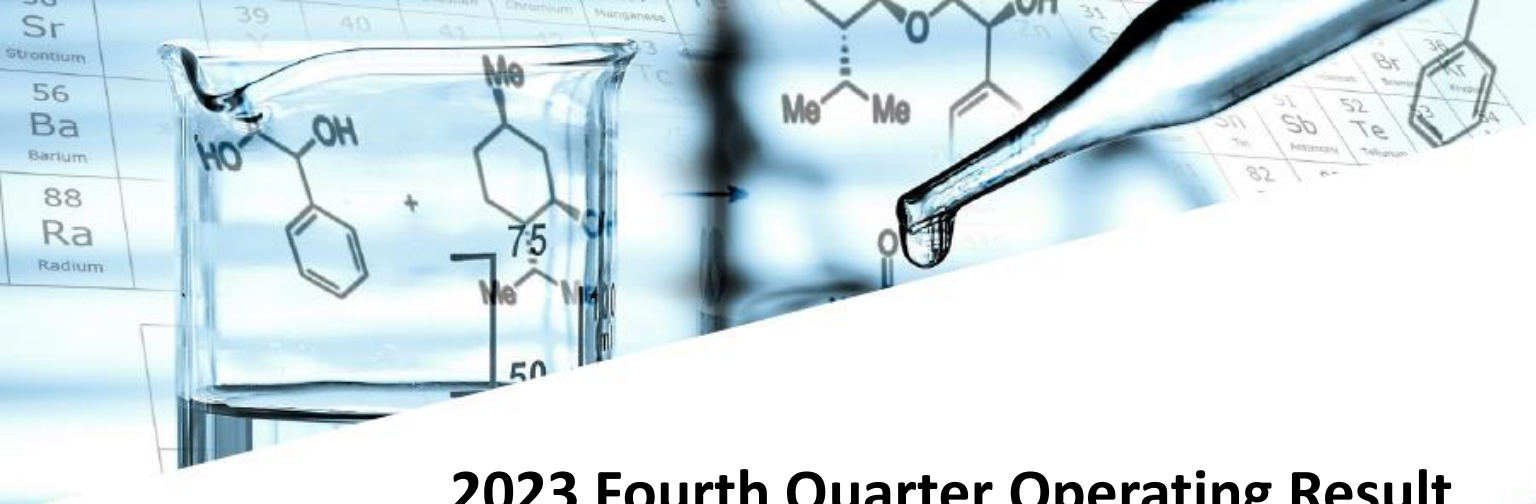




長興材料

# ETERNAL MATERIALS

Elements of Infinite Possibilities

The background of the top-left section features a laboratory setting with a beaker containing a chemical reaction, a pipette, and a periodic table of elements. Chemical structures and atomic symbols like Sr, Ba, Ra, Me, and OH are visible.

# 2023 Fourth Quarter Operating Result & Photoresist Materials Division : The Layout of Electronic Materials Business group in ASEAN

Presenter : Director, H.T. Shen (Photoresist Materials Division)

B.C.Liu (Spokesperson)

Date : 2024/03/15

Agenda



- 1. Profile**
- 2. 2023 Fourth Quarter Operating Result**
- 3. Introduction to Electronic Materials Business Group**
- 4. The Layout of Electronic Materials Business Group in ASEAN**





## Profile





Chairman — Allen K. L. Kao

Core Business — Manufacturing, processing and sales

Founding

1964

Employees

4,851

Overall Sales Revenue

USD\$ 1,645 million

Production Sites

25

Taiwan 5

China 14

USA 1

Thailand 1

Japan 2

Malaysia 1

Italy 1

Headcounts of Researcher

591

R&D expenditures

For sales revenue  
3%

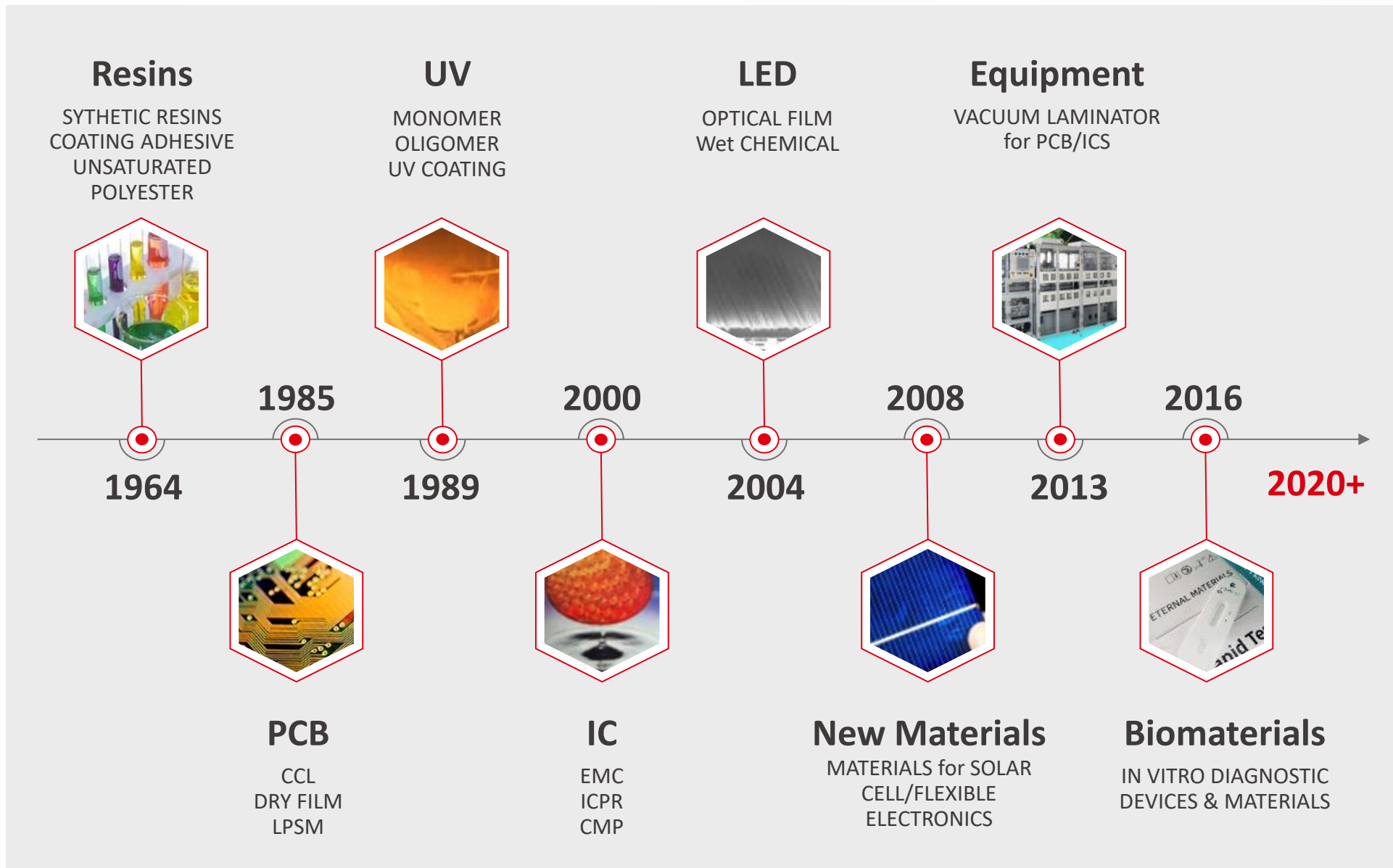
Notes 1 :

Number of Employees on December 31,2023

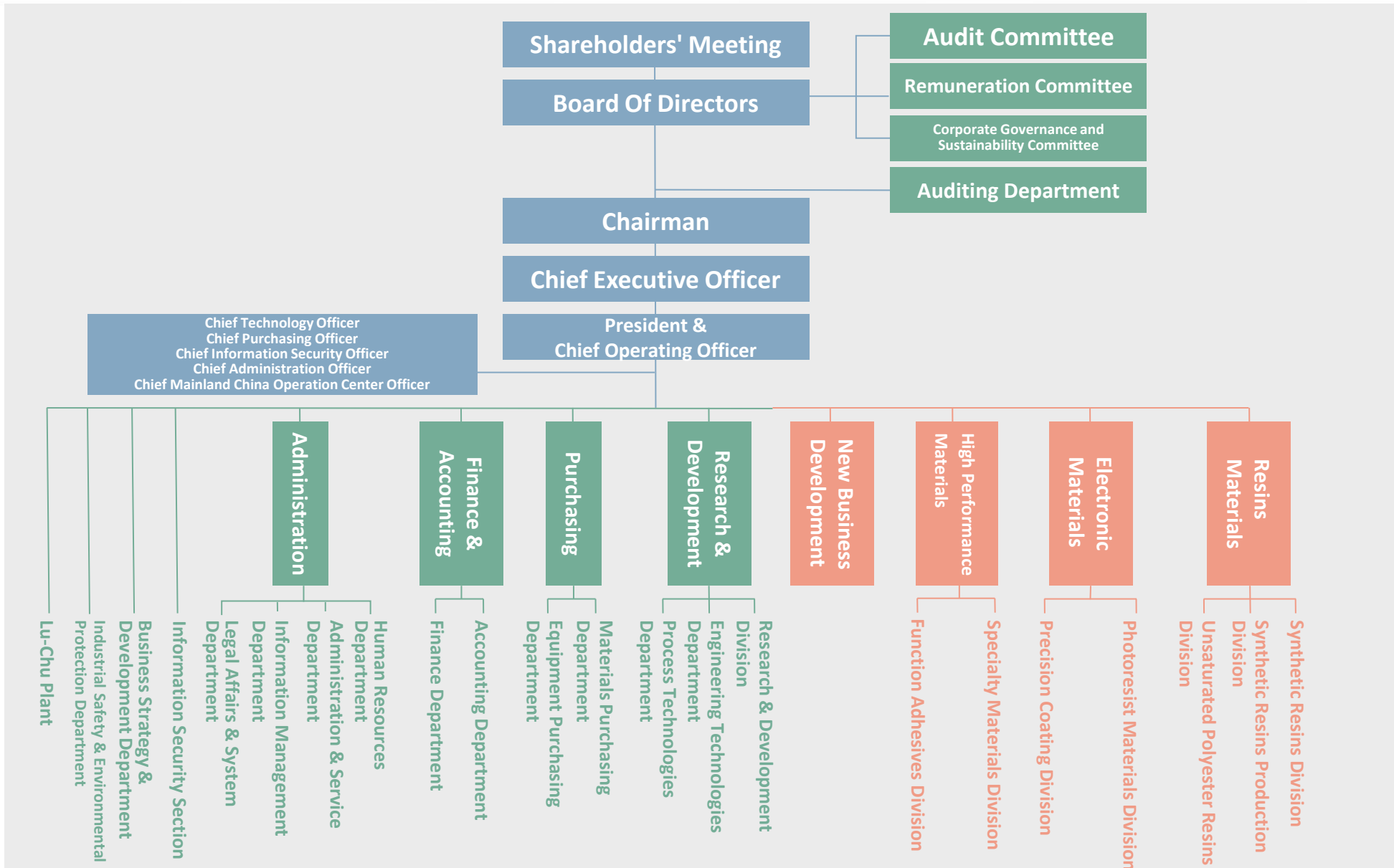
Notes 2:

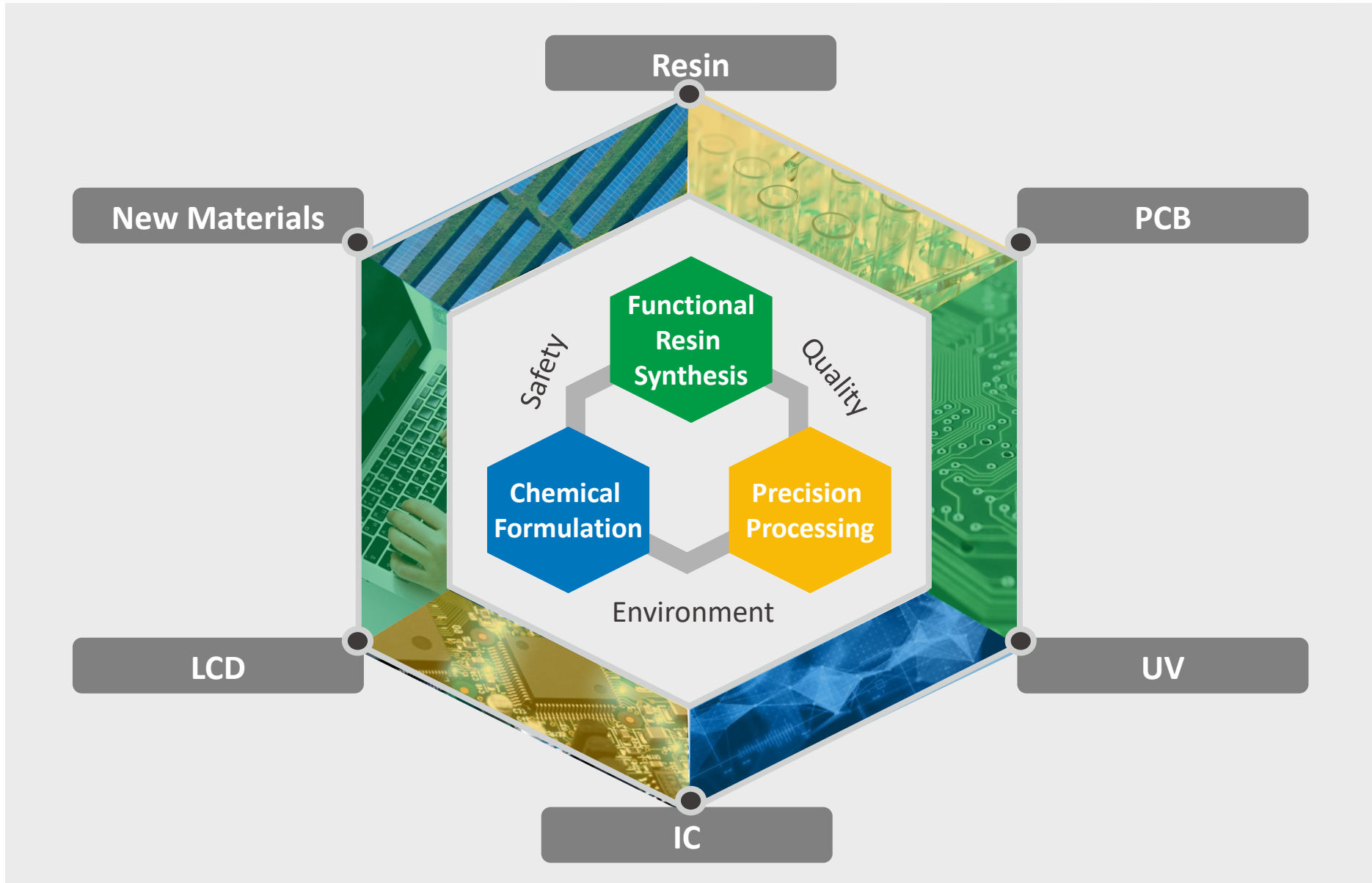
refer to year 2022 Consolidated statement

