



# Investor Presentation

**December 13, 2023**

- ❑ Forcera's statements of its current expectations are forward looking statement subject to significant risks and uncertainties and actual results may differ materially from those contained in the forward-looking statements.
- ❑ Except as required by law, we undertake no obligation to update any forward-looking statements, whether as a result of new information, future events, or otherwise.
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- ☐ Opening – company profile      Dr. CY Ma      Chairman
- ☐ Market position & part application      Starsky Wang      President
- ☐ Business performance
- ☐ Semiconductor market outlook & company strategic plans
  - capabilities
  - capacity
- ☐ Business outlook
- ☐ Summary      Dr. CY Ma      Chairman
- ☐ Q&A      Management team

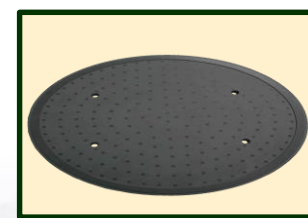
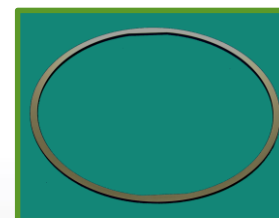
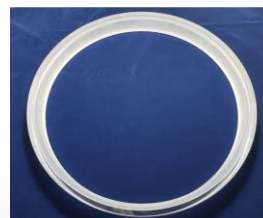
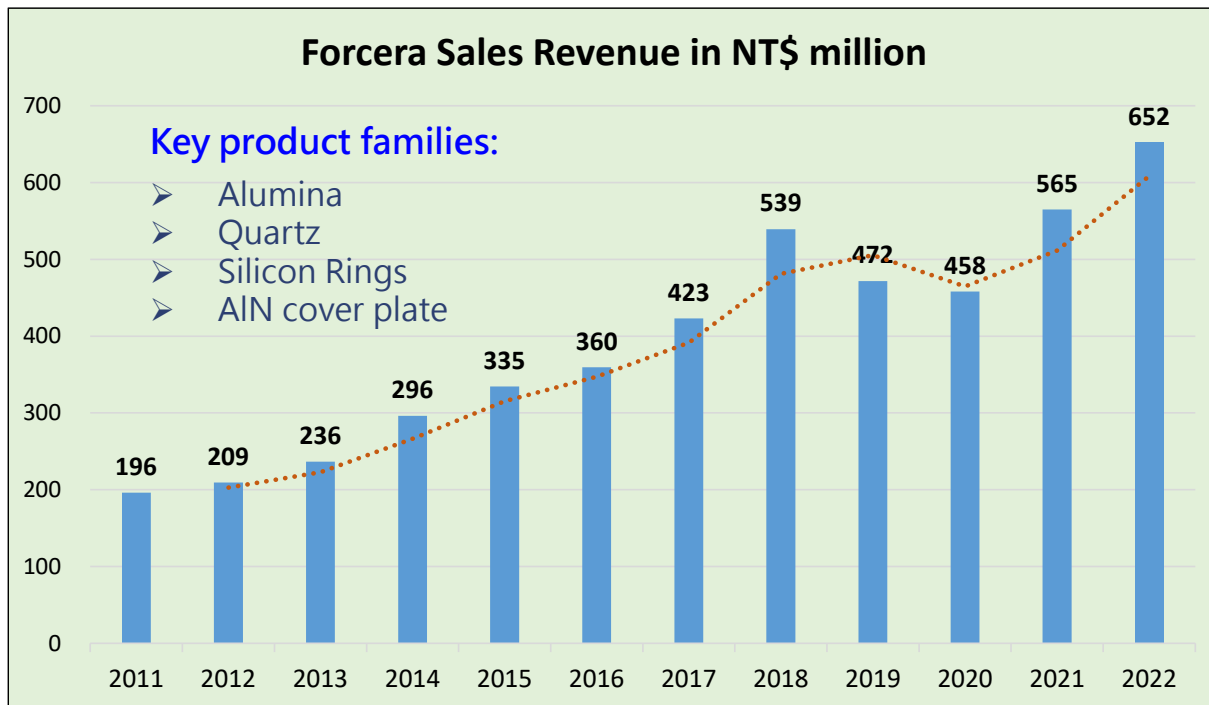


# Opening – company profile

## Forcera Materials Co., Ltd.



- Established: 1998
- Mfg. location: Hsinchu, Taiwan
- Capital: NT\$ 282 million
- Chairman: Dr. CY Ma
- President: Starsky Wang
- No. of employee: 170
- Business focus: semi industry



- An OEM certified, semi grade fine ceramic chamber part solution provider with core technologies integrating from ceramic material processing through precision machining, surface treatment, and part clean & etching

## Chairman Dr. CY Ma

### Education:

Ph.D. Metallurgy, *Stuttgart university, Germany*

### Professional experiences:

- President, *Solar Applied Materials Tech. Corp.*
- President, *Touch Micro-system Tech. Corp.*
- Head of Research Division, *CSIST*
- Awarded with Outstanding Young Engineer Award by the Chinese Institute of Engineers in 1997

## President Starsky Wang

### Education:

Master in International MBA, NCCU, Taiwan

### Professional experiences:

- Supply Chain Director, Walsin Lihwa Corp.
- Supply Chain Mgr. & SAP Project Mgr., Asia Pacific, Goodyear Tire & Rubber Company
- APICS certified at CPIM level
- Six Sigma Black Belt certified

## Technical Consultant Dr. WT Liu

### Education:

Ph.D. Metallurgy, NTHU, Taiwan

### Professional experiences:

- R&D Head, Solar Applied Materials Tech. Corp.
- R&D Director, Delta-optoelectronics
- Senior Researcher, ITRI

## Admin/Finance Director Alex Chen

### Education:

Bachelor of Accounting, NCKU, Taiwan

### Professional experiences:

- Audit Mgr., Chander Electronics Corp.
- Finance Mgr., AirVast Technology Corp.
- Finance Mgr., Taiwan Hi-Tech. Corp.
- Successful IPO expertise & experiences

## Manufacturing Director Paul Chuang

### Education:

Bachelor of Industrial & Info.Mgt., NCKU, Taiwan

### Professional experiences:

- Mgr. SCM, Solar Applied Materials Tech. Corp.
- Chief Engineer, YIEH United Steel Corp.

