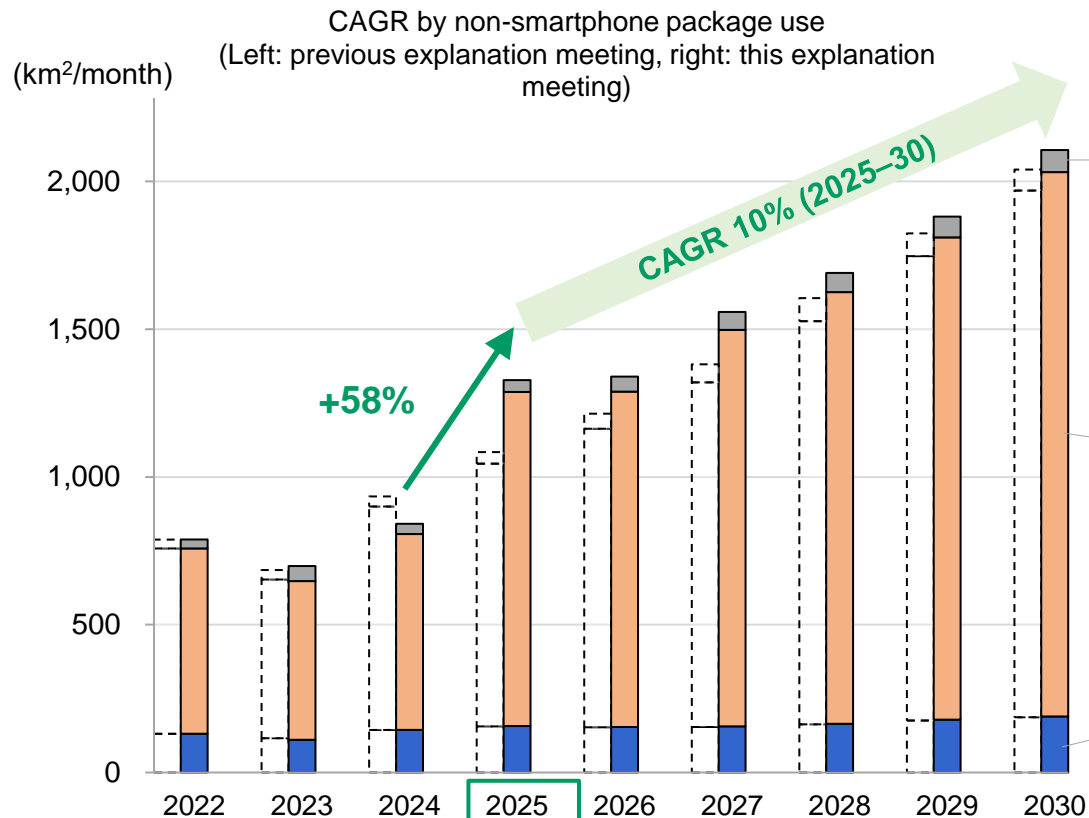
# Existing Applications and Market Trends of MicroThin™ for Packages (Smartphones)

Although the smartphone market has already entered a low-growth phase, device **performance continues to evolve through the incorporation of new functions, such as generative AI and improvements in processing capability and connectivity**, and we expect further expansion of opportunities for the adoption of our MicroThin™.



# Existing Applications and Market Trends of MicroThin™ for Packages (Non-smartphones)

In non-smartphone applications, we expect medium- to long-term demand growth mainly in information and communication infrastructure, such as AI servers, and we will continue to provide solutions through MicroThin™ to meet the **increasingly advanced requirements for high-speed processing, low power consumption, and space efficiency.**



\*Our forecasts are based on data from research firms.

**For modules  
(CAGR 13%)**

- Automotive applications (image sensors for ADAS and autonomous driving, millimeter-wave radar, etc.) are expected to increase.

**For memory  
(CAGR 10%)**

- Going forward, demand for both DRAM and NAND will significantly expand, primarily for data centers.**
- LPDDR is expected to be adopted in some AI servers for power efficiency, and GDDR is expected to be adopted in low-end applications.
- Adoption for automotive (ADAS/autonomous driving) and gaming consoles will increase.

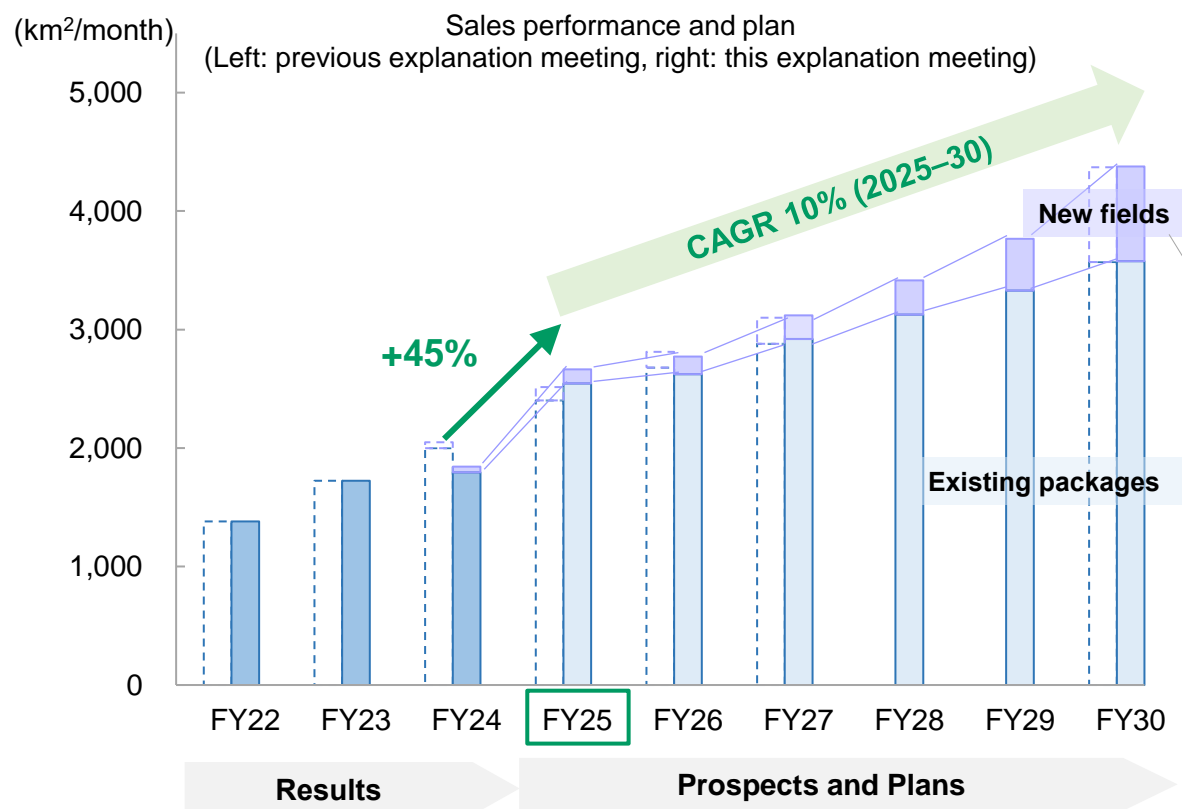
**For processors  
(CAGR 4%)**

- FC-BGA adoption will become mainstream.
- It will be used in smartwatches, VR headsets, and other devices.



# Sales Performance and Plan for MicroThin™ for Packages

In FY2025, demand has expanded rapidly, mainly for information and communication infrastructure, such as AI servers, and we have continued to receive orders at a high level throughout the fiscal year. Future growth will be driven mainly by non-smartphone applications, and the expansion of adoption in new fields, including optical transceivers for high-speed communications, is progressing steadily.



## FY25

- Demand is expected to expand significantly, primarily for memory applications in smartphones and non-smartphones, which are **projected to increase by 45% compared to FY2024**.
- In new fields, demand is rapidly expanding for high-speed optical transceivers (800 GB and above).

## Forecast for FY26 and beyond

- Continued expansion of memory applications over the medium to long term
- Increase in electronic devices adopting MicroThin™ driven by 5G and IoT

## Applications with expected growth in adoption

- High-speed optical transceivers
- Flexible wiring boards for ultra-fine wiring
- Substrate materials compatible with high-temperature processes
- High-layer count boards for ultra-high-speed infrastructure, etc.

# Approach to New Application Fields for MicroThin™ to Drive Growth by 2030

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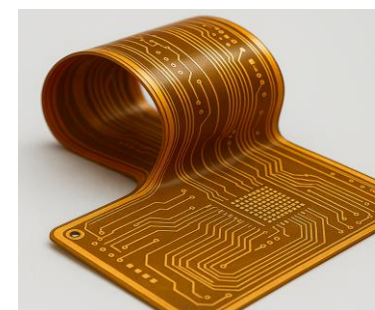


We are actively engaged in marketing activities and product development aimed at **creating new businesses**.

## High-speed optical transceivers



## Flexible wiring boards for ultra-fine wiring and substrate materials compatible with high-temperature processes

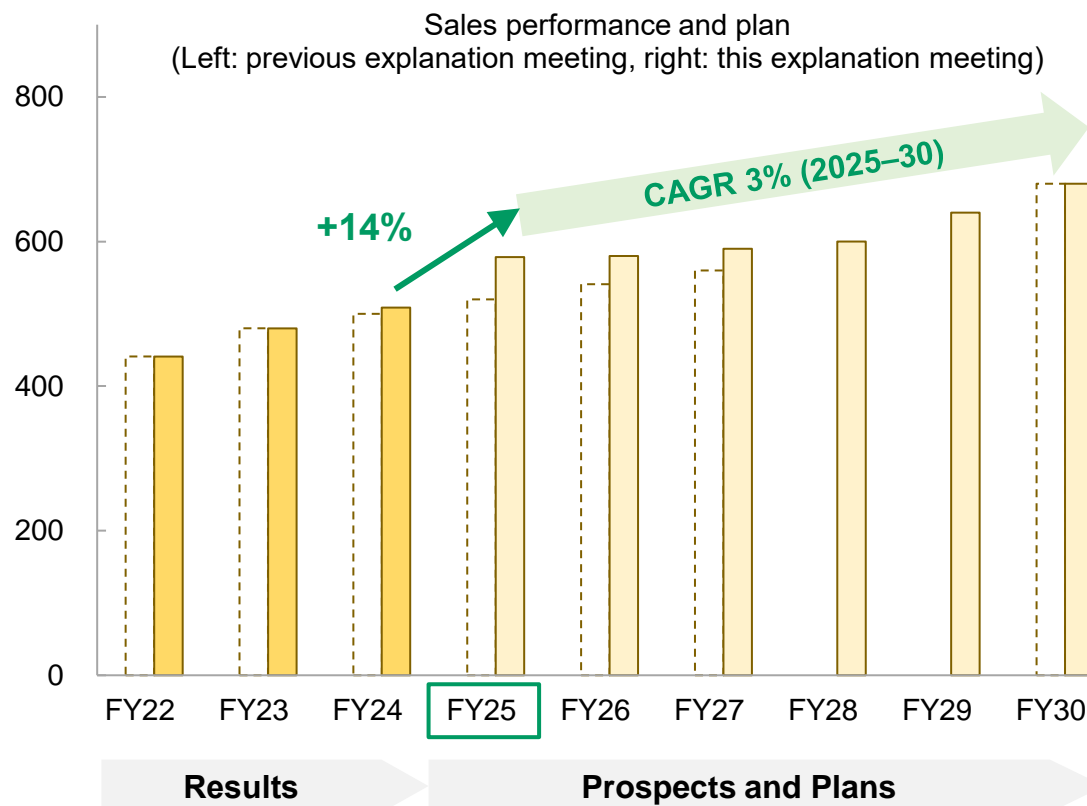


Projected scale for 2030	300 km <sup>2</sup> /month	100 km <sup>2</sup> /month
Overview	<ul style="list-style-type: none"><li>Connects devices such as routers and switches to optical fiber cables, converting electrical signals to optical signals and vice versa.</li><li>With rapidly increasing demand for high-speed processing of AI servers, the <b>adoption of MSAP is growing for capacities exceeding 800 GB.</b></li></ul>	<ul style="list-style-type: none"><li>Even in flexible circuits, <b>mounting density is increasing to achieve thinner structures and finer wiring</b>, leading to adoption primarily in mobile applications.</li><li>Furthermore, <b>we have newly completed the development of MicroThin™ featuring a heat-resistant release layer that can be peeled even at temperatures exceeding 350°C.</b> We will also conduct sales promotion activities for substrate materials with excellent dielectric properties, such as MPI, LCP, and PTFE, which require high-temperature processes.</li></ul>



## Sales Performance and Plan for MicroThin™ for HDI\*

In FY2025, sales of North American brand smartphones have been strong, particularly for new models, and **demand for MicroThin™ has remained steady with continued adoption**. Meanwhile, adoption by Chinese smartphone manufacturers has increased, including non-foldable models, although the increase has remained modest.



### FY25

- Supported by strong sales of North American smartphones, **sales are projected to increase by 14% compared to FY2024**.
- Regarding Chinese smartphones, adoption is progressing in non-foldable high-end models, but remains limited to certain segments.

### Forecast for FY26 and beyond

- Slight growth is expected for North American smartphones.



