



Tel: +66 2 452 1290









#### **BANGKOK OFFICE**

E-mail: jirat.k@patachem.com

#### CHIANG MAI OFFICE

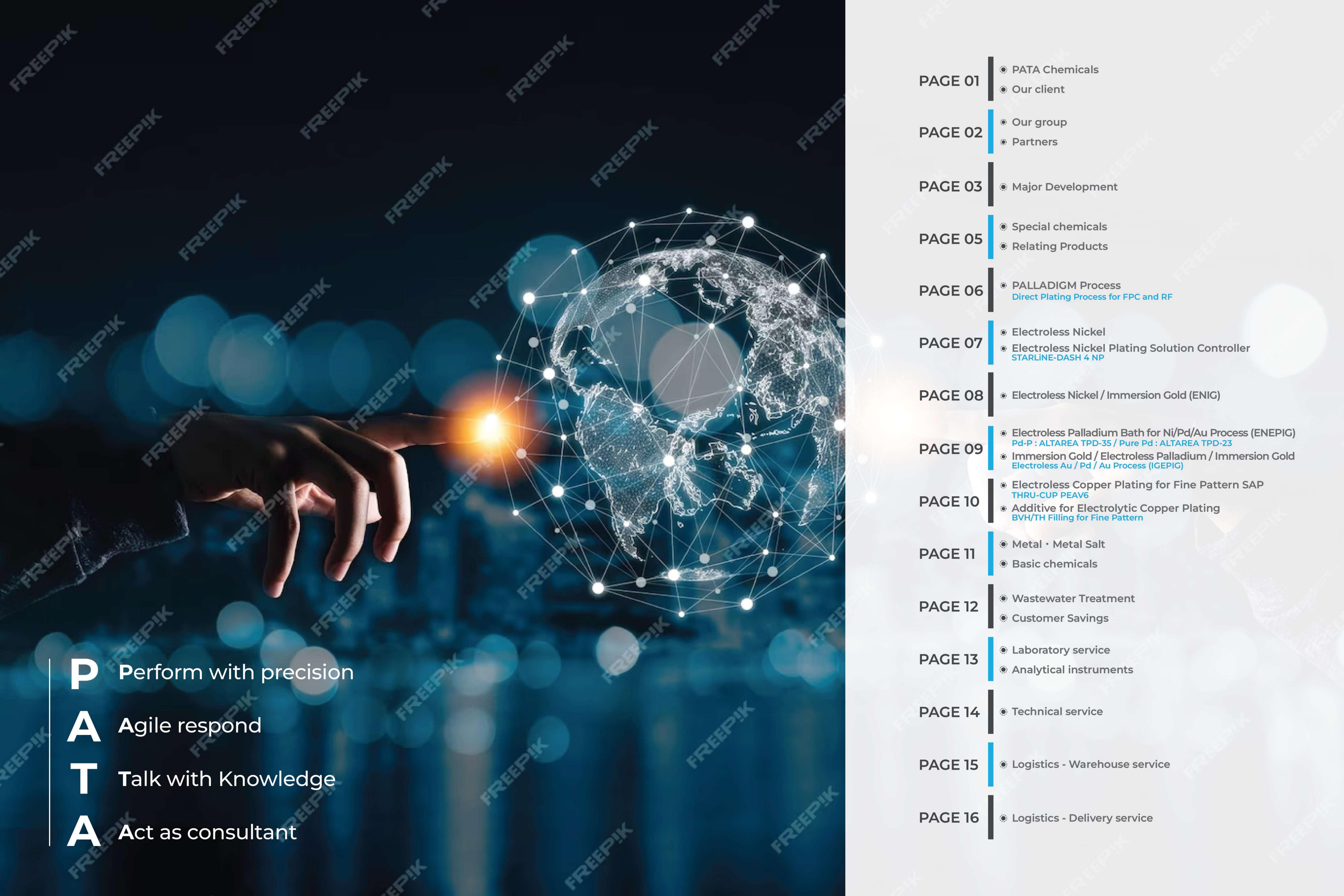
6, 8 Soi Bangkradi 9, Smaedam, 2nd Floor, Icon Park Hotel, No. 310 Bangkhuntien, Bangkok 10150 Thailand Maneenopparat Rd., Sriphoom, Muang Binh Duong Boulevard, Phu Hoa Ward,

#### VIET NAM OFFICE

8th Floor, Becamex Tower, No. 230 Chiang Mai, Chiang Mai 50200 Thailand Thu Dau Mot City, Binh Duong, Vietnam







# PATA Chemicals

PATA Chemicals We are a platform providing chemicals and equipment in many types of metal plating processes, including wastewater treatment processes contained metal contamination and DI/RO production process by covering all operations as "One Stop Service"

With our experience and entire time we have been operating in this business for a long time, this gives us the ability to help expanding opportunities in the line of metal plating and other materials to better meet your business needs.

