MATERIAL SCIENCE SERVICE

汎銓科技 半導體產業高階製程領航者

www.msscorps.com

# MSSCORPS. (6830)

# 1H24

# Operations & Performance



Form No: Q4-MA01 Ver.1.2

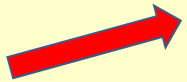
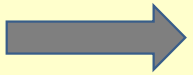
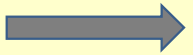
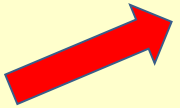
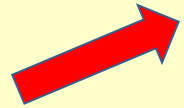
# 免責聲明 Disclaimer

- This presentation includes forward-looking statements. All statements, other than statements of historical facts, that address activities, events or developments that Material Science Service Corp. expects or anticipates will or may occur in the future (including but not limited to projections, targets, estimates and business plans) are forward-looking statements.
- MSS's actual results or developments may differ materially from those indicated by these forward-looking statements as a result of various factors and uncertainties, including but not limited to market demand, change in legal, financial and regulatory frameworks, government policies, financial market conditions, and other risks and factors beyond our control.
- MSS does not undertake any obligation to publicly update any forward-looking statement to reflect events or circumstances after the date on which any such statement is made or to reflect the occurrence of unanticipated events.

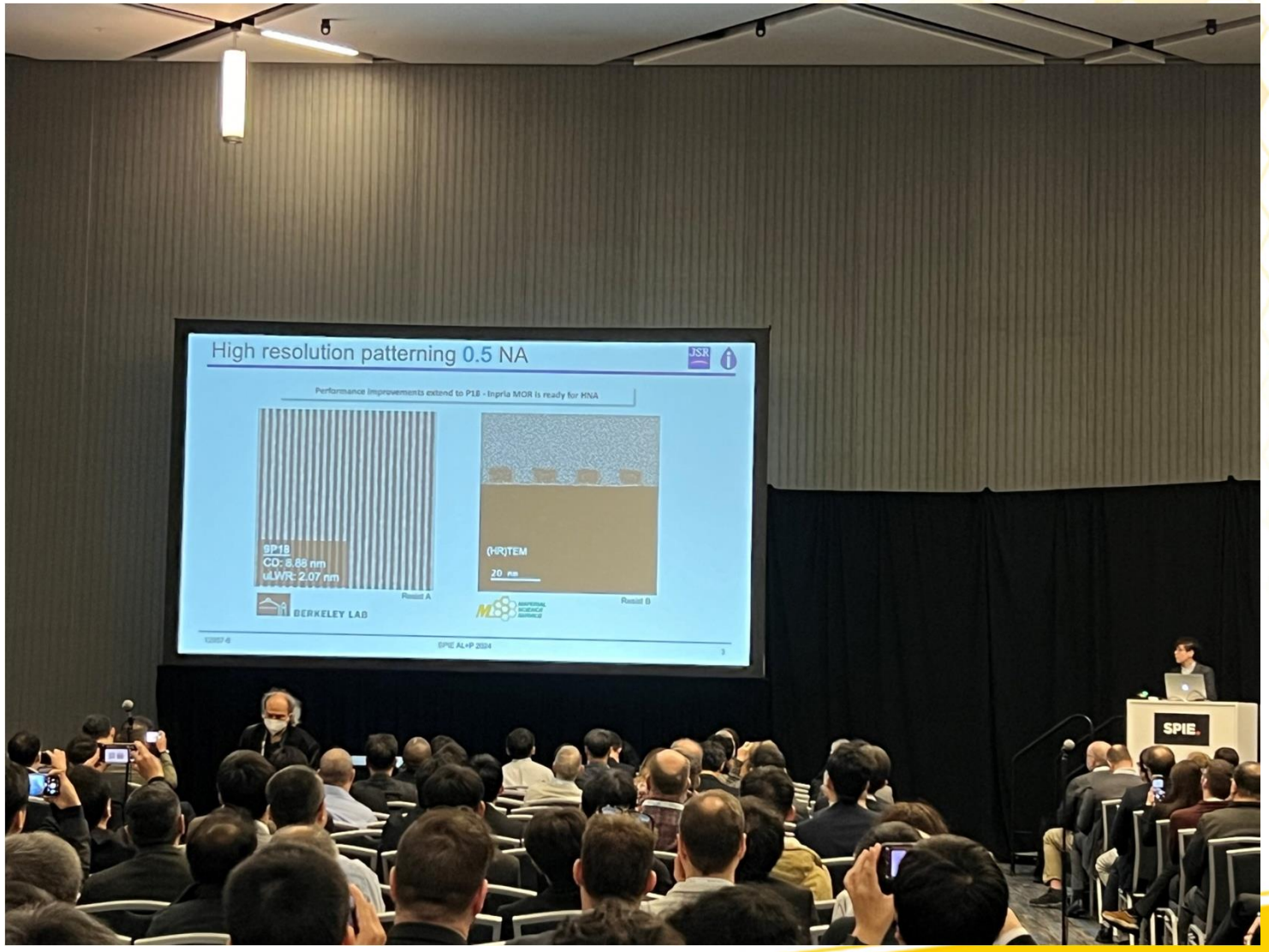
# From MSS's Perspective

- Taiwan’s analysis demand for advanced processes continues to increase, enter angstrom era
- Taiwan’s mature/legacy processes & compound semiconductor demand market is in poor condition
- IC design houses are subject to inventory destocking adjustments, resulting in a slowdown in demand for new R&D projects
- Silicon photonics / AI eras