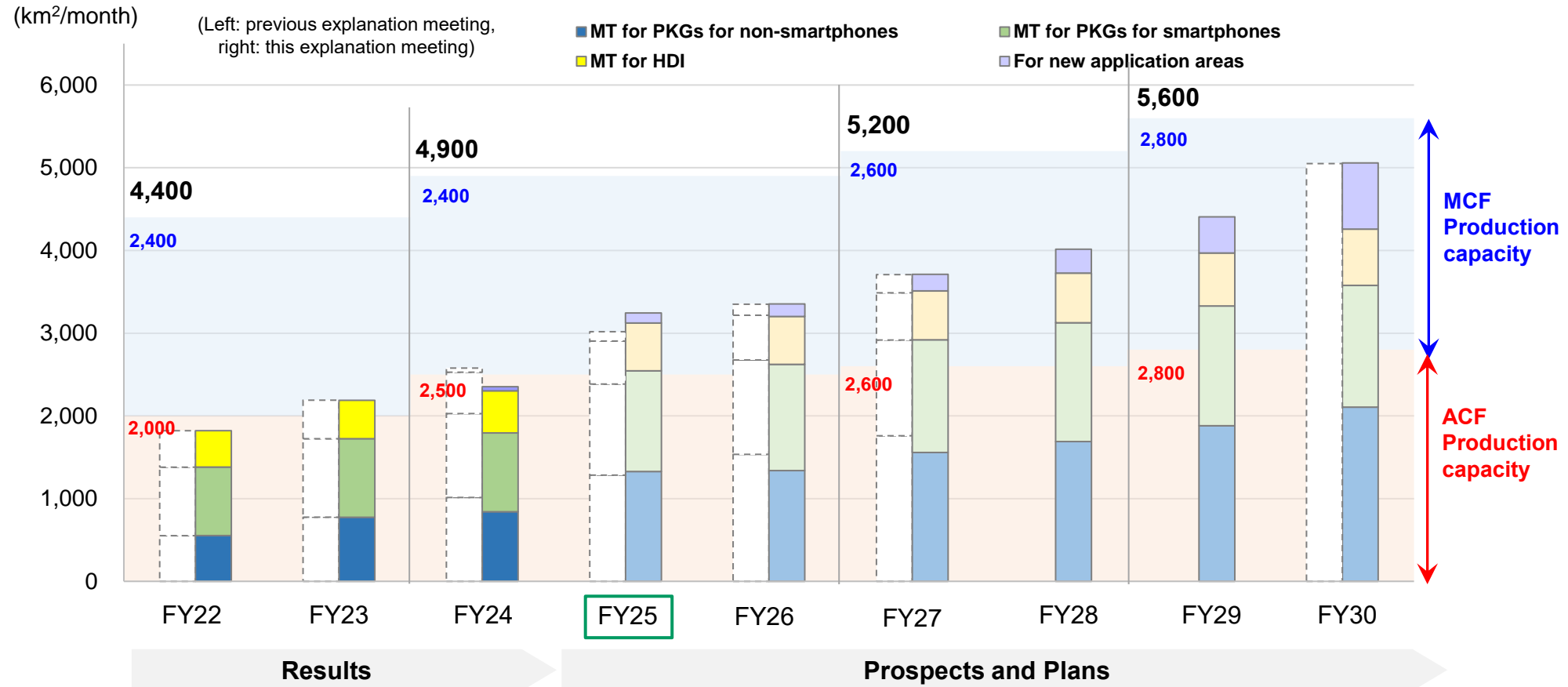
- Explore the use of MicroThin™ in HDI for non-smartphones (related to AR, VR, etc.)
- Continue promoting MSAP adoption on Chinese smartphones (including non-foldable models).

\*High Density Interconnected PCB

# Sales Plan and Production Capacity for MicroThin™

The sales of MicroThin™ will continue to increase with the advancement of high-speed communication technology.

**We will implement the previously announced production capacity expansion plans as scheduled** and establish a system capable of sufficiently accommodating near-term increases in demand.

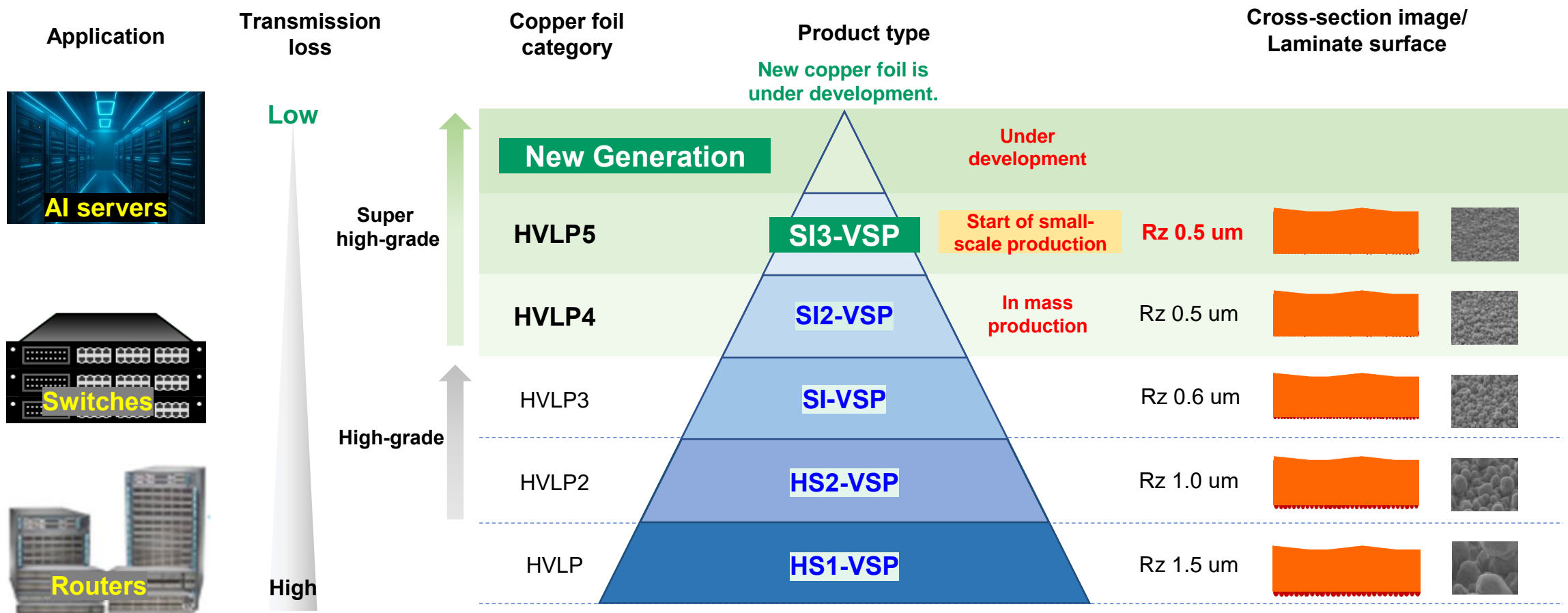






# Copper Foil for High-Frequency Communication Infrastructure VSP™: Mass Production and Development Lineup

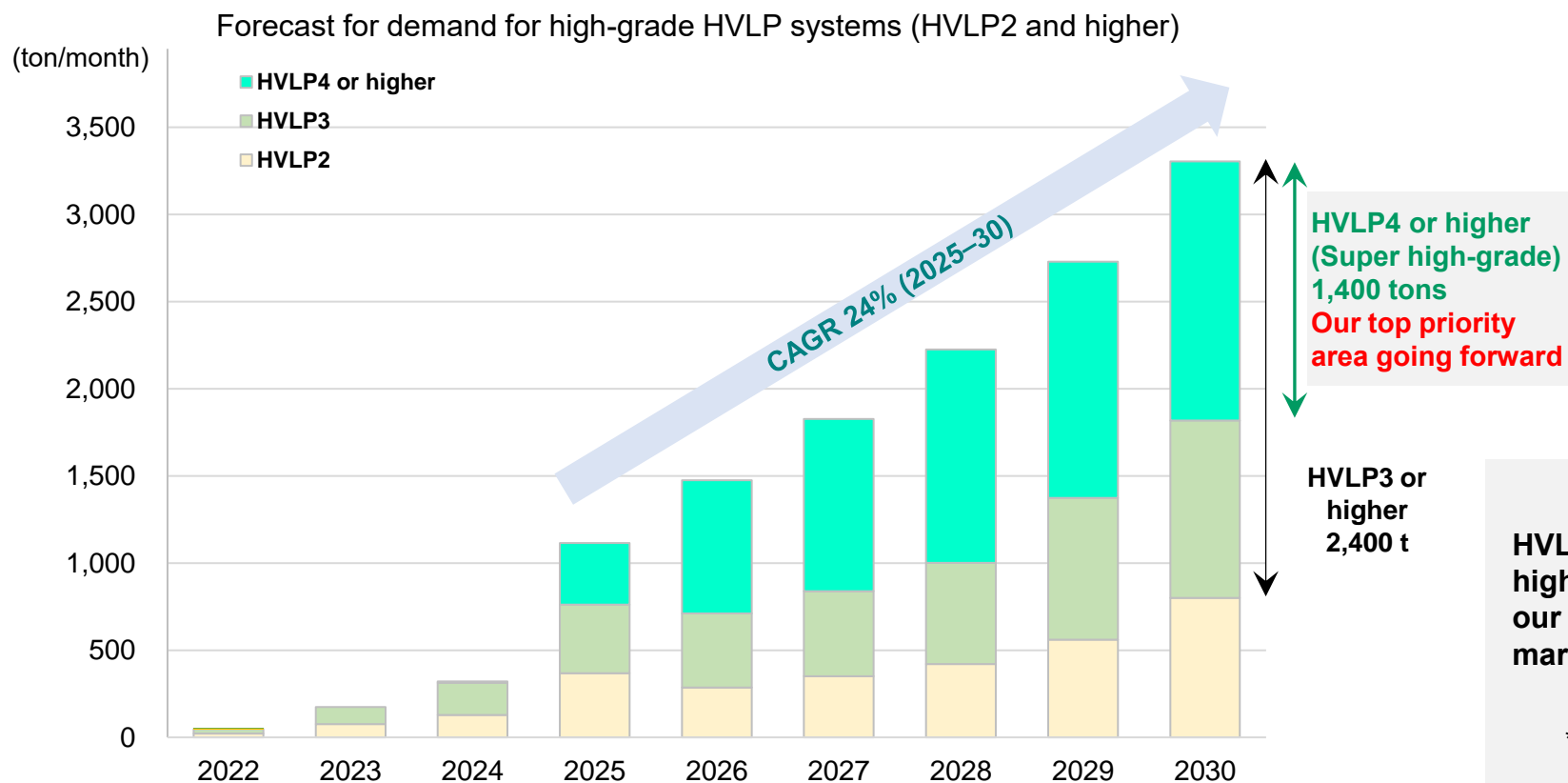
Demand for high-speed and high-frequency communications has been expanding due to the growing demand for generative AI and other factors, and our high-grade copper foil supports these needs. **Recently, we have started small-scale mass production and sales of HVLP5 (SI3-VSP™) and have also begun developing further next-generation products.**





## Long-Term Market Demand Forecast for High-Grade HVLP Copper Foil

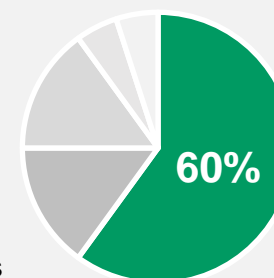
At present, we are the largest supplier of HVLP copper foil, and demand is expected to exceed **approximately 2,400 tons per month for HVLP3 and higher and approximately 1,400 tons per month for HVLP4 and higher by 2030**. Thereafter, demand is expected to continue to grow steadily in line with the expansion of the AI server market.



**Our HVLP copper foil “VSP™”** is used in high-performance communication infrastructure equipment such as servers, routers, and switches, because it significantly contributes to **reducing transmission loss in the high-frequency band**.

**HVLP2 or higher high-grade VSP™** our products market share

\* Internal estimates

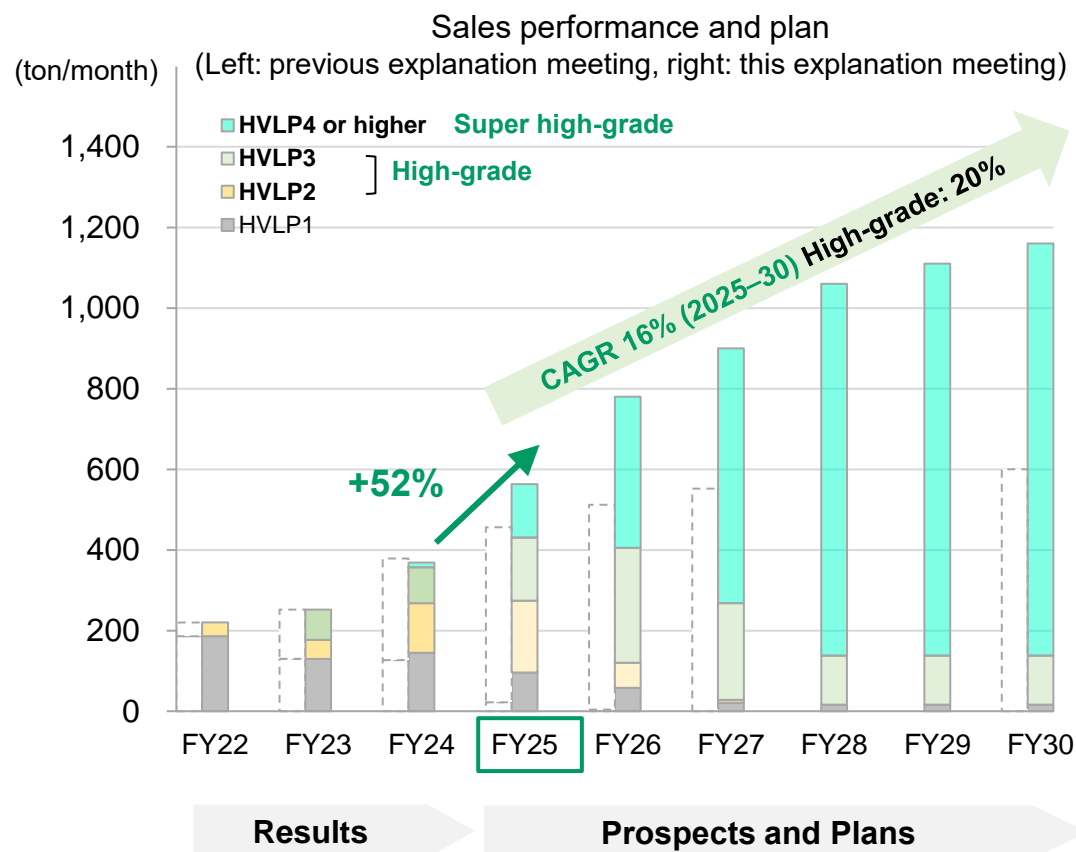


\*Our forecasts are based on data from research firms.



