

Paragon (3518TW)

# Investor Conference

2023 / 11 / 30

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# Company Overview

# Paragon<sub>(3518TW)</sub>

Paragon was established in 1995 as the world's first company to apply vacuum sputtering thin film technology to EMI/ESD solutions for 3C products. It is also the first vacuum sputtering technology company listed on the Taiwan Stock Exchange.company.

- ◆ Establishment : 1995.10.20
- ◆ Capital : NTD 840 Million
- ◆ Employees : 600
- ◆ Chairman : Mr. Eagle, Chen
- ◆ Assistant General manager : Ms. Cathy, Yu
- ◆ Main of products :
  - EMI 〈 Electromagnetic Interference 〉 – 95%
  - PVD appearance coating– 5%

# About Paragon



## Taiwan HQ & RD Center

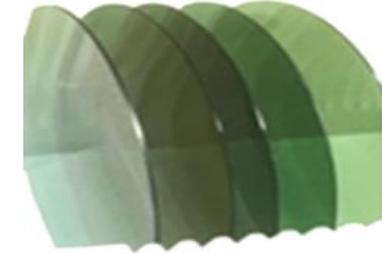
- Established: 1995 year
- Capital: 840 million (NTD)



## EMI sputtering & PVD appearance coating

- Suzhou Factory (3C)
- Nanjing Factory / Neijiang Factory (EMI)

The leading company of EMI suppliers in Notebook Market, 50% of market share, Annual shipments of 50 million.



## Silicon carbide products

- Nankan Factory (2023.1)
- 6" Silicon Carbide (SiC) Wafer**

# Development history

As the world's first company to apply vacuum sputtering thin film technology to EMI/ESD solutions for 3C products. The leading company of EMI suppliers in Notebook Market, 50% of market share.

In 2022, it will acquire Jingcheng Materials, which owns SiC (silicon carbide) wafer production technology.





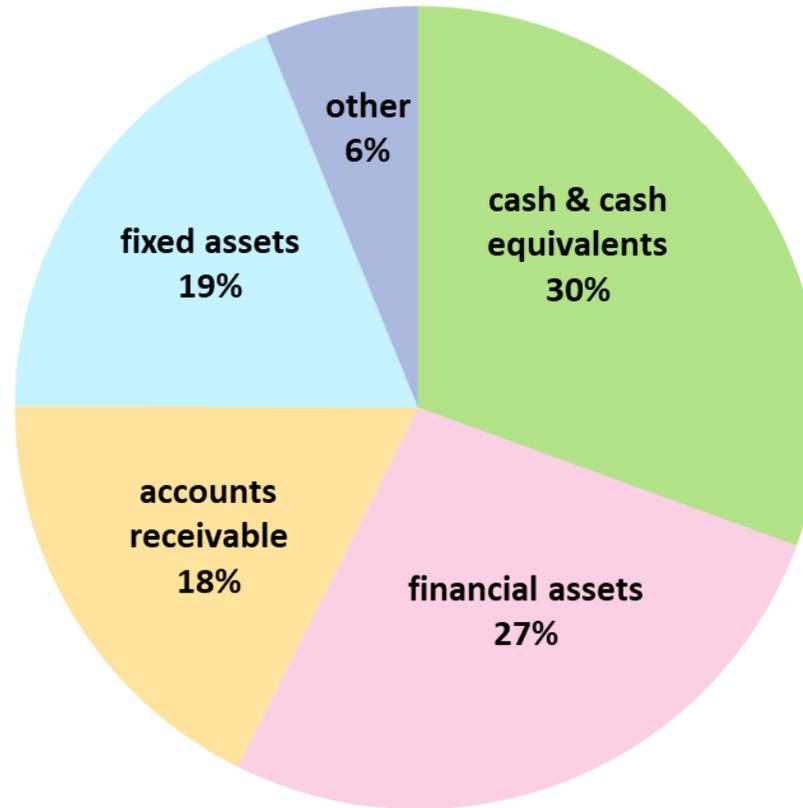
# Financial Information

# Q3 23' Consolidated Balance

Unit in NT\$ Million

	2023.9.30	%	2022.12.31	%	2022.09.30	%
cash& cash equivalents	508	30	886	50	726	37
Financial assets- current&noncurrent	445	27	213	12	482	25
Notes and accounts receivable	294	17	268	15	283	15
Inventories	7	0	5	0	4	0
non-liquid asset in suspense	26	2	19	1	120	6
Fixed Assets & Right-of-use asset	312	19	287	16	205	11
Other Assets	85	5	102	6	125	6
<b>Total Assets</b>	<b>1,678</b>	<b>100</b>	<b>1,779</b>	<b>100</b>	<b>1,945</b>	<b>100</b>
Short-term loans & current portion of longterm loans payable	184	11	74	4	118	6
other payables	73	4	118	7	116	6
long-term debt payable	6	0	9	0	72	4
other liabilities	78	5	90	5	199	10
<b>Total Liabilities</b>	<b>340</b>	<b>20</b>	<b>290</b>	<b>16</b>	<b>506</b>	<b>26</b>
<b>Total Owners' Equity</b>	<b>1,338</b>	<b>80</b>	<b>1,489</b>	<b>84</b>	<b>1,439</b>	<b>74</b>
<b>Net Worth Per Share</b>	<b>15.28</b>		<b>17.48</b>		<b>17.05</b>	