# MSS classification and growth

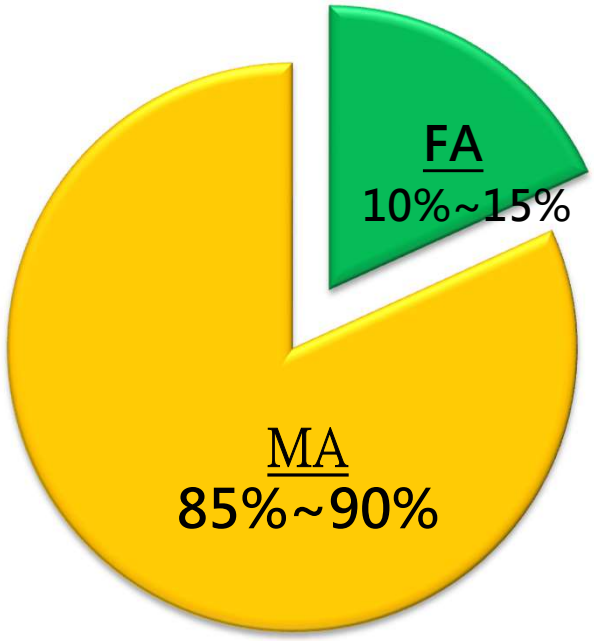
| Item | Group | Technology | MSS niche | Description | Performance ratio | Expected growth in 2025 |
|---|---|---|---|---|---|---|
| Advanced processes (Angstrom era) | MA | PR protection technology | 3rd generation EUV PR protection technology | Metal oxide PR | 65% |  |
| | MA | | Advanced EUV PR protection technology | EUV PR/etch structural analysis | | |
| | MA | | Selective deposition sample preparation technology | Special ALD deposition | | |
| | MA | low-*k* protection technology | BEOL: low-*k* structure protection technology | AMAT announces black dimand materials | | |
| | MA | | BEOL: low-*k* damage analysis technology | Low-k composition analysis | | |
| | MA | | Novel 2D materials analysis method | Weak-bonding materials analysis | | |
| | MA | Ultra-thin sample method | Ultra-thin sample protection method | 2nm/A14 device structural analysis | | |
| | MA | | FEOL: GAA etch byproduct bonding state analysis | 2nm/A14 device composition analysis | | |
| | MA | | MEOL: ALE etch byproduct comparison platform | | | |
| | MA | | High aspect ratio structural TEM analysis technology | DRAM cell analysis | | |
| | MA | Auto-measurement | Artificial intelligence for automatic measurement | Massive/reliable/accurate measurements | | |
| Mature processes | MA | ML ball height/ML defect | Optical component analysis technology: ML ball height/ML defect | CIS | 16% |  |
| | MA | | Wearable device AR/VR product lens integration analysis | Meta Lens/Pancake Lens | | |
| | MA | Compound Semiconductor | Epitaxial defect quantitative analysis technology | GaN on Si | | |
| | MA | | Carrier concentration distribution analysis in compound semiconductors | GaAs/InP/SiC | | |
| | MA | | Integrated stress analysis technology | PA amplification ability (diffraction pattern analysis) | | |
| | MA | OLED | Ultra-low contrast imaging technology for layer structures | Polymer image analysis | | |
| | MA | CCL/FCCL | Soft material slicing technology | Non-curtain effect/void | | |
| | MA | General materials analysis (SEM/FIB CS/Reversed MA/SIMS) | | | | |
| IC failure analysis | FA | Compound Semiconductor | High voltage and high temperature test (1000V, 300C) | GaN/SiC | 12% |  |
| | FA | | Ultrathin sample preparation technology for EFA | GaN/GaAs/SiC/3nm HPC InGaAs electrical measurement technology | | |
| | FA | Circuit edit technology | Signal lead technology | Tapping wire to directly measure the single logic gate function in the IC | | |
| | FA | | Backside signal lead technology | | | |
| | FA | | Adding external multiple passive components technology | Advanced process IC | | |
| | FA | | Precise local RDL removal technology | Dedicated for WLCSP/FO IC | | |
| | FA | | Filpchip front side FIB technology | Flipchip IC | | |
| | FA | General failure analysis ( decap/delayer/electrical property/CRD/IC Reverse/SAT/3D Xray) | | | | |
| Silicon photonics | MA | Silicon photonics structure | Large-area rapid cutting method for silicon photonics | Precise parallel lapping and PFIB to increase TEM capacity for silicon photonics | 3% |  |
| | MA | | Accurately quantify area and parallel lapping for silicon photonics | | | |
| | MA | | Conductive preparation method for silicon photonics | Improve the conductivity of large oxide/nitride | | |
| | MA | | Low-curtain effect cutting method for silicon photonics | Reduce the curtain effect caused by waveguide components | | |
| | FA | Silicon photonics photoelectricity test | Light characteristics and attenuation detection for silicon photonics | On the silicon photonics testing platform, the emitted light enters the silicon photonics IC, coupling to the waveguide in the IC, and then passes through different functional components such as light splitting/filtering/polarization, etc., and then coupling back to the optical fiber of the silicon photonics testing platform. By comparing the primitive light and the return light, light quality (intensity, wavelength, ...) can be obtained | | |
| | FA | | Optical path abnormality positioning, circuit break, light leakage detection for silicon photonics | | | |
| | FA | | 12-inch silicon photonic photometric platform with fully automatic light scanning | | | |
| AI Chips | MA | Advanced package | TSV sample preparation and analysis technology | The dimension of CoWoS TSV is usually over tens of um. Therefore, several TEMs are needed | 4% |  |
| | MA | | Hybrid metal bond analysis technology | TEM for 3D IC bond alignment/junction oxide | | |
| | MA | | Hydra PFIB | Dedicated to advanced packaging pre-processing | | |
| | FA | FA for advanced process chips (5nm/3nm) | IC full layer parallel lapping technology/3nm technology node parallel lapping technology | Process structure thickness reduction/Plasma delayer | | |
| | FA | | Ion beam pre-preparation techniques before E-beam probe | Ultra-thin samples for special electrical testing needs | | |
| | FA | | Verified by 3 companies on 3nm technology node products | um to nm positioning, direct nano probe measurements on devices | | |
| | FA | Advanced package | Large IC packaging and carrier board separation technology | Patent protection | | |
| | FA | | THZ-TDR open /Thermal xyz fault isolation/3D Xray | 5um precise positioning | | |