## Sales Performance and Forecast for VSP™

In FY2025, demand for further reductions in transmission loss grew, led by applications for AI servers and switches, and **demand for high-grade VSP™ (HVLP2 and higher) increased significantly**. From FY2026 onward, further expansion of demand is expected.



### FY25

- Demand for high-grade products of HVLP2 and higher categories mainly in AI servers and high-grade switches rapidly expanded.
- **The HVLP5-category product “SI3-VSP™” has been adopted for cutting-edge AI servers**, and small-scale production has commenced.

### Forecast for FY26 and beyond

- Increase sales by focusing on HVLP4-category products.
- Begin accepting full-scale mass production orders for HVLP5 “SI3-VSP™”

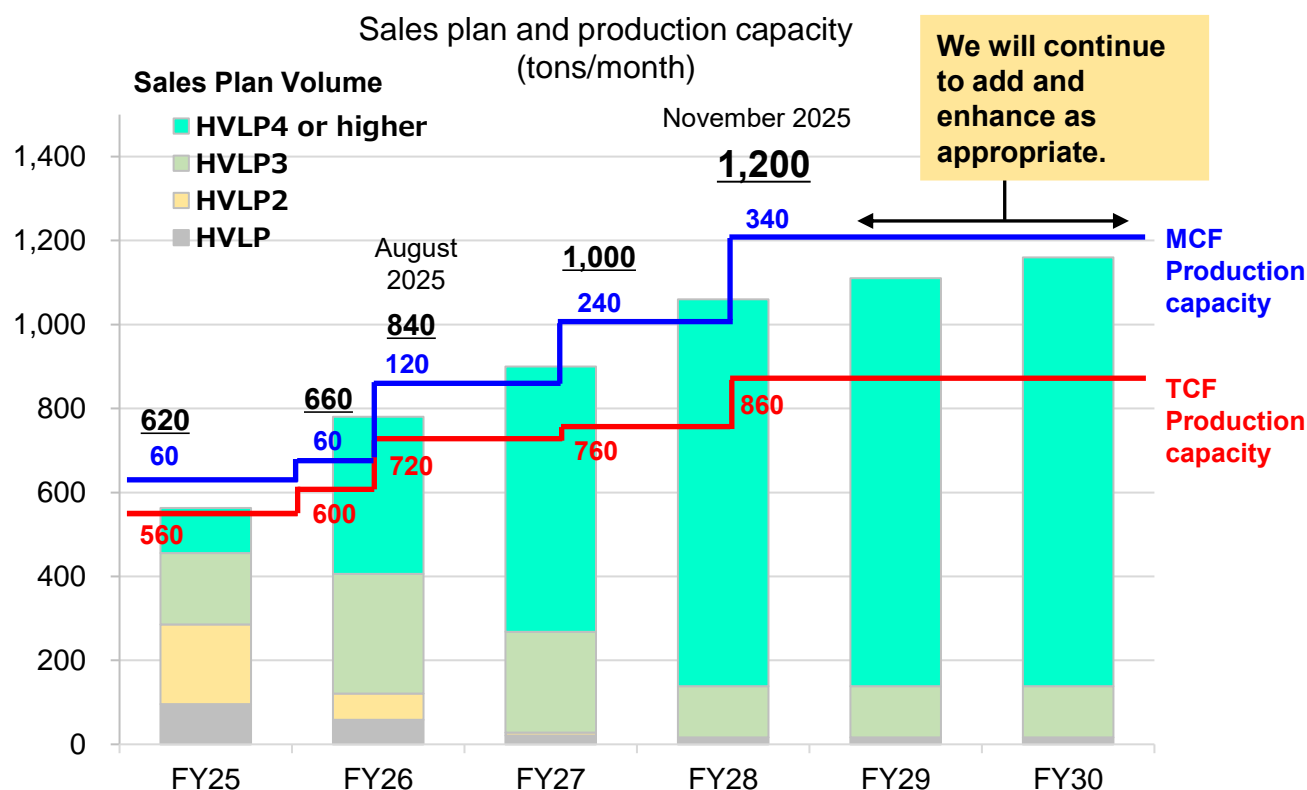
**Major tech companies are prioritizing our products based on factors such as production capacity, technological development capabilities, and mass production responsiveness.**

**Currently, a significant increase in demand is forecast and we are being strongly urged to increase production.**



## Sales Plan and Production Capacity for VSP™

Regarding the production system for VSP™, in response to **strong requests from major customers**, we have decided to increase production capacity to **1,200 tons per month (increase of 360 tons per month) by September 2028** through an investment of approximately **6 billion yen**, in addition to the previously announced expansion to 840 tons per month disclosed in August 2025. By expanding production capacity, **we will enhance our ability to ensure stable supply and further strengthen our position as the industry's No. 1 supplier in the HVLP segment.**



### Taiwan (TCF)

**860 tons/month** (September 2028)

- Conversion of existing electrolysis equipment
- New surface treatment equipment installation (including building)

### Malaysia (MCF)

**340 tons/month** (September 2028)

- Replacement of existing electrolysis equipment
  - Surface treatment machine retrofitting
- +200 tons/month**  
Additional capacity available

### Our Strengths:

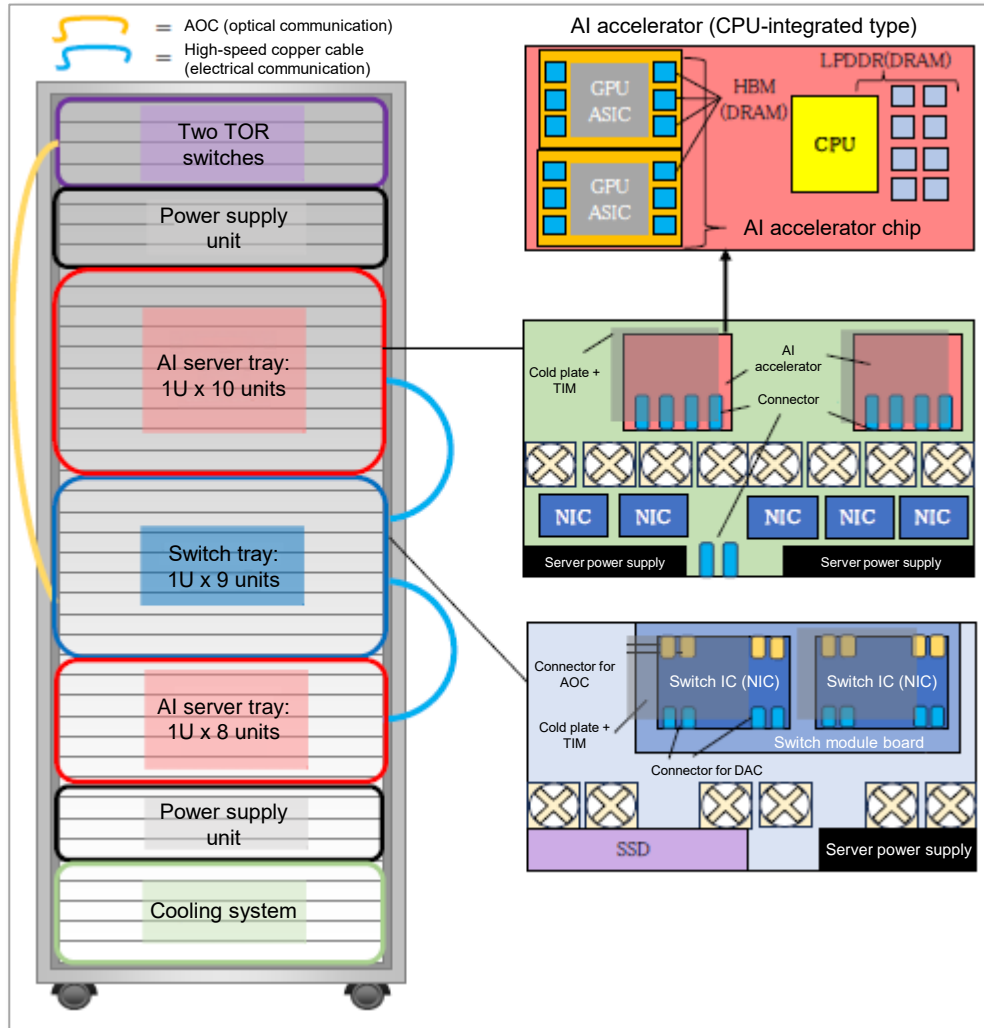
- **Customization capabilities** to offer surface treatments tailored to the customer's resin
- **Advanced surface treatment technology** that creates surface profiles capable of maintaining high adhesion, in addition to low roughness

**We also hold an 80% market share in HVLP5.**

\* Internal estimates

# AI Server Architecture and Examples of Applications of VSP™ and MicroThin™

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x 2 pcs/tray x 18 trays  
= 36 pcs/rack

x 18 trays/rack

x 9 trays/rack

**AI Accelerator  
(PCB)**

**HVLP3/4  
(SI-VSP/SI2-VSP)**

**LPDDR  
(PKG)**

**MT-FL**

**Switch Module  
Board  
(PCB)**

**HVLP3/4  
(SI-VSP/SI2-VSP)**

**SSD/NAND  
(PKG)**

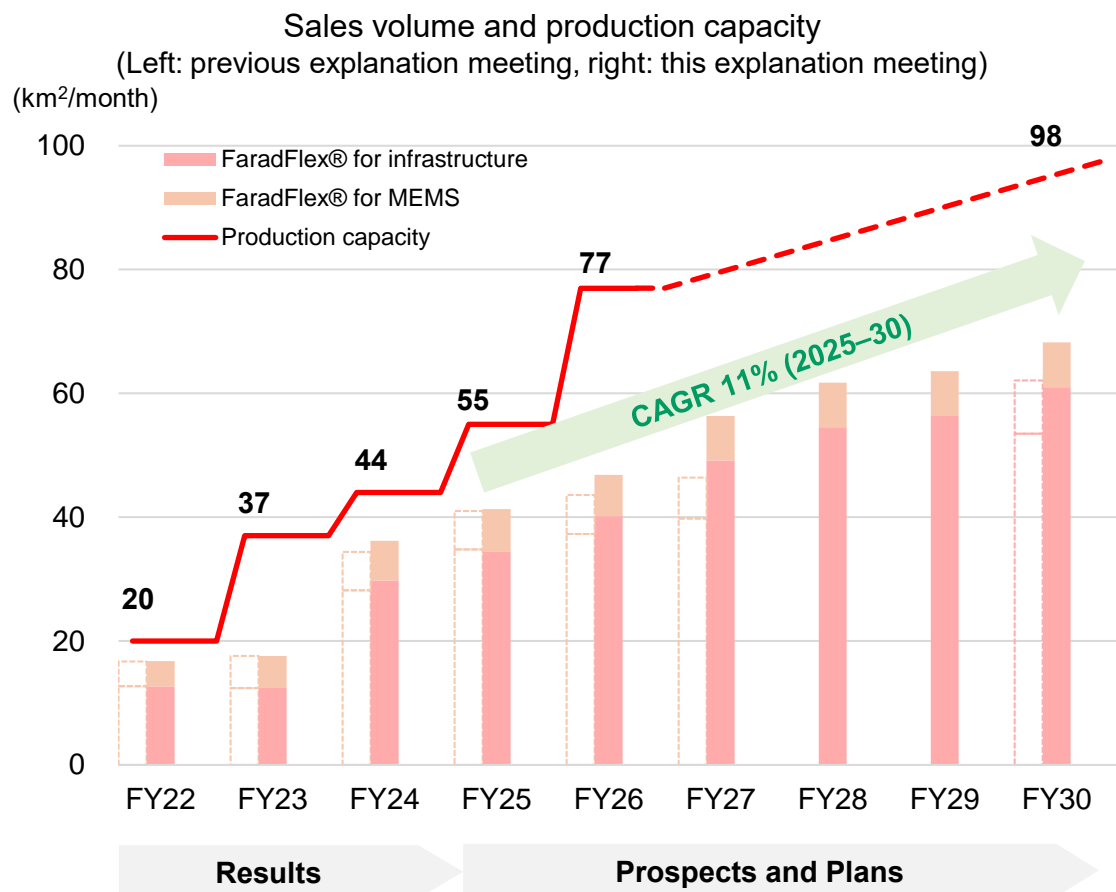
**MT-FL**

Source: Figures from "2025 Data Center and AI / Key Device Market Comprehensive Survey" by Fuji Chimera Research Institute, Inc., with additions by the Company.



# Sales Performance and Forecast for FaradFlex®

FaradFlex®, a thin embedded capacitor material, offers **excellent electrical performance and reliability** due to its proprietary resin composition, and adoption has been rapidly expanding, particularly in **information and communication infrastructure, such as AI servers and switches**, where further increases in processing speed are expected.



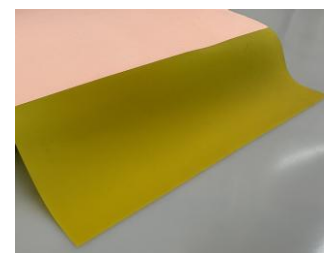
## FY25

- Infrastructure solutions such as AI servers and high-grade switches are experiencing rapid expansion.
- In addition to increased production in Malaysia, we have commenced production in Ageo, establishing a dual-site supply system.

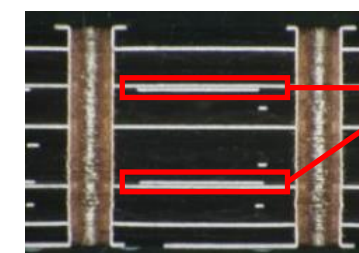
## FY26 and beyond

- Continue to expand sales mainly for infrastructure.

We will implement and consider additional capacity enhancements at both our Malaysia and Ageo locations going forward.



FaradFlex® Image



FaradFlex® is used.