# Q3 23' Financial Structure



ITEM	2023.Q3	2022	2021	2020	2019
Debt Ratio	20.27	16.30	24.54	37.12	32.60
Current Ratio	434.75	606.50	377.86	185.25	187.80
Cash flow Ratio	(14.56)	63.32	31.54	(1.05)	(21.64)

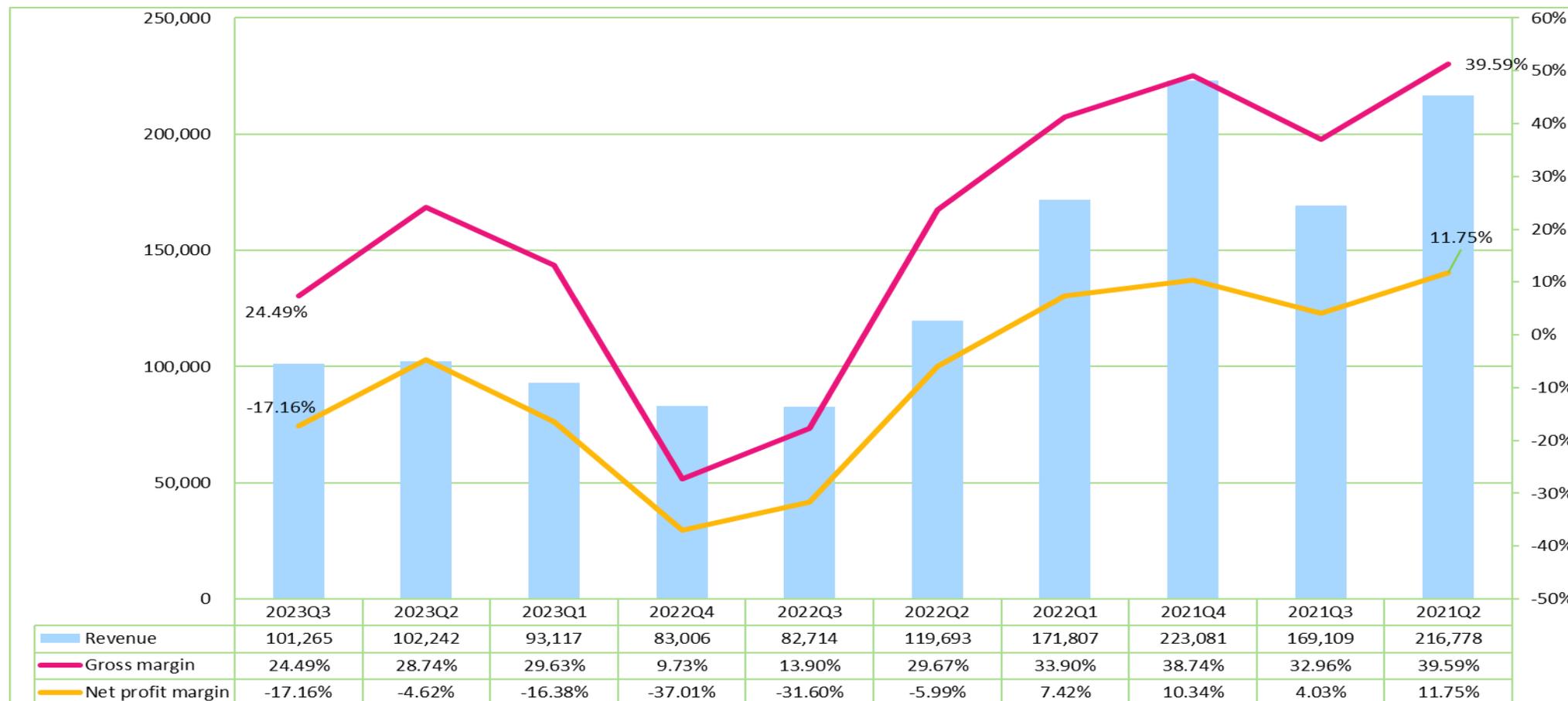
# 2023Q3 Consolidated income statement

Unit in NT\$ Million

ITEM	2023Q3	2023Q2	QoQ%	2022Q3	YoY%
operating revenue	101	102	( 1 )	83	22
Gross Profit	25	29	(13 )	12	116
operating expenses	42	33	27	38	12
Operating Profit	(17)	(5)	268	(26)	(34)
non-operating revenue and expenses	4	2	88	7	(38)
Pre-Tax Income	(13)	(2)	633	(19)	(32)
income tax expense	1	1	(8)	6	(80)
Net Income	(14)	(1)	1307	(25)	(43)
Gross margin(%)	24	28		14	
Net profit margin(%)	( 14 )	( 1 )		( 31 )	
Earnings Per Share <sub>(Dollar)</sub>	(0.18)	0.00		(0.31)	

# Revenue 、 Gross margin & Net profit margin

Unit in NT\$ Million



# Q3 23' Consolidated Cash Flow

Unit in NT\$ Million

	2023 ended September 30	2022 ended September 30
Cash provided by (used in) operating activities	(43)	131
Cash provided by (used in) investing activities	(282)	(68)
Cash provided by (used in) financing activities	(57)	(76)
Effects of exchange rate change on cash	5	16
Net increase (decrease) in cash and cash equivalents	(378)	3
Cash and cash equivalents at beginning of year	886	723
Cash and cash equivalents at end of year	\$508	\$726



# SIC Operational report

# About JING CHENG

JING CHENG was established in November 2021. It is composed of a group of teams with experience in compound crystal production. They have many years of experience in the production and development of silicon carbide (SiC). They independently develop and design thermal fields and crystal growth technologies to effectively improve yield stability, and combined with the management of parent company Boton Technology to improve operating efficiency and equipment optimization, improve cost control and unit machine output.