- **Participate in the development of MOR (Metal oxide) EUV photoresist for next-generation high NA EUV exposure machine**

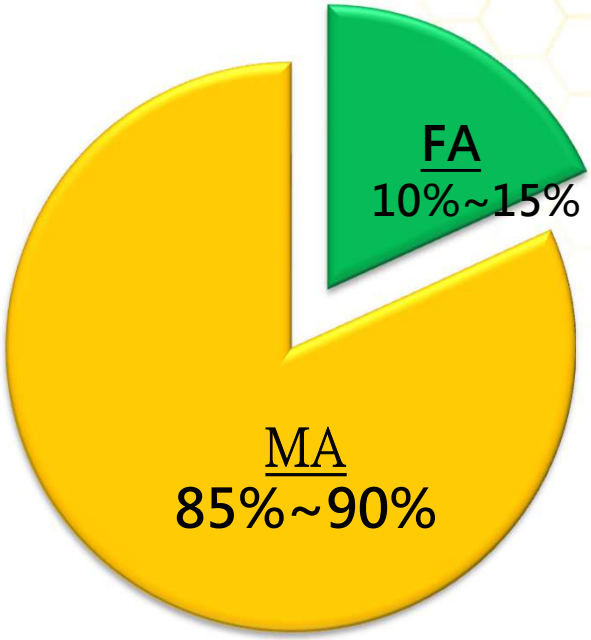


# Product Portfolio

## 2023 H1

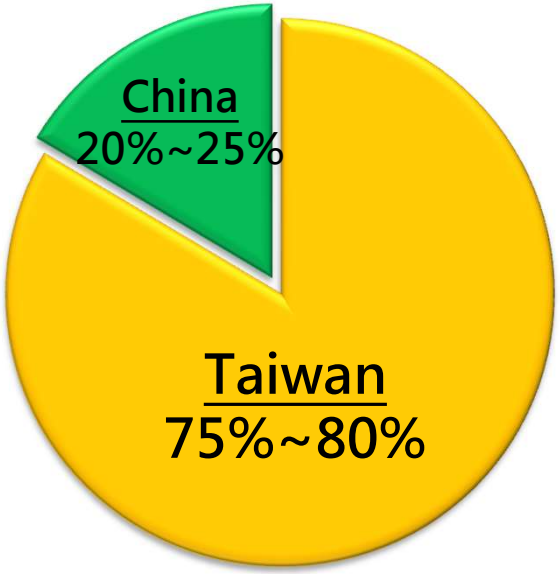



## 2024 H1

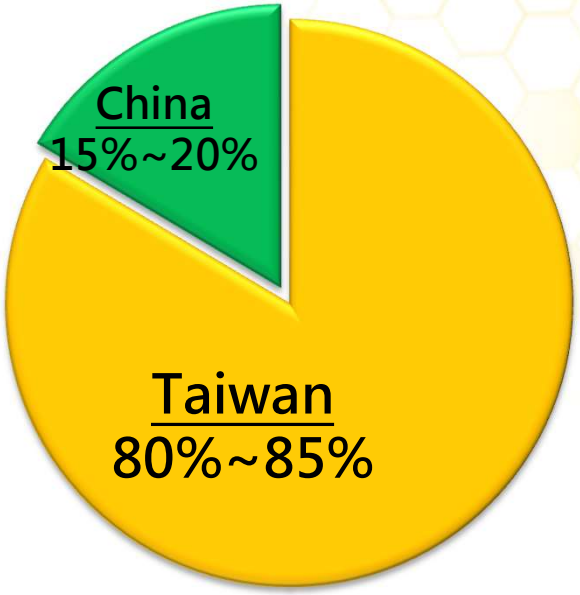


# Marketing Mix

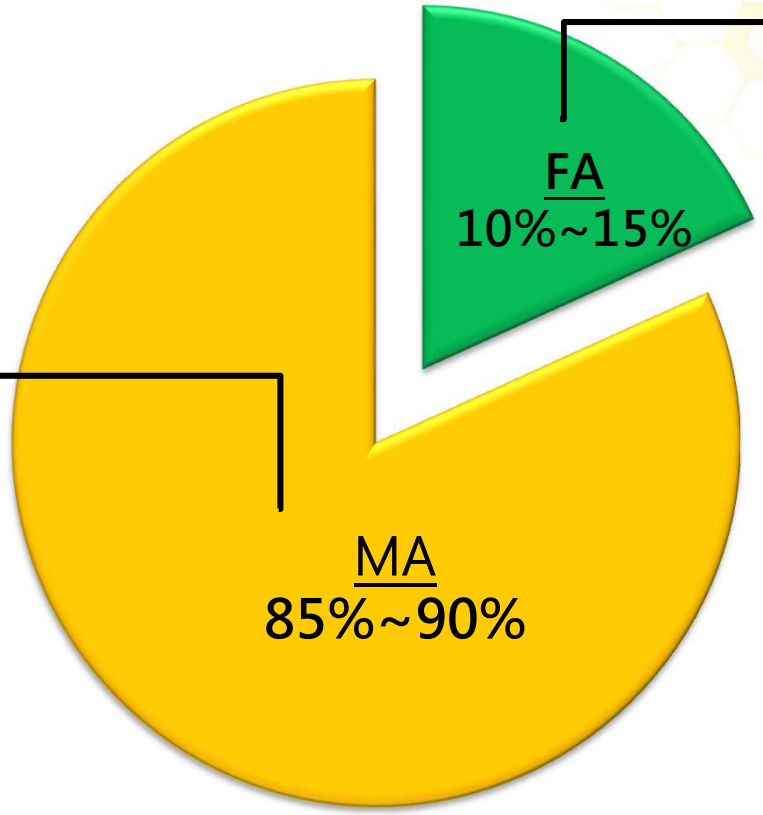
## 2023 H1




## 2024 H1



# 2024H1




**Processing time:**24hr~7days

**Recognition criteria :**
Cases entered /closed in the same month

**Processing time:**12hr~3 days

**Recognition criteria :**
Cases entered /closed in the same month

# Employees Trends

## 2023H1 VS 2024 H1

| Quarter | Q1 | Q2 | Q3 | Q4 |
|---|---|---|---|---|
| 2023 | 506 | 530 | 560 | 600 |
| 2024 | 610 | 620 | - | - |

