



2024.11.21  
法說會 Investor Conference

# 鑫科材料科技股份有限公司

ThinTech Materials Technology Co., Ltd.(TTMC)





# 議 程

- 致歡迎詞及團隊介紹  
Welcome speech and team introduction  
李昭祥 董事長  
Chairman C.H. Lee
- 24Q3營運  
24Q3 operation  
許銘璫 行政副總  
Adm. VP M.T. Hsu
- 公司新樣貌與營運展望  
New vision of the company and operation outlook  
潘永村 總經理  
President Y.T. Pan
- 提問與回答  
Questions and Answers  
經營團隊  
Management team





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# 經營團隊 Management team



董事長  
Chairman



李昭祥  
C.H. Lee

- 中龍鋼鐵股份有限公司  
總經理  
President of DSC
- 中鋼生產部門助理副總  
經理  
Assistant Vice  
President, Production  
division, CSC

總經理  
President



潘永村  
Y.T. Pan

- 中鋼技術部門專案副處長  
Project Deputy General  
Manager, Technology  
Division of CSC
- 中鋼新材料研發處 鋁及特  
殊合金發展組組長  
Manager, Aluminium &  
Specialty Alloy  
Development Section,  
New Materials R&D  
Department, CSC

生產技術副總  
Vice President  
of Production  
Technology



林景扶  
Jeff Lin

- 工業技術研究院研究員  
Researcher, Industrial  
Technology Research  
Institute

行政管理副總  
Vice President of  
Administration



許銘璵  
M.T. Hsu

- 中鋼工業工程處 經  
營發展組組長  
Manager, Business  
Development  
Section, Industrial  
Engineering  
Department, CSC

中鋼精材董事長  
Chairman of  
CSPM



馮復安  
F.A. FENG

- 中鋼技術部門專案副處  
長  
Project Deputy General  
Manager, Technology  
Division, CSC
- 中鋼冶金技術處特殊合  
金品管組長  
Manager, Specialty  
Alloy Quality Control ,  
Metallurgical  
Department, CSC



# I.營運概況 Operational Overview



## -近期重要紀事 Recent important events

- 成功開發脆性靶材特殊動態澆鑄製程，並取得專利。

Successfully developed and patented special dynamic casting process for brittle target.

- 成為中國醫藥大學附設醫院新竹分院裝設禾榮公司的台灣首套加速器型硼中子捕獲治療(AB-BNCT)設備的供應鏈夥伴，預計於2025年進行第二套設備建置，推估可再取得鋁基複材訂單。

Became a supply chain partner for the first accelerator-type boron neutron capture therapy(AB-BNCT) equipment provided by Heron Neutron Medical Corp. at the Hsinchu Branch of the China Medical University Hospital. The order of Al-based compound materials for next AB-BNCT could be expected in 2025.

- 成為面板級扇出型封裝金屬載板之唯一技轉方認可供應商，並於2024年配合顧客需求，穩定出貨。

Became the only metal carrier supplier authorized by the technology transfer side for fan-out panel level packaging and fully met the required quantity from end user in 2024.

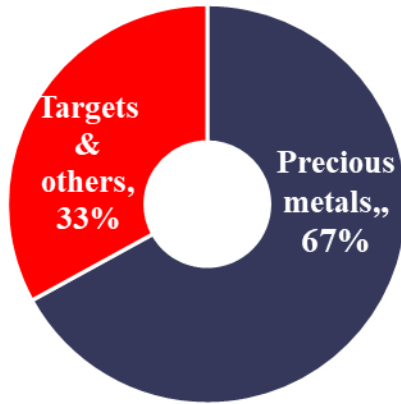


# I.營運概況 Operational Overview

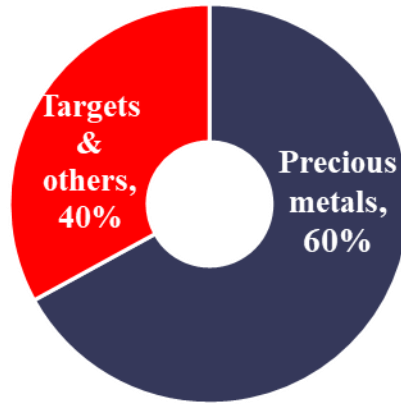
## -產品營收比率 Sales Revenue Ratio by Product