Our target is to research and develop for providing continuous service to support the growth of the metal plating industry, and reducing costs while happening the country's economic expansion as

"One small partnership creates big opportunity"

## OUR CLIENT

We are proud to be a part of client's successful story.





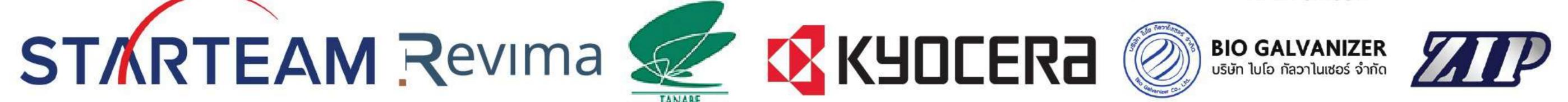




































## OUR GROUP

# PATA

PATA Chemicals Co., Ltd.

PATA Chemicals is a chemicals consulting and trading company relating to metal plating operations.

Employees: 200 persons

www.patachem.com











#### PATA Engineering Co., Ltd.

PATA Engineering is a manufacturing company for metal plating industries. Employees: 70 persons

www.pataengineering.com

#### Poly Hitechs Co., Ltd.

Poly Hitechs is a chemical manufacturing company for metal plating industries. Employees: 40 persons

## PARTNERS



#### SUM HITECHS CO., LTD.

Sum Hitechs is a plating professional company and main production base for Uyemura brand in Thailand



#### **CHEON WESTERN**

Cheon Western is a manufacturing enterprise specializing in R&D and production in China.



#### UYEMURA

Uyemura is a leading specialty chemicals company in metal finishing chemistry research in Japan.



#### Fujian Zhan Hua Chemical

Fujian Zhan Hua Chemical is a manufacturing of Persulfate products including Ammonium in China.

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0 1977

Partnered with C.Uyemura & Co., Ltd.

0 1974

Established S. Sirichai company limited at Worachak Rd., Pom Prap Sattru Phai, Bangkok,

0 1992

Relocated to Bangkradi Soi 9, Smaedam, Bangkhuntien, Bangkok.

0 1997

Established Poly Hitechs company limited where producing plating chemicals.

0 2021

Partnered with Sum Hitechs company limited (Chemicals plant), production capacity 300 Ton/Month.

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# PRODUCTS SPECIAL CHEMICALS

PATA realizes a variety of work purposes and desires to design it for customers. Therefore, we develop new chemicals to efficiently support any various types of processes with a prime quality.

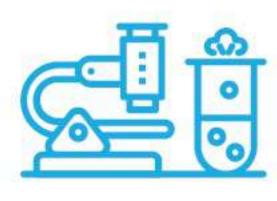
#### AN EXPERT TEAM





We have a high capability on plating chemicals R&D team to formulate chemicals and adjust processes of customers for the higher efficient productions.

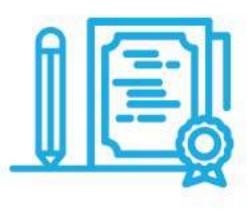
#### ADVANCED INSTRUMENTS





We have specific instruments for complicated metal plating specifications to effectively respond to various types of requirements.

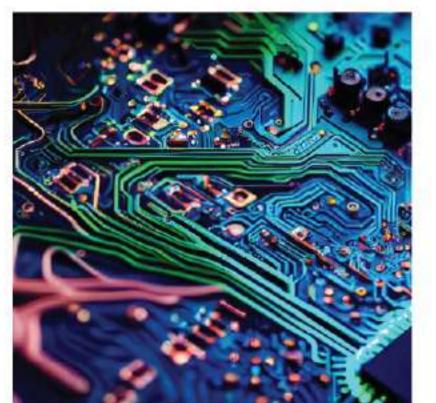
#### HIGH QUALITY





High-efficient products that are suitable for work required specific properties to support customer's demands.