In the global market, it will play an important material supplier to the industry and focus on the global electric vehicle/5G market to become a major supplier of silicon carbide (SiC) wafers.

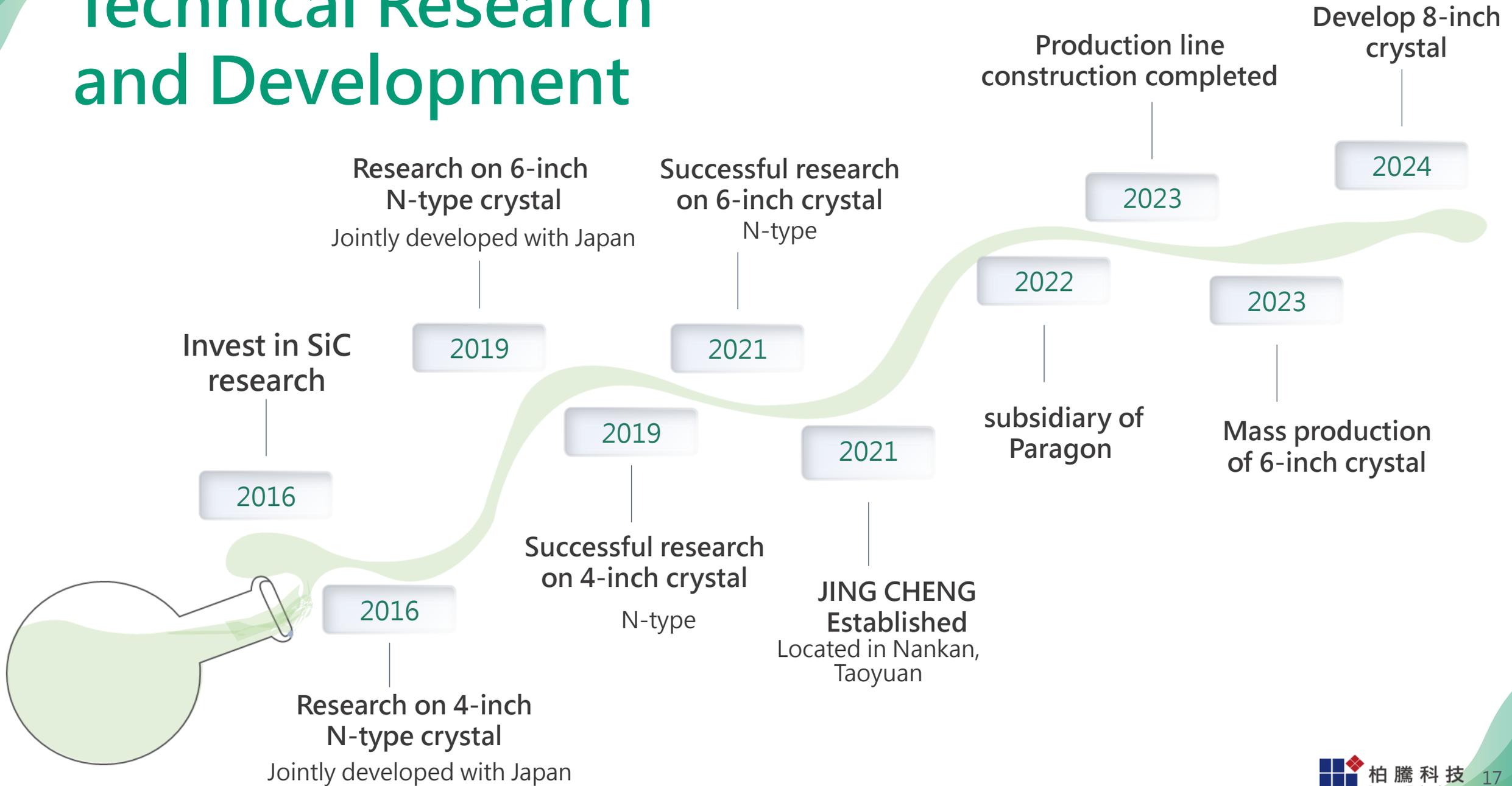


# Main products

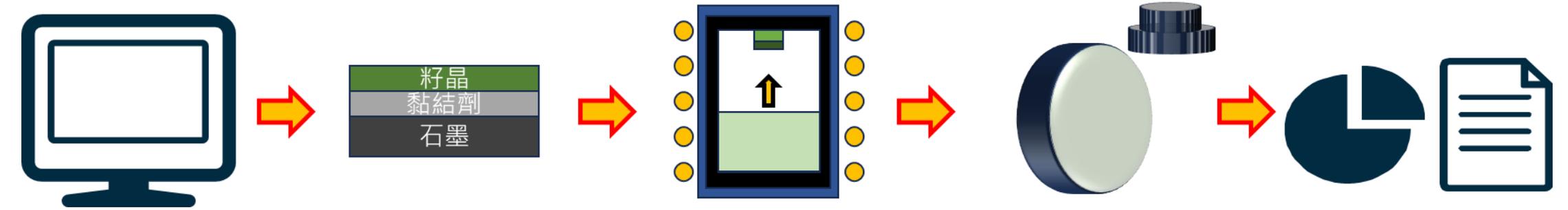
- ◆ SiC 4" 6" 8" N-type ingot / substrate
- ◆ SiC 4" 6" Semi-Insulating ingot / substrate