# Development Milestones

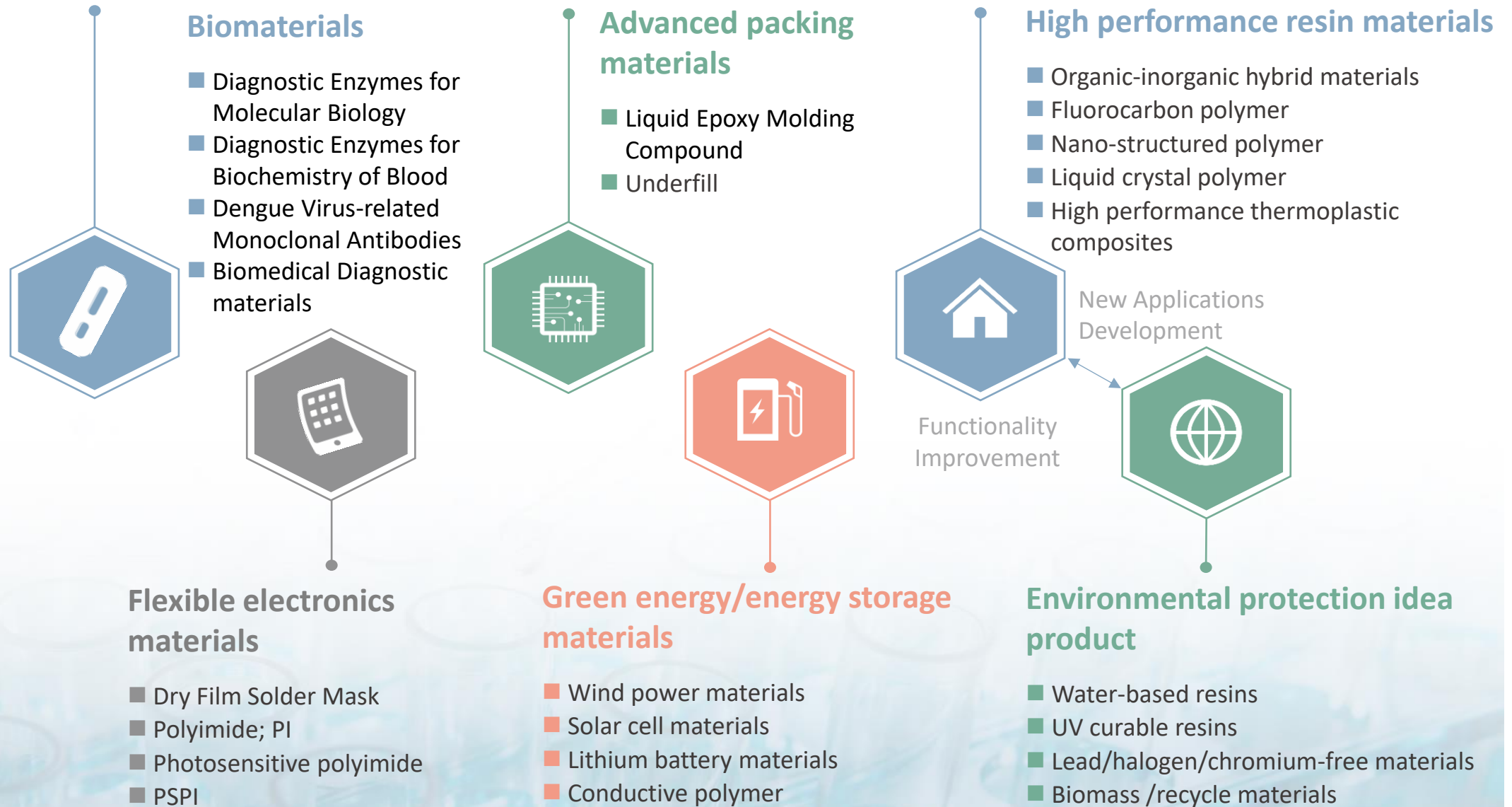


# Organization

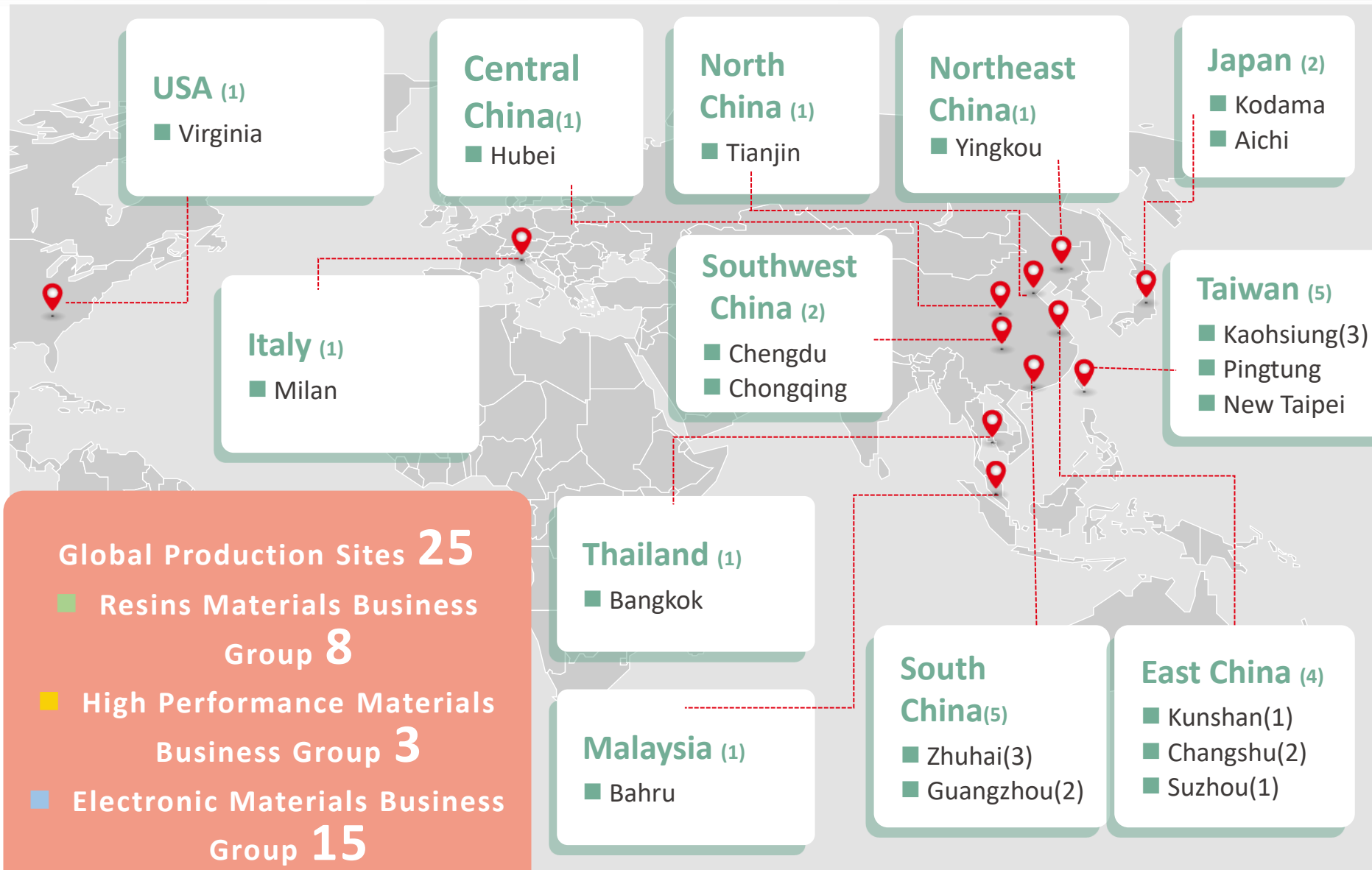




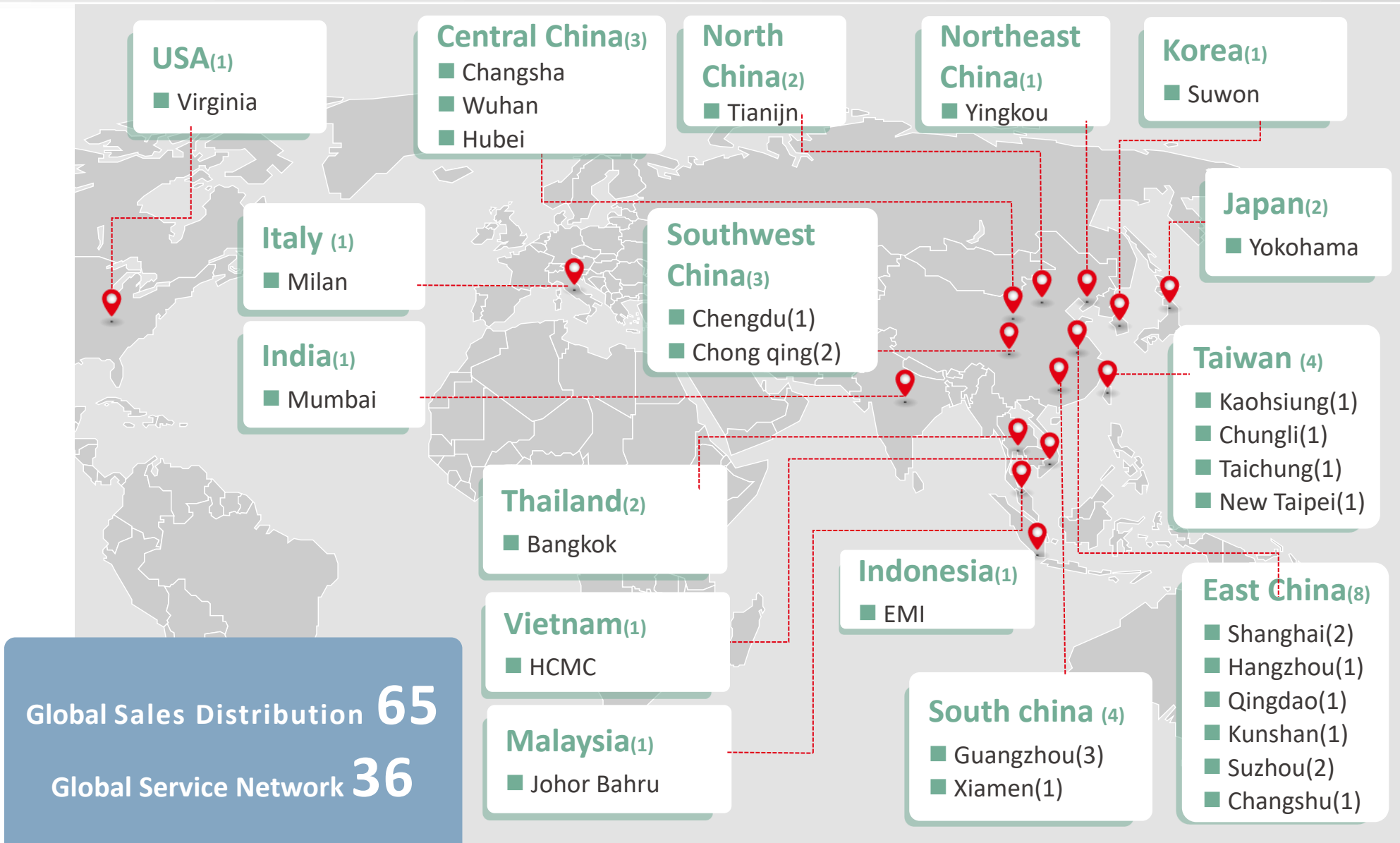




# Global Production Sites



# Global Service Network



# 2023 Product Lines Sales Ratio



## Resins Materials 52.1%

- Alkyd Resin 、 Solvent-Based Acrylic Coating Resin
- Water-Based Acrylic Coating Resin
- Acrylic Resin For Adhesives and Overprinting
- Polyester Polyol Resin 、 Fluorocarbon Resin
- Polyurethane Resin 、 Saturated Polyester Resin
- Amino Resin 、 Optoelectronic Materials 、 Wind power materials
- Other Coatings Resin
- Conductive polymer
- Unsaturated Polyester Resin
- Vinyl Ester Resin 、 Fire Retardant Resin
- Epoxy System 、 Structural Adhesive
- Polyester for Polyurethane Foam

## Others 0.6%

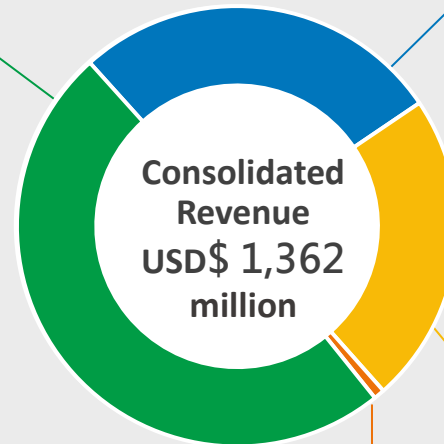
- Enzyme antibody for IVD
- Liquid molding compound
- Thermoplastic composite materials
- Hydrophilic film for strip
- Si/C for LIB materials
- Blood glucose test strip material
- High Frequency Materials in 5G

## Electronic Materials 26.4%

- Dry Film Photoresist
- Dry Film Solder Mask
- UV INK
- Dry Film Photosensitive Polyimide
- Liquid Polyimide Material
- Vacuum Laminator
- Toll Coating Service
- Paper Phenolic Copper Clad Laminate
- Composite Epoxy Copper Clad Laminate