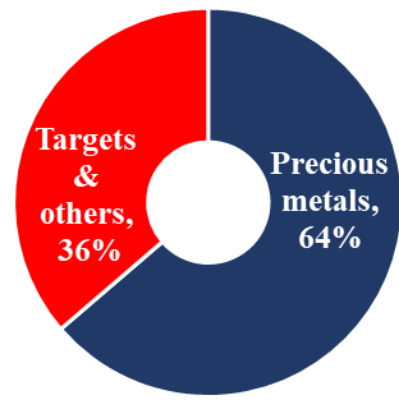
2021



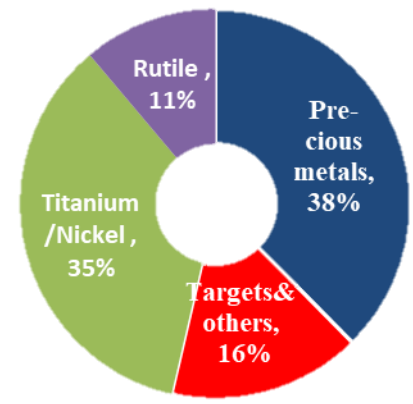
2022



2023



2024 Q3



2024Q2併購中鋼精材，產品類別新增鈦鎳特殊合金，以多樣化產品為公司創造更多收益。

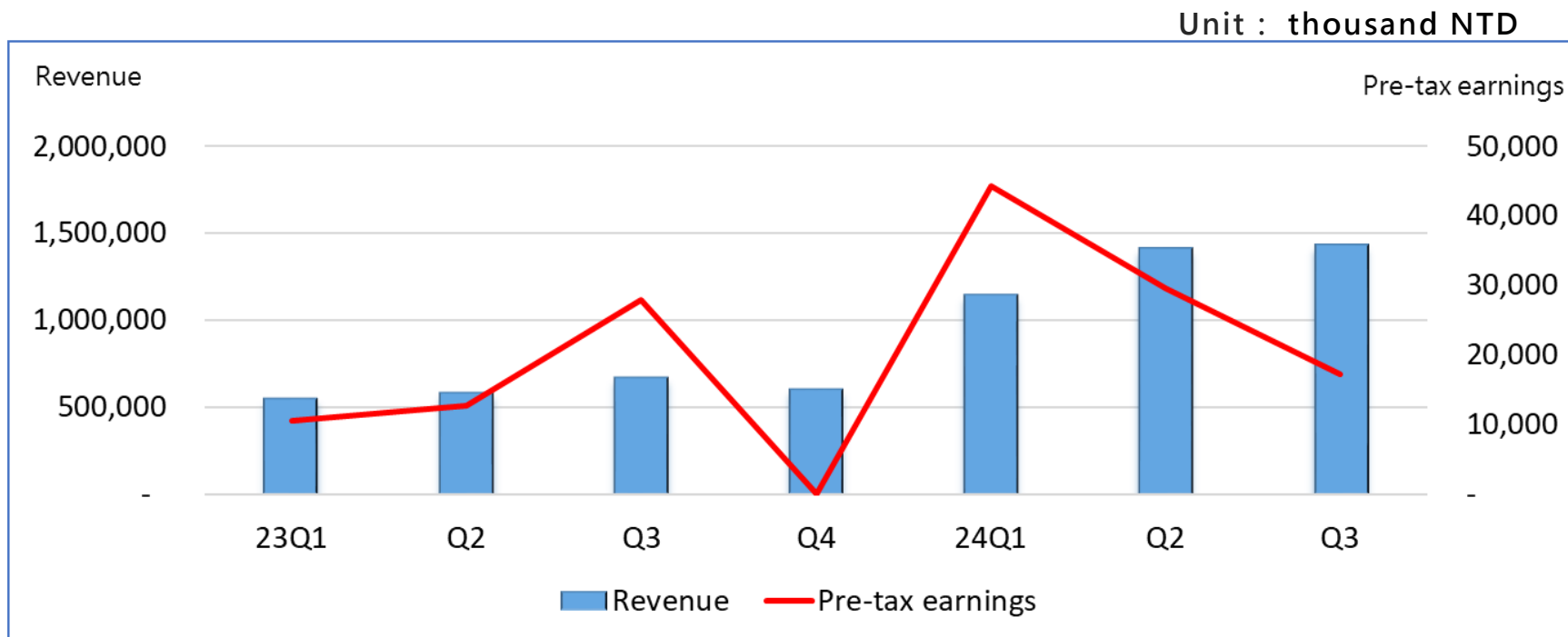
Titanium and Ni-based specialty alloys were added to the product mix. After the acquirement of CSPM in 2024Q2. Product diversification will contribute to higher revenue of the Company.



# I.財務績效 Financial Performance



-合併營收及前三年稅前淨利 Consolidated revenue and pre-tax earnings for the past three years



2024Q3營收新台幣3,996 百萬元；稅前淨利新台幣91百萬元。

2024Q3 Revenue : 3,996 million NTD; Pre-tax earnings : 91 million NTD.

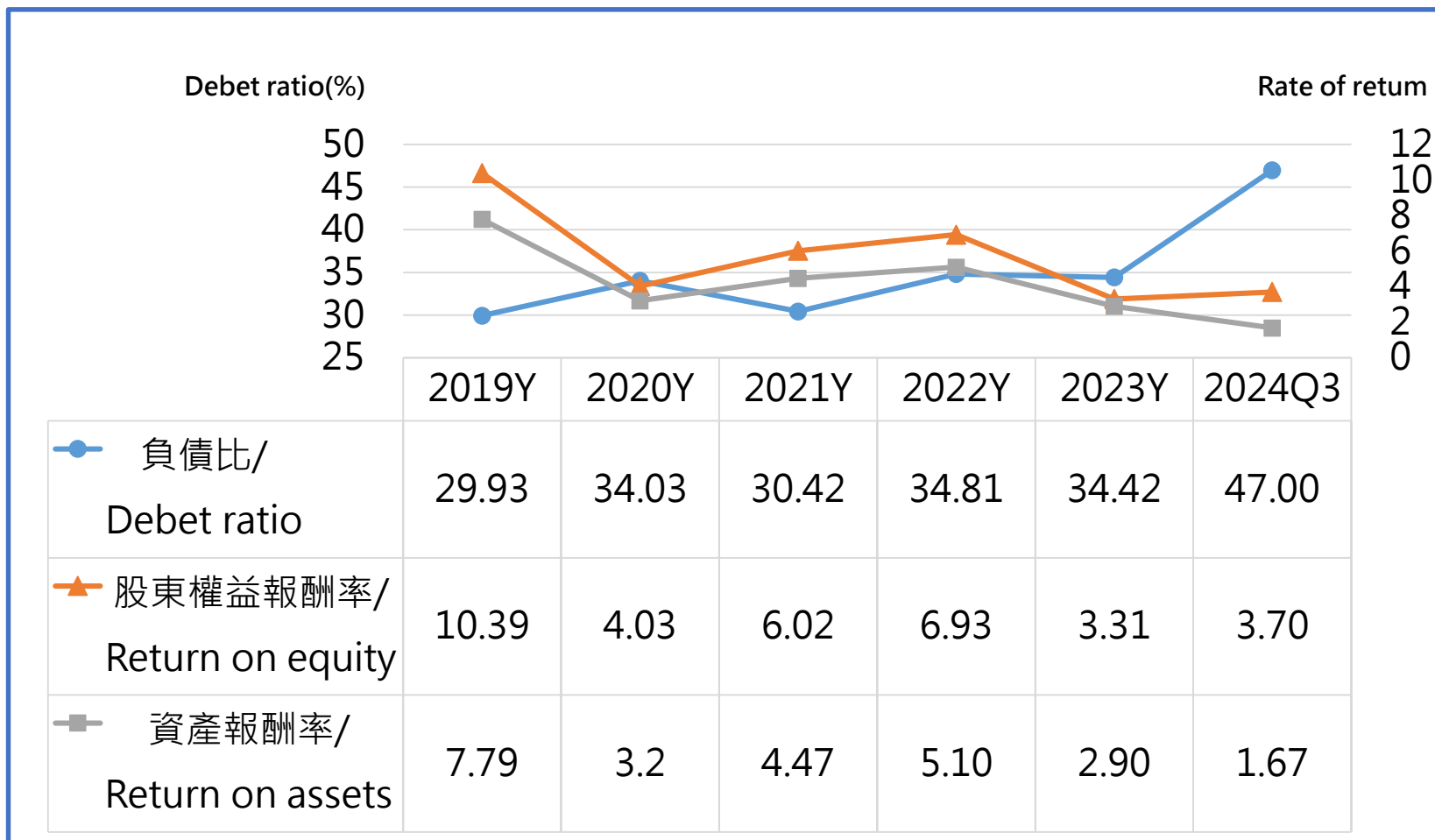
2023年營收新台幣2,405 百萬元；稅前淨利新台幣51百萬元。

2023Year Revenue : 2,405 million NTD; Pre-tax earnings : 51 million NTD.