# Global Business Strategy

## 一、Japan：

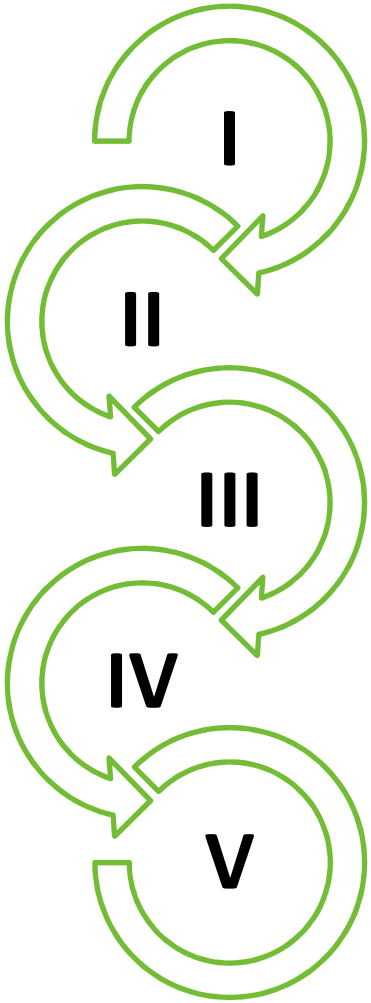
- It was originally expected that the MSS Japan operating base would be opened before 2024/Q2.
- The reason for the delay until 2025/Q2 is strictly requirement of laboratory construction regulations

## 二、USA

- It is expected that the MSS USA operating base will be opened before 2025/Q2

# Company Profile

# About MSS




汎銓科技股份有限公司
MSSCORPS CO.,LTD.(abbr.MSS)

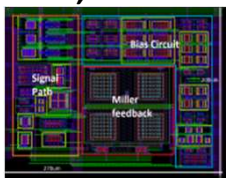
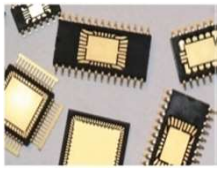
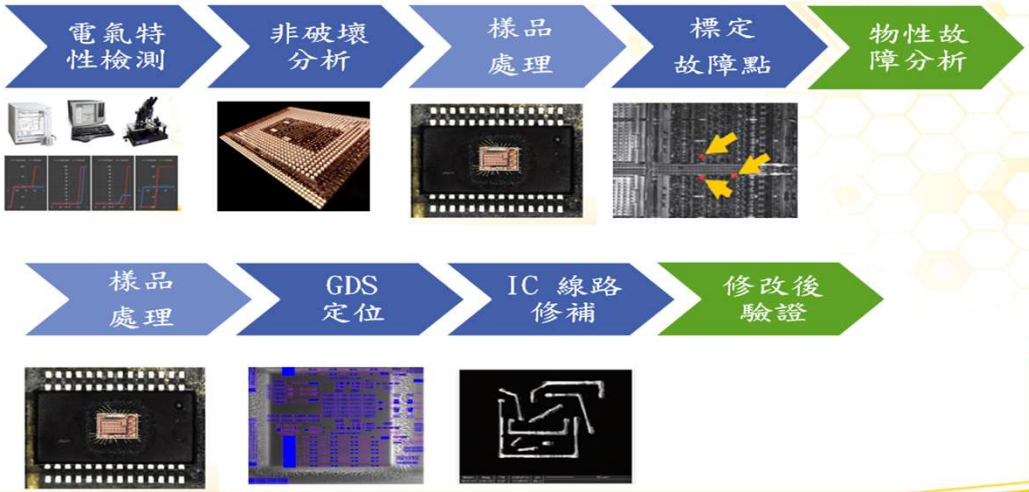
Founded: July 27,2005
Listing: August 31,2022

Chairman and CEO：Gino Liu

Capitalization: NTD518million
Number of Employees: 620

Service Item: MA(Materials Analysis)
FA(Failure Analysis)

# MSS role in the semiconductor industry chain-FA

| Positioning | | Content |
|---|---|---|
| FA(Failure Analysis)<br><br>(Hospital of ICs) | **IC design, mask, and RMA**<br>  | Design debugging and failure root cause investigation are the keys to shorten time to market<br>• IC circuit repair for designers to find design bugs and confirm **effectiveness of revised design**<br>• FA method to find failure **root cause** of fail IC after mass production |
| | **Package/substrate/PCB/FPC**<br>  | MSS **low-damage methods** developed in MA can be extended to be utilized in back-end industry<br>• Material diversity, hardness difference, thinner layers, and weaker inter-layer force to cause difficulties for analysis<br>• Special methods to reduce heat- and electricity-induced **artifacts** |
| Flow chart |  |  |