## Sr. Mgr, Technology Dev. Dr. Tianfu Chiang

### Education:

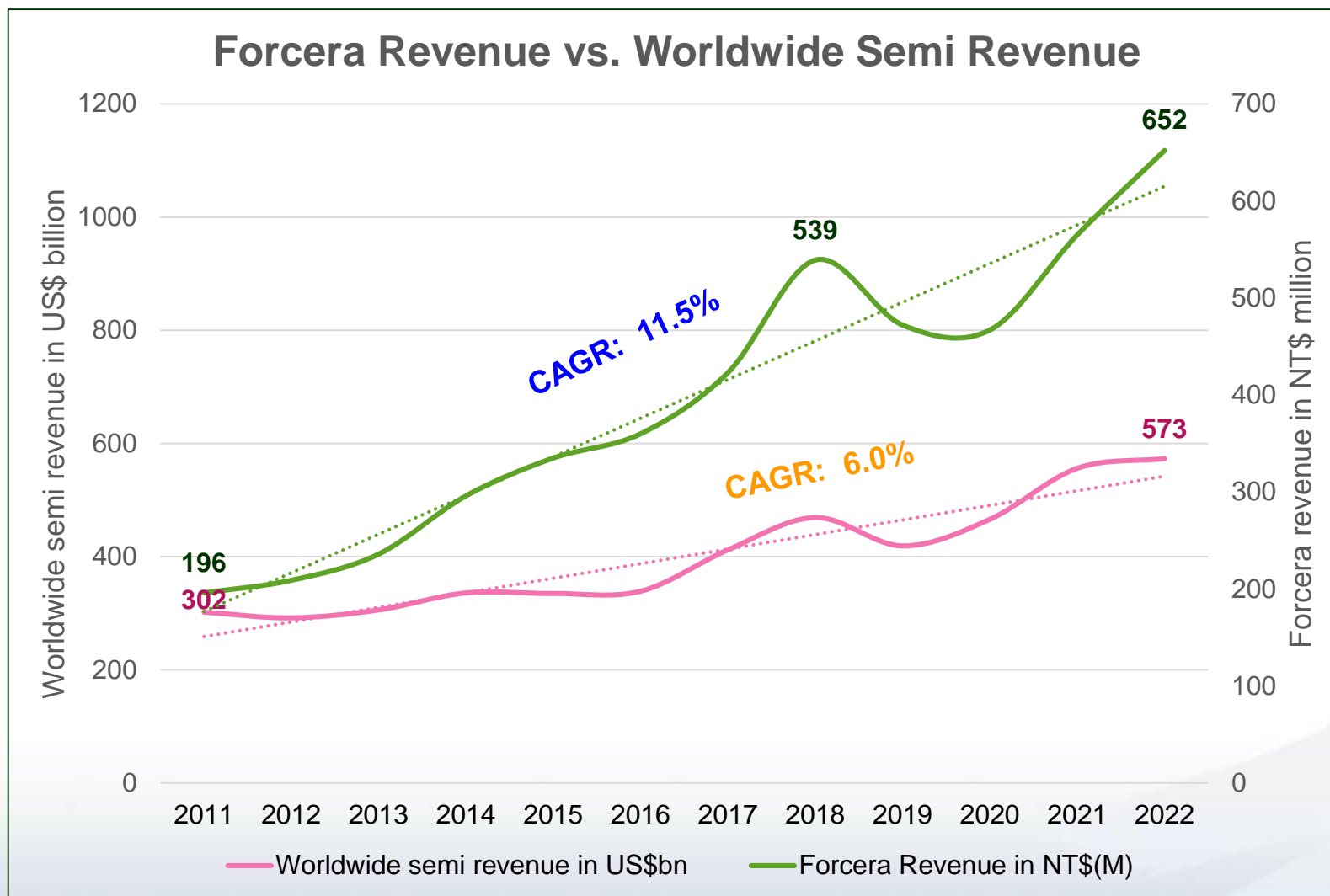
Ph.D. Metallurgy, NTHU, Taiwan

### Professional experiences:

- RD Mgr., LUXNET Mfg., Co., Ltd
- Sr. Mgr., Motech Industries Inc.
- Deputy Mgr., Centrotherm Asia Pte Ltd

- A professional team with skill set combination of [Material Science](#), [Chemistry Engineering](#), [Operations Management](#), [Six Sigma](#), [Mechanical Engineering](#), [Information Tech.](#), and [Financial Management](#) to support Forcera's sustainable growth

# FORCERA Revenue trend: 2011 to 2022



## 3-phase transformation



### Biz re-eng'g

Top semiconductor company

#### Systems build-up

- ✓ OEM certified supplier
- ✓ OEM certified part clean line (2013)

2011 2012 2013

Revenue in NT\$ million	196	209	236
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### Capabilities enhancement

Top semiconductor company

Top semiconductor company

#### Focused on semi, Grew by OEM

Technical catch-up (Forcera)  
versus

First mover advantage (Competitors)

- ✓ Record high revenue (2018)
- ✓ OEM certified component fabrication capability
- ✓ OEM certified semi grade fine ceramic Sicalox

2014 2015 2016 2017 2018

296	335	360	423	539
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### Moving to leading edge nodes

Top semiconductor company

#### Leading-edge technology dev.

- ✓ Record high revenue (2022)
- ✓ N7/N5 production & supply
- ✓ OEM certified higher purity ceramic FA998

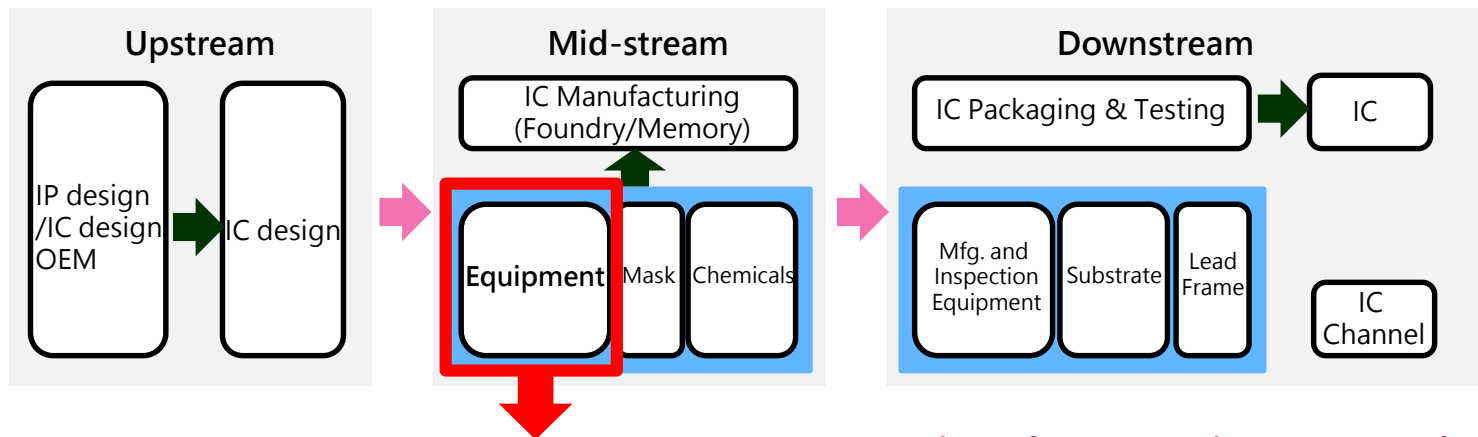
2019 2020 2021 2022

472	458	565	652
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# Market position & part application

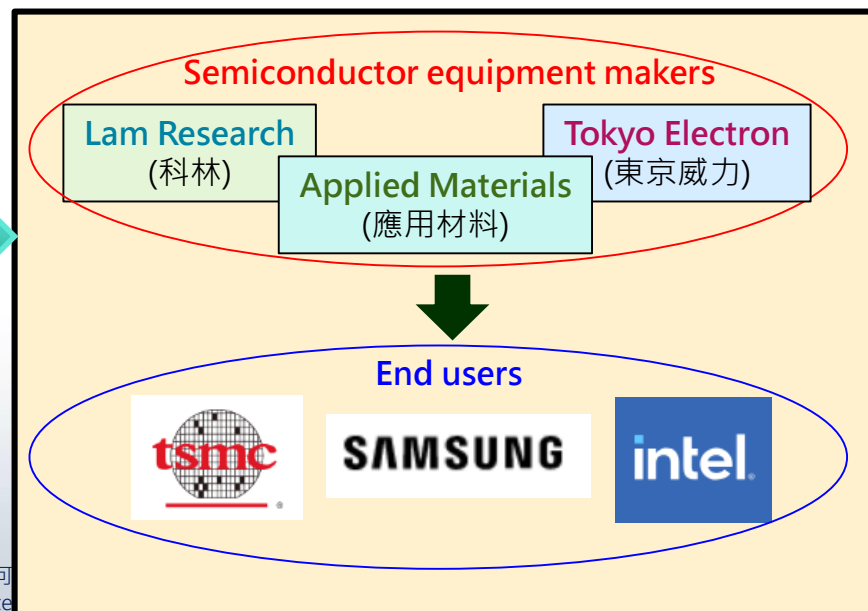
## ● Semiconductor Value Chain:



## ● Front-end Process Equipment Parts:

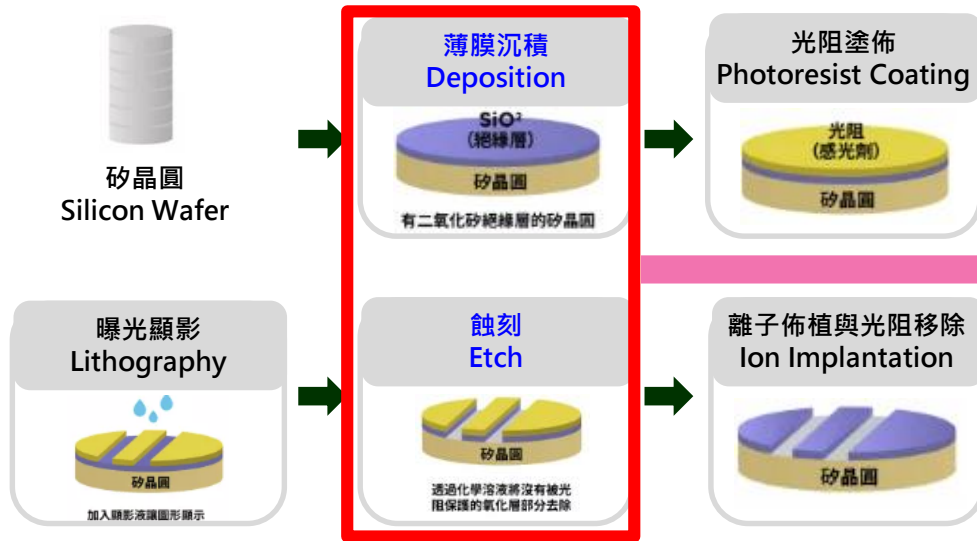


## ● Semiconductor equipment supply chain:



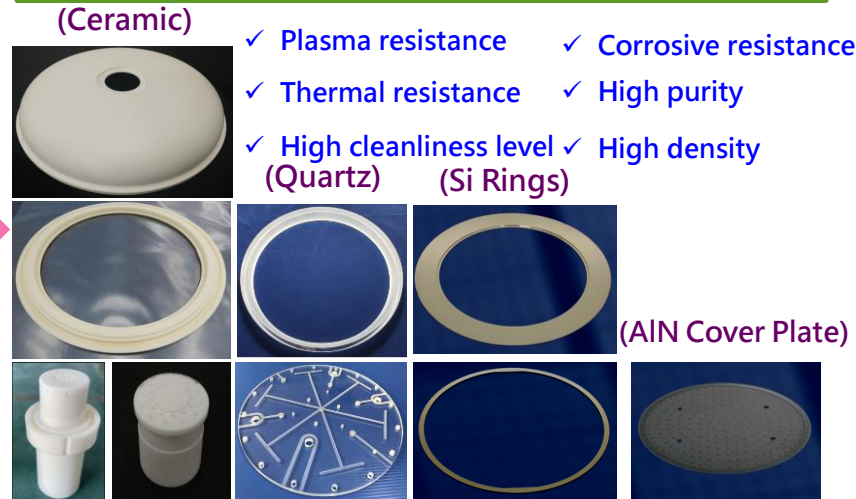
# Forcera parts application (front end)

## ● Semiconductor Manufacturing Processes:

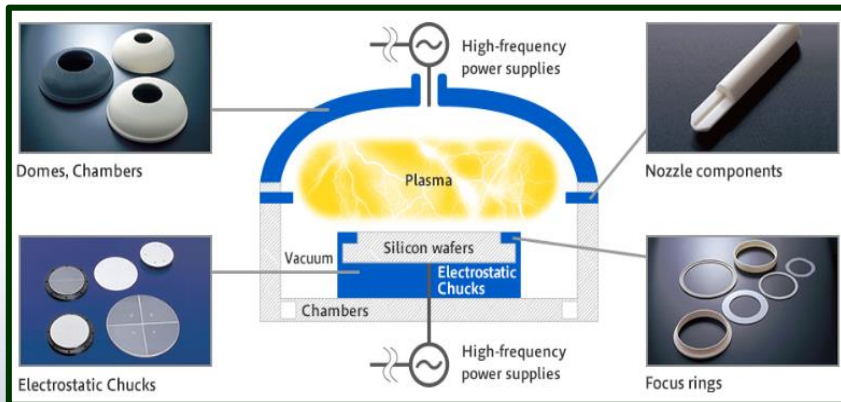


## ● Part Properties & Quality Requirements

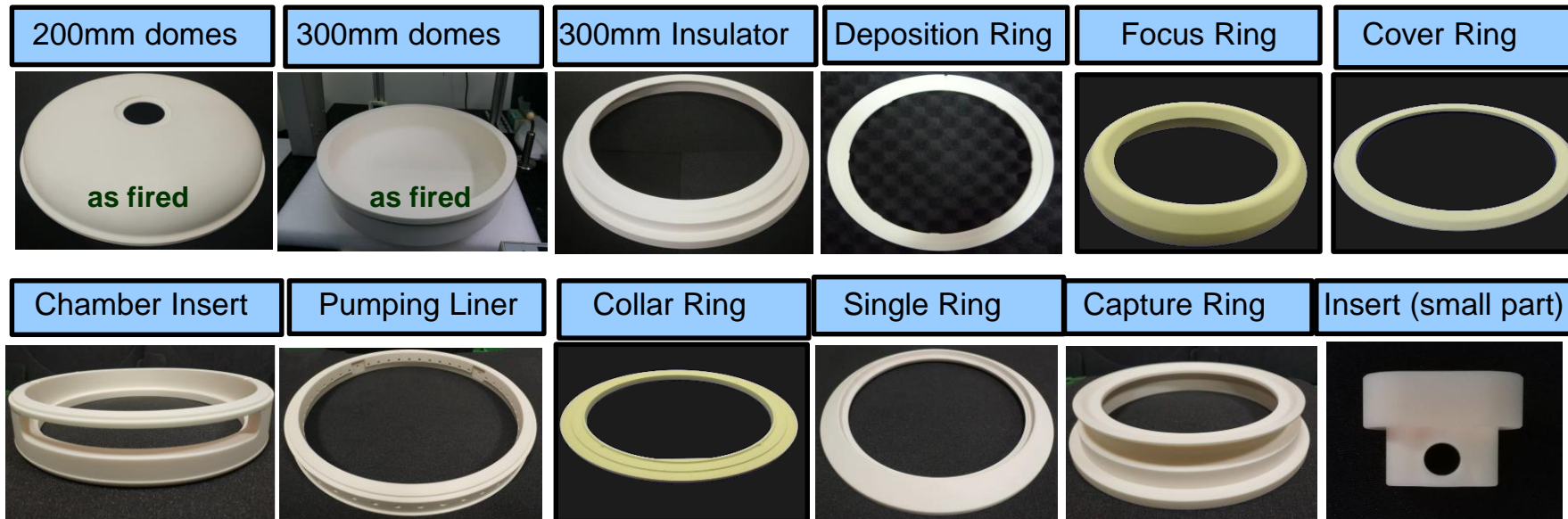
The goal: effective particle control



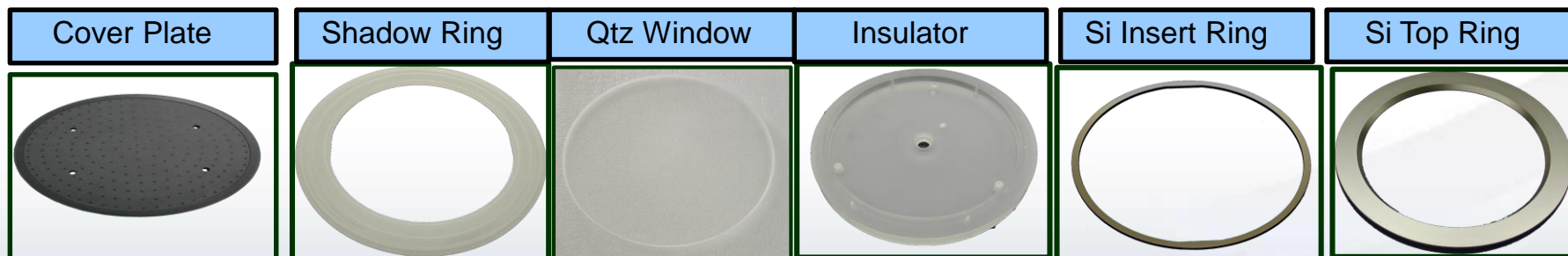
## ● Parts application



Forcera provides excellent material properties to withstand the **extreme environments** in **plasma etch** and **deposition chambers**