# I.財務績效 Financial Performance

## -重要財務指標 Key financial index



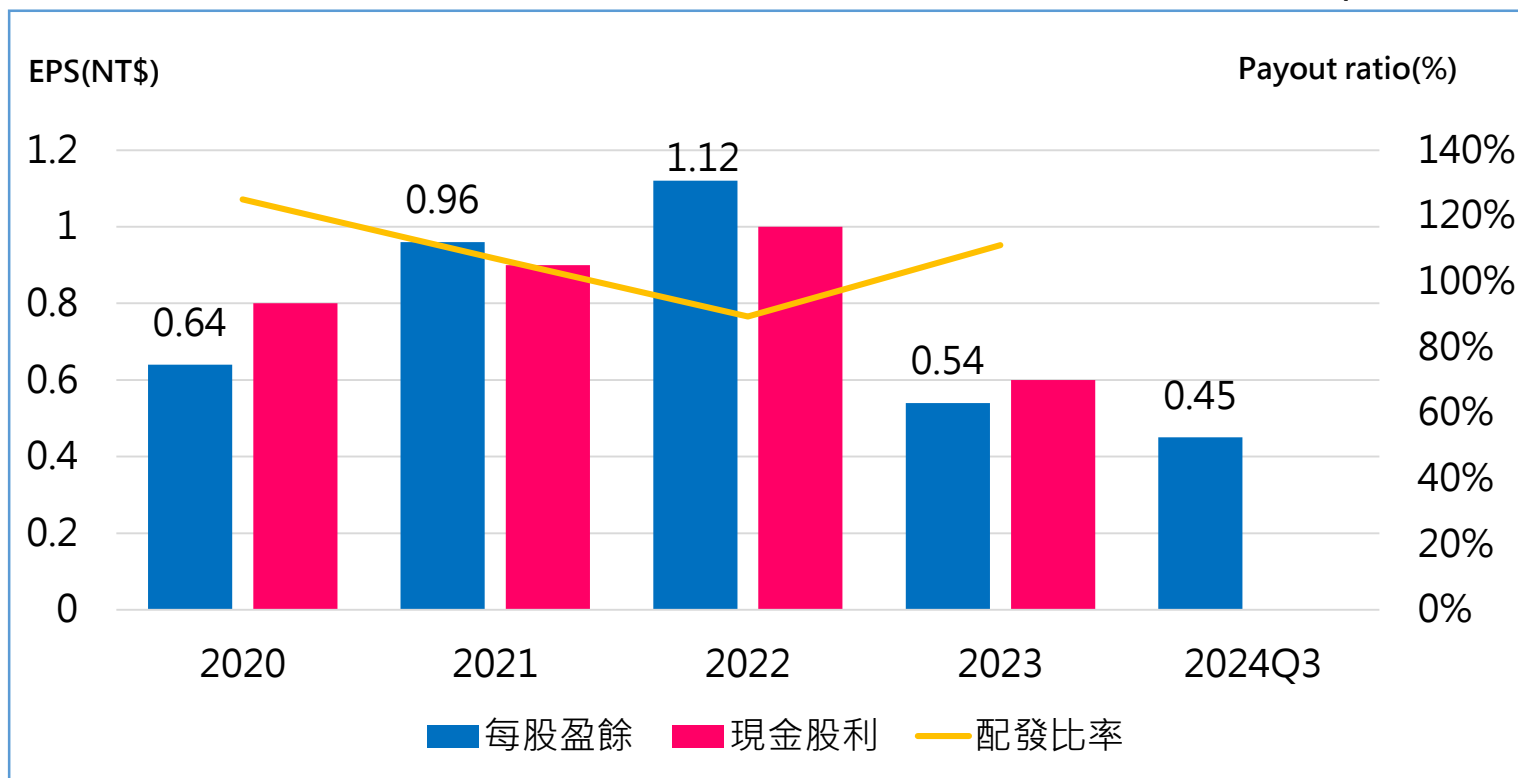




# I.財務績效 Financial Performance

## -每股盈餘及現金股利 EPS & Cash Dividend

Unit : NTD/per share



年度/Years	2020	2021	2022	2023	2024Q3
每股盈餘/EPS	0.64	0.96	1.12	0.54	0.45
現金股利/ Cash Dividend	0.8	0.9	1	0.6	-



## II. 鑫科整併及處置子公司之進度說明



-Progress report on the merger and disposal of subsidiaries by TTMC.

- 2024年5月透過股份轉換發行新股及現金收購等方式併購中鋼精材，中鋼集團對鑫科持股佔比超過50%。
- In May 2024, through methods such as share conversion and cash acquisition, the company merged China Steel Precision Material Ltd.(CSPM). The CSC Group holds more than 50% shares of TTMC.
- 6月經董事會決議轉讓太倉鑫昌100%股權案，主係平面顯示器在中國內地紅海市場生存不易，規劃半導體用靶材整併至中鋼精材，期雙方資源整合下，能更有效統籌與分配及節省管理成本，強化營運體質及提升競爭力。
- In June, the board of directors resolved to transfer 100% of the shares of Taicang ThinTech Materials Co. Ltd. (TCMC). The main reason is that it is difficult for flat panel displays to survive in the highly competitive market in mainland China. The plan is to merge the semiconductor target materials into CSPM, with the expectation that the integration of resources from both parties will enable more effective coordination and distribution, as well as save on management costs, thereby strengthening operational capabilities and enhancing competitiveness.
- 11月初取得太倉鑫昌股權轉讓核准，本公司預估扣除投資成本後，處分子公司鑫昌公司股權利益預計於Q4流入。
- In early November, the approval for the transfer of equity in TCMC was obtained. The Company estimates that after deducting the investment cost, the profit from the disposal of the subsidiary's equity will flow into profit account in Q4