## High Performance Materials 20.9%

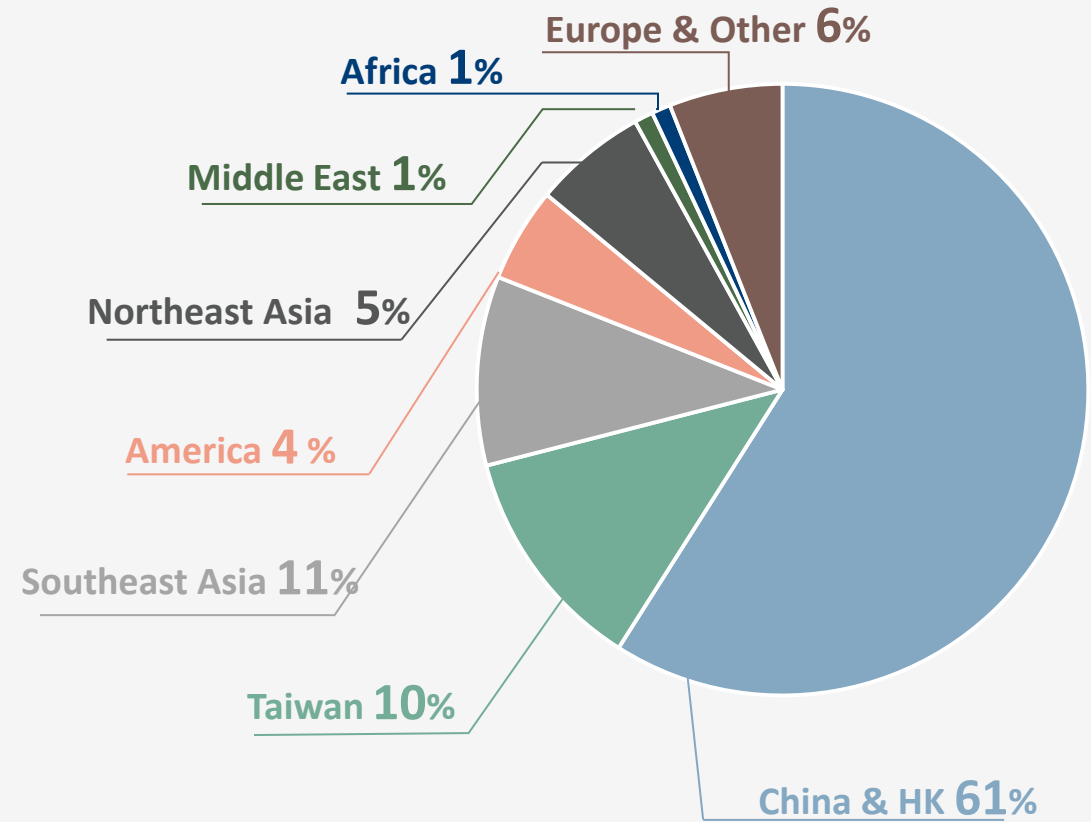
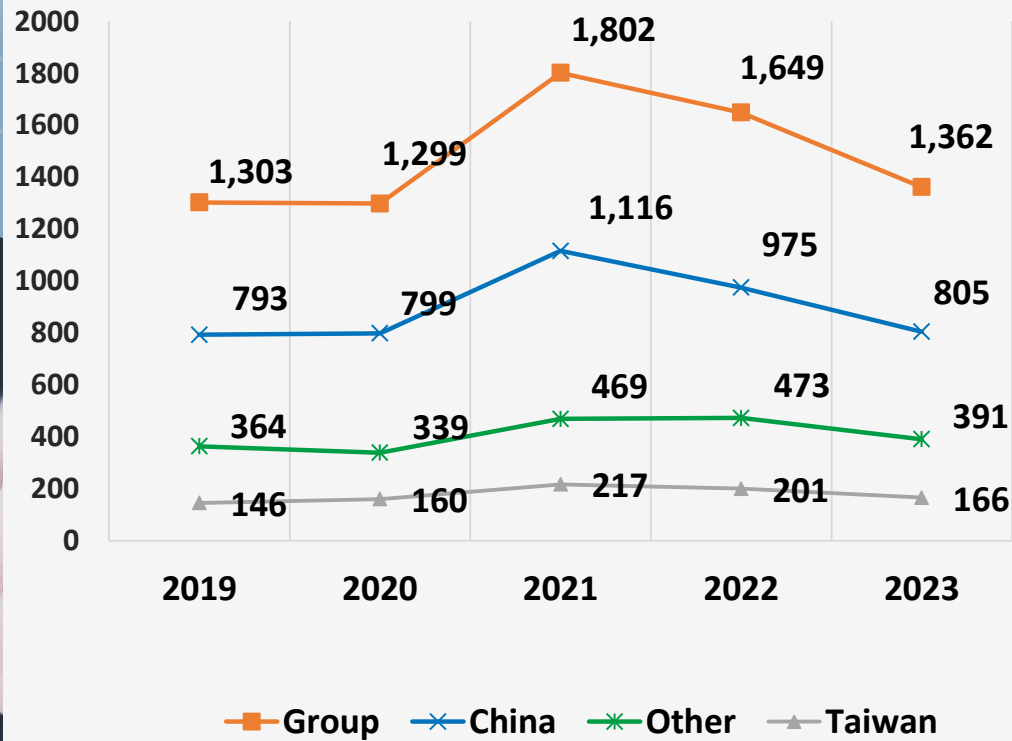
- UV Monomers
- UV Oligomers
- Special Coatings
- UV Adhesives
- Silicone Materials
- 3D UV printing Material 、 EMC
- Optical Silicone & Epoxy material - for LED Packaging



# Annual Sales Distribution (In the recent 5 years), 2023 Regional Markets Sales Ratio



Unit : USD million





## 2023 Fourth Quarter Operating Result



# Financial Information-Balance Sheets & Key Indices



	2023		2022		2021		Unit : TWD Millions
	Amount	%	Amount	%	Amount	%	
Cash and cash equivalents and current financial assets	7,624	<u>13</u>	6,671	<u>11</u>	4,444	<u>7</u>	
Accounts receivable	15,213	<u>26</u>	17,132	<u>29</u>	20,071	<u>33</u>	
Inventories	8,479	<u>14</u>	9,716	<u>16</u>	10,678	<u>18</u>	
Financial assets	3,516	<u>6</u>	3,155	<u>5</u>	3,506	<u>6</u>	
Property, plant and equipment	18,323	<u>31</u>	17,473	<u>29</u>	16,369	<u>27</u>	
<b>Total Assets</b>	<b>58,538</b>	<b><u>100</u></b>	<b>59,455</b>	<b><u>100</u></b>	<b>60,536</b>	<b><u>100</u></b>	
Short-term borrowings	5,557	<u>9</u>	5,364	<u>9</u>	4,588	<u>8</u>	
Current portion of long-term borrowings	3,741	<u>6</u>	3,040	<u>5</u>	4,326	<u>7</u>	
Long-term borrowings	11,858	<u>20</u>	13,988	<u>24</u>	12,506	<u>21</u>	
<b>Total Liabilities</b>	<b>33,322</b>	<b><u>57</u></b>	<b>34,384</b>	<b><u>58</u></b>	<b>35,869</b>	<b><u>59</u></b>	
<b>Total Equity</b>	<b>25,216</b>	<b><u>43</u></b>	<b>25,071</b>	<b><u>42</u></b>	<b>24,667</b>	<b><u>41</u></b>	
<b>Key Financial Ratios</b>							
Average cash collection days	141		141		138		
Average days required for sale	99		98		85		
Current ratio (%)	182		206		190		

# Financial Information-Statements of Comprehensive Income



	2023		2022		2021		Unit : TWD Millions
	Amount	%	Amount	%	Amount	%	
Operating Revenue	42,452	100	49,014	100	50,471	100	
Gross profit	8,147	19	10,163	21	10,694	21	
Operating expenses	(6,232)	(15)	(6,886)	(14)	(6,599)	(13)	
Operating Income	1,915	5	3,277	7	4,095	8	
Non-operating income and expenses	268	1	238	0	337	1	
Net profit attributable to owners of the company	1,504		2,618		3,549		
<b>Key Financial Ratios</b>							
Net profit margin (%)	4		5		7		
EPS	1.28		2.15		2.86		
ROE (%)	6		11		14		



# Financial Information-Cash Flow Statements



	2023	2022	2021	Unit : TWD Millions
	Amount	Amount	Amount	
Cash and cash equivalents at the beginning of the year	5,451	4,289	6,108	
Cash flows from operating activities	6,514	6,581	750	
Acquisition of property, plant and equipment	(3,149)	(2,783)	(2,049)	
Increase (decrease) in borrowings	(1,107)	681	1,743	
Dividends paid	(1,414)	(1,860)	(1,860)	
Other items	250	(1,568)	(216)	
Effects of exchange rate changes on cash and cash equivalents	(163)	110	(187)	
Cash and cash equivalents at the end of the period	6,382	5,451	4,289	
Free cash flow	3,365	3,799	(1,299)	

*Note:* Free cash flow=

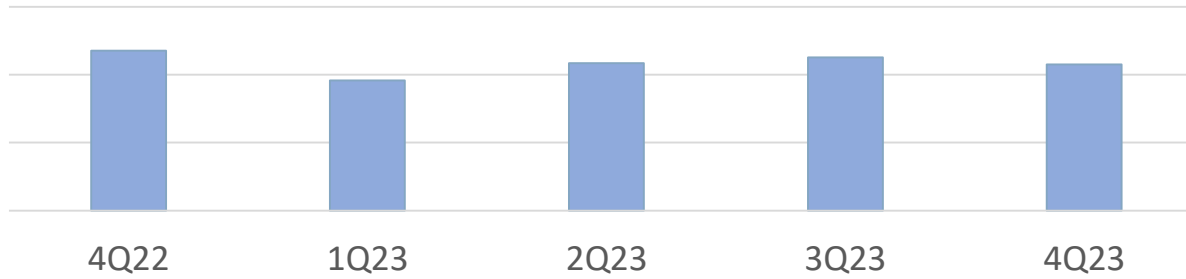
Cash flows from operating activities - Acquisition of property, plant and equipment