Alumina (66%)



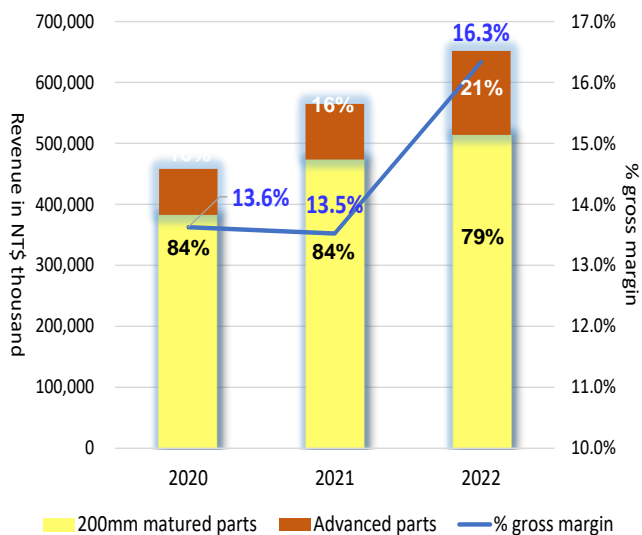
AlN (3%)

Quartz (22%)

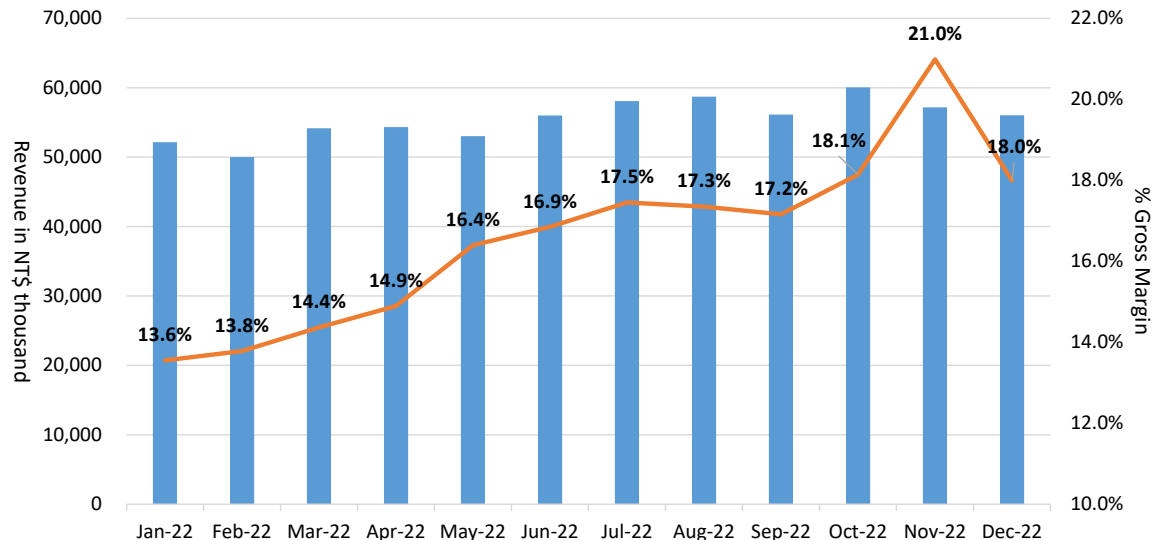
Si Rings (9%)

# Business performance

## Product Mix Migration



## 2022 % Gross Margin Improvement



- Improving % gross margin through product portfolios optimization

# FORCERA Income statement

(NTD in thousand)	2021		2022		Jan-Jun 2022		Jan-Jun 2023		YoY %
	Amount	%	Amount	%	Amount	%	Amount	%	
Net Revenue	564,799	100.0%	651,728	100.0%	317,363	100.0%	307,350	100.0%	-3.2%
COGS	488,440	86.5%	545,217	83.7%	269,006	84.8%	253,731	82.6%	-5.7%
Gross Margin	76,359	13.5%	106,511	16.3%	48,357	15.2%	53,619	17.4%	+ 2.2 pts
Operating Expenses	57,897	10.3%	72,414	11.1%	34,133	10.8%	36,429	11.9%	6.7%
Operating Income	18,462	3.3%	34,098	5.2%	14,224	4.5%	17,190	5.6%	+ 1.1 pts
Non-Operating Items	(2,630)		8,474		3,738		1,287		
Income Before Tax	15,832	2.8%	42,572	6.5%	17,962	5.7%	18,477	6.0%	
Net Income	15,832	2.8%	47,942	7.4%	24,845	7.8%	17,326	5.6%	- 2.2 pts
EPS	0.66		2.01		0.93		0.63		(0.30)

1H23 vs. 1H22:

Revenue

3.2% ↓

Operating income

20% ↑

EPS

0.3元 ↓

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# Balance sheets & key indices

(NTD in thousand)	June 30, 2023		December 31, 2022		December 31, 2021	
	Amount	%	Amount	%	Amount	%
Cash, Current Financial Assets	80,834	11.9%	103,168	14.5%	88,235	13.1%
Accounts Receivable	59,578	8.8%	78,814	11.1%	87,108	12.9%
Inventory	156,492	23.0%	154,768	21.7%	149,710	22.1%
Property, plant and equipment	334,653	49.2%	348,813	49.0%	331,395	49.0%
<b>Total Assets</b>	<b>\$680,704</b>	<b>100.0%</b>	<b>\$712,393</b>	<b>100.0%</b>	<b>\$675,923</b>	<b>100.0%</b>
Accounts Payable	111,023	16.3%	163,577	23.0%	152,487	22.6%
Current Liabilities	157,881	23.2%	207,227	29.1%	197,219	29.2%
<b>Total Liabilities</b>	<b>258,333</b>	<b>38.0%</b>	<b>316,573</b>	<b>44.4%</b>	<b>317,493</b>	<b>47.0%</b>
<b>Total Shareholders' Equity</b>	<b>422,371</b>	<b>62.0%</b>	<b>395,820</b>	<b>55.6%</b>	<b>358,430</b>	<b>53.0%</b>

## Key Indices

Debt Ratio	38.0%	44.4%	47.0%
Current Ratio	204.7%	165.8%	170.9%
Quick Ratio	105.6%	91.1%	95.0%



# Semiconductor market outlook & company strategic plans

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- Global semiconductor market to double to **\$1 trillion by 2030** vs. the **\$573 billion in 2022**