## II. 中鋼精材整併 Mergence of CSPM

- 上下游整合 Up- and Down-stream integration



製造技術垂直整合綜效

Vertical Integration Synergy on Target Manufacturing Technology

Raw Materials



Melting & Casting



Hot Forging



Surface Finishing

中 C  
鋼 S  
精 P  
材 M

鑄錠熔鍛製成粗胚

Ingot Melting and Forging into Slab

Clean & Packaging



Machining



Diffusion Bonding



TMP

鑫 T  
科 T  
材 M  
料 C

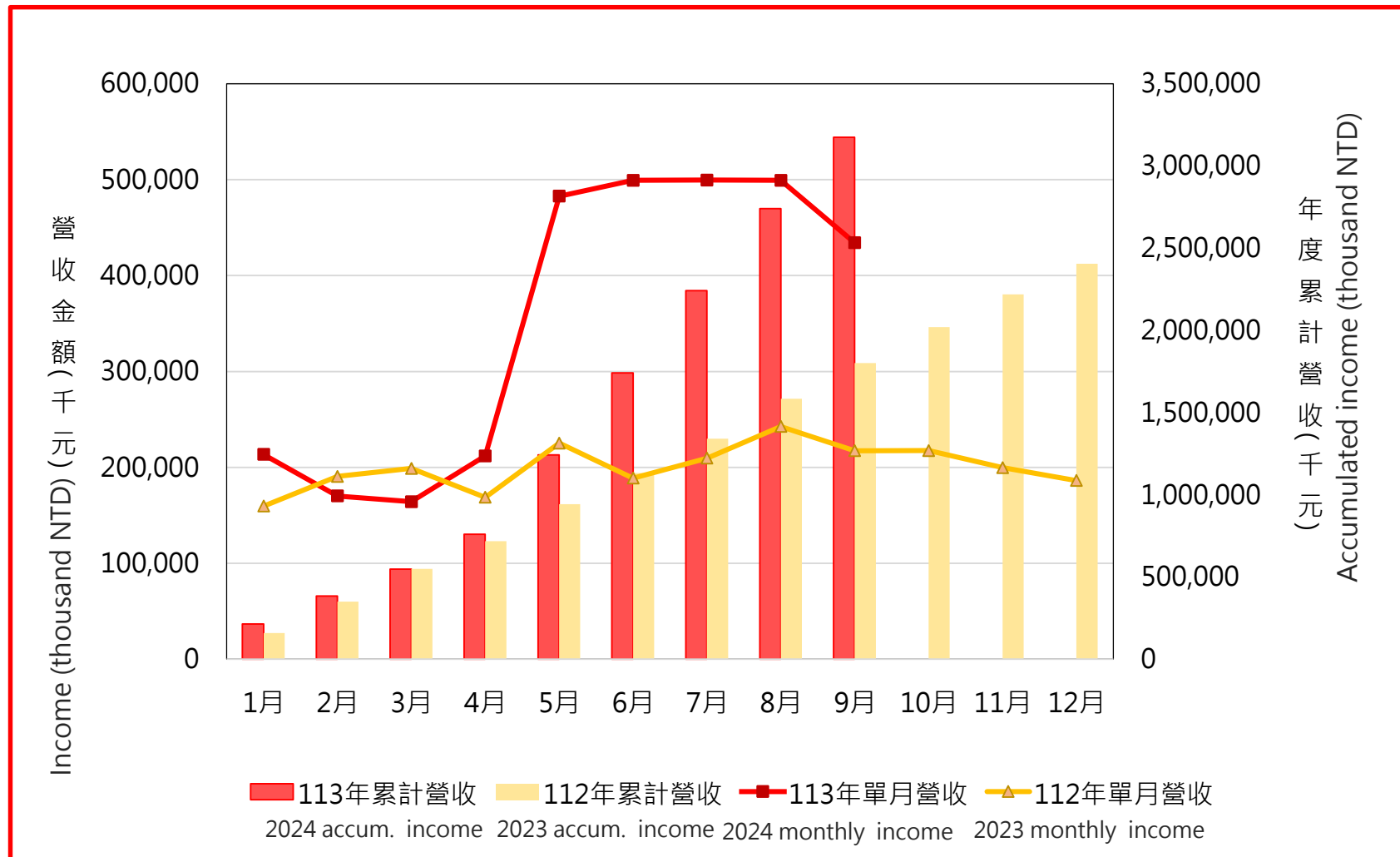
粗胚熱機處理/背板接合/機加工/清潔包裝

Slab Thermo-Mechanical Processed,  
Bonded/Machining/Clean & Packaging



## II. 中鋼精材整併 Mergence of CSPM

### - 合併財務績效 Consolidated financial performance







## II. 中鋼精材整併 Mergence of CSPM



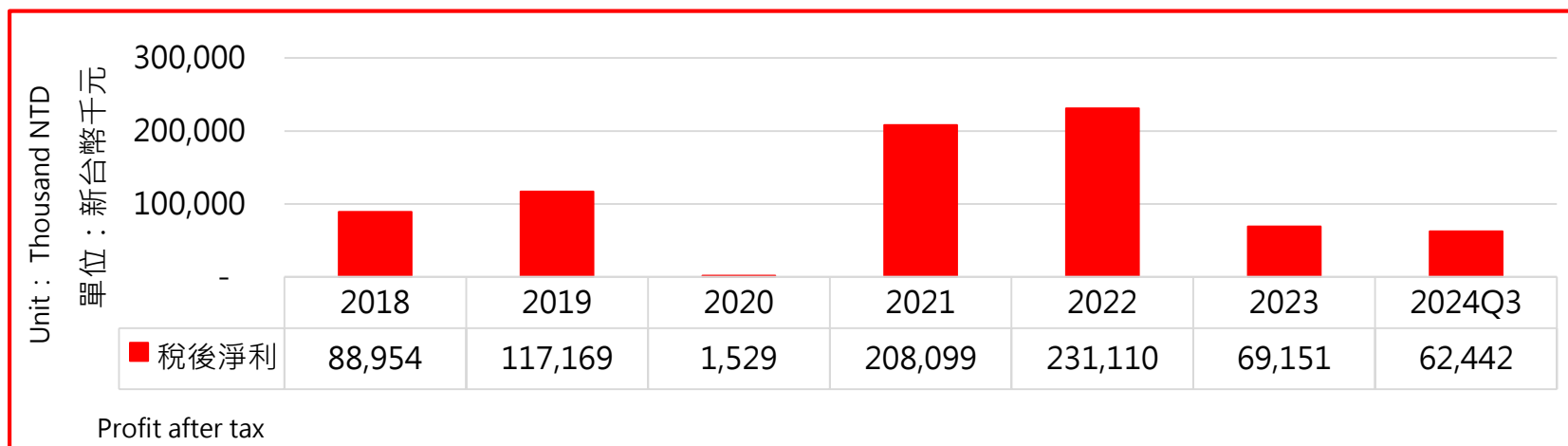
### - 中鋼精材財務績效 Financial performance of CSPM

- ✓ 由於技術純熟且良好服務，中鋼精材鈦、鎳等主要產品在大陸市場已奠立穩健基石，除2020年因市場金屬行情急速下跌導致銷售及獲利減少外，其餘年度獲利皆達6千萬元以上。

The main products (Ti & Ni) of CSPM have successfully established a foothold in China's market in recent years due to its mature technology and excellent service. Except for revenue and profits were lower than expected, due to the sharp drop in market metal prices in 2020, the profits have reached more than 60 million in the other years.

- ✓ 2024Q3中國經濟未如預期回溫，鈦、鎳產品市場及金屬市場行情持續走跌，中鋼精材藉由富化產品組合，提高產品毛利。

Since the recovery of the Chinese economy in 2024Q3 is not as expected, Ti & Ni product orders, and the market metal prices continue to decline. CSPM enhanced the gross profit margin by increasing product's portfolio.