## Relating Products











Functional parts



PCB/FPC

Automotive parts

Electronic parts

Decorative parts

# Direct Plating Process for FPC and RF PALLADIGM Process

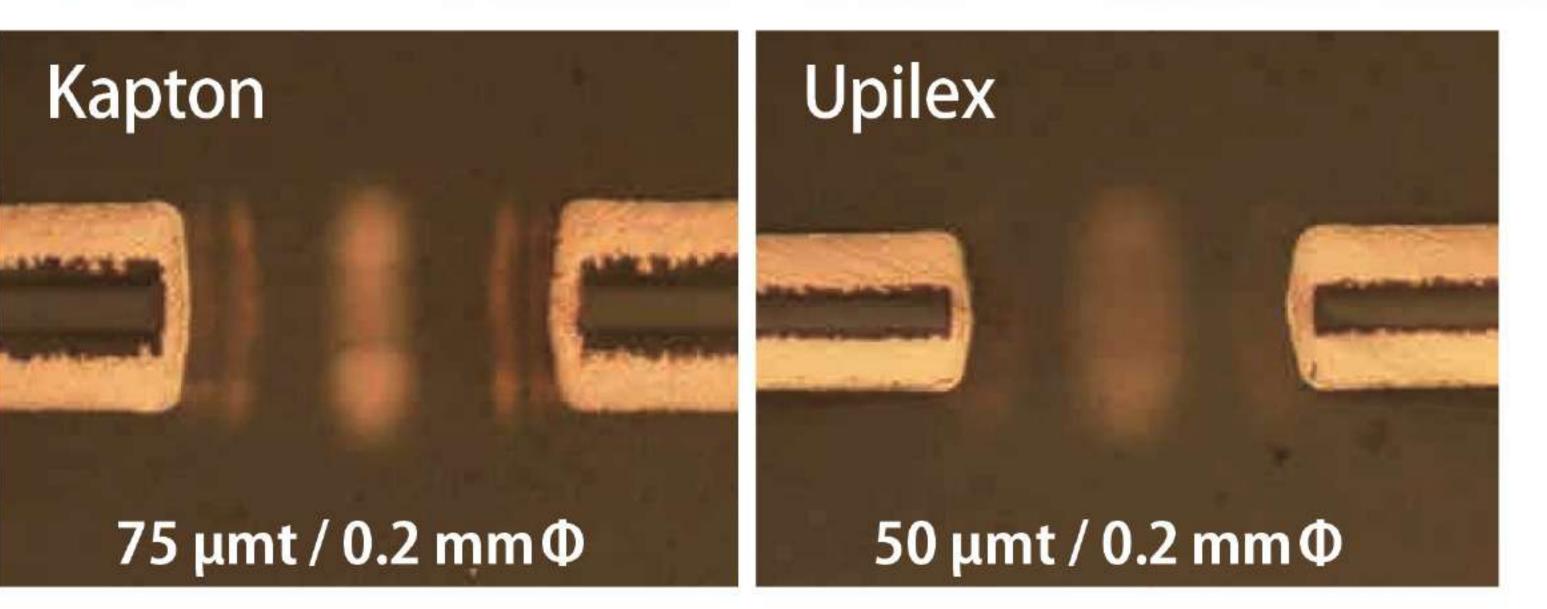
#### Features

- Formaldehyde-free, Cyanide-free, Fluoride-free.
- Catalyst is adsorbed selectively to the resin.
- Treatment time is shorter than electroless copper process.
- Connection reliability is the same as electroless copper.