# Technical Research and Development



# Core Technology



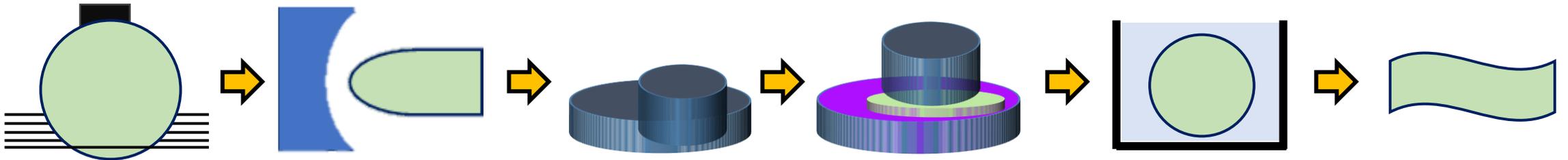
Thermal Field Simulation and Design

Seed crystal paste

crystal growth

crystal processing

Crystal analysis



Mortar cutting

chamfer

Grind

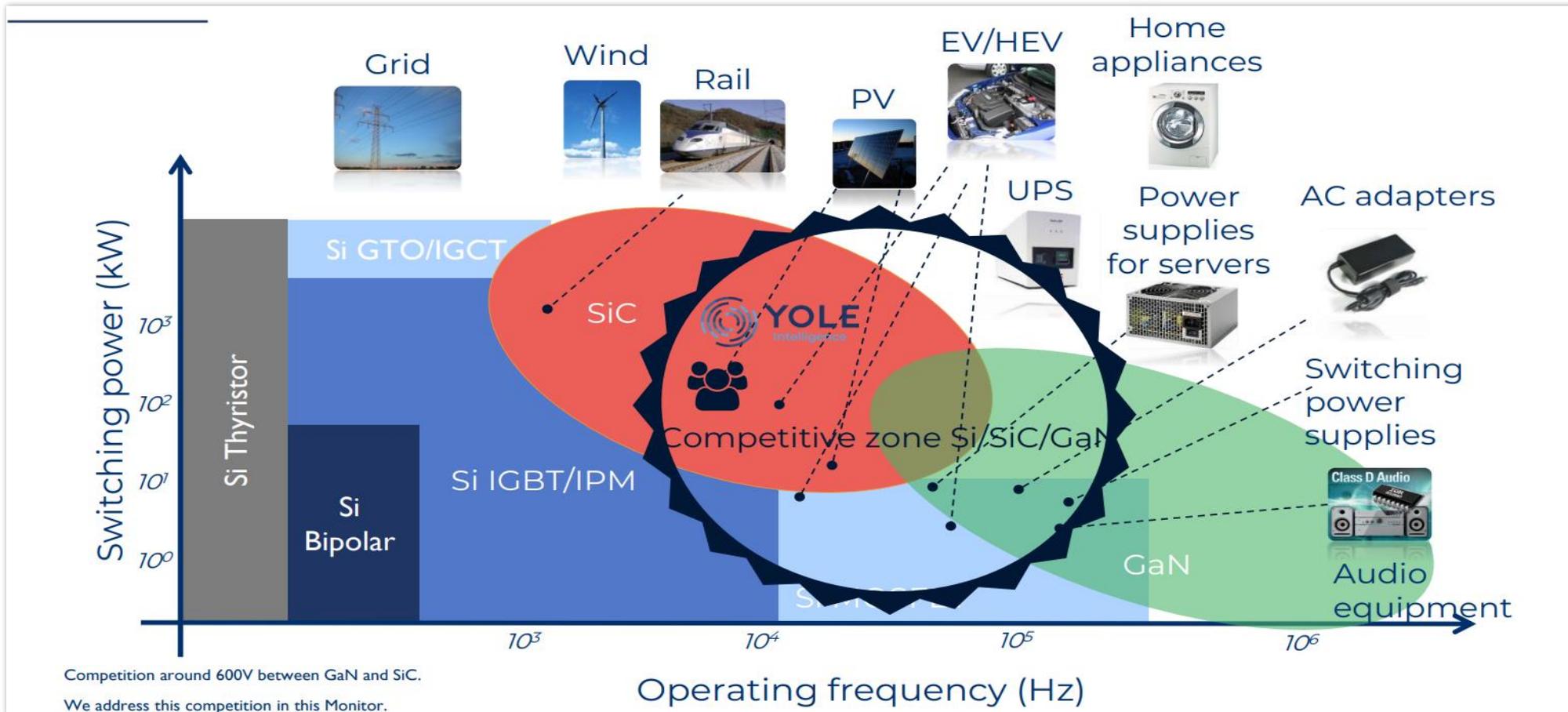
polishing

Clean

Detection

# SiC Applications

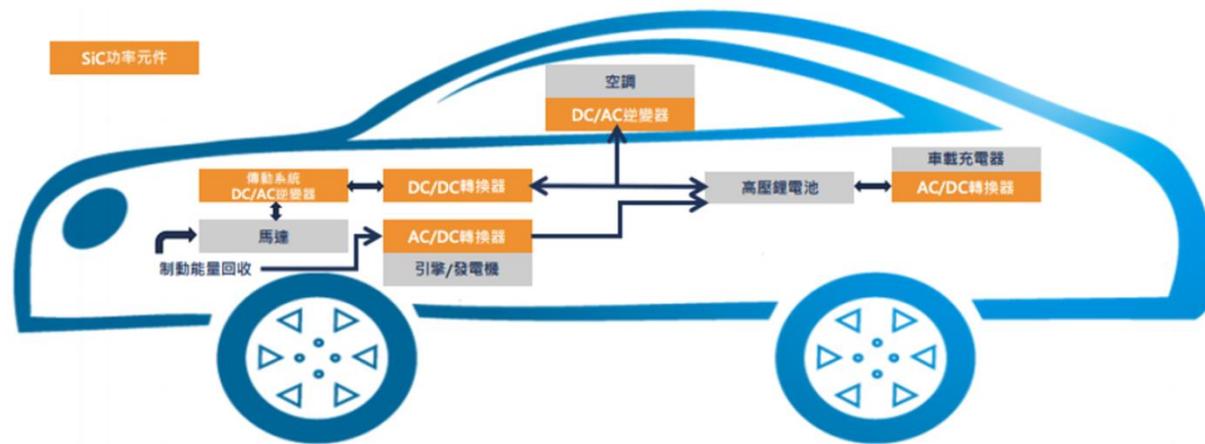
SiC is mainly used in new energy vehicles, wind power generation, solar power generation, 5G communications, rail transit and charging piles, etc.