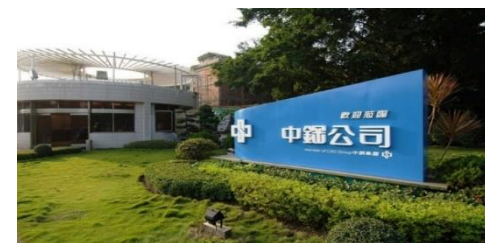
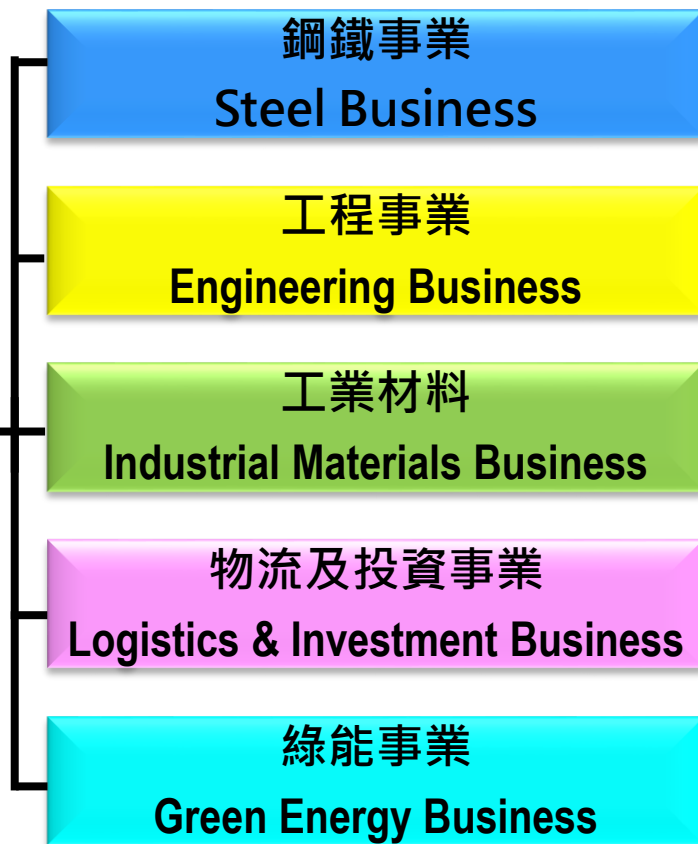




# III. 公司新樣貌 Company New Profile



- 工業材料事業群 Industrial Material Business Group



鑫科隸屬工業材料事業群，聚焦光電及半導體靶材，並擴及鈦鎳特殊合金生產，銷售版圖涵蓋台、陸、日、歐、美等。

TTMC belongs to industrial materials business group of CSC group, focusing on the production of opt-electric and semiconductor sputtering targets, and extending to Ti/Ni specialty alloys. The market territory includes Taiwan, China, Japan, Europe and USA etc.

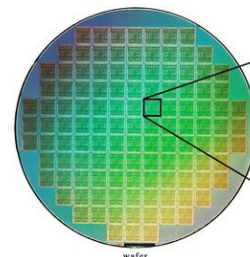
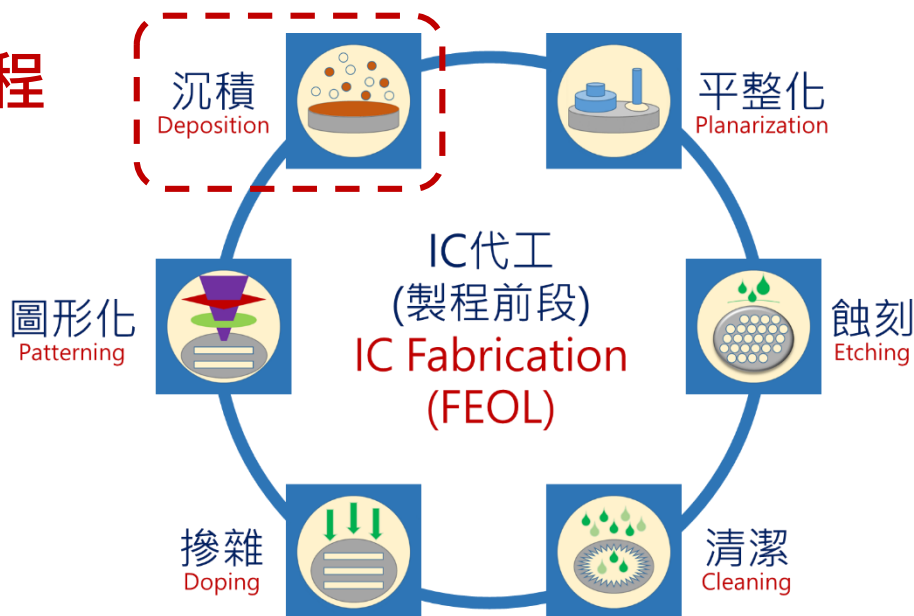


# III. 濺鍍靶材之應用 Application of Sputtering Targets



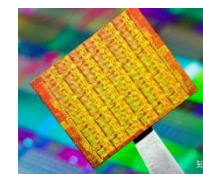
## - 導電薄膜沉積 Deposition of conduction thin film

### 前段製程 FEOL



晶圓  
Wafer

Source: <https://www.techpowerup.com/review/nvidia-8800-gtx/>

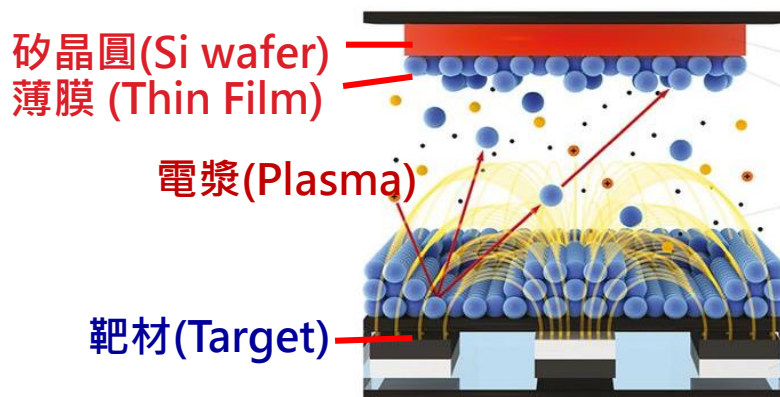


裸晶片  
Die

<https://arstechnica.com/gadgets/2018/01/whats-behind-the-intel-design-flaw-forcing-numerous-patches/>



後段封裝晶片  
OSAT chip



薄膜物理氣相沉積濺鍍製程  
Thin film PVD sputtering process



Source: <https://www.researchgate.net/publication/331583709>



# III.公司新樣貌 Company New Profile



## 鑫科材料(TTMC)

<div>2000成立 founded</div> <div>2006遷入高科園區 move to KHH Science Park</div> <div>2012 上櫃 TWSE OTC (3663)</div>	<div>Employers員工數(2024) 209 (TTMC/TWN)鑫科 166(CSPM/China)精材</div> <div></div>	<div>Capital 資本額(2024) US\$33.1M</div> <div>Revenue 合併營收 US\$100.3M</div> <div>Major Holders 主要股東(2024) CSC Group 中鋼集團(54.4%) URECO 聯合再生(6.7%)</div>	<div>QC/OHSMS品保/環安衛</div> <div>ISO 9001</div> <div>ISO 45001</div> <div>ISO 14001</div> <div>ISO 17025</div> <div>IECQ-QC 080000</div> <div>IATF 16949</div> <div>AEO</div>
<div>Location廠址 TTMC鑫科 KHH Sci. Park1, Luke 8th Rd., Lujhu District, Kaohsiung, TWN</div> <div>CSPM常州中鋼精材 (Changzhou, Jiangsu, China)</div> <div>Plant area : 30,000m2 ; Phase 1 : 2 Building , 18000m2 , Phase 2 : 12000m2 available</div>	<div>Southern Taiwan Technology Corridor</div> <div></div> <div>高科園區 路科八路1號</div>	<div>Main products 主要產品</div> <div>Sputtering Targets濺鍍靶材</div> <div>TFT LCD/Touch panel (Flat/tube, Al, Mo, Cu, Ti)</div> <div>Optical data storage (ZnS, TRA-, TRB- series)</div> <div>Crystal Oscillators/ Passive component (Ag, Ag-alloy series)</div> <div>Tool/Decoration (Al, Cu, Ti, Ni-alloy series)</div> <div>Semiconductor (Al-Cu, Ti, NiV, Ag, Au series)</div> <div>Other products其他</div> <div>Biomedical composites (BNCT moderator)</div> <div>Parts Cleaning (Au, Ag...)</div> <div>Sputtering parts (Taiko ring, sliding plate, FOPLP carrier...)</div> <div>Industrial Ni-base alloy (Pickling hook, Furnace)</div> <div>Ti-base alloy (3C frame, Cu foil roller, roof, curtain wall )</div>	