#### Process

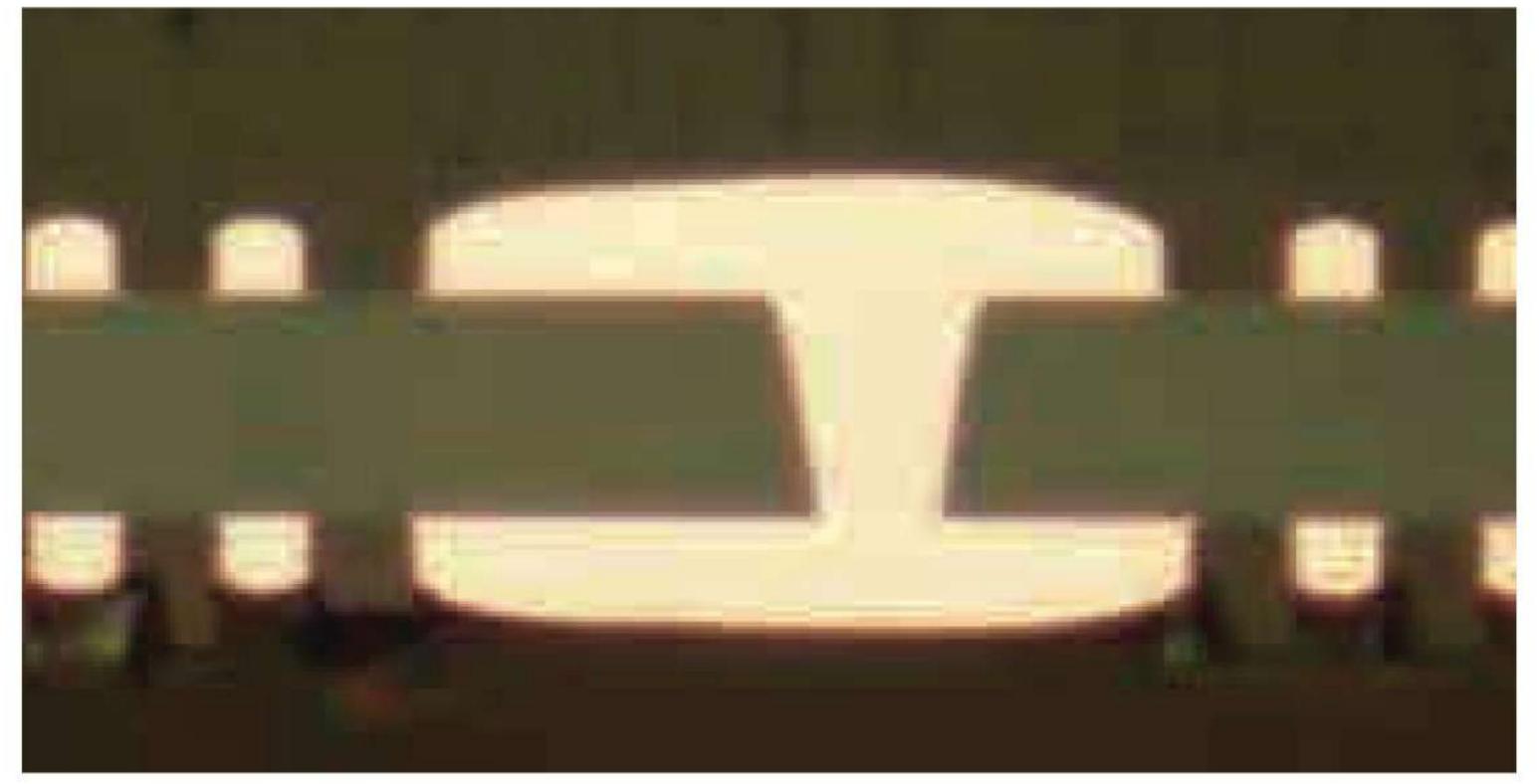
Steps	Acid rinse	Cleaner conditioner	Soft etching	Acid rinse	Pre-dip	Activator	Accelerator	ectrolytic u plating
Chemicals	H <sub>2</sub> SO <sub>4</sub>	WCD	SPS/H <sub>2</sub> SQ <sub>4</sub>	H <sub>2</sub> SO <sub>4</sub>	WHP	WAT	WCN	for panel
Temp. (°C)	R.T.	50	25	R.T.	R.T.	40	50	id cleaner lectrolytic
Time (min)	1	5	2	1	1	5	3	Cu plating for pattern

#### Plating deposition in TH



Electrolytic Cu plating: 10 µm (2.5 ASD)

## Application to SAP on polymide



## Plating deposition in BVH



Electrolytic Cu plating: 5 µm (2.5 ASD)



Electrolytic Cu plating: 8 µm (1.5 ASD)

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# Electroless Nickel

#### Brightness

This is an electroless Ni-P plating solution that has the same level of brightness as cadmium additives without using any cadmium compounds, brightness additives, lead compounds, or bath stabilizers.

#### Hardness

This is a low phosphorus type of electroless Ni-P solution that provides high hardness in the precipitated condition and suits materials that cannot be heat treated.

### Cracking

This is an electroless Ni-P plating solution that suppresses cracking during bending after plating and is resistant to cracking.

#### Thickness

This electroless Ni-P plating solution is suitable for coatings with a thickness of 50 µm or more.

#### **Black Nickel**

This is an electroless Ni-P plating solution that has a darker tinge than conventional ones due to its finely uneven coating surface.

#### Environmentally friendly Nickel

This is an electroless Ni-P plating solution that does not use harmful substances such as lead, mercury, or cadmium and does not use any heavy metals other than Nickel.