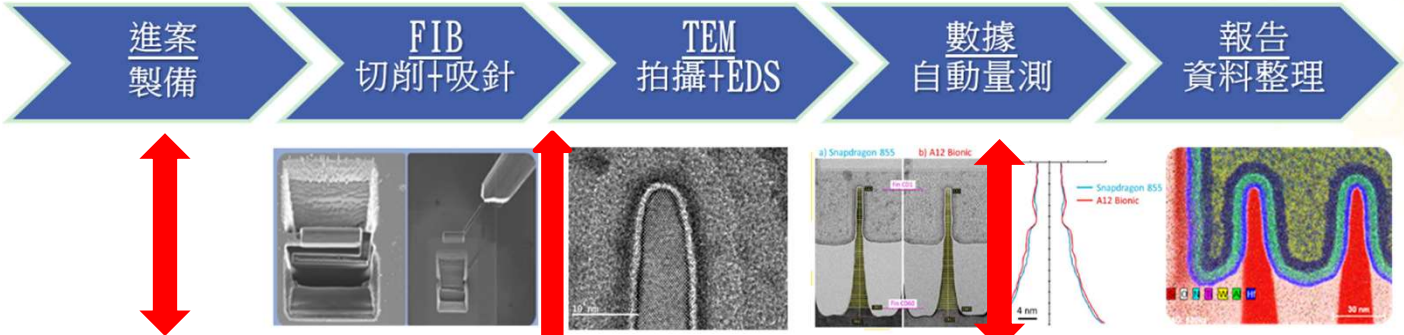
# MSS role in the semiconductor industry chain-MA

| Positioning | Content |
|---|---|
| MA(Materials Analysis)<br>(R&D Pilot) |  <br>晶圓代工/設備/材料 |

Providing timely correct structural and chemical analyses of specimen of interest to Fab for

- New technology node R&D, to determine **process parameters**, **new materials**, and **process tools**
- Process tool consistency check during transfer from R&D to mass production
- Yield optimization in mass production

**Flow chart**




| Patent Title | Patent period |
|---|---|
| 低溫原子層鍍膜專利 | 2020~2039 |
| 導電膠保護膜專利 | 2022~2040 |
| 原子層導電膜專利 | 2022~2041 |
| 影像自動量測專利 | 2022~2040 |

# Statements of Comprehensive Income

| (In NT$ thousand) | 2024Q2 | 2023Q2 | YoY |
|---|---|---|---|
| Revenue | 509,291 | 503,609 | 1.13% |
| **Gross profit** | **160,312** | **194,711** | **(17.67%)** |
| **Margin %** | **31** | **39** | |
| Operating expenses | (88,810) | (84,459) | 5.15% |
| Total non-operating income and expenses | (10,271) | 313 | (3381.47%) |
| Profit before income tax | 61,231 | 110,565 | (44.62%) |
| Income tax expense | (20,490) | (29,405) | (30.32%) |
| Total non-operating income and expenses | 40,741 | 81,160 | (49.8%) |
| EPS | 0.87 | 1.73 | |