# Sales Revenues & Gross Profits



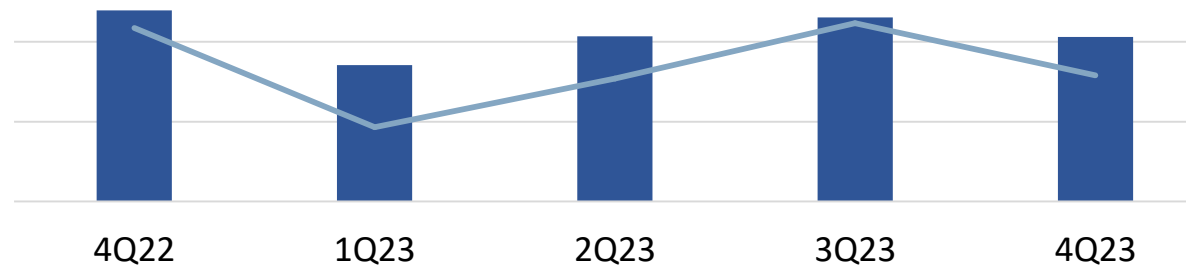
Unit : TWD Millions

Sales  
營收



	4Q22	1Q23	2Q23	3Q23	4Q23
<b>Sales</b>	11,771	9,575	10,850	11,268	10,759

GP  
毛利



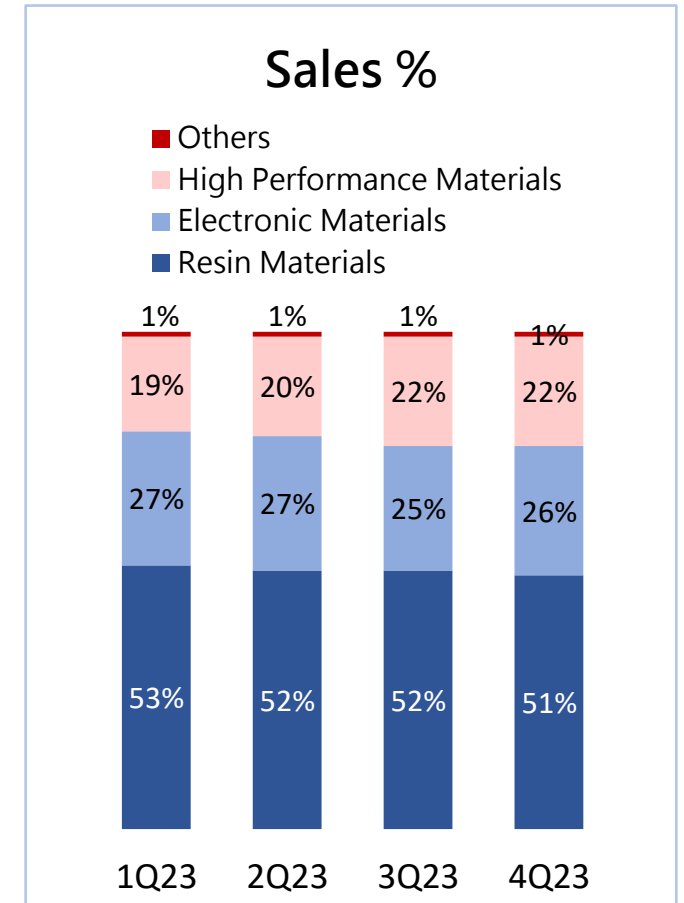
	4Q22	1Q23	2Q23	3Q23	4Q23
<b>GP</b>	2,395	1,710	2,070	2,306	2,061
<b>GPM</b>	20.4%	17.9%	19.1%	20.5%	19.2%

4Q23	y/y	q/q
<b>Sales</b>	-8.6%	-4.5%
<b>Gross Profits</b>	-13.9%	-10.6%

# Performance by Segment



TWD Millions	4Q Sales		4Q Operating Profits			
	y/y	q/q	y/y	q/q	q/q	
Resin Materials	5,542	-4%	-6%	97	+6%	-56%
Electronic Materials	2,824	-23%	-1%	169	-59%	-28%
High Performance Materials	2,336	+5%	-5%	338	+27%	-19%





- Introduction to Electronic Materials Business Group
- The Layout of Electronic Materials Business group in ASEAN

Presenter : Director, H.T. Shen (Photoresist Materials Division)

Date : 2024/03/15



## Introduction to Electronic Materials Business Group



Agenda



1. Electronic Materials Business Group Profile
2. Important Milestones in Business Development
3. Revenue (2019~2023)
4. Key Products and Applications



# Electronic Materials Business Group Profile



Employees of Electronic Materials Business Group

One of the world's leading suppliers of dry film photoresist products

Established in 1988 (DF Task Force)