#### Corrosion resistance

This electroless Ni-P plating solution that uses a special stabilizer features excellent coverage, corrosion resistance, nitric acid resistance, and low internal stress. It is resistant to rust even though it is thin.

#### Wear resistance

This is an electroless Ni-P plating solution that has excellent wear resistance under high load conditions by containing cobalt and changing the blending properties of Ni crystals compared to conventional baths.

#### Sliding

Electroless Ni-P plating solution containing PTFE (polytetrafluoroethylene) fine particles. PTFE has a low coefficient of friction and is self-lubricating, so it can provide excellent sliding properties and is waterproof.

# Electroless Nickel Plating Solution Controller STARLINE-DASH 4 NP

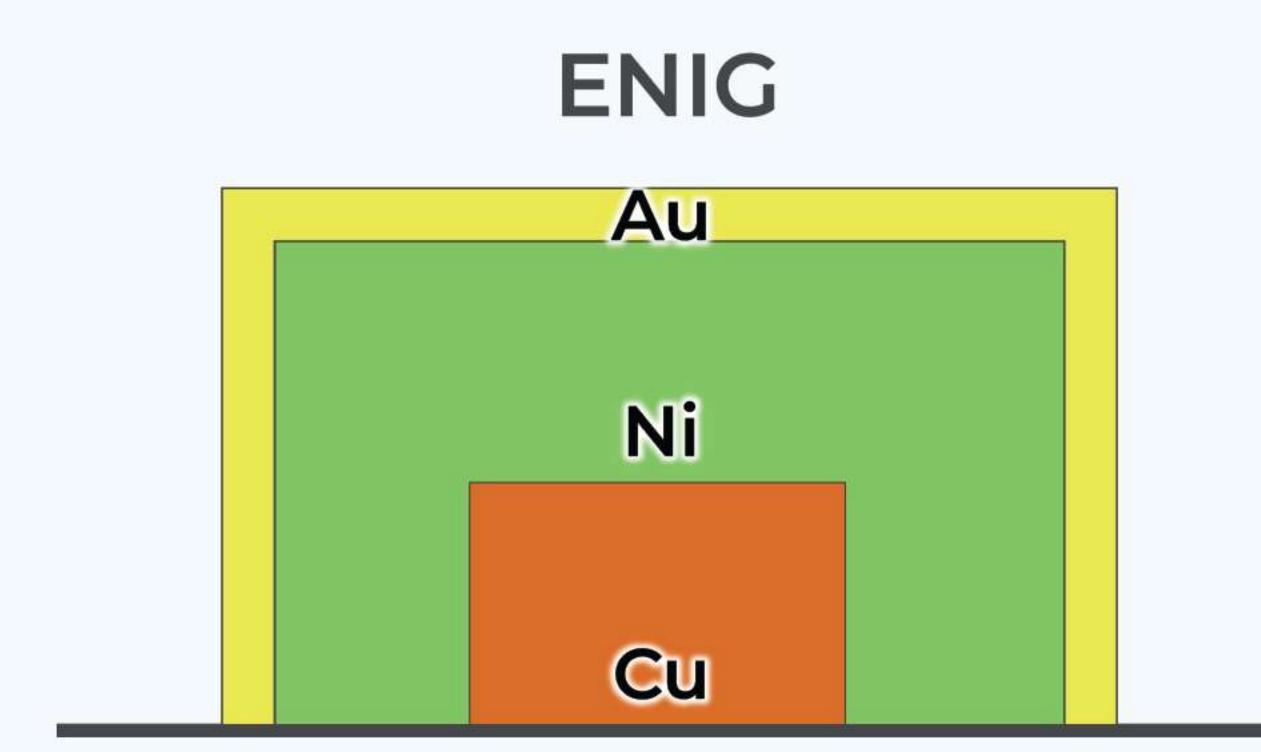


## STARLINE-DASH 4 NP

More than ever before, high density, precision, and reliability are being required in electronic equipment, and demand of specialized plating is increasing. In the plating process, it is very important to have chemical solution management control, and the condition of the chemicals in plating process majorly influence on quality of the plated finish.

## Electroless Nickel / Immersion Gold (ENIG)

ENIG is the industry standard for uniform mid-phos EN deposits with a topcoat of immersion gold. A unique, reduction-assisted immersion gold process deposits higher thicknesses "4 to 8 µin gold" in a single step, with no corrosive replacement reaction.