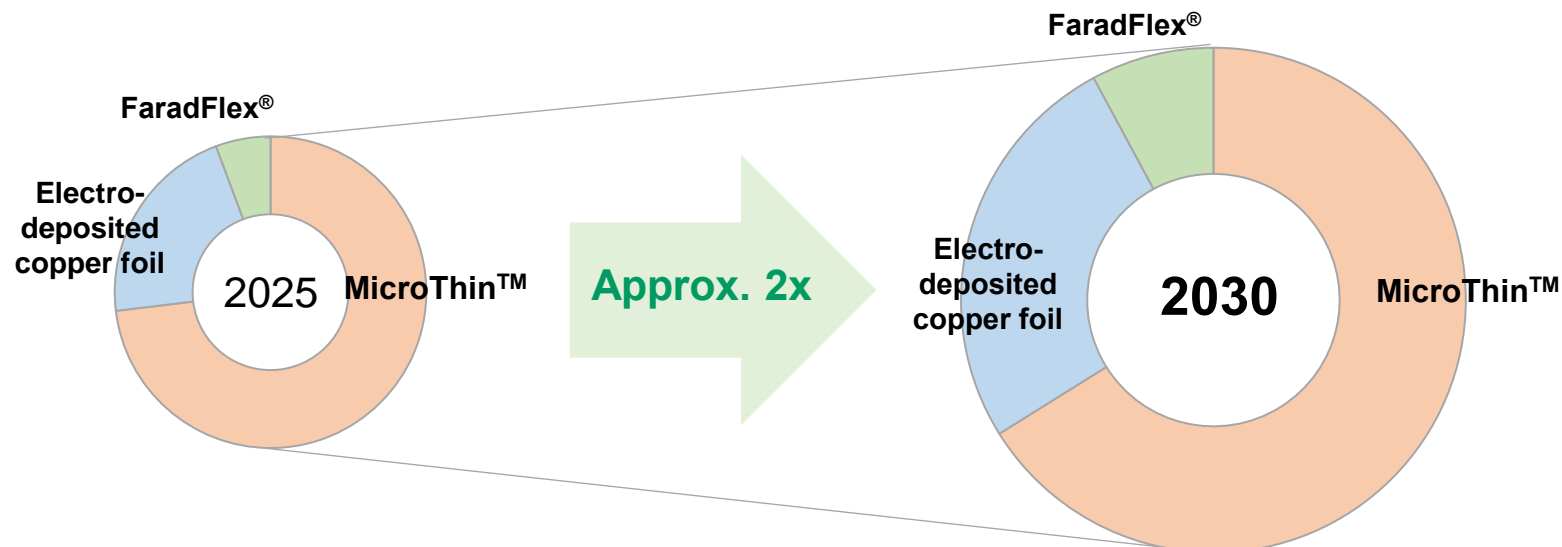
Cross-section photo of a multilayer PCB for infrastructure





## Profit by Segment in the Copper Foil Business

In the copper foil business, all three segments—**MicroThin™**, **electrolytic copper foil**, and **FaradFlex®**—are **expected to achieve significant growth, and we forecast that profits in FY2030 will be approximately double the level of the current fiscal year.**



<b>MicroThin™</b>	<b>1.7x</b>	We anticipate medium- to long-term demand growth primarily for non-smartphone packages within the information and communications infrastructure sector, while also promoting activities to expand adoption in new fields.
<b>Electro-deposited copper foil</b>	<b>2.3x</b>	We will maximize the shift in our sales mix toward high-grade VSP™, accelerate product development, and expand production capacity.
<b>FaradFlex®</b>	<b>2.6x</b>	We will accelerate our production capacity expansion plan to meet the rapidly growing demand for infrastructure and ensure we capture market growth.



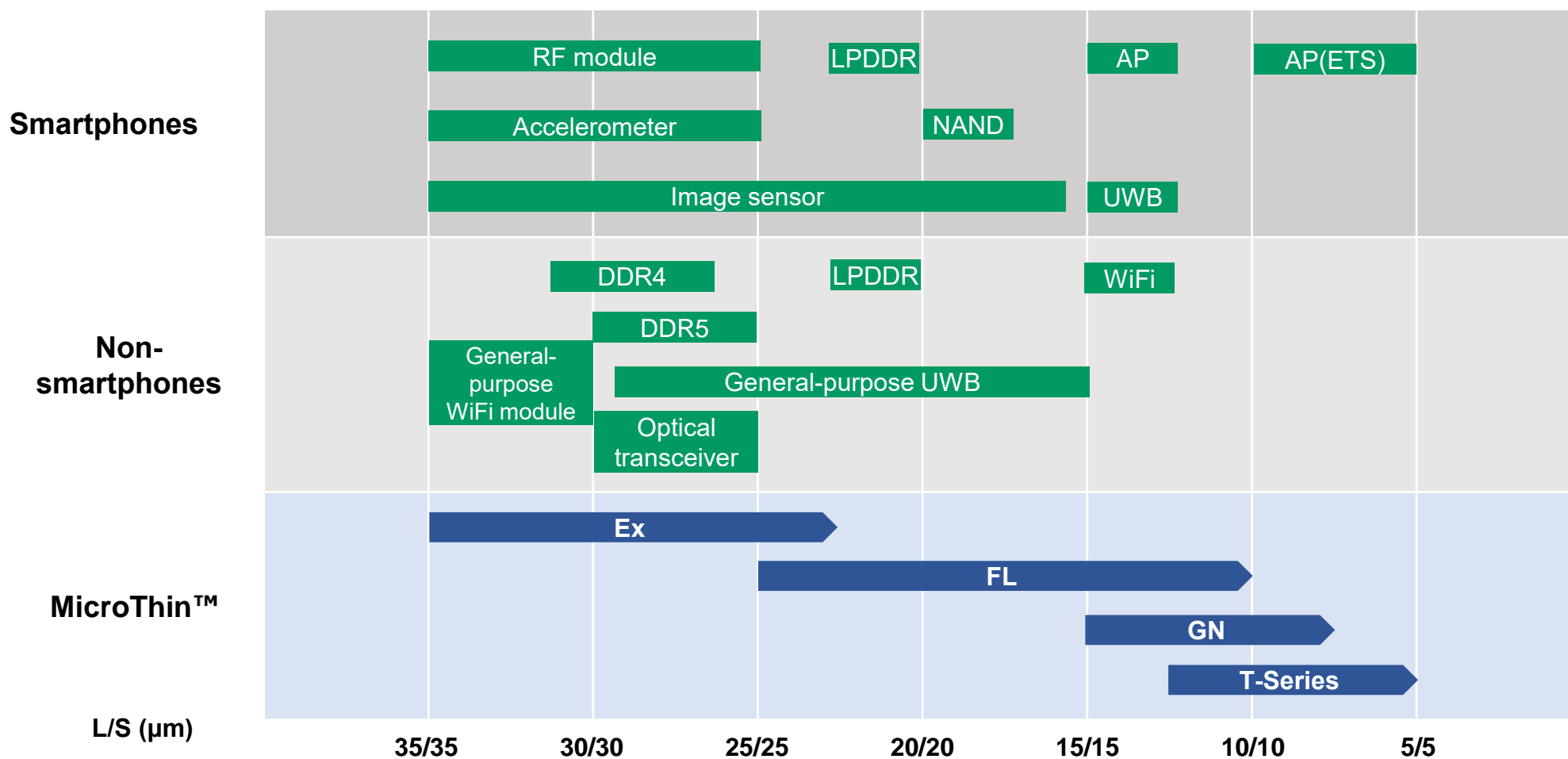
## Appendix (Copper Foil Division)

# [Appendix 1] Main Examples of Application Areas for MicroThin™ for Packages

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Our MicroThin™ is widely used, mainly in the range of 10/10 to 35/35  $\mu\text{m}$ .



## [Appendix 2] News Releases Related to the Copper Foil Business (From January 2025 Onward)

As outlined below, we are sequentially advancing initiatives aimed at expanding the business going forward.

Date of release	Title	Aim	Intent
January 7, 2025	"Mitsui Kinzoku Plans to Increase MicroThin™ Production Capacity"	<b>Enhance the ability to supply the product in a stable manner in order to increase its use by existing users and in new fields.</b>	Increase the total production capacity of the Ageo Operation and the Malaysia Plant from the current 4.9 million m <sup>2</sup> to 5.6 million m <sup>2</sup> /month in 2030.
January 7, 2025	"Production Capacity Enhanced for VSP™ Electro-Deposited Copper Foil for High-Frequency Circuit Boards"	<b>Expand supply of the product in response to demand in AI-related applications (such as servers, routers and switches). (First announcement)</b>	Increase the production capacity for the product by approx. 40% from the current level to 580 tons/month by increasing the production capacity at the Taiwan Plant and commencing production at the Malaysia Plant.
August 20, 2025	Additional Expansion of Production Capacity for VSP™ Electrolytic Copper Foil for High-Frequency Substrates	<b>Expand supply to meet AI-related demand (servers, routers, switches, etc.). (Second announcement)</b>	Expand production capacity to 840 tons per month, representing an increase of approximately 45% compared with the previous level, through additional capacity expansion at the Taiwan and Malaysia plants.
August 21, 2025	Additional Expansion of Production Capacity for FaradFlex® Thin Embedded Capacitor Material for Substrates	<b>Expand supply to meet AI-related demand (routers, switches, etc.), as well as demand for smartphones and wireless headsets.</b>	Complete production capacity expansion and establishment of a business continuity plan (BCP) framework at two sites, the Malaysia Plant and the Ageo Operation.
November 11, 2025	Expansion of Carrier-Attached Ultra-Thin Copper Foil "MicroThin™" for Flexible Substrate Applications	<b>Expand solutions to address thinning and finer pitch requirements associated with high-density mounting.</b>	Advance mass-production adoption by multiple customers for flexible substrates as materials capable of supporting fine circuit formation and with improved reliability.
November 11, 2025	Expansion of Production Capacity for VSP™ Electrolytic Copper Foil for High-Frequency Substrates	<b>Expand supply to meet AI-related demand (servers, routers, switches, etc.). (Third announcement)</b>	Increase production capacity to 1,200 tons per month through an investment of approximately 6 billion yen at the Taiwan and Malaysia plants.
January 6, 2026	Completion of Technology Development for High-Temperature-Resistant Carrier-Attached Ultra-Thin Copper Foil "MicroThin™"	<b>Expand the application scope of "MicroThin™" for various substrate materials processed through high-temperature processes.</b>	Expand the application scope to substrate materials with excellent dielectric properties, such as MPI, LCP, and PTFE, which require high-temperature processes, by incorporating a heat-resistant release layer that can be peeled even at temperatures exceeding 350°C.



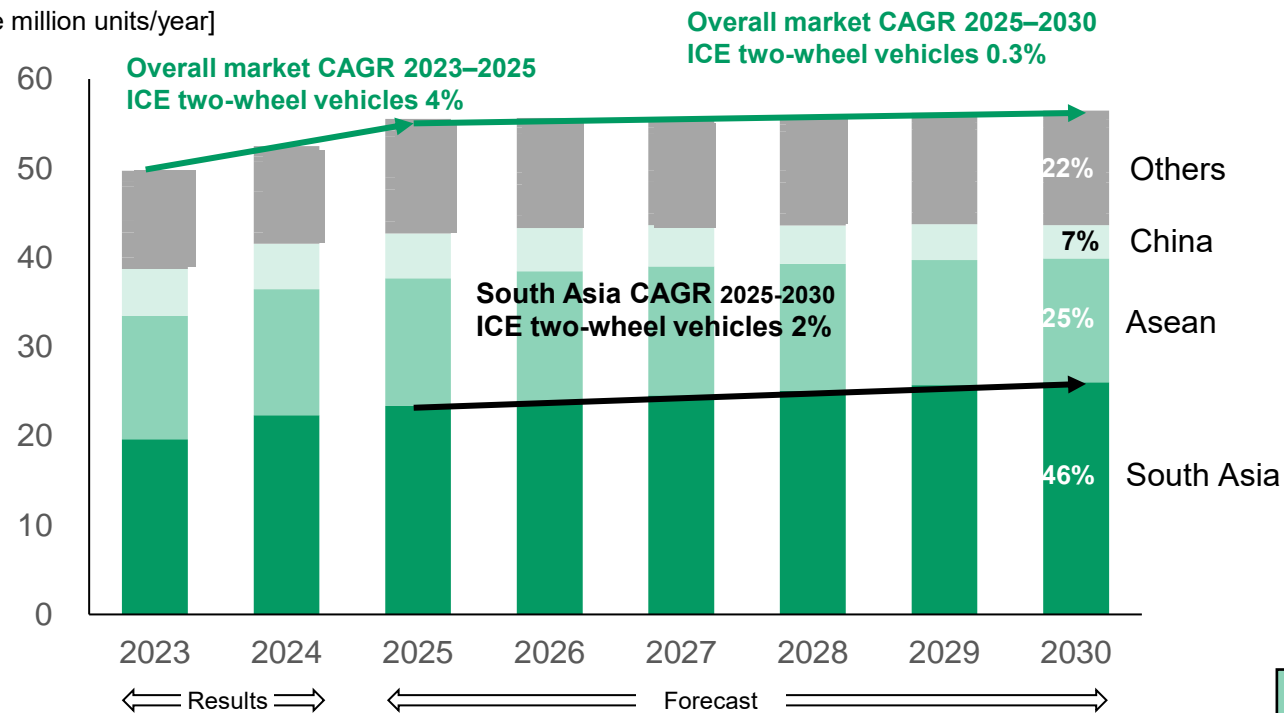
# Catalysts Division

# Market Trends for Two-Wheel Vehicles with Internal Combustion Engines (ICE) and Our Market Share

From FY2025 onward, growth in the ICE two-wheel vehicle market is expected to slow down overall; **however, growth is anticipated in South Asia, which has a large market size, while the ASEAN market is expected to remain largely flat.** In the ICE two-wheel vehicle market, **our catalysts maintain a market share of approximately 50%.**

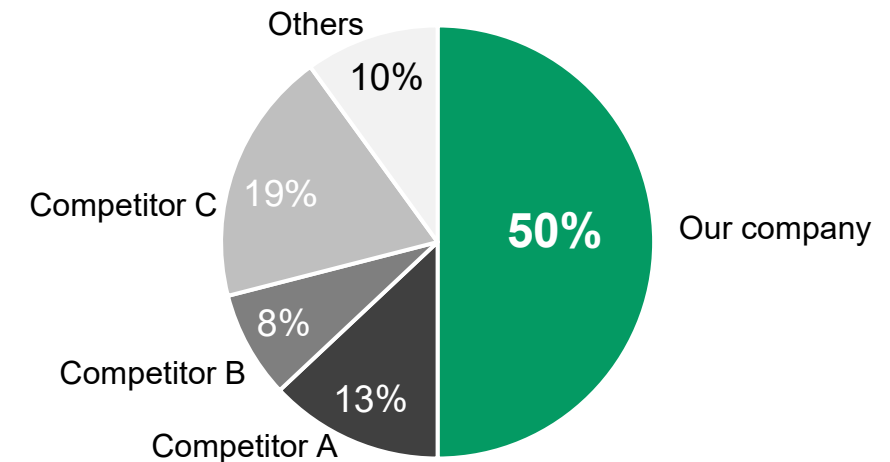
## Sales volume trends and market growth rate for ICE two-wheel vehicles

[One million units/year]



## Our catalyst market share (FY2025 forecast)

\* Calculated based on the number of ICE two-wheel vehicles equipped with our catalysts.