Consolidated revenue

NT\$ 11.2B  
FY2023

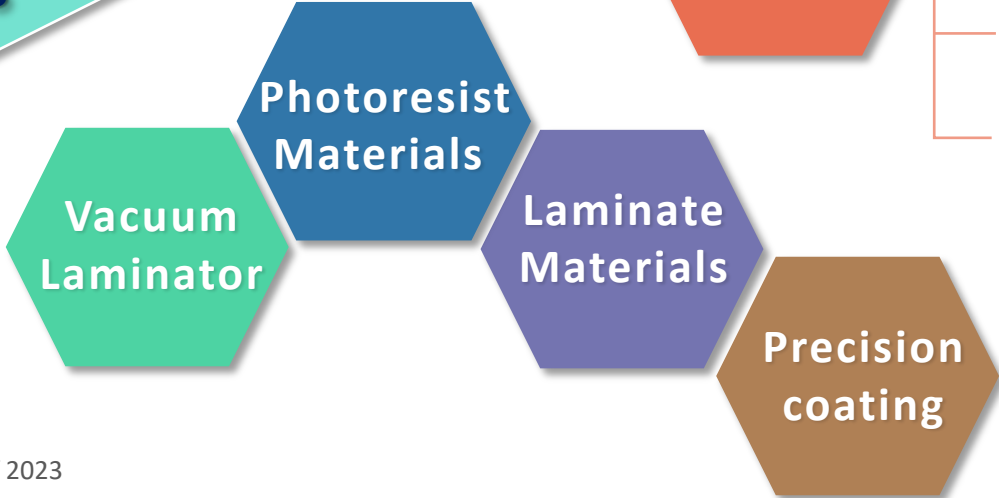
1,384  
Note1

The world's largest supplier of vacuum laminators for ICS

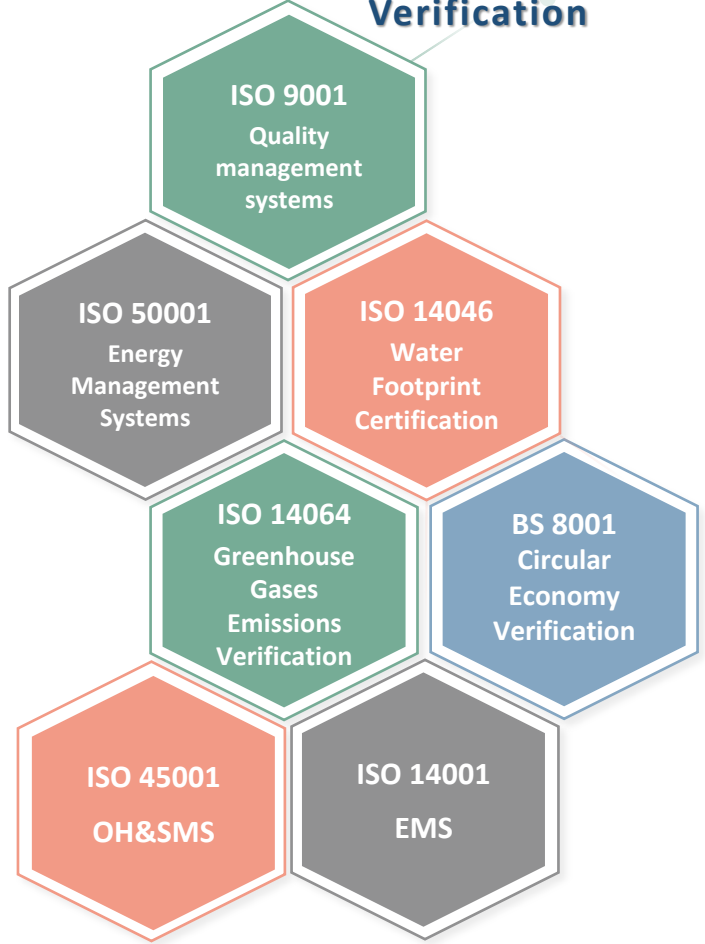
Production Sites  
13

- Taiwan 2
- China 6
- USA 1
- Thailand 1
- Japan 2
- Italy 1

Key products and business



Quality & EHS Verification



Note1 : Source of number of employees: statistics at the end of 2023

# Important Milestones in Business Development



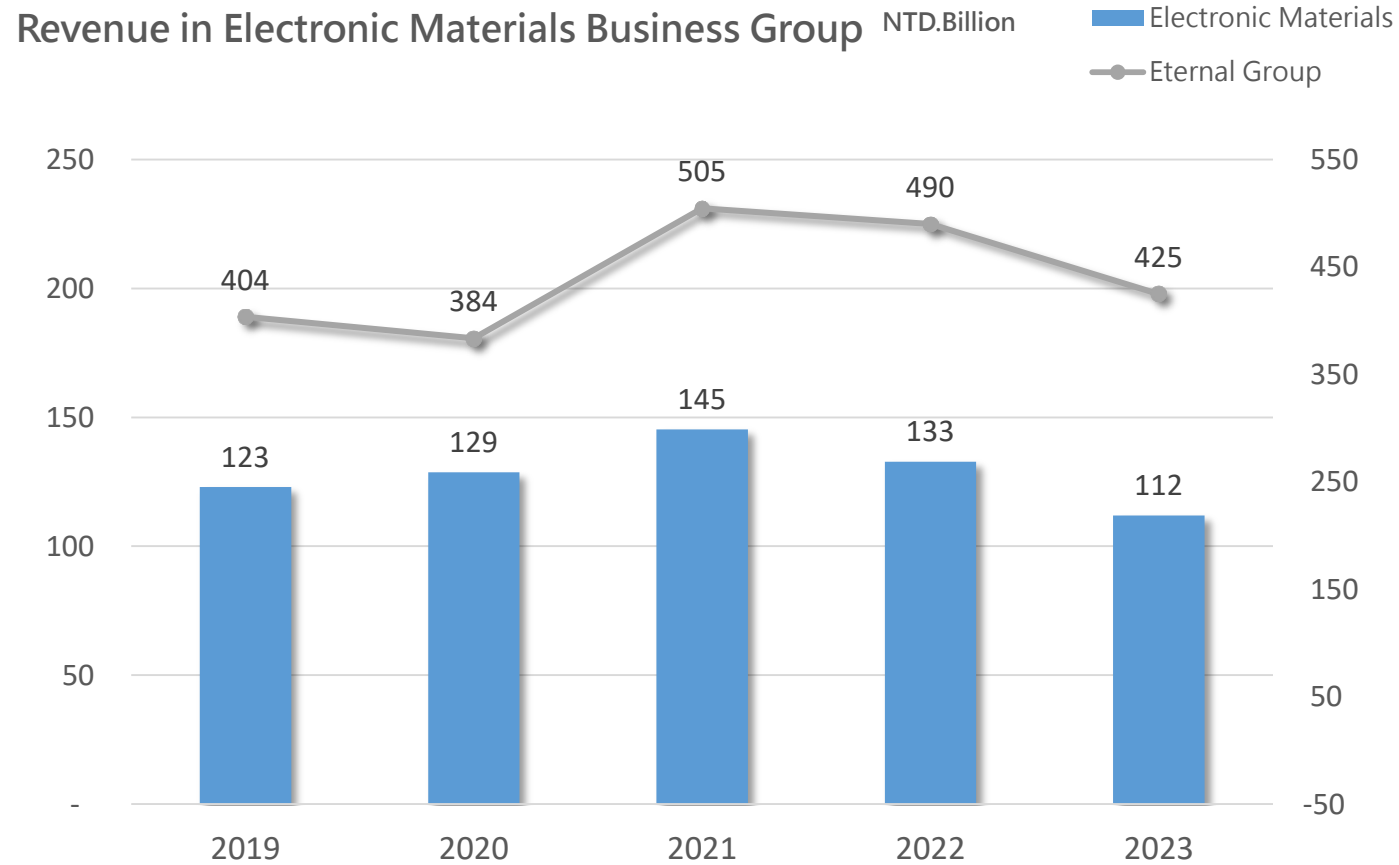
- 1990 Taiwan Ta-Fa Plant was established and started producing dry film photoresist
- 1995 Established Eternal Chemical (China) Co., Ltd. Guangzhou (Southern China Slitting Plant)
- 1999 Established Eternal Technology Corporation (ETC) and Eternal Photo Electronic Materials (Kunshan) Co., Ltd. (Eastern China Slitting Plant)
- 2001 Established Eternal Photo Electronic Materials (Guangzhou) Co., Ltd. (Southern China Plant 1)
- 2003 US ETC acquires Shipley Company, L.L.C. Dry Film product line
- 2006 Established Eternal Photo Electronic Materials (Guangzhou) Co., Ltd. (Southern China Plant 2)
- 2007 Established Eternal Photoelectric Material Industry (Yingkou) Co., Ltd.
- 2008 Established Eternal Electronic Material (Thailand) Co., Ltd.
- 2012 Established Eternal Photo Electronic Materials (Guangzhou) Co., Ltd. Chongqing Branch
- 2013 Acquired 100% equity of Nichigo-Morton Co., Ltd. (NM Nikko Materials) & acquired 60% equity of Elga Europe S.r.l.
- 2013 Established Eternal Electronic (Suzhou) Co., Ltd. (Eastern China Plant 1)
- 2017 Acquired the vacuum laminating machine production business of Nikko Materials OEM
- 2017 Acquisition of 35% stake in Elga Europe S.r.l.
- 2022 Established Eternal Precision Machinery Co., Ltd.
- 2023 Established Hubei Slitting Plant
- 2023 Established Eternal Precision Machinery (Guangzhou) Co., Ltd.

To be continued...

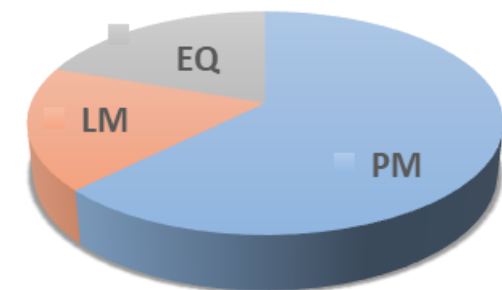




# Consolidated Revenue in Electronic Materials Business Group (2019~2023)



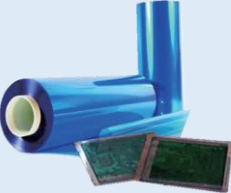
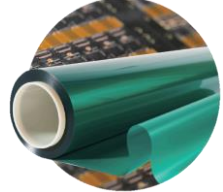
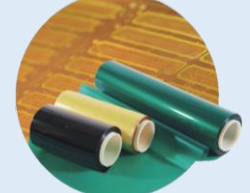
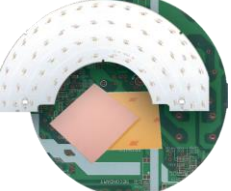
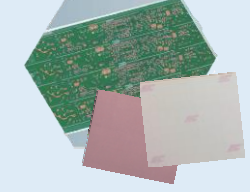
Electronic Materials Products Revenue Proportion



Source : Annual Report of Eternal Materials





# Key Products and Applications



Key Product	Illustrate	Applications
<p>Dry Film Photoresist</p>	 <p>Dry film photoresist is the key component used in the image transfer process. It is widely used in precision etching and electroplating products such as Printed Circuit Board (including Rigid board, Flexible board, Rigid/Flexible composite board, and HDI), Lead Frame, IC Substrates, IC packaging, etc.</p>	<p>IT, communications, automobiles, semiconductors, consumer electronics and other products</p>
<p>Dry Film Solder Mask (DFSM)</p>	 <p>It is mainly used for circuit protection (Solder Mask) of precision outer layers of flexible/rigid PCB, IC Substrate, high-precision metal substrates/ceramic substrates/glass substrates, etc. It is a permanent material.</p>	<p>IT, communications, automobiles, semiconductors, consumer electronics and other products</p>
<p>Photo-Imageable-Coverlay (PIC)</p>	 <p>Low-temperature 150°C baking type, high-precision weak alkaline dry film photoresist, used for high-precision flexible printed circuit board (FPC)/metal substrate outer circuit protection</p>	<p>IT, communications, automobiles, semiconductors, consumer electronics and other products</p>
<p>Paper Phenolic Copper Clad Laminate (FR-1)</p>	 <p>Copper clad paper phenolic laminate is made of bleached kraft paper impregnated with phenolic resin and then hot press with copper foil to form an insulating material. It is suitable for punching and drilling process.</p>	<p>Home appliances, information peripherals, communications, power supplies and other related electronic products</p>
<p>Composite Epoxy Copper Clad Laminate (CEM-1)</p>	 <p>It is composed of two base materials: fiberglass fabric and bleached kraft paper core material. The product is mainly a single-sided copper foil substrate and is suitable for punching and drilling process.</p>	<p>Home appliances, information peripherals, communications, power supplies and other related electronic products</p>

# Key Products and Applications



Key Product	Illustrate	Applications
<p data-bbox="122 386 499 494"><b>Liquid UV Curable Marking Ink</b></p> 	<p data-bbox="876 344 1923 536">The screen printing process is used for text and graphic markings on double-sided and multi-layer printed circuit boards. It is suitable for printing text and graphic markings on double-sided and multi-layer printed circuit boards. The ink has excellent adhesion and heat resistance after hardening.</p>	<p data-bbox="1954 344 2397 536">IT, communications, automobiles, semiconductors, consumer electronics and other products</p>
<p data-bbox="122 625 468 718"><b>Liquid Polyimide Material</b></p> 	<p data-bbox="876 636 1773 715">Touch sensor substrate and flexible electronic substrate, dielectric layer material of probe card</p>	<p data-bbox="1954 636 2390 708">Displays and touch panels, Wafer Test Probe Card</p>
<p data-bbox="122 886 529 936"><b>Toll Coating Service</b></p> 	<p data-bbox="876 836 1905 986">With continuous cumulate of coating technique and experience, which allowed us to cooperate with the customers by providing high value coating products, as well as precision toll coating services.</p>	<p data-bbox="1954 851 2397 965">LCD/TP Industry, PV Backsheet, IC Sub Build-up Film...etc.</p>
<p data-bbox="122 1139 512 1182"><b>Vacuum Laminator</b></p> 	<p data-bbox="876 1086 1900 1236">Diaphragm-type vacuum laminator provides excellent conformation of various build-up materials to fine patterns and via holes. In addition, the high-precision hot press unit provides uniform thickness and surface flatness.</p>	<p data-bbox="1954 1108 2435 1222">The related application processes of IC packaging substrates, FPC, NCF and LED.</p>