# SiC Market analysis

N type 4H-SiC Can be used in EV、HSR、Solar Energy&Wind power、The largest one is used in electric vehicle components, accounting for 61%.

未來大部分車用半導體都有可能改採 SiC 元件



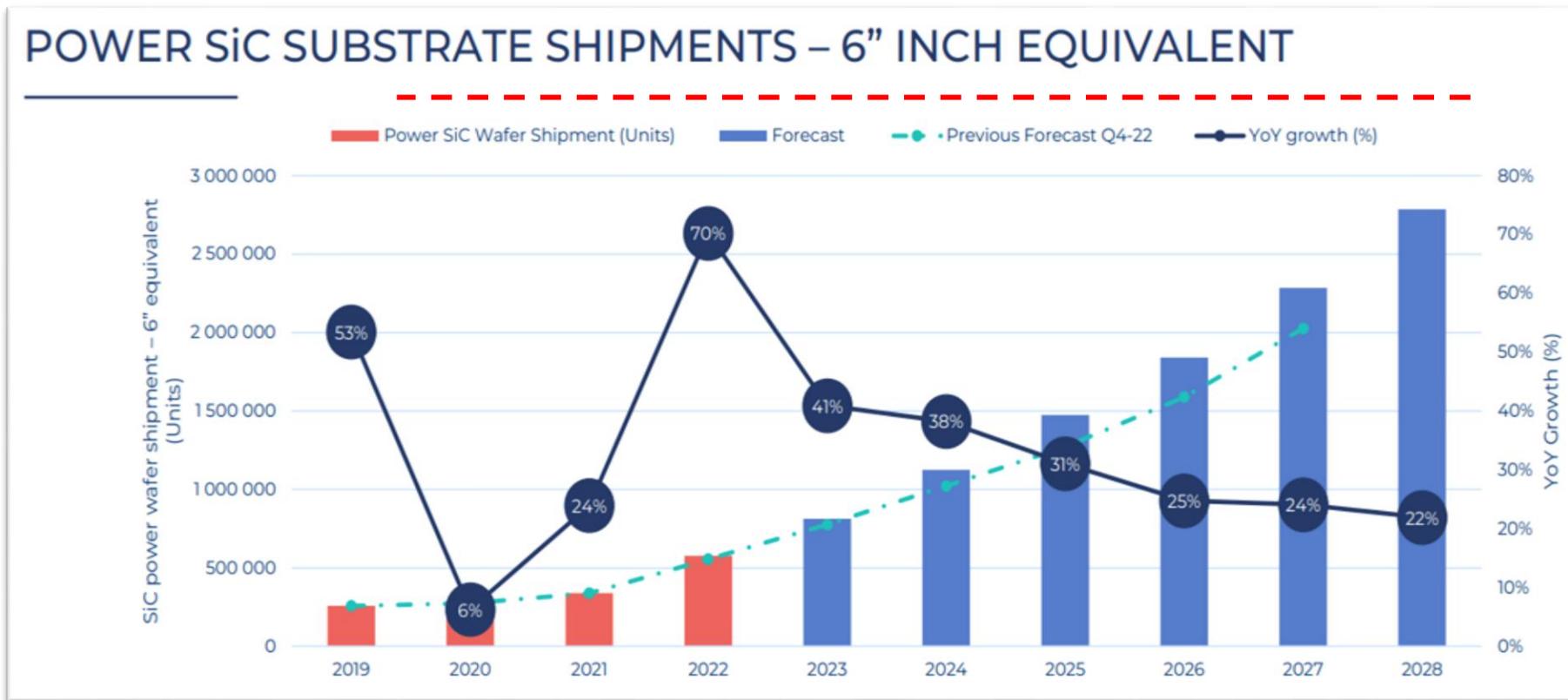
各大車廠陸續導入 SiC 元件至電動車款

 <b>TESLA</b> Tesla Model 3 主要逆變器 採用 SiC MOSFETs	 <b>RENAULT</b> Renault 高效能車載充電器 OBCs 導入SiC元件 (On-Board Chargings)	 <b>ZF</b> ZF 採用SiC基功率逆變器以 開發高效率電傳動設備	
 <b>BOSCH</b> Bosch 投產電動車專用的高效能SiC微晶片模組	 <b>Continental</b> The Future in Motion		 <b>vitesco</b> TECHNOLOGIES
德國大陸集團 (Continental AG) 旗下的 Vitesco透過SiC功率元件 進一步提高電動車功率電子元件的效率			

One piece of 6-inch chip can only be used by 2 to 6 electric vehicles.