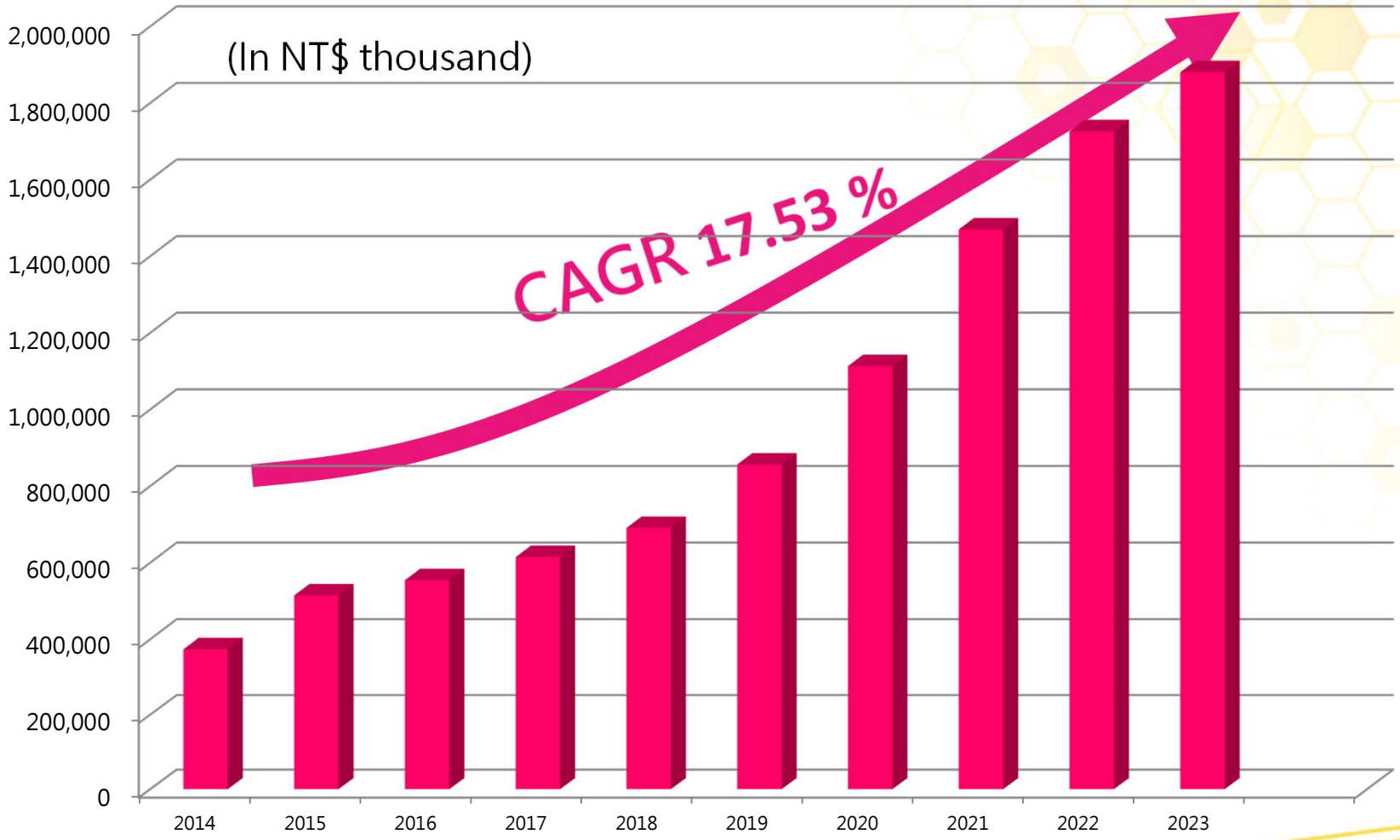
# Balance Sheet

| (In NT$ thousand) | 2024/06/30 Amount | % | 2023/06/30 Amount | % |
|---|---|---|---|---|
| Cash and cash equivalents | 1,031,186 | 15% | 1,059,003 | 27% |
| Trade receivables | 634,192 | 16% | 699,911 | 18% |
| Prepayments & Other assets | 148,804 | 3% | 105,791 | 3% |
| Property, plant and equipment | 2,697,145 | 51% | 1,649,189 | 42% |
| Right-of-use assets and other non-current assets | 760,236 | 15% | 423,020 | 10% |
| **Total Assets** | **5,271,563** | **100%** | **3,936,914** | **100%** |
| Trade payables & Other payables | 481,633 | 9% | 517,464 | 13% |
| Other current liabilities | 805,496 | 15% | 283,927 | 7% |
| Long-term borrowings | 1,303,479 | 25% | 587,009 | 15% |
| Other non-current liabilities | 278,211 | 5% | 131,347 | 4% |
| **Total liabilities** | **2,868,819** | **54%** | **1,519,747** | **39%** |
| **Total equity** | **2,402,744** | **46%** | **2,417,167** | **61%** |

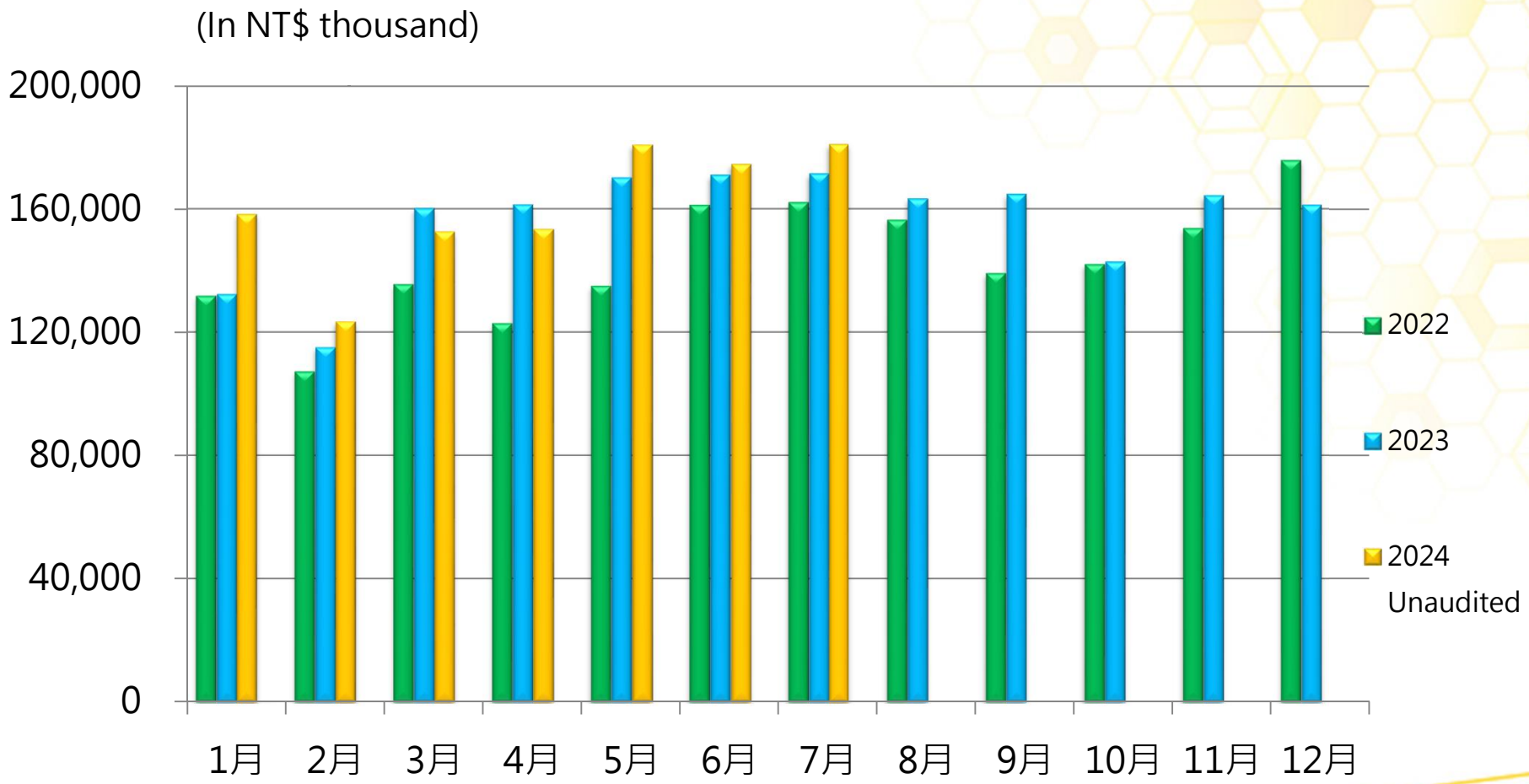
# Cash Flows

| (In NT$ thousand) | 2024Q2 | 2023Q2 |
|---|---|---|
| **Beginning Balance** | 622,110 | 1,113,271 |
| Cash from operating activities | 359,099 | 273,034 |
| Capital expenditures | (950,506) | (302,237) |
| Long-term loans | 1,112,000 | 31,000 |
| Others | (111,517) | (56,065) |
| **Ending Balance** | 1,031,186 | 1,059,003 |