	ENIG
Pattern ability	<b>X</b> Fair
Wire bonding	Good
Solder joint	Good
Insertion loss	<b>X</b> Fair
Ductility (MIT)	<b>X</b> Fair

Deposits have a tighter grain and are more uniform than conventional immersion gold. It also has low contact resistance. ENIG creates a highly solderable surface that won't discolor or tarnish and provides exceptional electrical continuity. The nickel component forms a barrier against copper diffusion and guards against contamination of the solder during soldering and re-work. ENIG also contributes EMI shielding. This final finish process is highly resistant to corrosion and suits contacting surface.

# Pattern ability (L/S = 30/20 µm)

Before plating







ENIG process never waste time and resources with "dummy plating". They are also efficient in:

- A low-concentration, room temperature, chloride-free catalyst.
- A bath that runs at least 10°F below the competition.
- © Compatibility with the newest soldermask technology.

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## Electroless Palladium Bath for Ni/Pd/Au Process (ENEPIG)

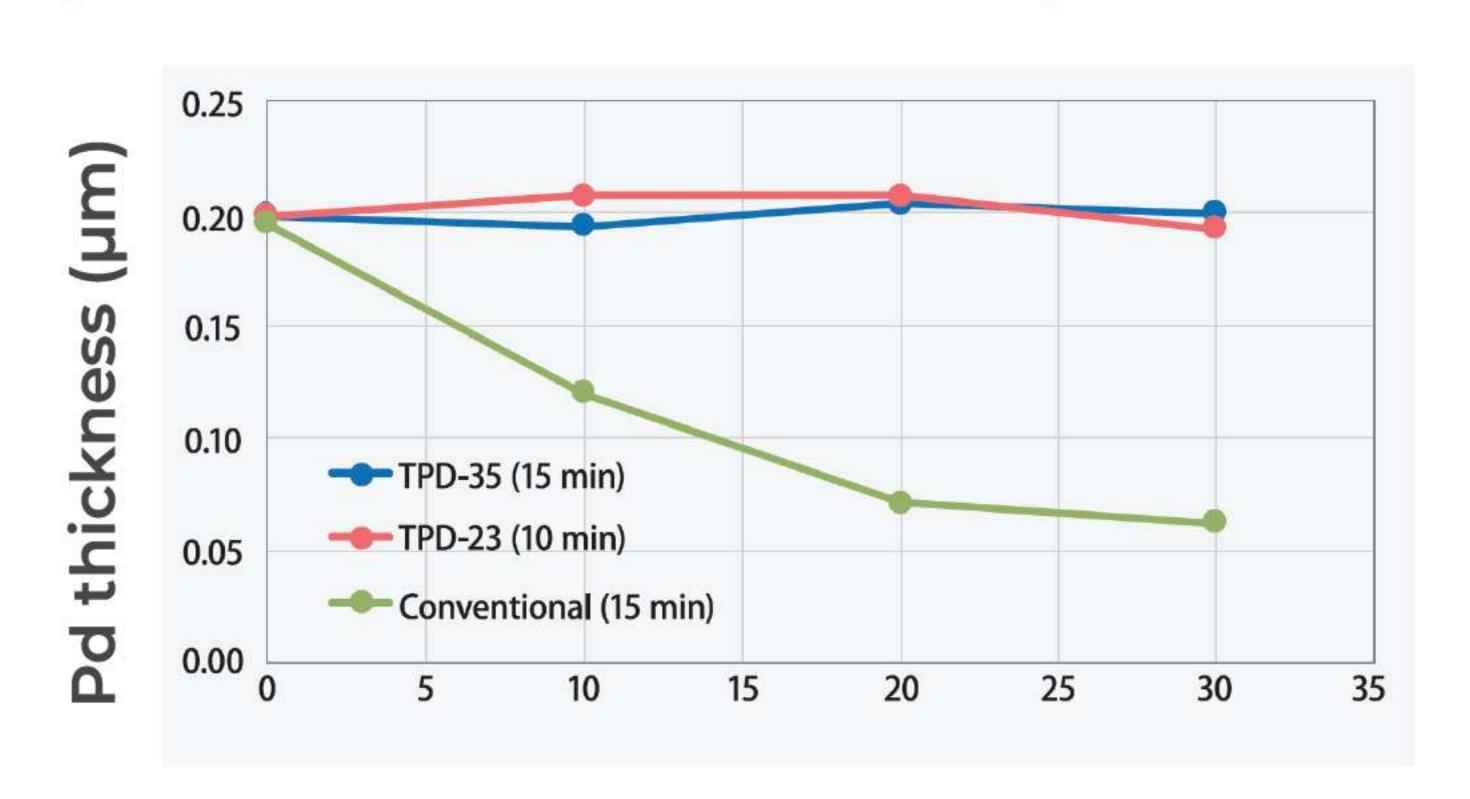
## Pd-P: ALTAREA TPD-35 / Pure Pd: ALTAREA TPD-23