# SiC Market analysis by Yole

According to Yole's forecast report, there will be a demand for 2.8 million conductive sheets in 2028. With the current total annual SiC wafer production capacity of 25~35W pcs, its production capacity is far from being in short supply.

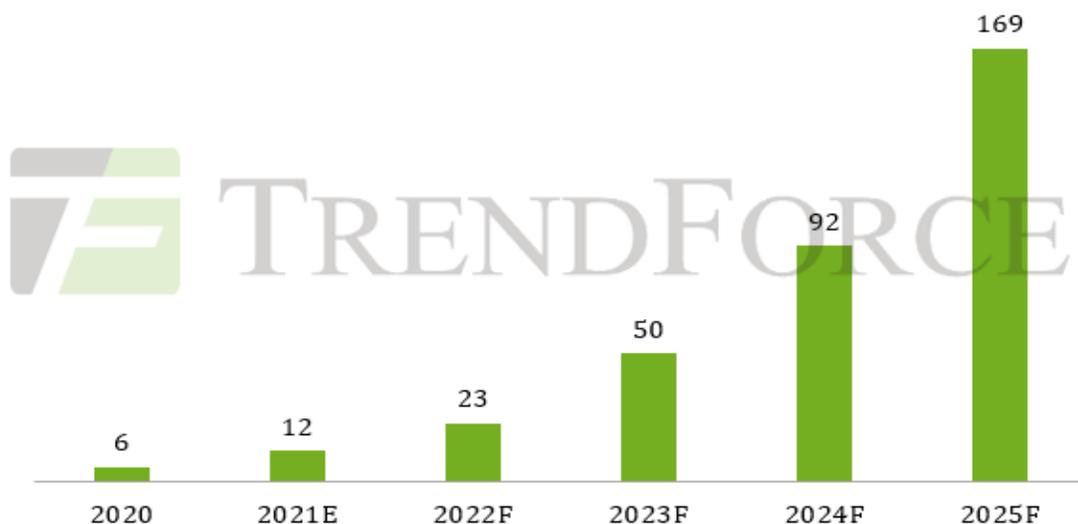


Ref: Yole's report - Power SiC/GaN CS Market Monitor – Q1 2023

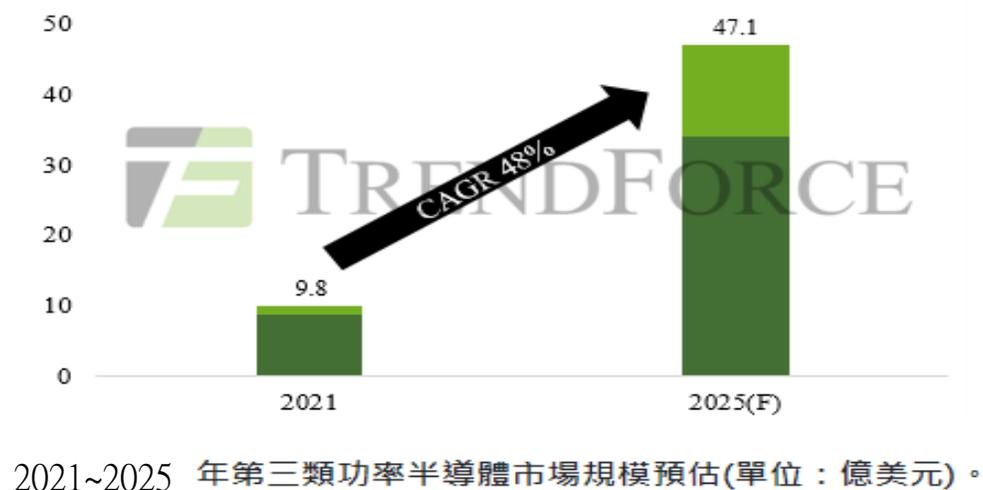
# SiC Market analysis by TrendForce

In TrendForce's forecast report, there will be a demand for 1.69 million conductive sheets in 2025, and its CAGR will grow to 48% in early 2025.

Figure 1: Global EV Market Demand for 6-inch SiC Wafers (Unit: 10,000 wafers)



Source: TrendForce, Dec. 2021



(來源：TrendForce)

- ◆ In addition to the original electric vehicle applications, new application markets will also continue to introduce SiC, which will make the supply of SiC wafers even more insufficient.
- ◆ 晶成材料SiC production capacity will be flexibly adjusted according to market demand, and new production capacity will be planned towards the 8-inch process

# Industry status

## Process yield

The low process yield is mainly due to the difficulty in growing crystals and improving processing yield.