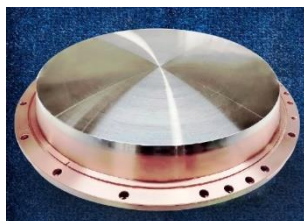
# III. 產品發展軌跡 Products Development Trace



- 鑫科早期(2000~2005)以光碟片用銀、鋁、介電靶起家；2006~2020則以面板為主，擴及裝飾鍍、被動元件及石英震盪用鋁、鉬、銅、鈦靶；2021~2023則開始發展半導體用靶材，策略為製程由後向前、尺寸由小至大、涵蓋純矽及化合物。現也跨足鈦/鎳特殊合金及面板級扇外型封裝用Fe-Ni合金載板。
- Early(2000~2005) : Focus on Optical data storage (ODS) targets (Ag, Al, Dielectric)
- Middle(2006~2020) : Extend to optical targets for decoration(DEC), passive components(PAC), Display, Crystal Oscillators (OSC) (Al, Mo, Cu, Ti)
- Near(2021~2023) : Launch into semiconductor(SEMI) industry, strategy: process from back to front end, size from small to large, and application for both Si & compound semiconductor.
- Now(2023~) : Extend the application of Specialty Ti/Ni Alloys, such as FOPLP Fe-Ni carrier plate and Smartphone Ti frame.



半導體蒸鍍材  
Semi Slug



半導體靶材  
Semi target



光儲存媒體  
ODS



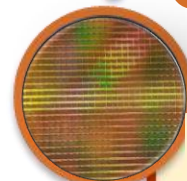
裝飾及被動元件  
DEC & PAC



面板  
Display



晶體振盪器  
OSC

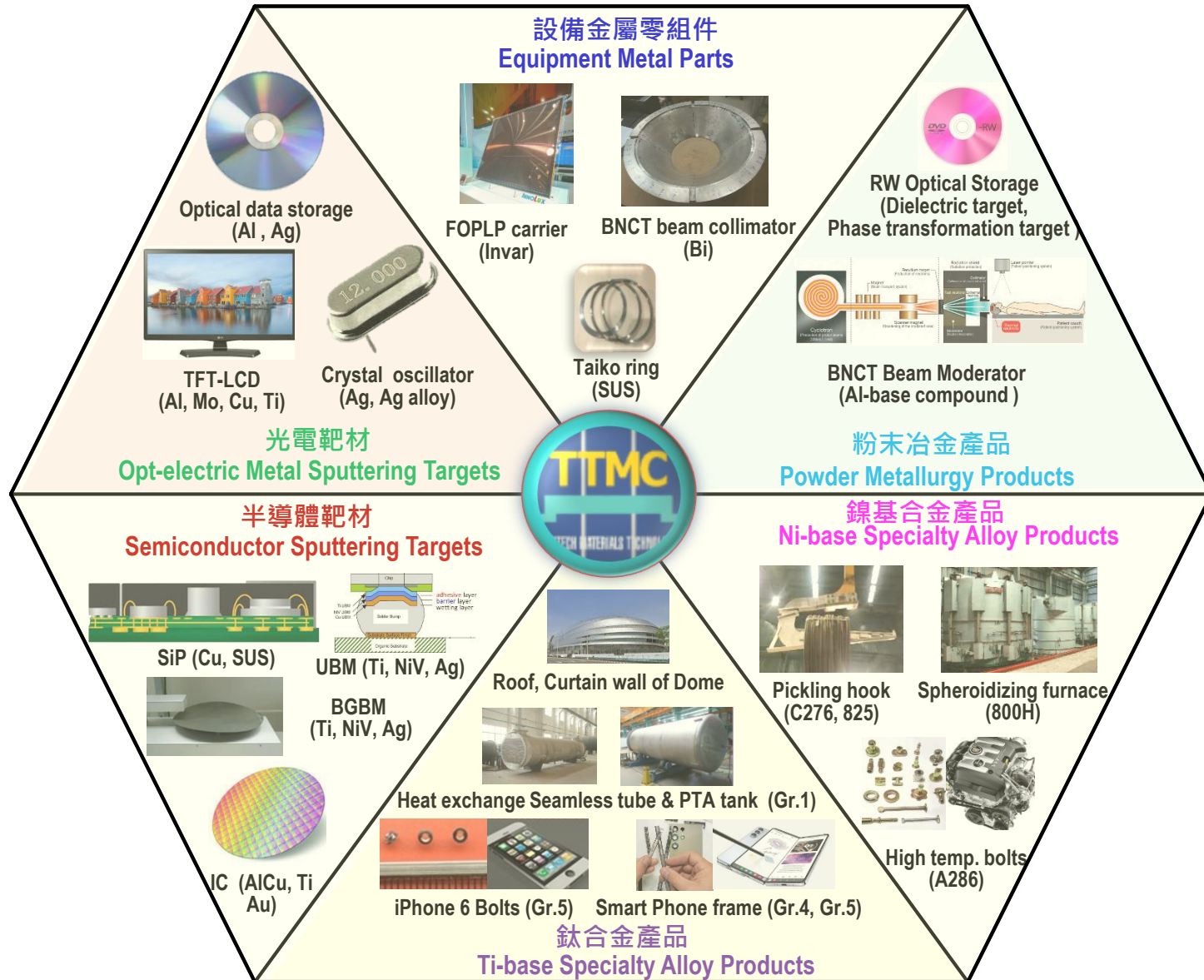


半導體  
SEMI



特殊合金  
Ti/Ni





# III.亮點產品 Product Highlights

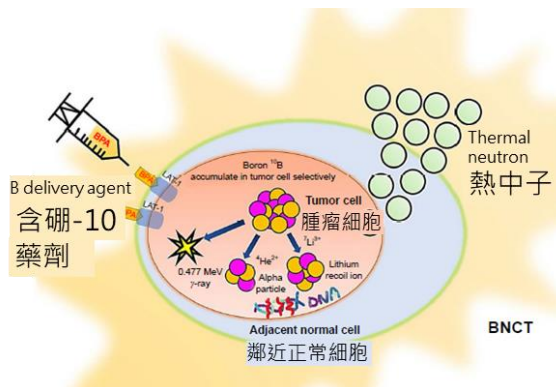
## - Biomedical materials 生醫材料

- ✓ 加速器型BNCT硼中子捕獲治療是利用低能量熱中子殺死腫瘤細胞卻又不嚴重影響正常組織細胞。為得到熱中子，加速器生成之高能中子需經調節器減速，中子調節器是由數種鋁基複合材料組合而成，鑫科獨家供應此調節器用生醫材料。