**Estimated global market size for catalysts for two-wheel vehicles: approximately 40 billion yen per year**

\*Based on catalyst processing fees.

Potential expansion of the catalyst market of **≥ ¥3 billion per year** (estimate) driven by the implementation of emission regulations in Pakistan and African countries

Source: Prepared by the Company based on market research reports.





# Our Business Strategy for Catalysts for ICE Two-Wheel Vehicles

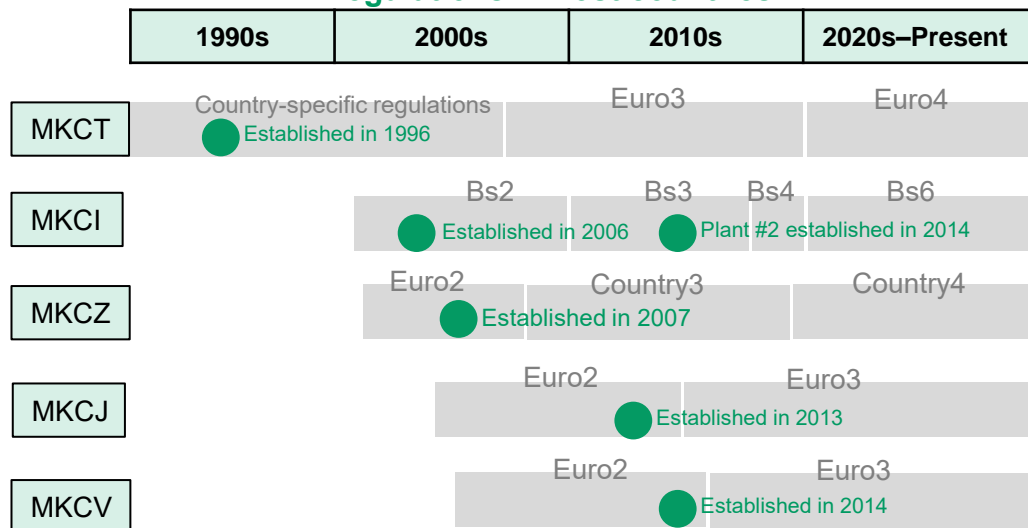
## ■ Our Strengths

- **Development of catalysts** optimized for each vehicle model, tailored to **local emissions regulations** and the specific needs of individual OEMs in each country
- Flexible and timely sales, production, and technical support for local OEM manufacturing sites, achieved by **entering local markets** in line with **growth in two-wheel vehicle markets** and the tightening of regulations in each country

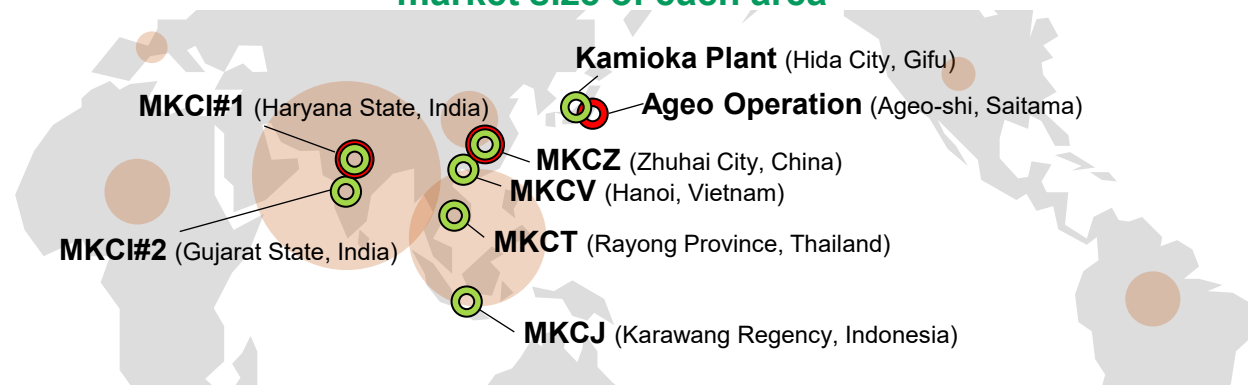
## ■ Future Business Policy and Strategy

Policy	Build on our strengths to expand sales and earnings by increasing market penetration in South Asia (India), where market growth is expected, while maintaining our share in ASEAN.
Strategies	<ul style="list-style-type: none"> <li>- Enhance the allocation of development resources to <b>develop catalysts</b> optimized for each vehicle model in line with OEM needs, while strengthening cost reduction measures, including reduced use of precious metals.</li> <li>- Provide flexible and rapid support to local OEM production sites by <b>fully leveraging the strengths of our existing bases</b> in South Asia and ASEAN.</li> <li>- <b>Establish an optimal sales and manufacturing allocation framework</b> for 2030, with the aim of further enhancing our responsiveness.</li> </ul>

### Timing of the Catalysts Division's market entry and tightening of regulations in host countries



### Development/production sites of the Catalysts Division and market size of each area



Production sites	Kamioka Plant	MKCT	MKCI		MKCZ	MKCJ	MKCV
			#1	#2			
Production capacity	2W	1 mil	4 mil	15 mil	5 mil	6 mil	3 mil

Legend: ● Development sites ○ Manufacturing sites  
The size of ● represents the market size of each area.

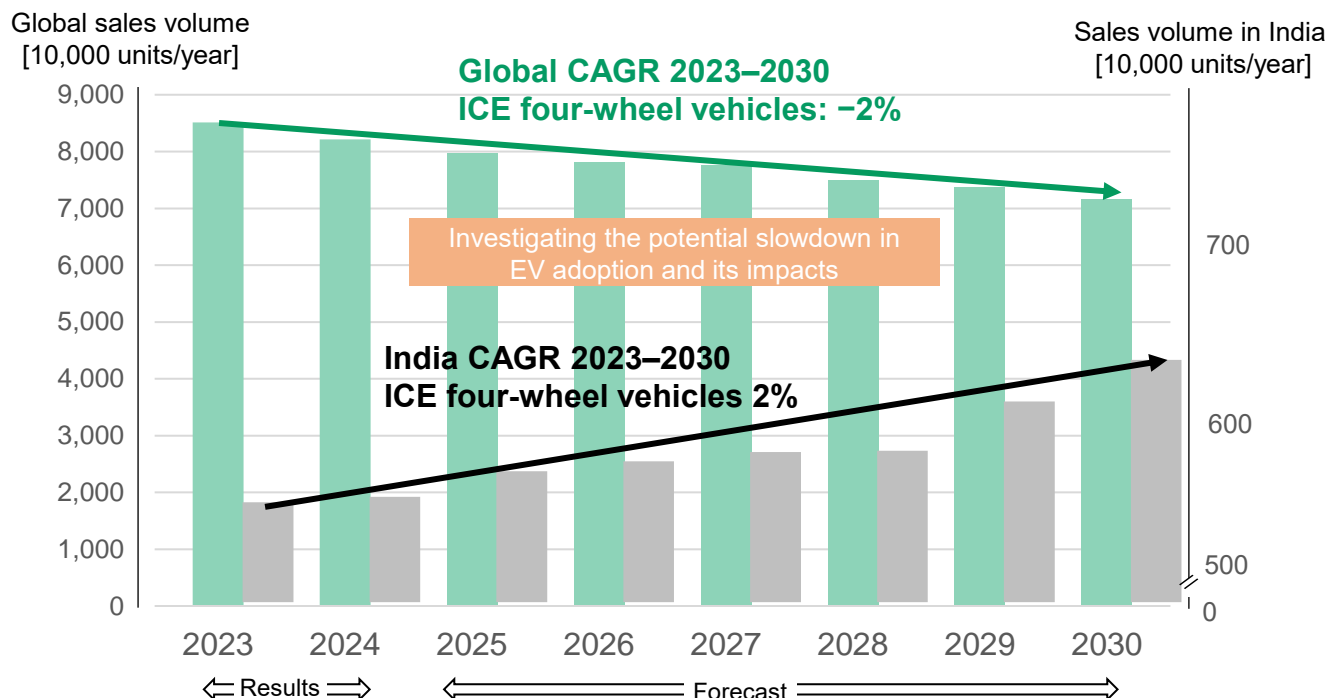


# Our Business Strategy for Catalysts for ICE Four-Wheel Vehicles

## Future Business Policy and Strategy

Policy	Expand our share in growth markets to maximize sales volume and earnings amid a shrinking ICE market.
Strategies	<ul style="list-style-type: none"> <li>- Build an integrated development, manufacturing, and sales structure <b>aligned with future electrification trends.</b></li> <li>- Leverage <b>expertise in CNG/FFV-compatible catalysts and the strength of having development functions at local sites to expand sales in the Indian market, where growth of the ICE market is expected.</b></li> </ul>

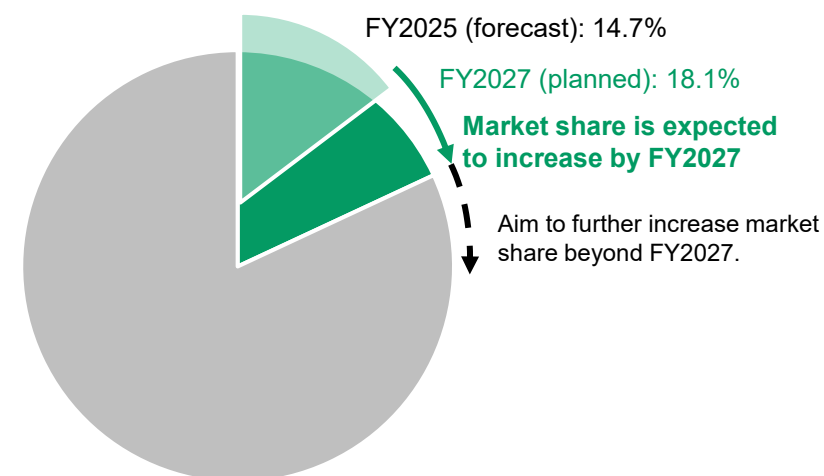
### Global and Indian market growth rates for ICE four-wheel vehicles



Source: Prepared by the Company based on market research reports.

### Expected market share of our catalysts in India

\* Calculated based on the number of ICE four-wheel vehicles equipped with our catalysts.



Estimated market size of the Indian market for catalysts for four-wheel vehicles: approximately 30 billion yen per year

\*Based on catalyst processing fees.



## Appendix (Catalysts Division)



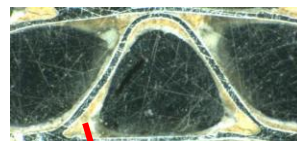
## [Appendix] Overview of the Catalysts Division

### What is a catalyst?

- An exhaust gas catalyst is a component in which catalytic materials are supported within a substrate.
- Installed downstream of the combustion engine, it converts harmful substances emitted by four-wheel and two-wheel vehicles (CO, HC, and NOx) into harmless substances such as CO<sub>2</sub> and water.



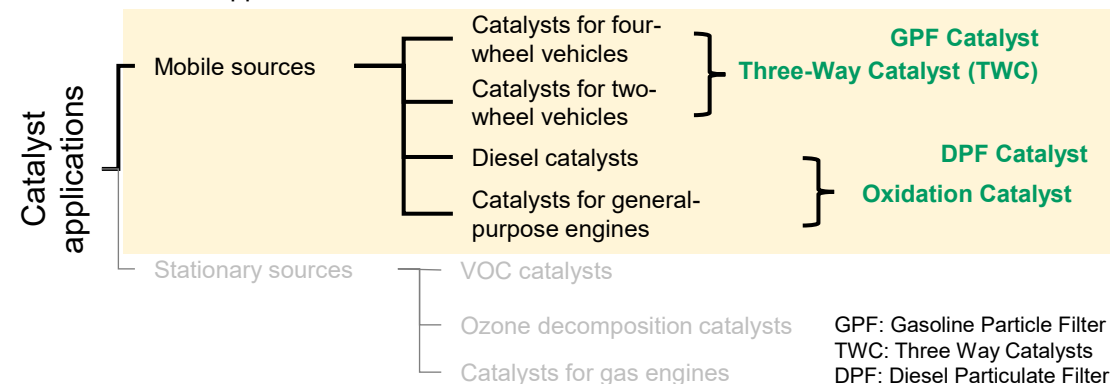
Enlarged  
view



Supported catalytic materials  
\*Value provided by the Company

### Business domains

Purification catalysts for mobile sources, including catalysts for four-wheel and two-wheel vehicle applications



### Locations and production capacity of the Catalysts Division

- Operate and sell catalysts at seven locations worldwide, including overseas sites, based on a local-production-for-local-consumption approach.
- Provide production capacity of approximately 40 million units per year for two-wheel vehicles and approximately 8.5 million units per year for four-wheel vehicles.

Production sites		Kamioka Plant	MKCT	MKCI		MKCZ*	MKCJ	MKCV	MKCA
				#1	#2				
Date of establishment		1982/1	1995/2	2005/6		2006/9	2011/12	2013/2	2013/7
Production capacity (units/year)	2W	1 mil	4 mil	15 mil	5 mil	6 mil	6 mil	3 mil	-
	4W	0.9 mil	0.1 mil	0.9 mil	0.6 mil	1 mil	1.5 mil	-	2 mil

Kentucky, United States

\* MKCZ has an additional GPF production capacity of 1.2 million units per year.