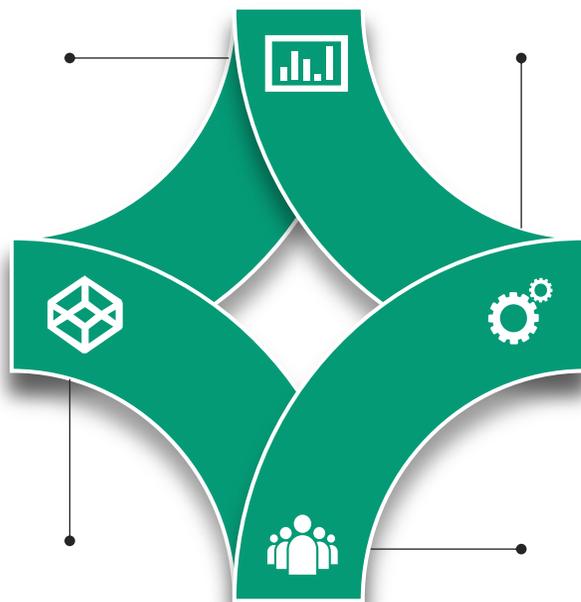
表 5: 山东天岳主要生产环节良率对比

主要生产环节	2021年1-6月	2020年度	2019年度	2018年度
晶棒良率	49.90%	50.73%	38.57%	41.00%
衬底良率	75.74%	70.44%	75.15%	72.61%

资料来源: 天岳先进招股说明书, 安信证券研究中心

## Material costs

The cost of consumables is high, the domestic supply chain is not yet mature, and the learning period is long and the investment cost is high.



## Equipment investment cost

The investment time is early, and the equipment models are mostly compatible with 4~6 inches. In the future, 8 inches will become the mainstream product.

企业	时间	量产时间 (预计)
Wolfspeed	2015	2022
ROHM	2015	2023
意法半导体	2021.6	2023
安森美	2021.9	2025
II-VI	2015	2024
英飞凌	2020.9	2025
Soitec	2022.5	2025
烁科晶体	2022.3	—
中科院物理研究所	2022.4	—

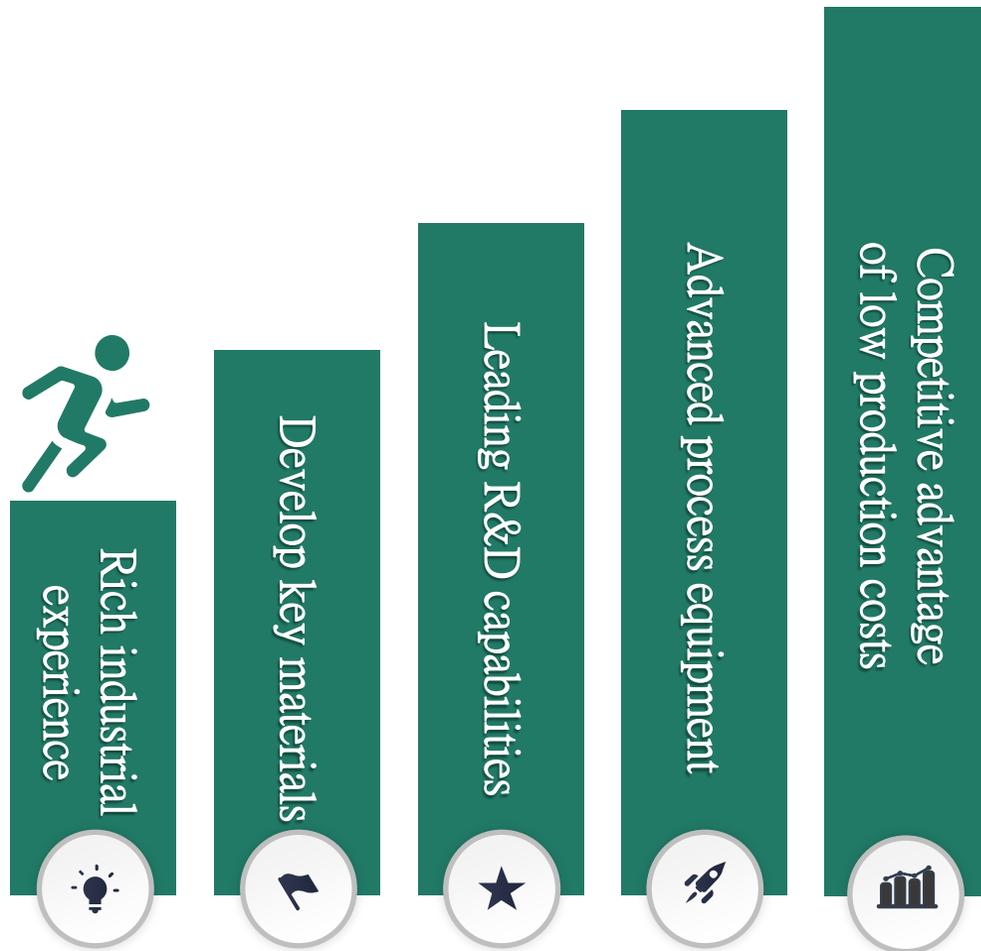
\* 根据公开信息整理

## Professional

Most of them come from the silicon wafer or LED industry. There is a shortage of talents with complete SIC crystal growth and wafer processing experience.

# JING CHENG

## Competitive Advantage



### SiC Process experience

Complete industry experience in SiC growth, wafer processing, epitaxy and compound semiconductor production, sales and R&D.