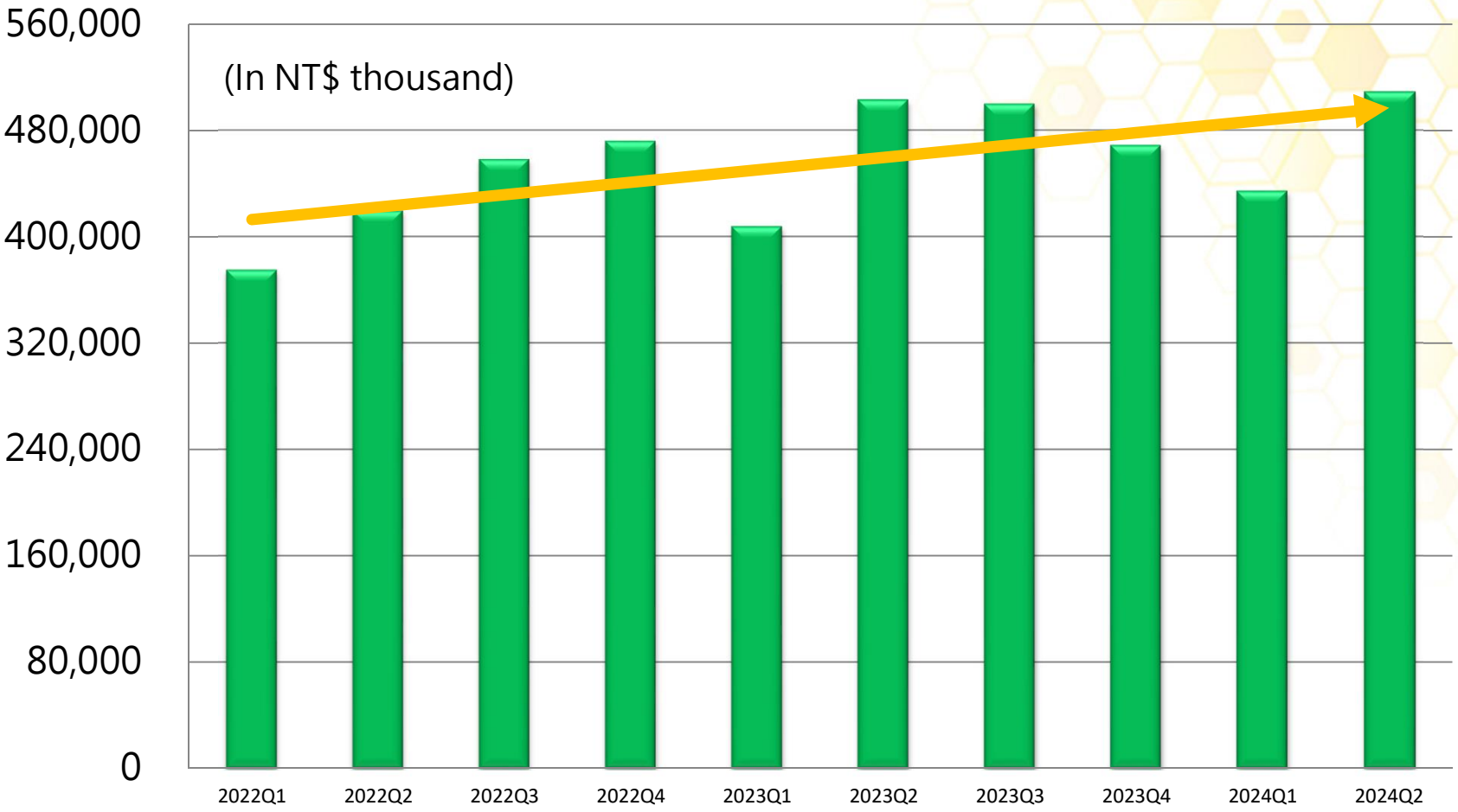
# Revenue Compound Annual Growth Rate in the past ten years