# Engineered Powders Division



## [Developed Products] Negative Thermal Expansion Powder

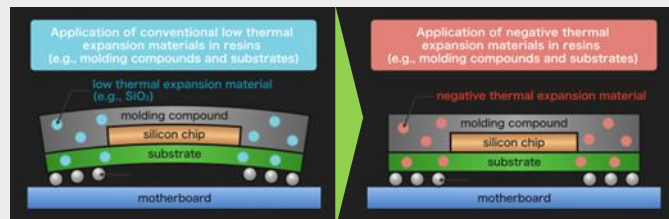
Customer evaluations of our negative thermal expansion materials\*<sup>1</sup>, including ZMP, which offers world-class shrinkage properties at a practical level, as well as CZVPO and ZSP, which exhibit different shrinkage behaviors, are increasingly positive, particularly for semiconductor-related applications. In addition, recognition is increasing as a result of our full-scale expansion of overseas activities and enhanced external communications.

### Overview of products under development

#### Nature of product

- Materials that contract as temperature increases
- Capable of suppressing the thermal expansion of resins, metals, glass, and other materials that are prone to thermal expansion

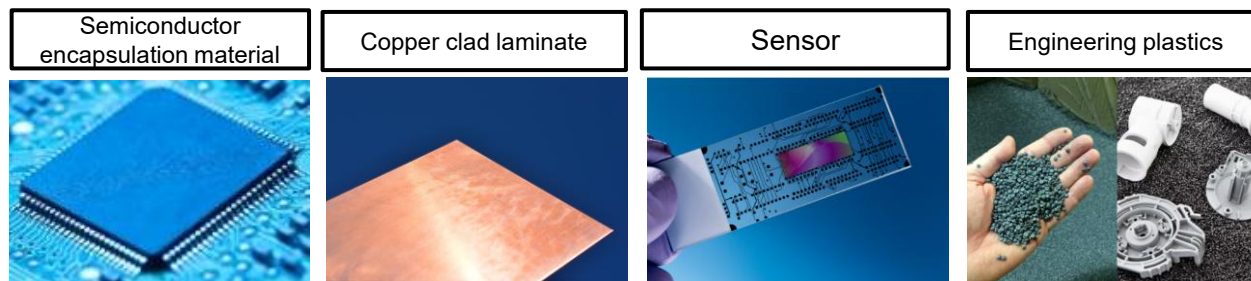
Less difference in thermal expansion between dissimilar materials



#### Characteristics

- Lineup of three products with different thermal contraction behaviors
- ZMP: Negative thermal expansion of **-66 ppm**, offering the world's highest-level contraction performance at a practical application level
  - CZVPO: Stable contraction performance over a wide temperature range (-170°C to 230°C)
  - ZSP: Superior contraction performance in high-temperature ranges (100°C to 500°C)

#### Application



### Market size and progress

#### [Expected revenue and market size in 2030]

Expected revenue potential: approximately 1 billion yen  
Thermal control silica powder market: 150 billion yen and assumed share of up to 1%

#### [Progress]

- Receive positive customer evaluations, primarily for ZMP: Provide samples to **approximately 50 companies** and perform validation across a wide range of applications, including encapsulation materials, copper-clad laminates, sensors, and engineering plastics.
- Accelerate overseas expansion: Begin sample shipments for the Taiwanese market.
- Strengthen external communications: Issue one press release, participate in six exhibitions and deliver two presentations in FY2025, and gain media coverage through press releases and other channels.

\*1. ZMP and CZVPO were developed based on inventions by Professor Takenaka (Nagoya University); ZSP was developed based on an invention by Associate Professor Isobe (Institute of Science Tokyo).  
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# Engineered Liquids Commercialization Promotion Division (iconos™)

# Promotion of Commercialization of Engineered Liquids Centered on iconos™

We promote the well-being of the world  
through a spirit of exploration  
and diverse technologies.

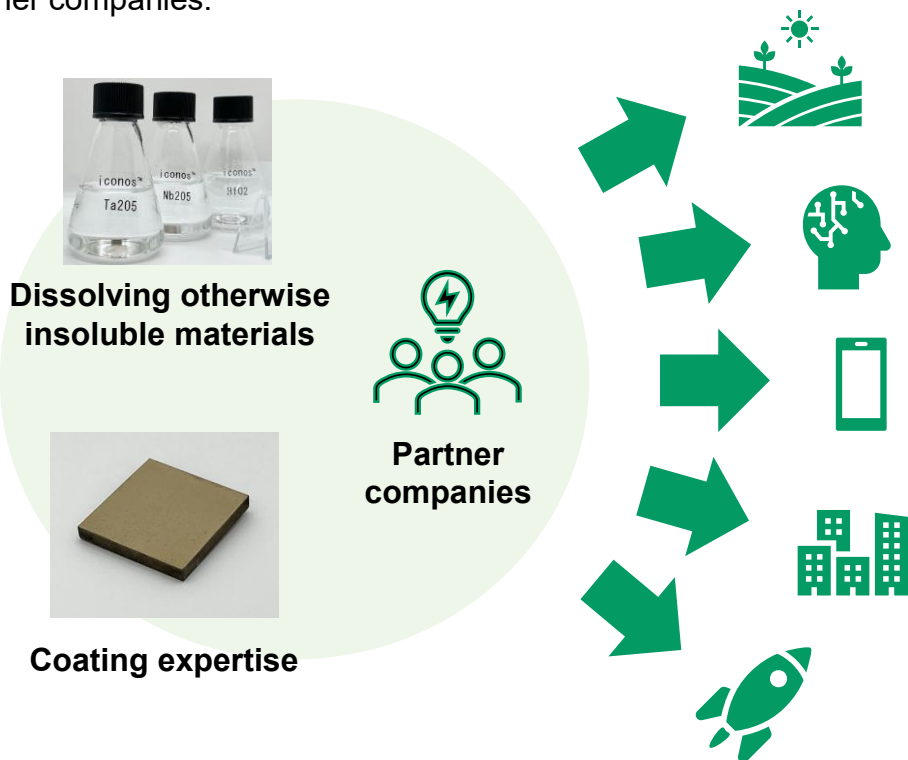


Leveraging iconos™ solution-based coating technologies, we are conducting marketing activities targeting high value-added fields\*, including semiconductor-related applications and premium steel materials. We aim to enter growth markets such as semiconductors, wafers, and all-solid-state batteries by 2030.

\*Potential high-profit areas

## Value proposition and business model

Leveraging our proprietary solution technologies and distinctive coating technologies, we create a wide range of new businesses by collaborating with partner companies.



## Examples under consideration for commercialization

Cases planned for commercialization by 2030

External collaboration

**Semiconductor-related**  
Market size: 80 billion yen or more

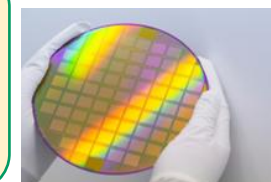
### Collaboration with semiconductor-related companies



By applying corrosion-resistant coatings to graphite and steel materials for semiconductor-related components, we contribute to improved quality and productivity.

**Wafer market**  
Market size: 100 billion yen or more

### Collaboration with startups



In collaboration with Gaianixx, we have successfully achieved thin-film single crystallization of lithium niobate (LN) and lithium tantalate (LT). We aim to enter the 6G market and the optical communications market.

Internal

**All-solid-state batteries**  
Market size: several tens of billions of yen

### Collaboration with our battery business



A-SOLiD®

Using our coating technologies, we have addressed material challenges related to higher output and higher energy density in battery materials, contributing to the accelerated social implementation of next-generation batteries.

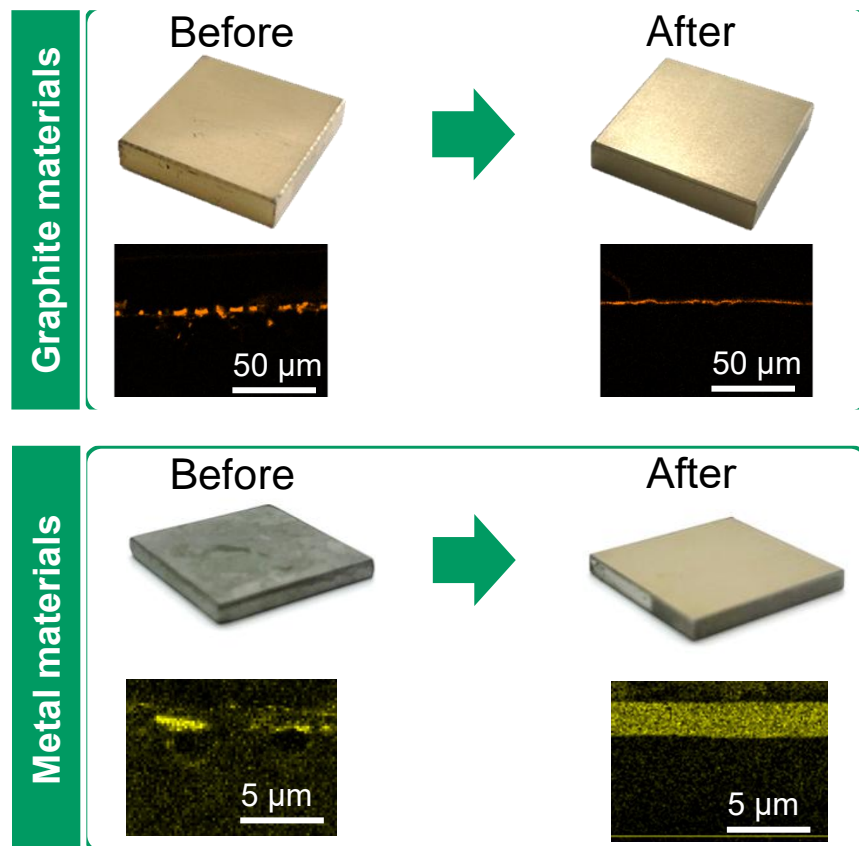


# Acceleration of the Coating Business Using iconos™

We are strongly promoting commercialization through significant advances in coating technologies and proactive allocation of resources.

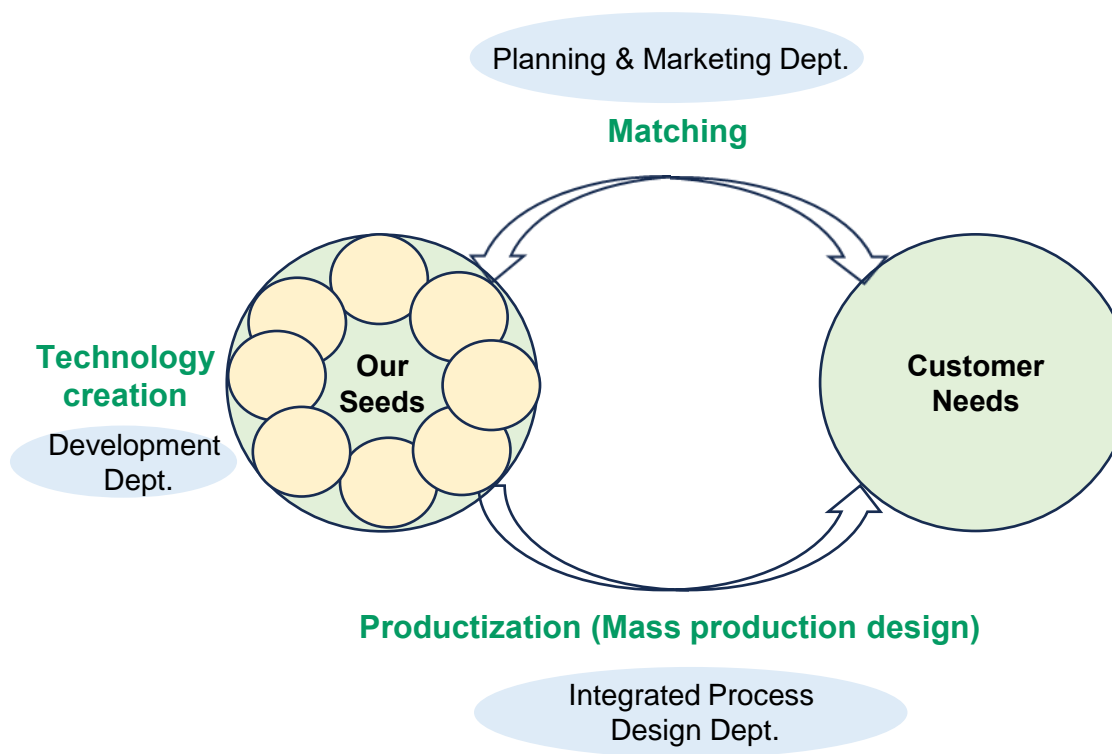
## Significant evolution of coating technologies through iconos™

Since April 2025, we have significantly advanced our coating technologies over a six-month period.