#### Features

- Either Pd-P bath or pure Pd bath can be selected.
- The deposition rates of both baths are stable, and thus it is possible to control Pd thickness from 0.05 to 0.2 µm and more.
- Durability for leaching component from substrates then it is resistible in etching and soldering and it is easy to handle.
- In combination with our mixed replacement reduction type of Au solution (TWX, TSB, TNK series), it is possible to form and ENEPIG layer which provides good performance.

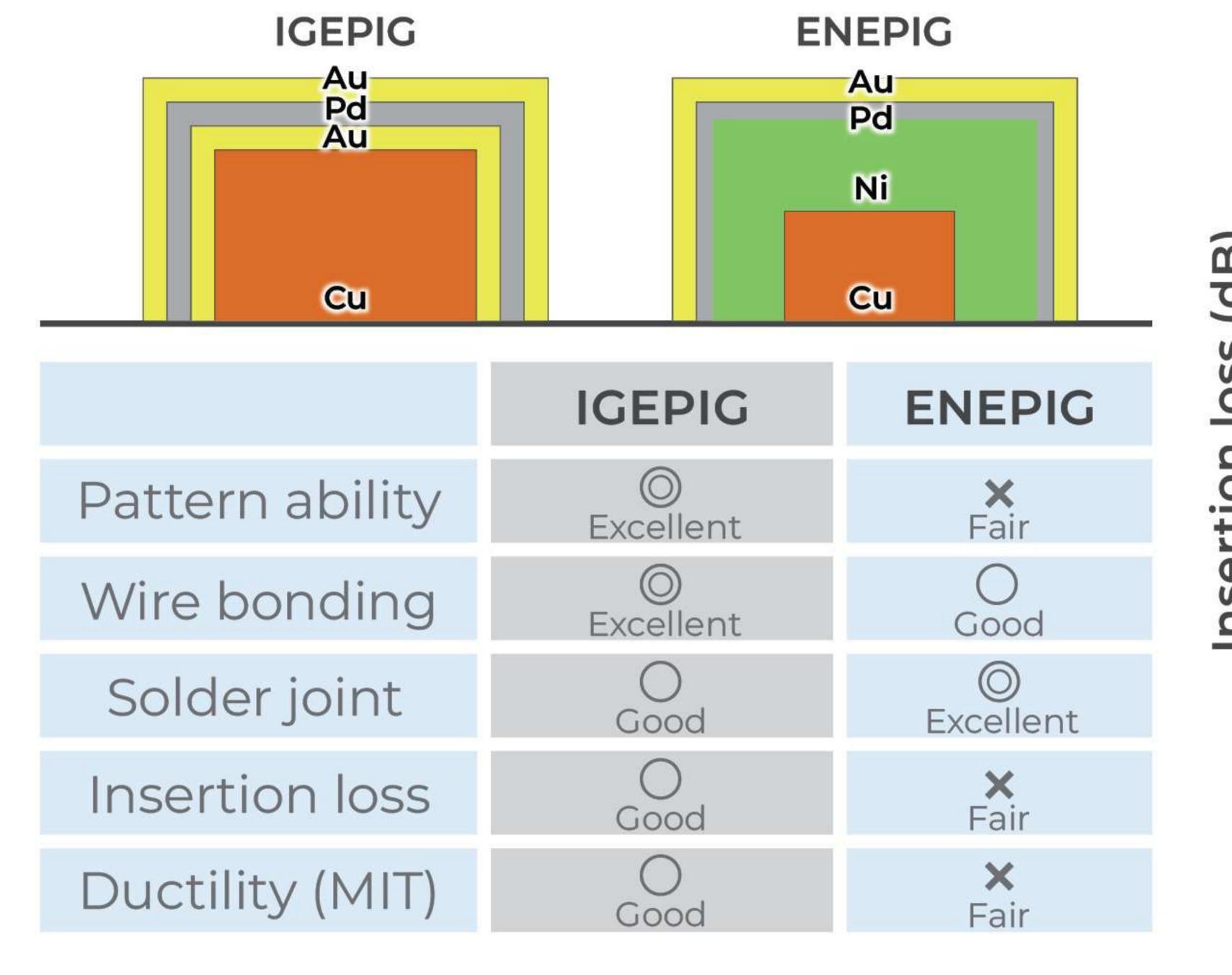
#### Relation between deposition rate and elapsed time after make-up