## The Layout of Electronic Materials Business group in ASEAN





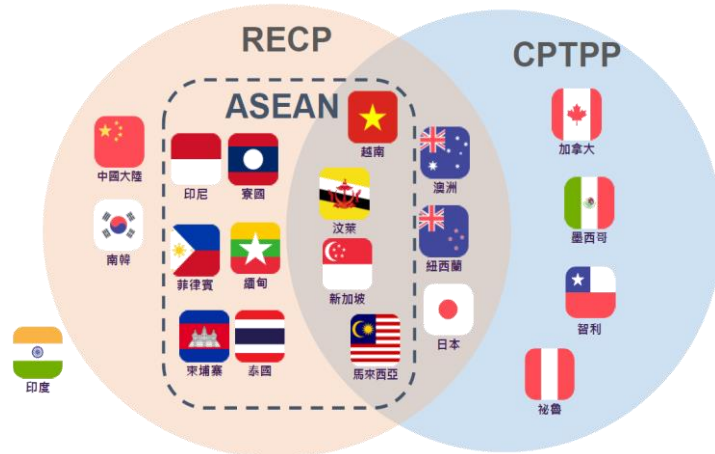
1. Geopolitical Risks
2. ASEAN PCB Industry Development Trends
3. Key Products of the ASEAN PCB Industry
4. Global Layout of Electronic Materials Business group
5. Industrial Distribution of PCB and Layout of Electronic Materials Business Group in ASEAN
6. Conclusion



# Geopolitical Risks



- In response to the impact of the Sino-US trade war, as well as the rise in inflation and raw materials caused by the conflict between Ukraine and Russia, the industrial supply chain is facing restructuring.
- **China+1** aims to decrease reliance on manufacturing in China, secure access to critical and strategic materials, and reducing business operational risks, hence many companies have raised attention to investing in ASEAN.
- The manufacturing industry has moved out of China and dispersed to emerging countries such as ASEAN and India. Overseas investment will focus on being close to customers and industrial clusters.
- To cope with geopolitical uncertainty, it's crucial for enterprises to adjust strategic planning, reducing and diversifying the risk of production with resilience and good adaptability.
- These ten ASEAN countries has the third largest population in the world which amount to 670 million, and their GDP reaches US\$3.6 trillion, making them the third largest in Asia.
- ASEAN itself is both a manufacturing factory and a huge consumer market.

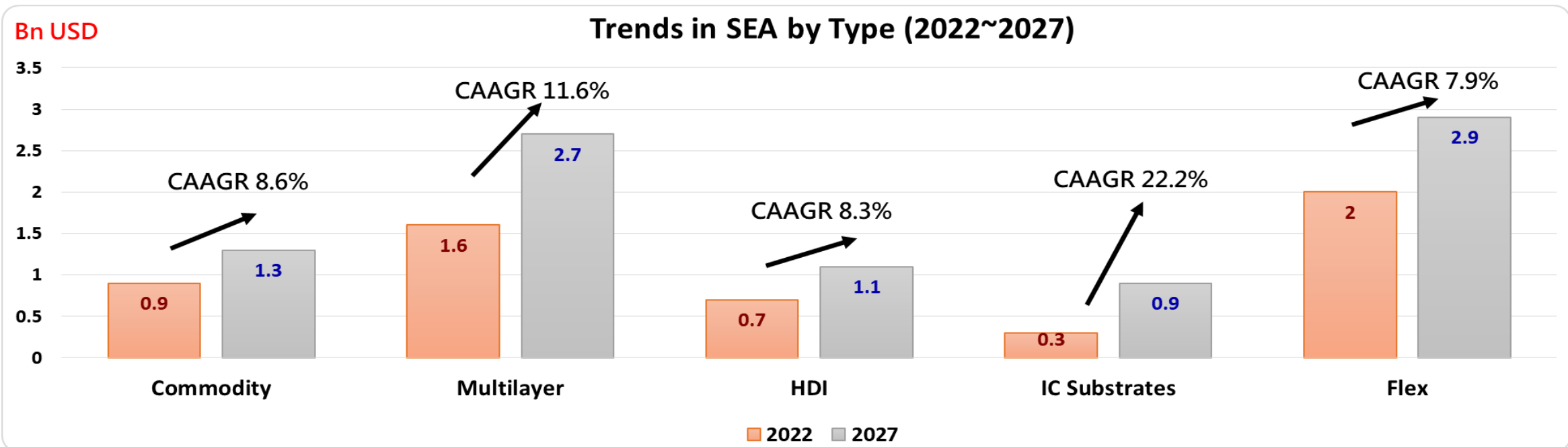


ASEAN actively participates in global economic integration



- According to Prismark Estimates, ASEAN PCB Industry Trends ( By Type ) :  
**CAAGR Growth Forecast : IC Substrates > Multilayer > Commodity > HDI > Flex**  
**Production Value Estimate : Flex > Multilayer > Commodity > HDI > IC Substrates**

## ASEAN PCB Industry Trends (By Type)

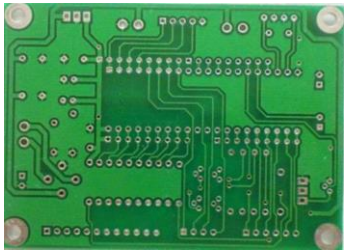
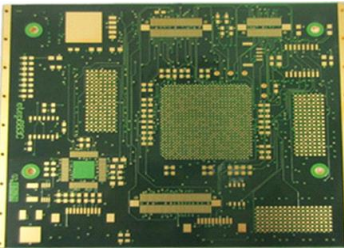

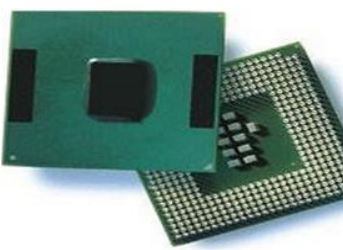
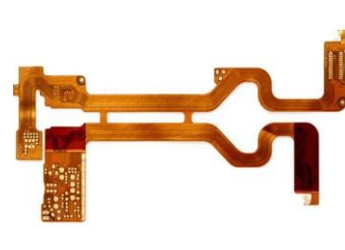
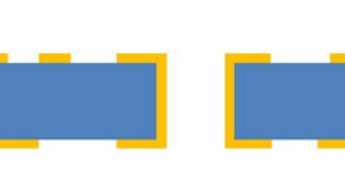

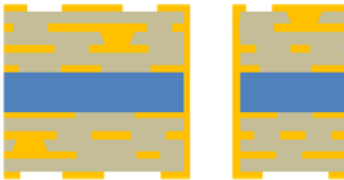




Source: PRISMARK & Eternal Materials Data Consolidation

# Key Products of the ASEAN PCB Industry

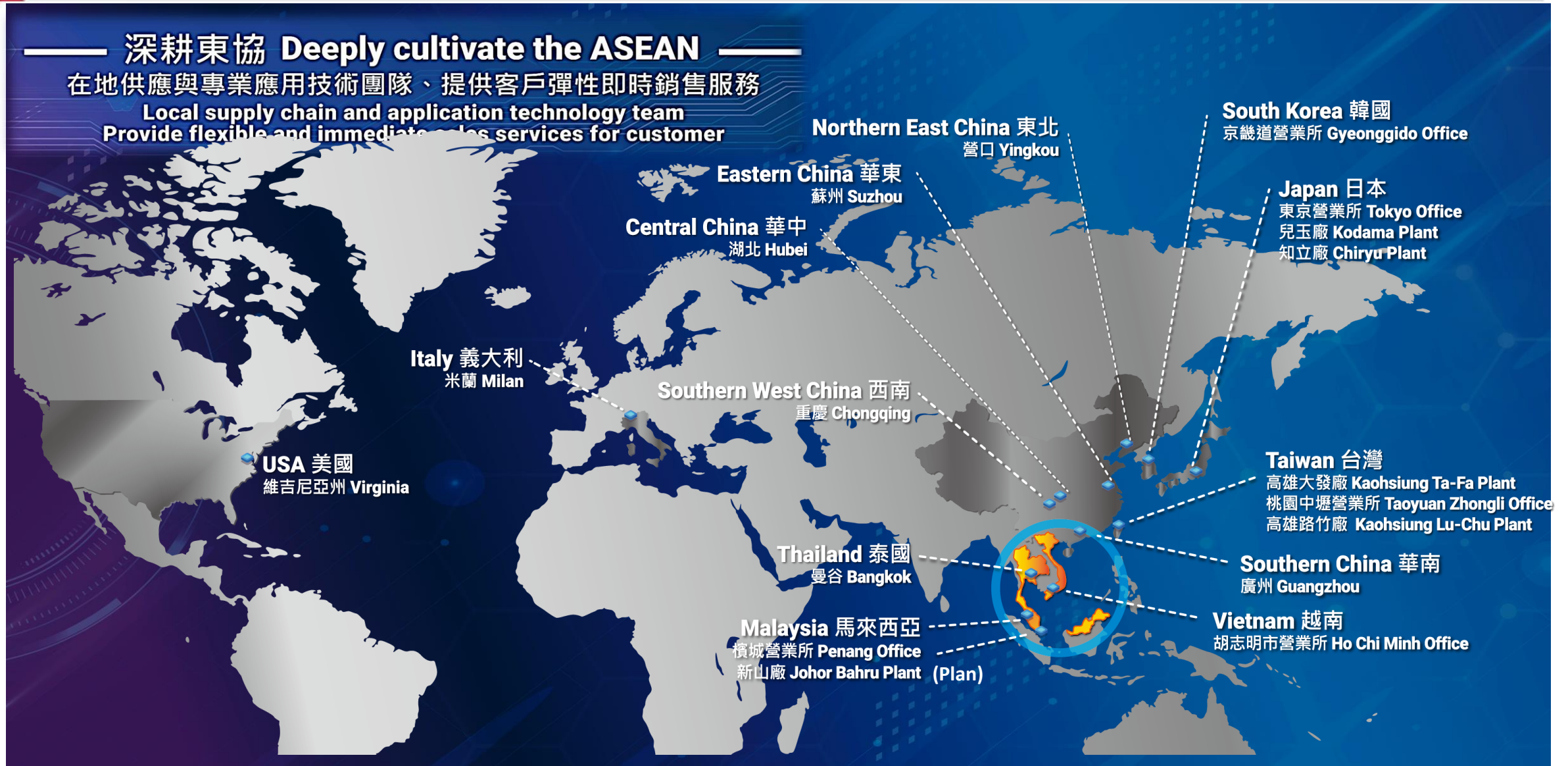


ASEAN is the main growth area for the PCB industry, The main applications are FPC ( Vietnam applied to Smartphone ) , Multilayer (Thailand applied to server and automotive) , IC Substrates ( Malaysia applied to CPU, GPU ) and High-Density Multilayer HDI PCB, expected demand growing up very fast in the coming years.