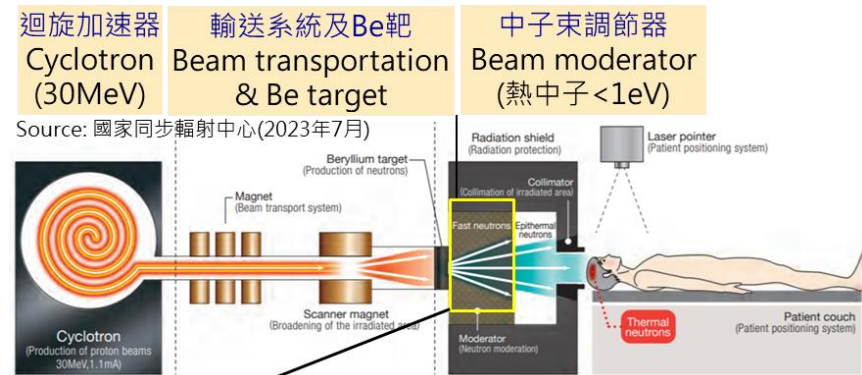
AB-Boron neutron capture therapy (BNCT) adopts the low energy thermal neutron ( $< 1\text{eV}$ ) to kill tumor cells rather than normal cells. The high energy neutron must be decelerated through a moderator to get the thermal neutron. The moderator is mainly composed of various Al-base compounds, which are exclusively supplied by TTMC.

- ✓ 設備已於2024年啟用，陸續取得相關證照等；預計於2025年進行第二套設備建置，推估可再取得鋁基複材訂單。

The equipment has been enabled in 2024, and the relevant certificates and licenses are also obtained. The second order of Al-based compound materials could be expected in 2025.



Source: 科儀新知 · 第236期(2023年9月)



Neutron moderator is composed of Al-base compounds





# III.亮點產品 Product Highlights



## - 面板級扇外型封裝載板 FOPLP Carrier

- ✓ 面板級扇外型封裝比晶圓級扇外型具更高載板利用率及更大面積。載板材質有金屬、玻璃或高分子等，其中金屬載板無玻璃易脆、高分子高熱膨脹係數 (CTE)不匹配等問題，已逐漸成為主流。

FOPLP is superior to FOWLP in terms of higher carrier utilization ratio and more space for dies. The carrier for FOPLP used can be metal, glass, or polymer. Since glass carriers are fragile and polymer carriers features high CTE mismatch, the metal carriers have become the mainstream of FOPLP carries.

- ✓ 開發成功與樹脂熱膨脹匹配之大尺寸金屬載板(700mmx700mm)，滿足FOPLP製程嚴苛需求。

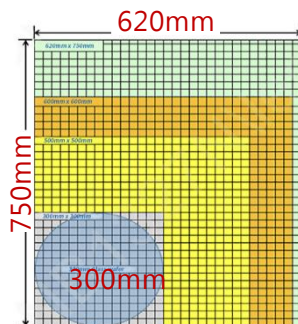
A dedicated alloy carriers with size up to 700mmx 700mm featuring similar CTE to EMC are supplied to meet the severe requirement of FOPLP carrier.

- ✓ 為解決/提高客戶利用率與產品良率，持續進行製程精進；並於2024年配合顧客需求，穩定出貨。

To address and improve the utilization and yield of product, the manufacturing process is continuously refined and fully met the required quantity from end user in 2024.

G3.5 Panel (620mm x 750mm)  
area ~ 6 times of 300mm wafer

Source: 群創網站



World largest FOPLP (700mm x 700mm)  
area ~ 7 times of 300mm wafer

Source:三立新聞網(2023年9月)





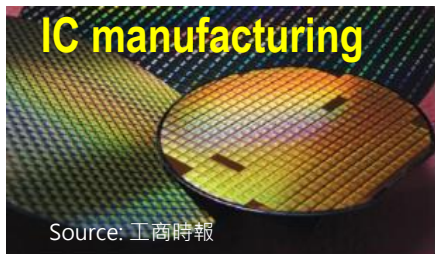
# III.亮點產品 Product Highlights

## -半導體金屬靶材/蒸鍍材 SEMI Metals Targets/Slugs



- ✓ 先進IC生產製程分成前段-IC製造、中段-晶圓減薄、後段-IC封裝。

The advanced IC manufacturing process can be divided into three stages: front-end (FEOL)- IC manufacturing, Middle-end (MEOL) - wafer thinning, and back end (BEOL)- IC packaging.



- ✓ 半導體靶材及蒸鍍材銷售量及客戶數逐步增加，預估今年銷售額可較去年成長20%，客戶數由11家(2020)增至33家(2024Q3)。

The proportion of targets and evaporation materials used for semiconductor users and the number of customers are gradually increasing. Sales are expected to increase by 20% this year compared to last year and the number of customers has also grown from 11 to 33.

- ✓ 半導體應用由純矽跨足二、三代化合物。材料種類包括後段封裝用Cu, SUS, Ti，中段晶圓減薄用Ti, Ni-V, Ag，前段IC製造用Ag, Au, Al-Si，和光洋科以銅及鎳白金靶為主，有所區隔。

In addition to first-generation silicon semiconductors, it is also advancing into the field of second- and third-generation compound semiconductors. Its application areas include back-end packaging (Cu target, SUS target, Ti target), mid-end wafer thinning (Ti target, NiV target, Ag target) and front-end IC manufacturing (Ag target, Au target, Al-Si target), which is distinguished from the Cu alloy targets and Ni-Pt target of Solar Applied Materials Co.