## Strengthening the organizational framework to accelerate commercialization

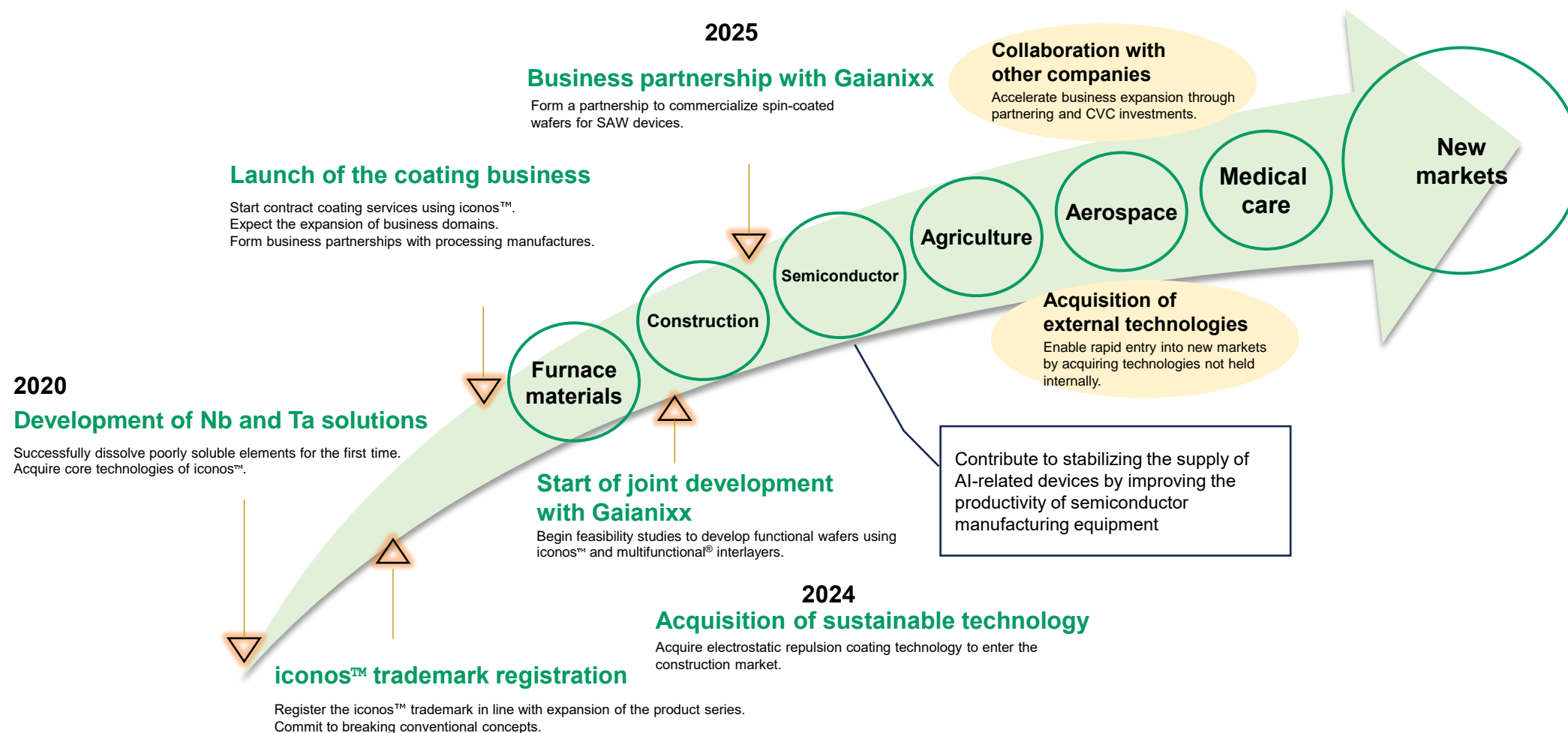
By substantially increasing internal collaboration and the frequency of external engagement, we are accelerating verification and validation efforts.





# Business Expansion Leveraging iconos™

By collaborating with external partners and leveraging external technologies to generate synergies, we aim to generate profits totaling several billion yen by around 2035.



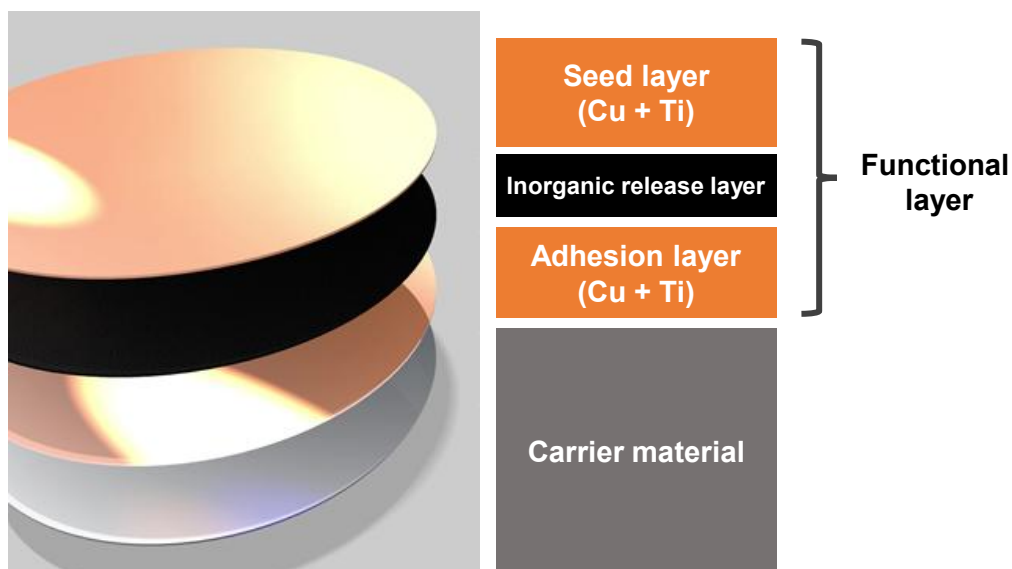


# HRDP Business Development Division



# HRDP® (Carrier for Next-Generation Semiconductor Packaging)

## HRDP® product structure



## Strengths of HRDP®

### 1. Thin-film lamination using sputtering

→ High planarity **enables easy fine-line patterning**.

### 2. Selectable carrier materials tailored to customers' processes

### 3. Ready-made release layer and easy release process

→ The release layer is pre-made, so **customers do not need to make significant capital investments** in release-layer formation or release processes.

## Our initiatives for the HRDP® business

### ■ Transfer to the Engineered Materials Sector (effective October 1, 2025)

- Aim to accelerate commercialization by strengthening synergies between the market insights and customer base of the Copper Foil Division and the production technologies of the PVD Materials Division.

### ■ Strengthening collaboration with Geomatec (press release on November 11, 2025)

- Launch a second production line and increase production capacity to 160,000 m<sup>2</sup>.
- Advance process automation to achieve significant improvements in quality.
- Strengthen collaboration between our production technologies and Geomatec's film deposition know-how.

### ■ Customized product development and resolution of quality issues tailored to each customer's process

- Select carrier materials tailored to customers' processes.
- Optimize release strength in accordance with customers' manufacturing conditions.
- Develop double-sided coated products.

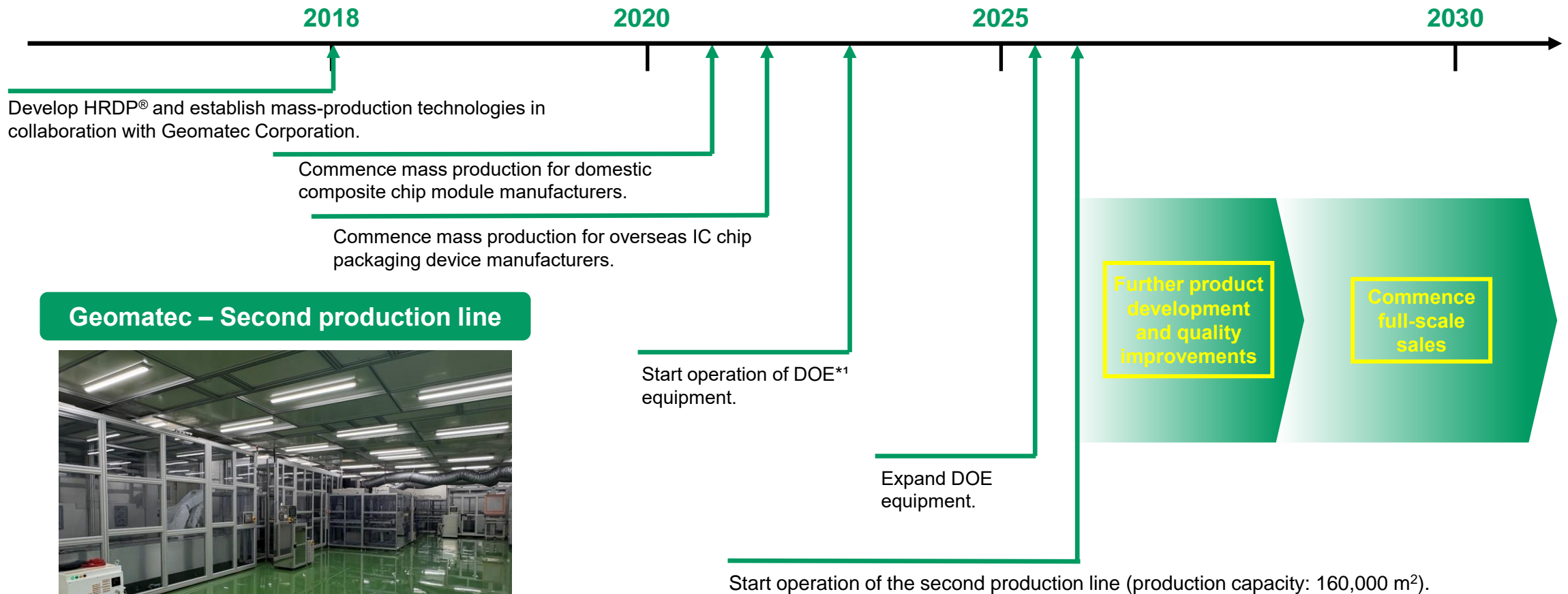
### ■ Refinement of the business plan and future Policy

- Regarding the future potential of this business, we will work on refining it with the aim of completing it within this fiscal year.
- While securing the necessary production capacity, we will strengthen product development to meet increasingly sophisticated technical demands from our customers.



# HRDP® (Business Roadmap)

## Business roadmap



### Geomatec – Second production line





# Appendix

## —Other Featured Products—



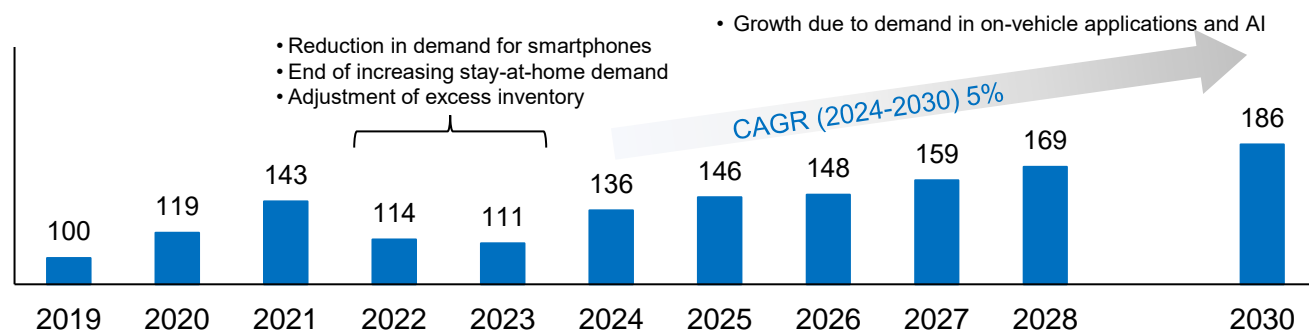
# [Engineered Liquids Commercialization Promotion Division] Sales Plans for Copper Powders for Electronic Materials

For copper powder for electronic materials, we continue to expect growth in line with the MLCC market, as well as growth driven by the expansion of new overseas customers.

## MLCC market trends and sales plans for copper powders for electronic materials

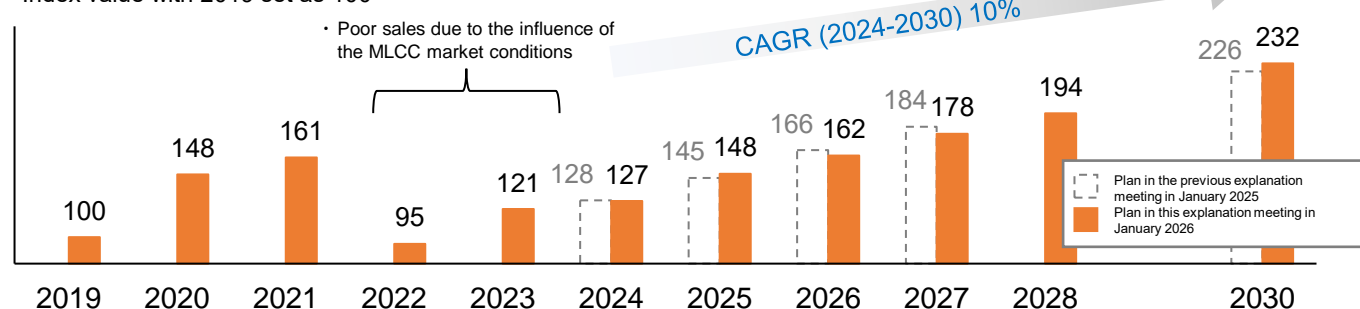
### ■ MLCC market forecast: unit sales \*Index value with 2019 set as 100\*<sup>1</sup>

\*<sup>1</sup> Internal estimates



### ■ Copper powders for electronic materials: sales volume plans

\*Index value with 2019 set as 100



Results

Prospects and Plans

## Market's and our company's conditions

### Prospect for FY24

[Market] The MLCC market is still in the process of recovery  
[Our company] Strengthen readiness to respond to the regrowing MLCC market

Enhance the ability to cater to new overseas customers and expand sales to them.  
Further enhance competitiveness by enhancing our production technological capability.  
Change policies on large-sale development projects (from consumer to on-vehicle applications).

### Prospect for FY25

[Market] Renewed growth of the MLCC market  
[Our company] Strengthening response to MLCC market expansion

- Further strengthen capabilities to serve overseas customers and expand sales.
- Enhance responsiveness to development projects.
- Resume consideration of investment in Hikoshima atomization facilities.

### Toward FY30

[Market] Expansion of the MLCC market  
[Our company] Keep pace with the growth of the MLCC market and expand our market share

- Develop new copper powders for MLCC
- Expand sales to existing overseas customers
- Expand our market share by taking advantage of our technological capability
- Expansion of demand in on-vehicle applications
- Further increase production capacity

Expand into applications other than MLCC market applications

# [Engineered Liquids Commercialization Promotion Division] Sales Plan for Silver-Coated Copper Powder for Solar Cells

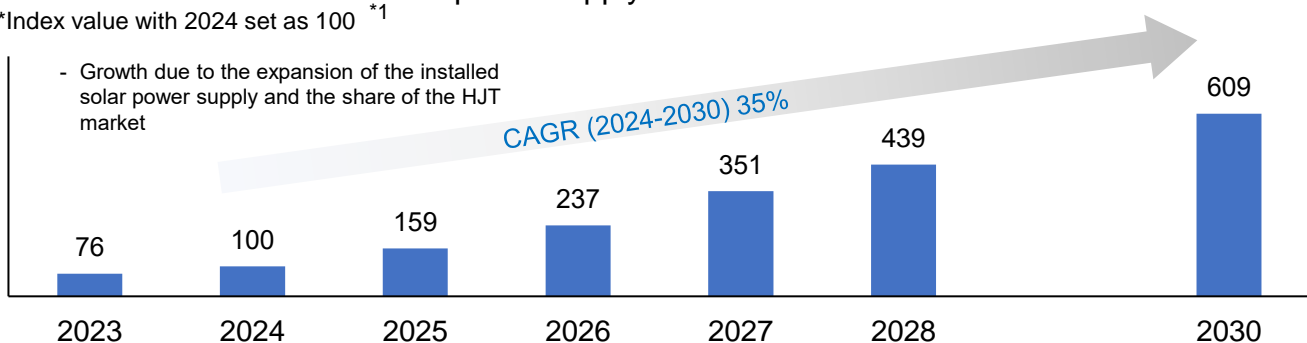
Due to intensified market competition and a downturn following the surge in demand in the Chinese power generation market, sales declined significantly from early 2025. By providing metal powder that is more affordable than silver, whose price continues to rise, to the solar cell market as a whole, we contribute to the realization of a decarbonized society.