### Development of key materials

The development of special coatings can extend the service life of raw materials, significantly reduce costs and improve quality.



### Thermal field design and R&D capabilities

Excellent design and analysis capabilities can quickly improve yield and quality and reduce development costs.



### 8-inch process equipment

Introducing the most advanced equipment in the industry that is compatible with the 8-inch process, and owning advanced processing technology



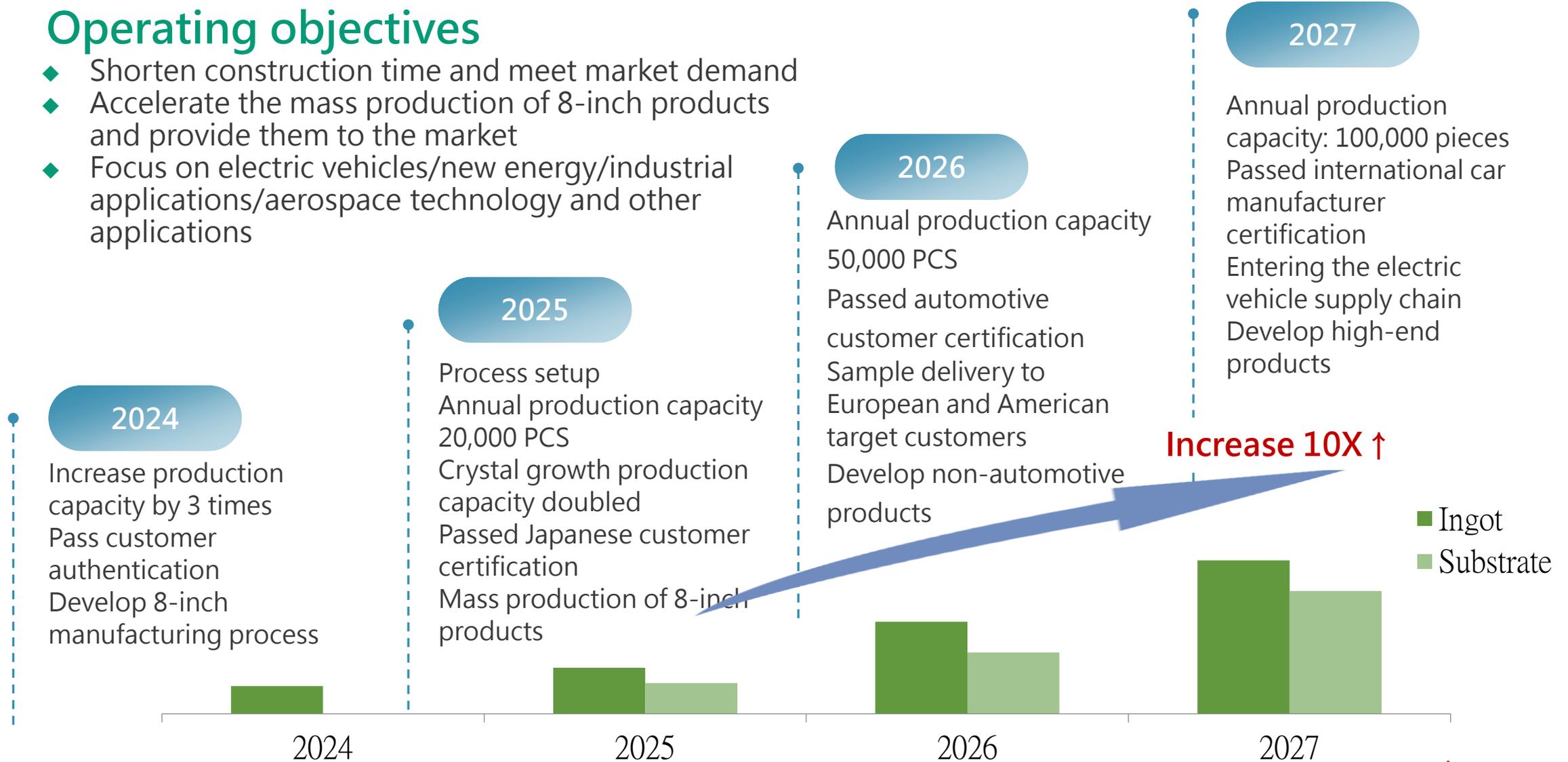
### Low production cost competitiveness

Self-made high-quality crystal seeds, self-made SiC powder, mastering advanced processes and materials, processing technology...

# Future development plan

## Operating objectives

- ◆ Shorten construction time and meet market demand
- ◆ Accelerate the mass production of 8-inch products and provide them to the market
- ◆ Focus on electric vehicles/new energy/industrial applications/aerospace technology and other applications



# SUMMARY

- ◆ The new factory will introduce the most advanced 6- to 8-inch process equipment to speed up the mass production of 8-inch products, provide more cost-competitive SiC substrates, and accelerate industry development.
- ◆ Accelerate the production capacity construction process, and the production capacity will increase at least 10 times in 2027, providing high-quality SiC substrates to fill the gap in market supply.
- ◆ At the same time, mastering key materials, advanced crystal growth processes and advanced wafer processing technologies will give us a competitive advantage in reducing costs and improving yields in the future.

04

# 資訊交流

Q&A

# TRUE PARTNER FOR A BRIGHTER FUTURE

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