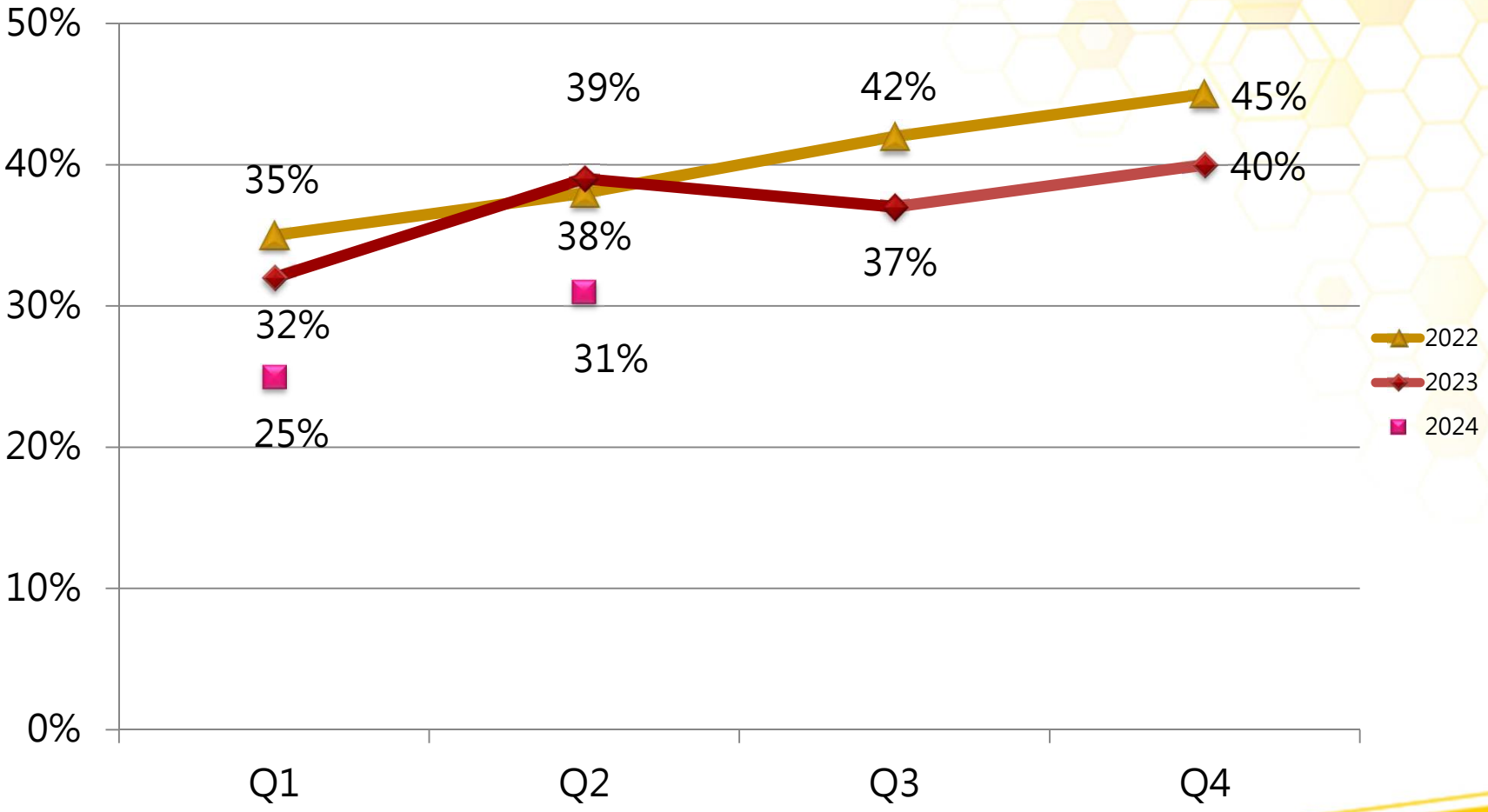
# 2022~2024 Monthly Revenue Trends



# 2022~2024 Quarterly Revenue Trends

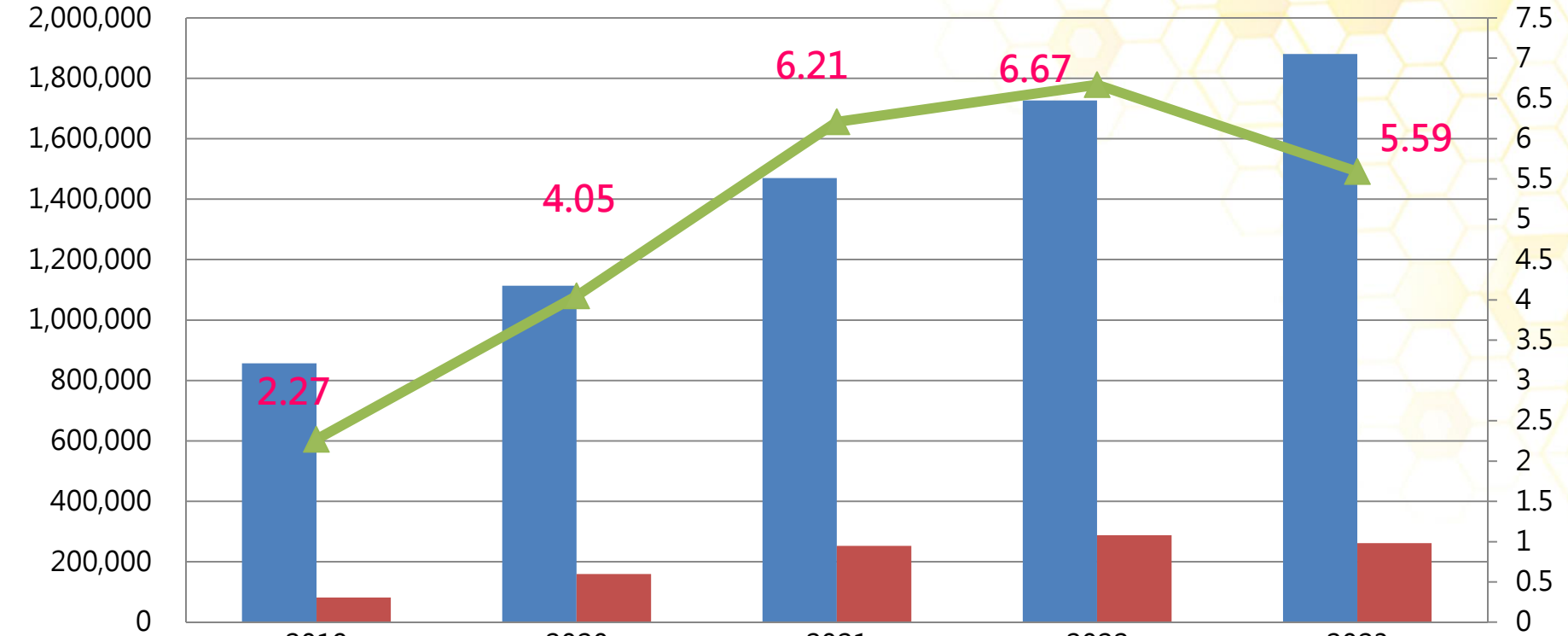


# 2022~2024 Quarterly Margin



# Profitability & Dividend in the past five years

(In NT$ thousand)




| | 2019 | 2020 | 2021 | 2022 | 2023 |
|---|---|---|---|---|---|
| Revenue | 856,306 | 1,113,184 | 1,469,881 | 1,726,427 | 1,880,575 |
| Net profit | 81,764 | 159,106 | 252,493 | 287,998 | 261,280 |
| EPS | 2.27 | 4.05 | 6.21 | 6.67 | 5.59 |
| **Dividend** | **2** | **2.5** | **4.5** | **5.5** | **4.5** |

# Thank you for listening.

MATERIAL SCIENCE SERVICE

*Your best R&D partner*

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