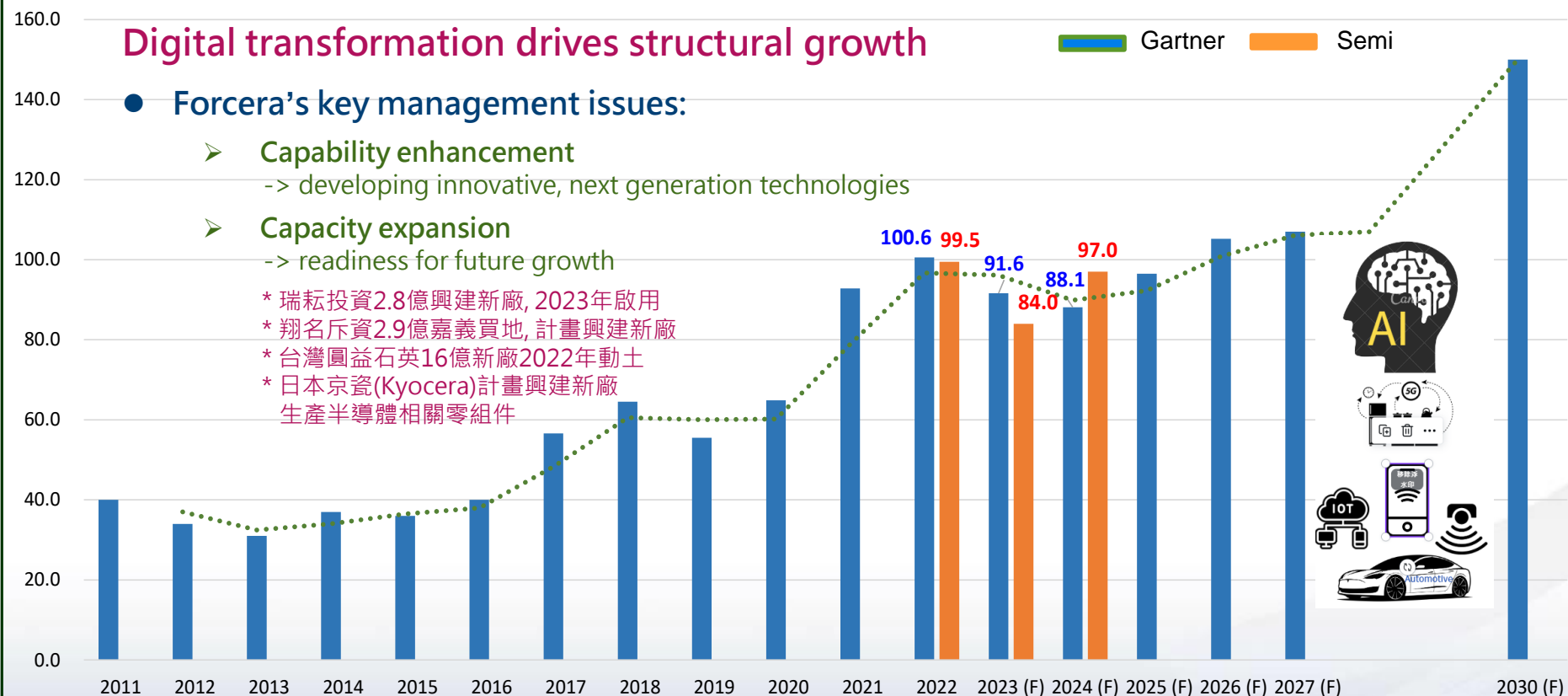
Wafer Fab Equipment (WFE) Spending - US\$ billion

## Digital transformation drives structural growth

### ● Forcera's key management issues:

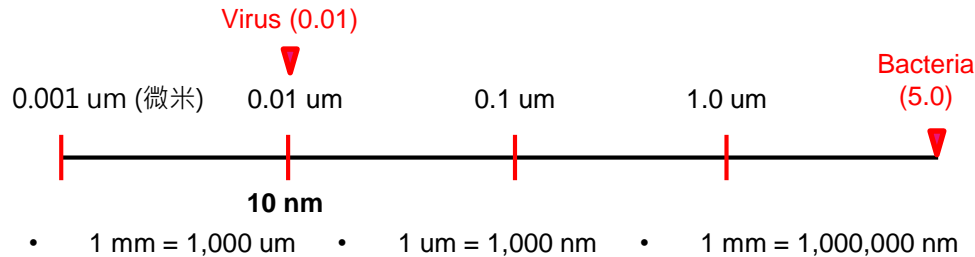
- **Capability enhancement**  
-> developing innovative, next generation technologies
- **Capacity expansion**  
-> readiness for future growth

- \* 瑞耘投資2.8億興建新廠, 2023年啟用
- \* 翔名斥資2.9億嘉義買地, 計畫興建新廠
- \* 台灣圓益石英16億新廠2022年動土
- \* 日本京瓷(Kyocera)計畫興建新廠  
生產半導體相關零組件



# FORCERA Semi grade fine ceramic technologies

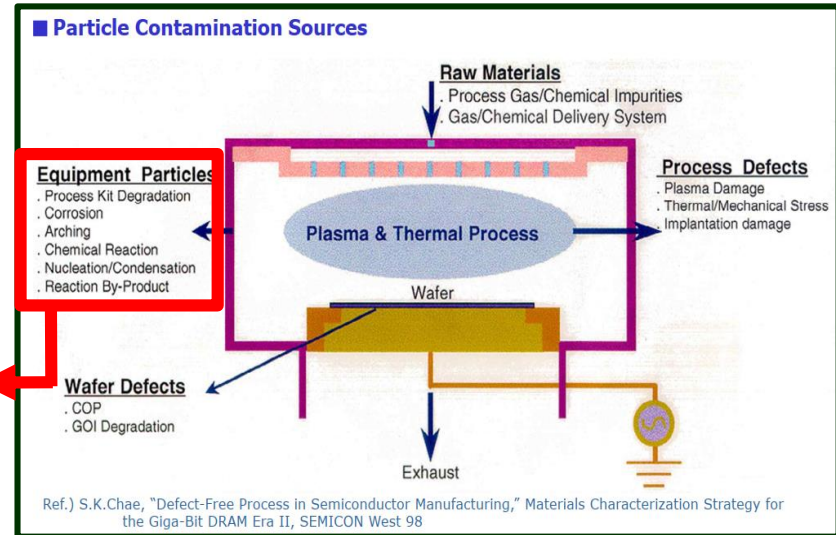
## ● Particle Size Measurement



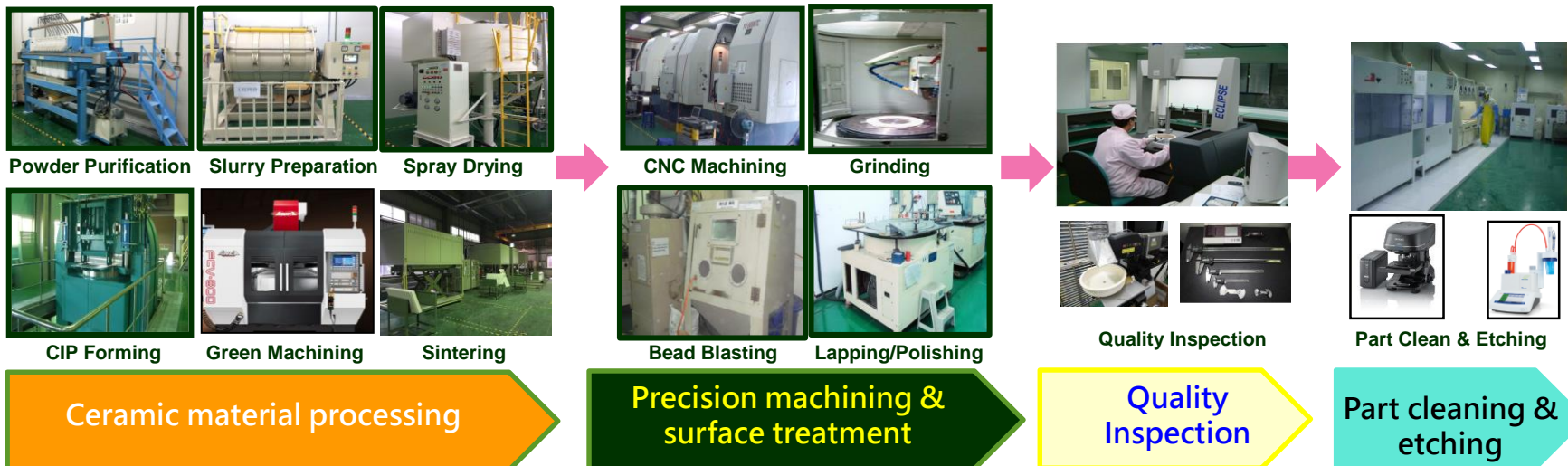
## ● Forcera's advantage in differentiation:

One of very limited number of **semi grade fine ceramic manufacturers** worldwide. The **three (3) core technologies** integrated as whole to **minimize particle risk effectively**, leading to **improved IC manufacturing yield**

## ● Particle Sources in Semiconductor Mfg.



## ● Forcera's leading-edge technologies to improve customers' yield



# FORCERA Fine ceramic development roadmap



## Be ready for leading edge node market development

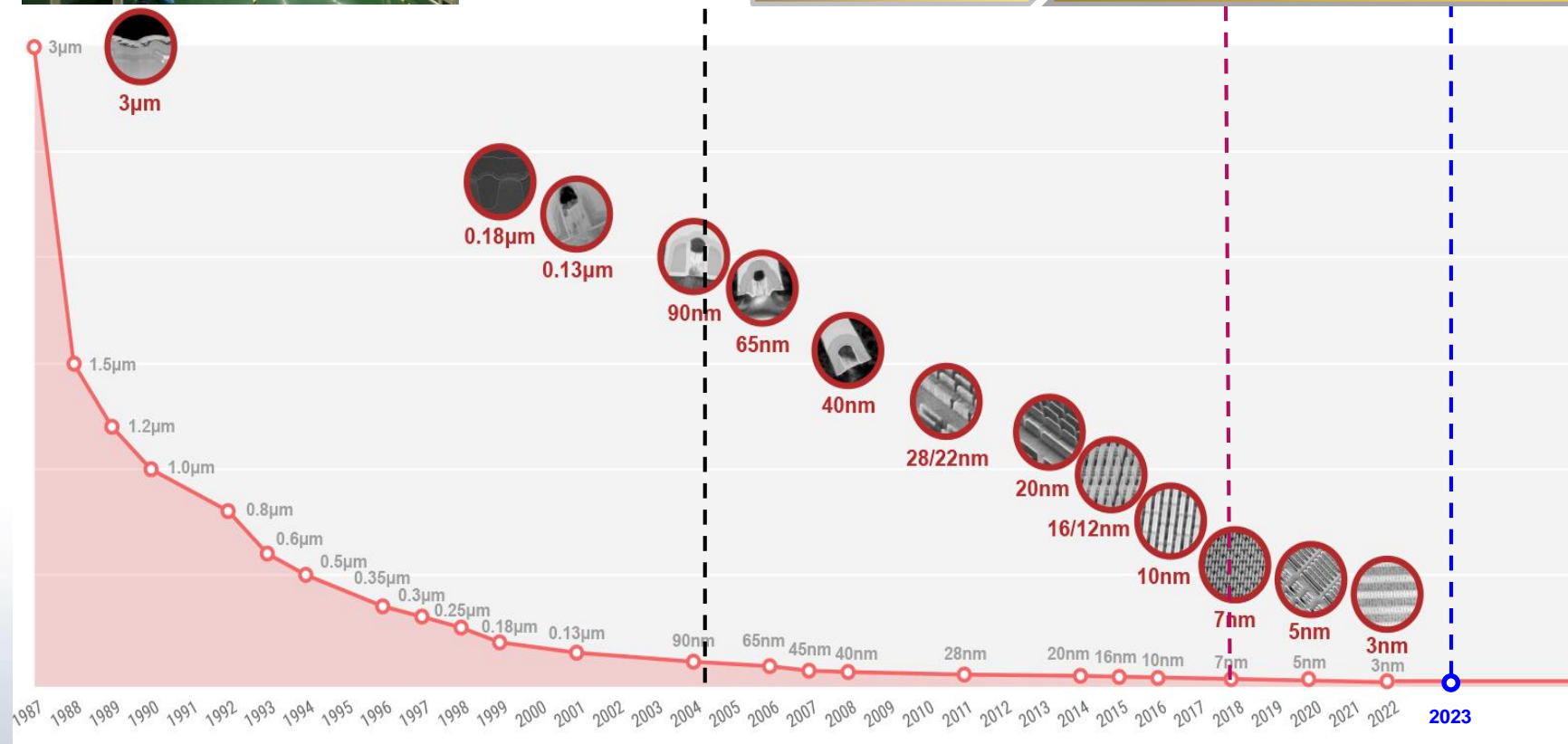
➤ the new, next generation ceramic dev. to be ready by 1Q24

New, next gen.  
ceramic dev.

**FA998 @ 99.8% qualified**

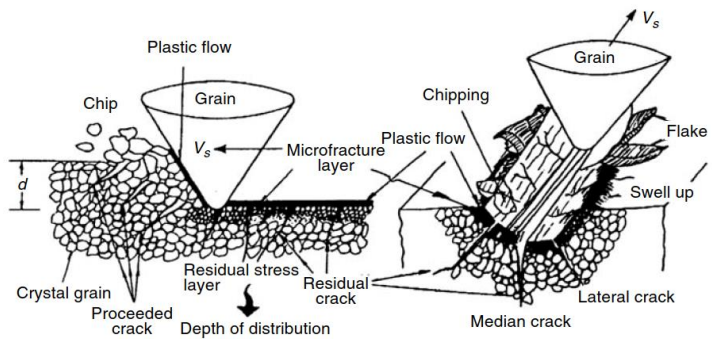
**Sicalox @ 99.5%**

Qualified by the largest semi equipment maker



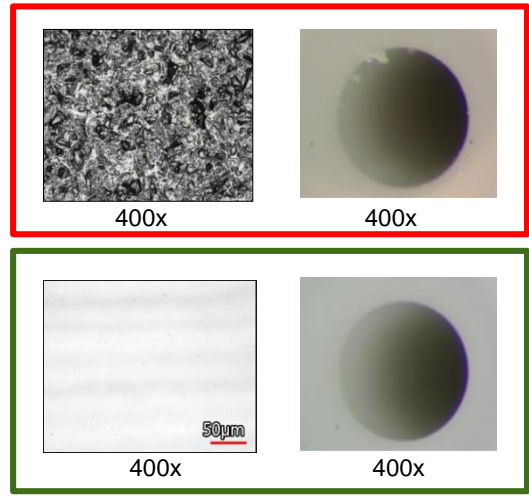
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# Precision machining & surface treatment



Unlike metals, ceramic is classified as brittle and more sensitive to **cracks** → Particle source