ITEM	SS/DS	ML	HDI	IC Substrate	FPC
Product					
Structure					
Application	Consumer, LED, Power-Supply System	PC, NB, Server, EV, Automotive, Industrial PC, Work Station	Smart phone, PC, NB, HPC, MotherBoard, EV, Automotive	Smart Phone, Module, NB, CPU, GPU, Base Station, Automotive EV, AI	EV, Automotive, LED Lamp, Antenna, SIM Card, Mobile Device, Camera Module, Antenna Module
<b>CAAGR 2022 ~ 2027Y</b>	<b>8.6%</b>	<b>11.6%</b>	<b>8.3%</b>	<b>22.2%</b>	<b>7.9%</b>

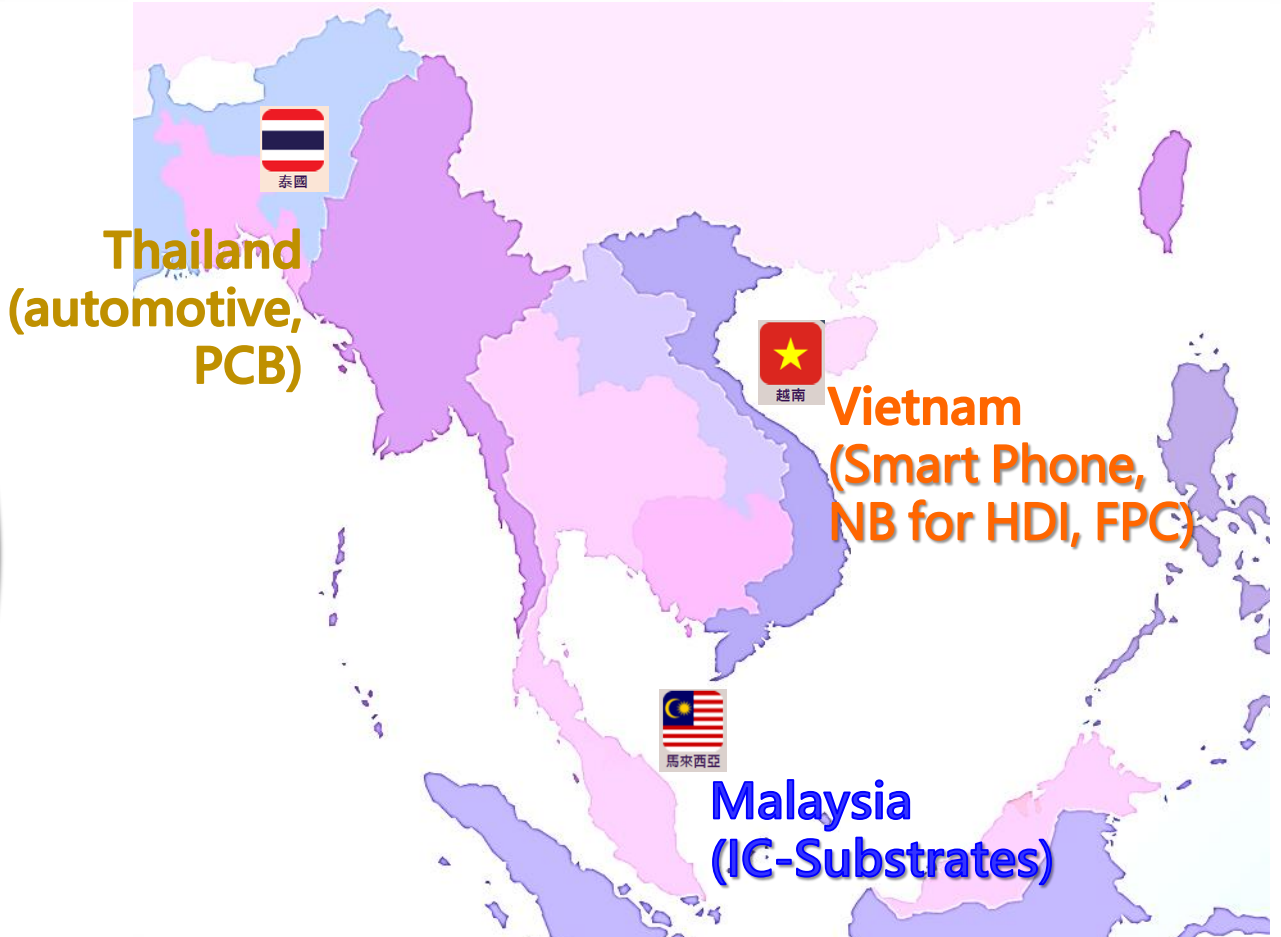
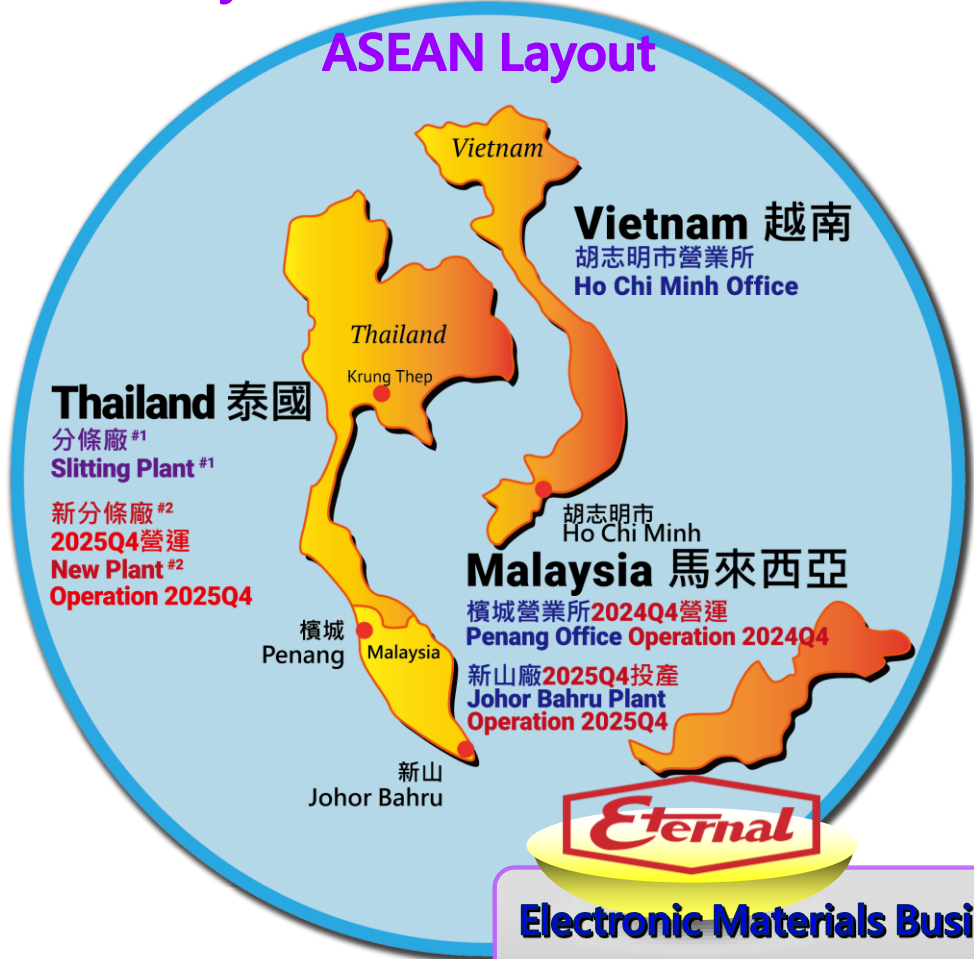


# Global Layout of Electronic Materials Business group



## Dry Film of Eternal Materials

### ASEAN Layout



Electronic Materials Business Group will be continuously developing dry film photoresist (Dry Film) for PCB industry process to meet customer-end requirement such as flexible board FPC, high-density multi-layer board HDI, IC carrier board and other corresponding products.



1

The Sino-US trade war and the conflict between Ukraine and Russia have caused the price of raw materials to rise. In response to the reorganization of industrial supply chains due to geopolitical risks, the trend of companies investing in ASEAN has increased significantly. ASEAN itself is both a manufacturing factory and a huge consumer market.

2

The main applications for ASEAN PCB growth are FPC, Multilayer, and IC Substrates, HDI PCB, expected to be used in ASEAN PCB industry process in 2024, the annual demand for dry film photoresist (Dry Film) market is 1.1 million KSF.

3

ETERNAL Group is deeply involved in ASEAN, providing local supply and professional application technical teams to provide customers with flexible and timely sales services. The Electronic Materials Business Group is expected to expand and increase slitting capacity and shipping warehouse, and plan to build Dry Film coating factory in Malaysia in 2025 [Operation 2025Q4](#) to meet the demand for dry film photoresist (Dry Film) in the ASEAN market.



長興材料

# ETERNAL MATERIALS

Elements of Infinite Possibilities