# III.亮點產品 Product Highlights

## -半導體金屬靶材/Au-Sn

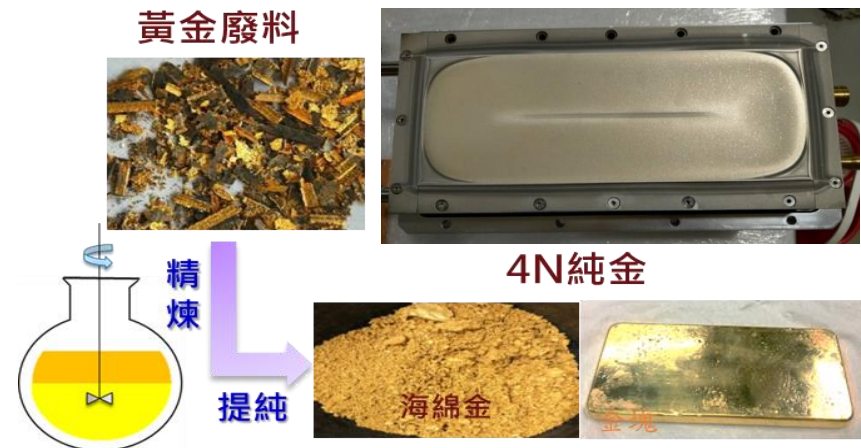
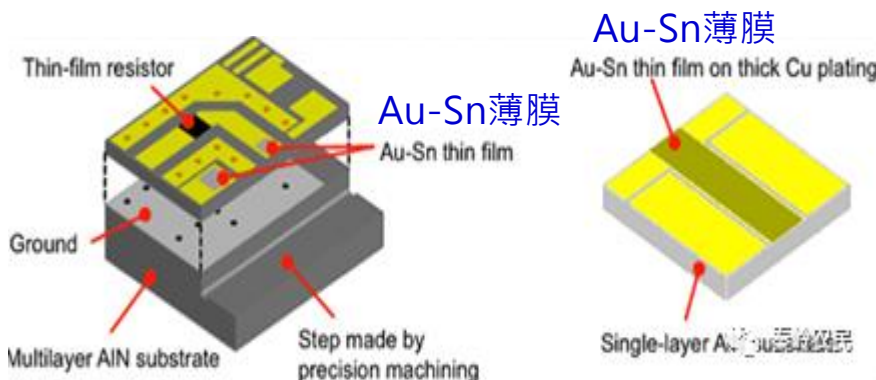


- ✓ 為求提高恆溫的能力及散熱的效率等封裝品質，封裝的軟焊製程極為關鍵；為提升產品的使用壽命、可靠度，已廣泛採用Au-Sn合金作為電子封裝的焊料。

To improve the quality of the package, such as the ability to maintain constant temperature and the efficiency of heat dissipation, the soft soldering process of the package is the key. To enhance the lifetime and stability of ICs, AuSn alloy has been widely used as electronic packaging solder.

- ✓ 因Au-Sn靶材易脆難以熱機加工，鑫科成功開發專利特殊動態澆鑄製程來產製此靶材，其顯微組織細緻且均勻，已於客戶端完成初期上機驗證，進行產品驗證。另也建立貴金屬回收再生技術

Since Au-Sn target is quite brittle, it is hard to be thermomechanical processed. TTMC has successfully developed a patented special dynamic casting process to produce Au-Sn target with uniform and fine microstructure. The related validation of Au-Sn sputtering target is ongoing. In addition, the recycling and reusing process of Au-Sn scrap target has been established.



<https://www.eet-china.com/mp/a83742.html>



# III. 半導體發展策略 SEMI Development Strategy



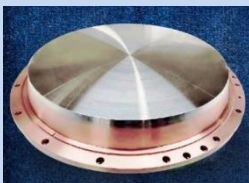
-由後向前兼顧化合物半導體 from BE to FE, inclding. Comp. Semi

標的客戶  
Aimed users

應用 (金屬化薄膜)  
Application (Metallization film)

鑫科材料 TTMC

Al/Ti / Cu/ Ta/ Au/ Ag/  
Ni-V/ SUS  
High Purity Metal  
Target/ Slug



蒸鍍材  
Semi Slug

靶材  
Semi target

提高市占率  
Increase market share

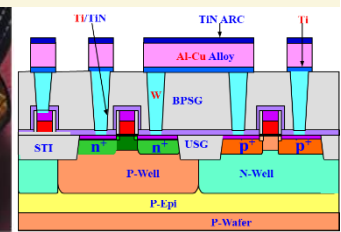
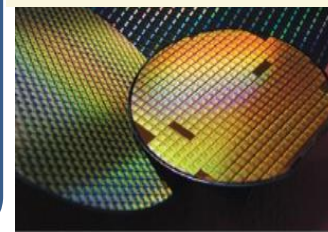
台積電  
tsmc

聯電  
UMC

世界先進  
Vanguard

前段製程  
FEOL  
-IC  
fabrication

FEOL-IC fabrication targets (Al/Ti/Au)



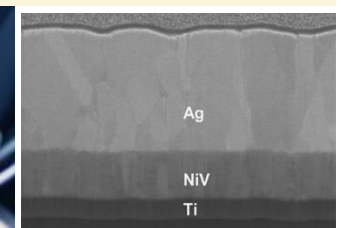
昇陽半  
PSI

iST  
宜特

微矽  
MicroSilicon

中段製程  
MEOL  
-Wafer  
thinning  
-FSM/BSM

MEOL-FSM/BSM targets (Ti/NiV/Ag)



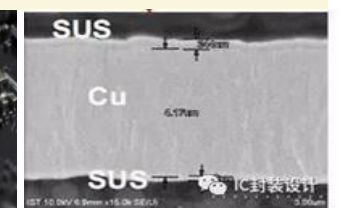
日月光  
ASE

矽品  
SPIL

艾克爾  
Amkor

後段製程  
BEOL  
-IC  
packaging  
-UBM  
-Anti EMI

BEOL-Anti EMI Targets (Cu/SUS)





## 鈦材業務開拓 Open up Ti-related business

- ✓ 中鋼精材研製成功原僅日本才能製作銲接型銅箔陰極鈦輥，已於2024Q3完成示範線生產設備安裝，預計2024年12月產出首捲，2025Q2完成用戶驗證，下半年量產。

CSPM has successfully developed welded titanium rollers used as copper foil cathode, which previously can only be produced in Japan. The installation of demonstration production line has been implemented in 2024Q3, and is expected to produce the first roller in December 2024. The end user verification will be completed in 2025Q2, with mass production in the second half of the year.



銅箔陰極鈦輥  
Ti Roller used as  
Cu Foil Cathode

- ✓ 擴展合併CSPM公司效益，於台灣進行純鈦材及純鈦管產品的應用銷售，將於明年銷售相關鈦材近百噸。

Expand the overall benefits of incorporating CSPM and assist in the application and sales of pure titanium materials and pure titanium tube products in Taiwan, It will sell nearly 100 tons of titanium related products next year.





- ✓ 中鋼精材技術純熟且良好服務，廣泛用於大陸地區化工、機械、石化與核能等產業上，然受原料價格下行與市場需求不振，截止9月底總計銷量持平。為擴大業務量，積極開發Invar(Fe-Ni)系列鎳基合金產品，以期進入3C產業市場。

With the pure technology and good service, CSPM is widely used in the chemical, machinery, petrochemical and nuclear industries in China. However, due to the downward trend of raw material prices and the sluggish market demand, the total sales remained constant as of the end of September. In order to expand our business, we are actively developing Invar (Fe-Ni) series of nickel-based alloy products to enter the 3C industry market.



### III.循環再生商機 Opportunity of Recycle



#### ✓ 發展循環再利用

因應ESG及客戶需求，投入高純材料再利用研發；首先跨足貴金屬零組件清淨業務，近期也投入純鈦材的再利用製程開發。

#### ✓ Development for recycling and reuse

To respond to ESG and customer demands, TTMC invested in the research and development of high-purity material reuse. First of all, we stepped into the parts cleaning business of precious metals. Recently, we also invested in the development of a reuse process for high purity titanium.

# Thanks for Your Attention



## New Vision Of Materials Application