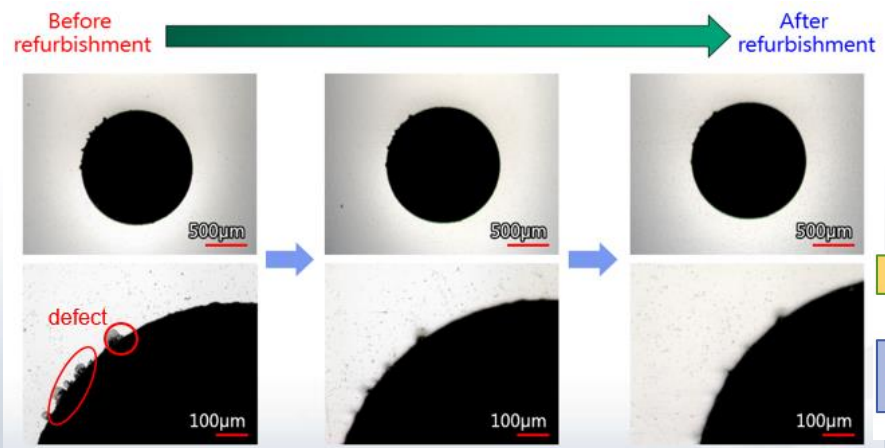
- Surface
- Hole quality



**Traditional machining method**

**Semi grade method:**  
OEM certified machining & surface treatment capability (Forcera)

## ■ Leading technology, new business opportunity - part refurbishment & repair



	Forcera Differentiation advantage	Traditional part clean service provider
Core tech.	✓ material ✓ machining ✓ cleaning	✓ Cleaning ✓ Bead blast
Refurb. method	Physical & Chemical ✓ Refurb. ✓ Repair	Chemical ✓ Refurb.
Analytical capability	✓ Analytical ✓ Inspection	✓ Inspection



# FORCERA Part clean & etching technology

- Existing Line – OEM certified



## Surface particle number control (Quartz Part):

< 3,000



Industry Standard

Assuming the index of leading node goal as 100

< 100



Goal for Leading Node

< 80



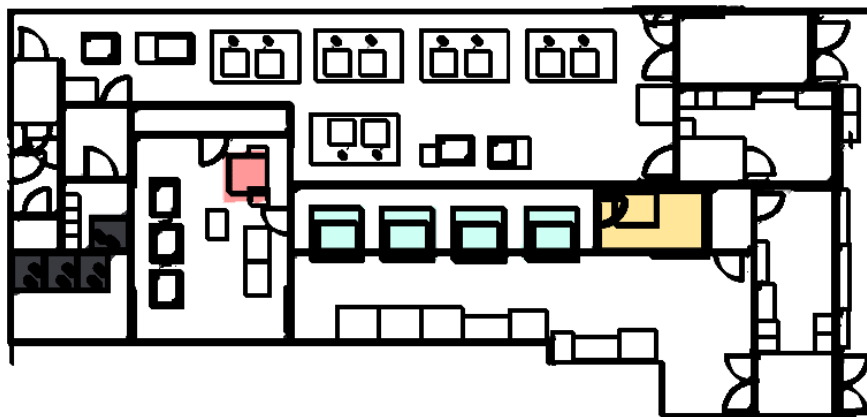
Forcera



Microcrack free quartz @ 2000x

Forcera Leading Edge Surface Treatment Technology

- New Line for < 7nm (by June 2024)



- ✓ Clean room upgrade
- ✓ Real time particle check
- ✓ Baking oven upgrade
- ✓ Larger size tanks
- ✓ In compliance with OEM spec requirements

● Core tech.

Material Processing

Precision machining  
& surface treatment

Part clean & etching

Competence	The only semi grade, OEM certified fine ceramic material maker in Taiwan	Competitive advantage ✓ machining 、 surface treatment ✓ analytical capability	OEM certified capability
Enhancement plan	Innovative, next generation material development	Continuous improvement	<7nm new line set up

## Business strategy:

- Objective** Technologies of material, precision machining, surface treatment, part clean & etching integrated as a whole to preempt our competitors
- Growth strategy**
- 1) **Fine ceramic** – new ceramic development, focusing on leading edge nodes , higher profit margin items
  - 2) **Advanced quartz & Si rings** – new market development based on our superior surface treatment technology, achieving economies of scale
  - 3) **Part refurbishment & repair** – a new business boundary for future growth

# Forcera plant capacity expansion

Land area	10,657 m <sup>2</sup>
Gross floor area	
- Available	11,695 m <sup>2</sup>
- % space utilization	78%
Gross floor area available for future expansion	3,360 m <sup>2</sup>

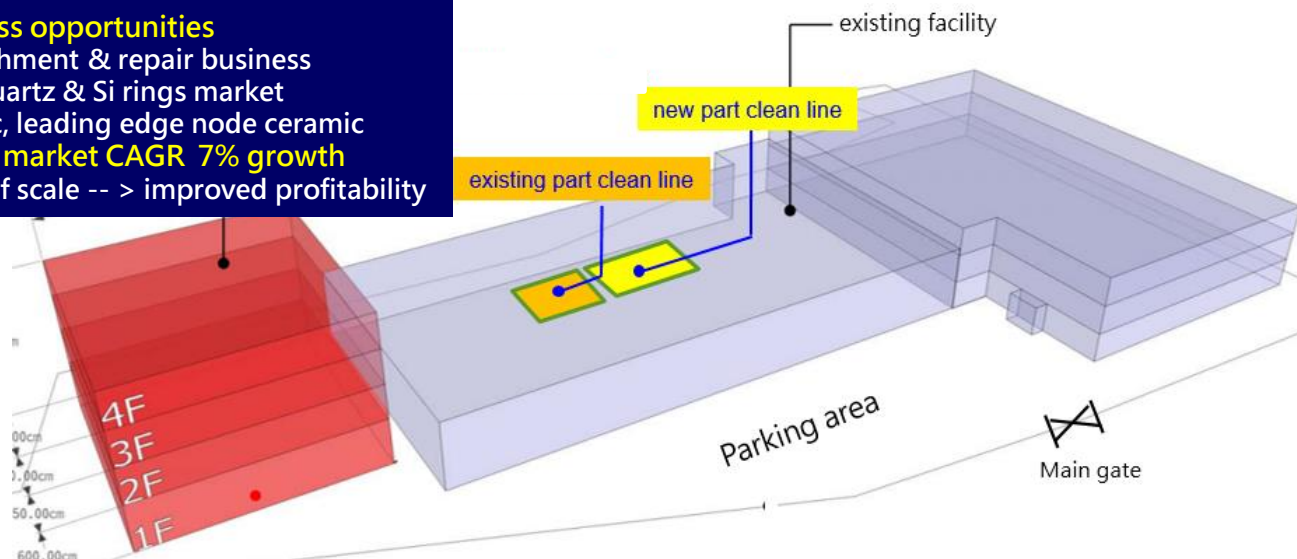
## Plant Capacity

↑ 50%

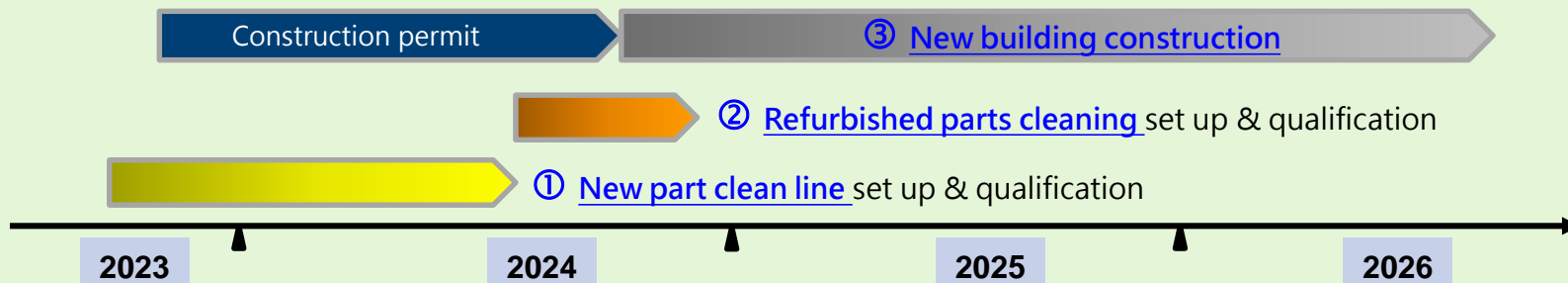
NT\$ 800M → NT\$ 1.2B



- **New business opportunities**
  - ✓ Part refurbishment & repair business
  - ✓ Advanced quartz & Si rings market
  - ✓ New ceramic, leading edge node ceramic
- **Global semi market CAGR 7% growth**
  - ✓ Economies of scale -- > improved profitability