## HJT market trends and sales plans for silver-coated copper powders for HJT

### ■ HJT market forecast: amount of power supply installed

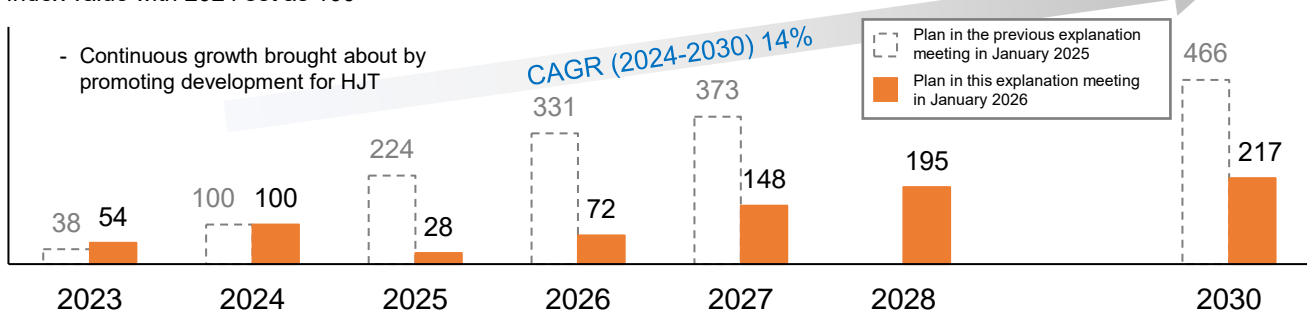
\*Index value with 2024 set as 100 \*1

\*1 Internal estimates



### ■ Silver-coated copper powders for HJT: sales volume plans

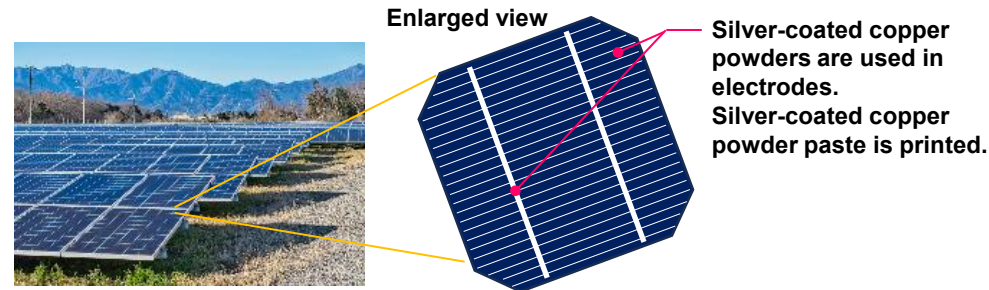
\*Index value with 2024 set as 100



Results

Prospects and Plans

## HJT



Technology	Share forecasts 2024		Share forecasts 2030	
	(Previous)	(Current)	(Previous)	(Current)
Crystalline silicon solar cells				
PERC type	31%	25%	5%	2%
TOPCon type	58%	66%	55%	65%
HJT type	6%	3%	27%	15%
Others	5%	6%	13%	18%

- PERC type : Conventional mainstream technology. Existing processes can be repurposed, and replacement with TOPCon is progressing.
- TOPCon type : High-efficiency technology with excellent cost performance that is becoming mainstream. Silver electrodes are currently dominant; however, due to rising silver prices, silver-coated copper and pure copper are also being considered.
- HJT type : High-efficiency technology offering higher performance than TOPCon, though at slightly higher cost. If the price of silver continues to rise, HJT is expected to become more cost-competitive than TOPCon.
- Others : xBC-type technologies, etc., offer high efficiency and superior aesthetics.

# [Engineered Liquids Commercialization Promotion Division]

## Copper Powder for 3D Printing

We promote the well-being of the world  
through a spirit of exploration  
and diverse technologies.



We are promoting entry into the business by positioning cold plates for data centers and space rocket chambers as priority markets. In addition to collaborating with partners and utilizing our in-house additive manufacturing equipment, we are accelerating new customer acquisition by participating in exhibitions in Japan and overseas, as well as implementing digital marketing initiatives.

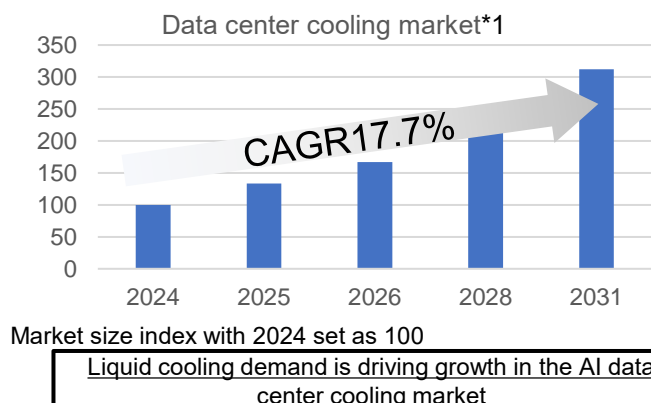
### Entry strategy for target markets

#### Applications

Cold plates for data centers (liquid cooling plates)



#### Market potential



#### Competitive advantage

##### [Advantages of 3D printing]

- Create complex geometries that are not feasible with conventional methods.
- Improve thermal performance through integrated, one-piece fabrication.

##### [Advantages of our materials]

- Achieve fine-feature fabrication using general-purpose lasers.

#### Progress

- Gain strong interest in the Taiwanese market, with the dedicated product introduction web page averaging approximately 780 views per month over the past year.
- Promote collaboration with Taiwanese additive manufacturing companies.
- Accelerate validation through prototyping using in-house 3D printers and the introduction of evaluation equipment.

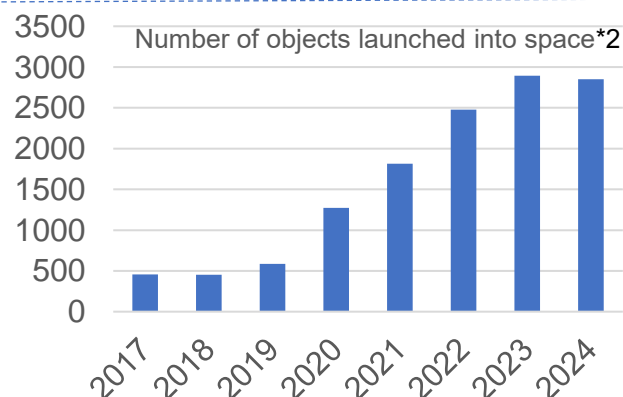
#### Market size

**[Expected revenue and market size in 2030]**

**Expected revenue potential: 1–2 billion yen**

(3D printing copper powder market: 33 billion yen and assumed share of 3–6%)

Rocket chambers for space launch vehicles



Increasing satellite launches are driving demand for rockets

##### [Advantages of 3D printing]

- Achieve miniaturization and cost reduction.

##### [Advantages of our materials]

- Achieve higher strength, higher thermal conductivity, and higher productivity compared with commercially available copper materials.

- Evaluate using actual-shape components fabricated by rocket manufacturers.
- Promote engagement with rocket manufacturers through domestic and overseas exhibitions.
- Provide quality support based on fabrication quality data obtained from in-house 3D printing equipment.

\*1: Based on our research, \*2: Source: Our World in Data (<https://ourworldindata.org/grapher/yearly-number-of-objects-launched-into-outer-space>)



## [Rare Materials Division] CMP Slurry for SiC Wafers: NANOBIX™

The market for SiC wafers, which are materials for SiC power semiconductors with excellent power conversion efficiency, is expected to expand significantly as applications broaden. Taking advantage of this opportunity, we will promote the global expansion of our CMP slurry for SiC wafers, **NANOBIX™**.

### Major applications of SiC power semiconductors using SiC wafers



High-speed railways

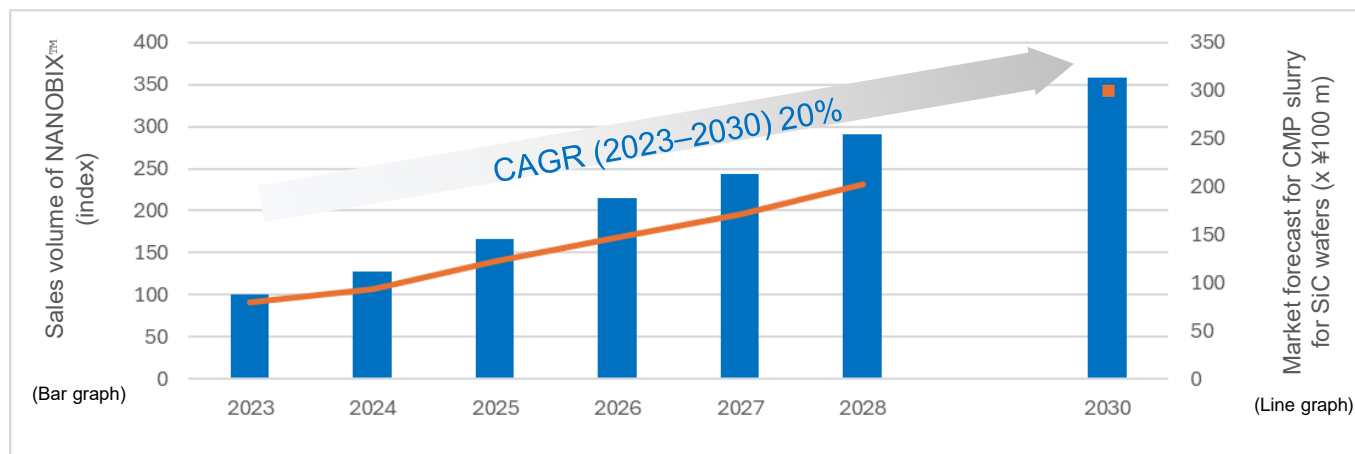


EV/HEV



Renewable energy

### Market trends for CMP slurry for SiC wafers and NANOBIX™ sales plan



\*The market size is estimated by the Company.

### Market's and our company's conditions

#### Expected sales and market scale in 2030

**Expected sales potential: several hundred million yen**

- SiC wafer abrasive market: 30 billion yen x estimated share: a few percent

#### Progress

- **Japan:** Current sales are performing well
- **China and Taiwan:** Engaging with major SiC manufacturers in China and Taiwan
- **U.S. and Europe:** We are considering routes to introduce the product to leading manufacturers.
- **Our company:** Install polishing equipment in March 2026 to accelerate development.

#### NANOBIX™ CMP slurry for SiC wafers



#### SiC wafer



#### Polishing equipment







# [Ceramics Division] Growth Potential and Business Development of the Ceramics 3D Additive Manufacturing Business

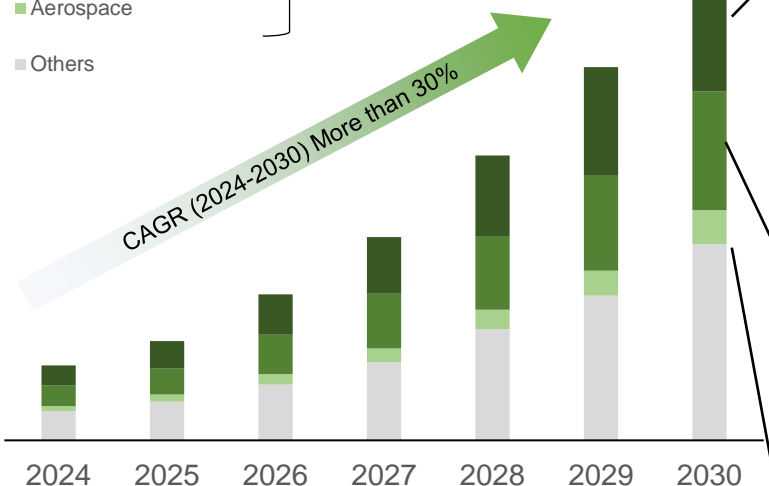
Becoming a leading company in the ceramics 3D additive manufacturing business through our advanced capabilities in design, fabrication, and sintering

## Market size of 3D printing and product examples

### ■ Additive manufacturing market scale (index)\*1

- Semiconductor production equipment
- Dental medical
- Aerospace
- Others

Advanced industrial sectors with high growth rates



\*1 Prepared by the Company based on a VoxelMatters market report.

Customer demand for advanced technologies is strong in the semiconductor manufacturing equipment, dental medical, and aerospace sectors, with average growth rates exceeding 30% in each.

Material: Alumina



Material: Zirconia



Material: Silicon Nitride



## Our strategy

### Customer needs

- Complex geometries and high precision that are difficult to manufacture using conventional methods
- High levels of material performance
- Shorter lead times for prototype products

### Our competitive advantages

- Leveraging our extensive experience to propose optimal designs for additive manufacturing and selecting materials suited to specific applications and operating environments
- High dimensional accuracy through advanced precision fabrication and sintering technologies
- Stable quality by combining proprietary know-how in material control
- Short lead times supported by ample sintering capacity

### FY25

- Promoting bidirectional technology development with additive manufacturing equipment manufacturers
- Strengthening marketing capabilities by launching a dedicated website
- Initiating sample work and product supply for advanced industrial applications

**Achieve sales of JPY 500 million by 2030**