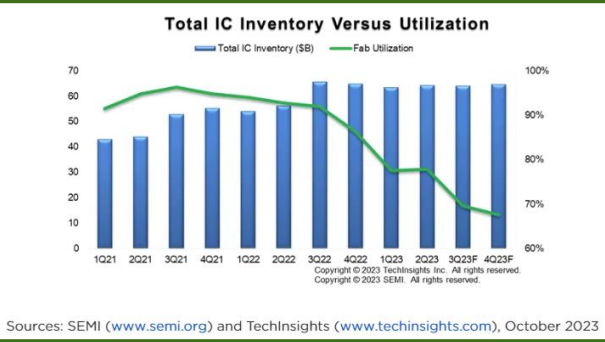



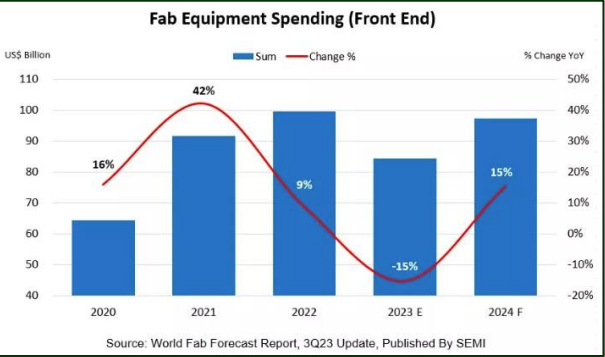



## Implementation Roadmap

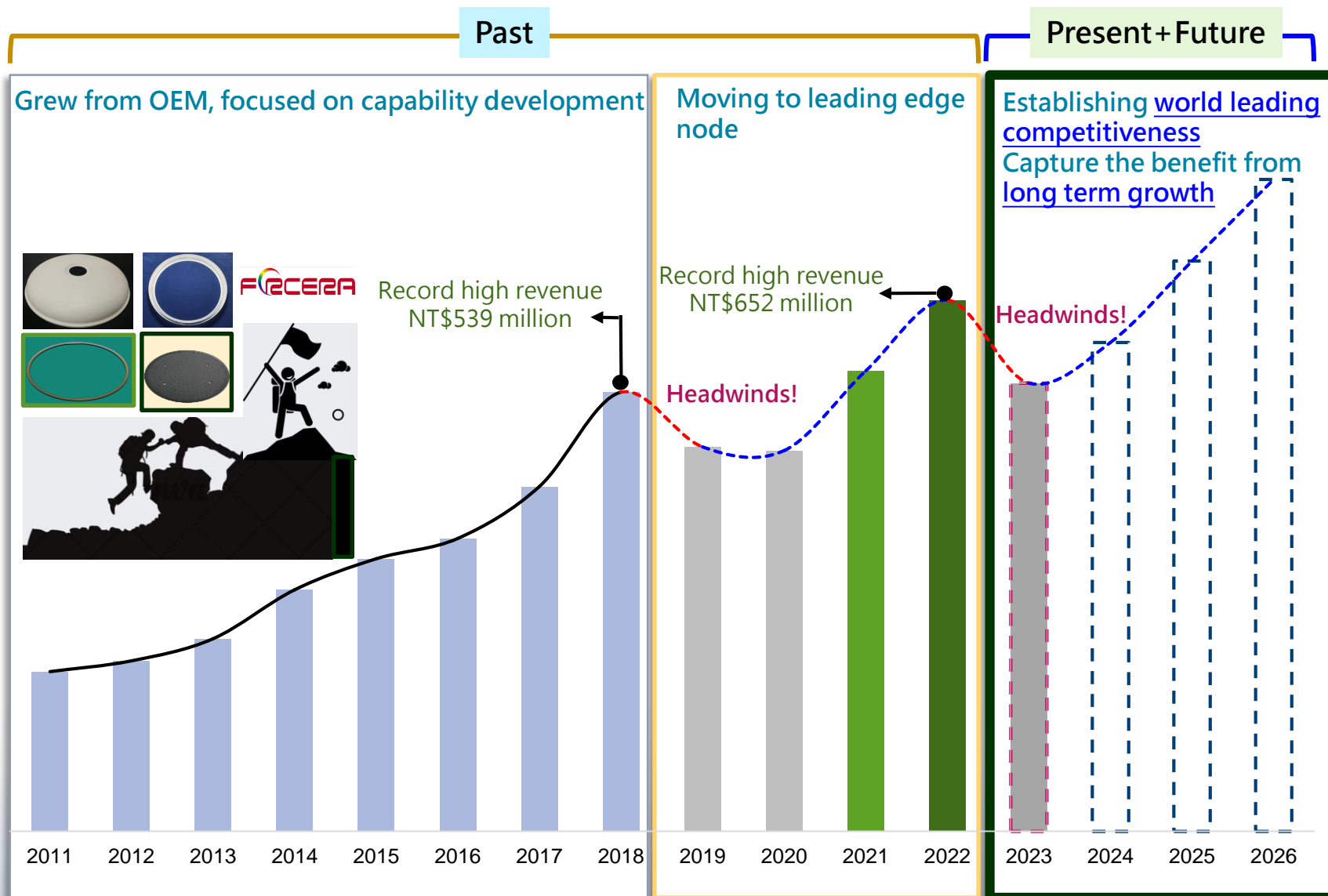




# Business outlook

Time	Market research	Description	Company assessment
Mid to long term (2025 onwards)	With the benefit from AI and IoT, chip industry on track to hit \$1 trillion by 2030 ~ <i>Applied Materials</i>		
Near term (2024)	 <p>Sources: SEMI (<a href="http://www.semi.org">www.semi.org</a>) and TechInsights (<a href="http://www.techinsights.com">www.techinsights.com</a>), October 2023</p>	<ul style="list-style-type: none"> <li>Despite the <b>improvement in IC sales</b>, semiconductor mfg. indicators remain soft. <b>Fab utilization rate and capital expenditures continue to decline in 2H23</b></li> <li>Improving IC sales signaling a <b>recovering from downturn</b> with building momentum <b>in 2024</b></li> </ul>  	 <p>1H24-inventory correction moving to the end 2H24-recovery</p>
2023	 <p>Source: World Fab Forecast Report, 3Q23 Update, Published By SEMI</p>	<ul style="list-style-type: none"> <li>Weakening semiconductor demand and decreasing WFE spending. High inventory correction continues</li> </ul>	 <ul style="list-style-type: none"> <li>1H23 vs. 1H22: Revenue ↓ 3.2% Operating income ↑ 20% EPS ↓ 0.3元</li> </ul>

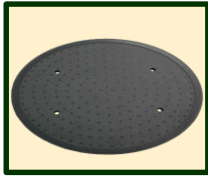
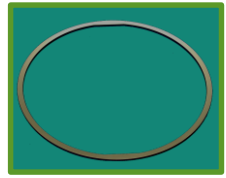
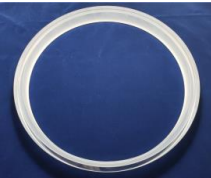
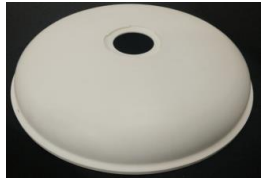
# Summary



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# Thank you