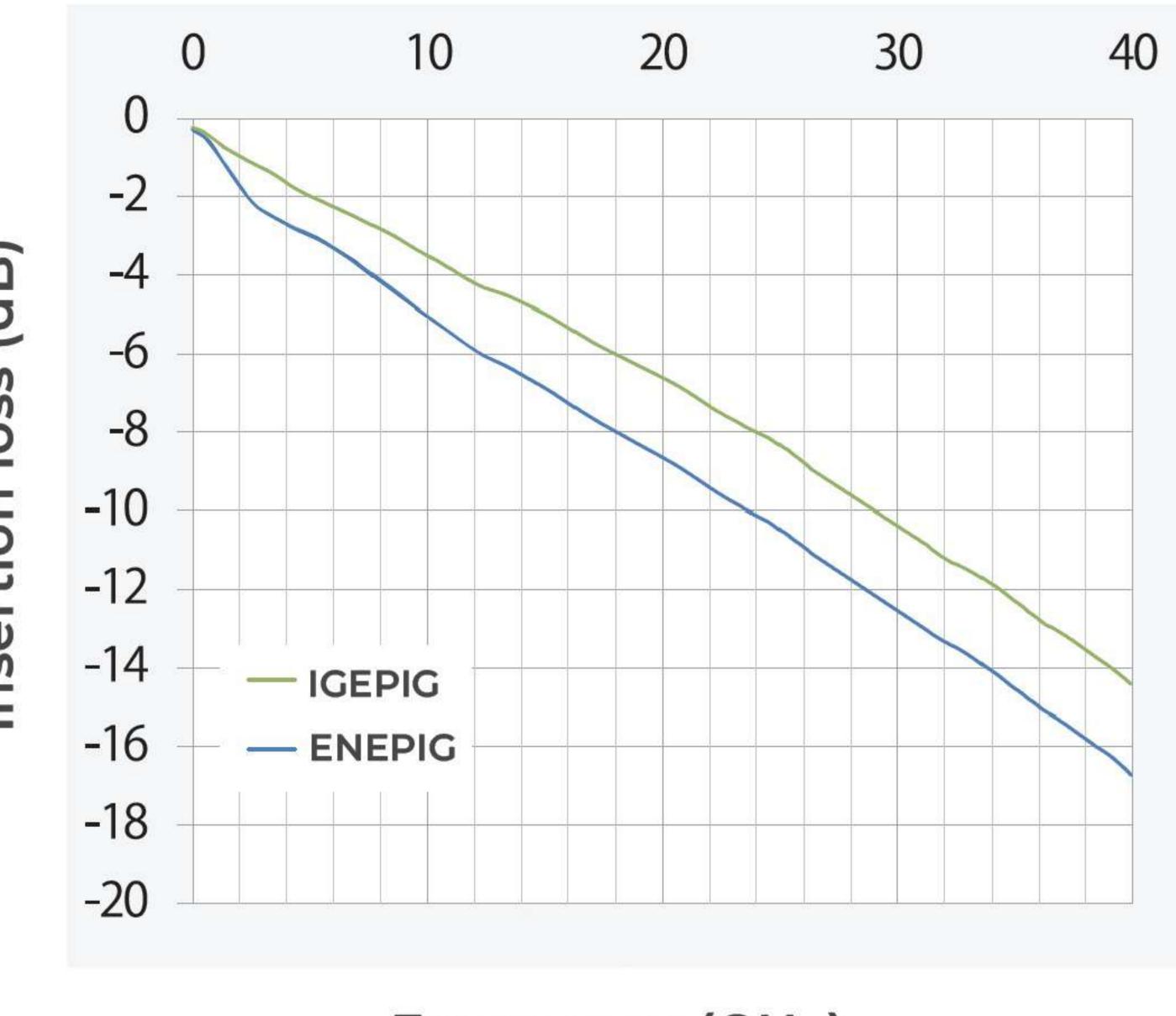
		TPD-35 (Pd-P type)	TPD-23 (Pure Pd type)
Pd conc.	g/L	0.9	1.0
рН		7.5	5.8
Temp.	°C	48	55
D.R.	µm/min	0.1 µm/7 min	0.1 µm/5 min



Elaped time from make-up (days)

## Immersion Gold / Electroless Palladium / Immersion Gold Electroless Au / Pd / Au Process (IGEPIG)

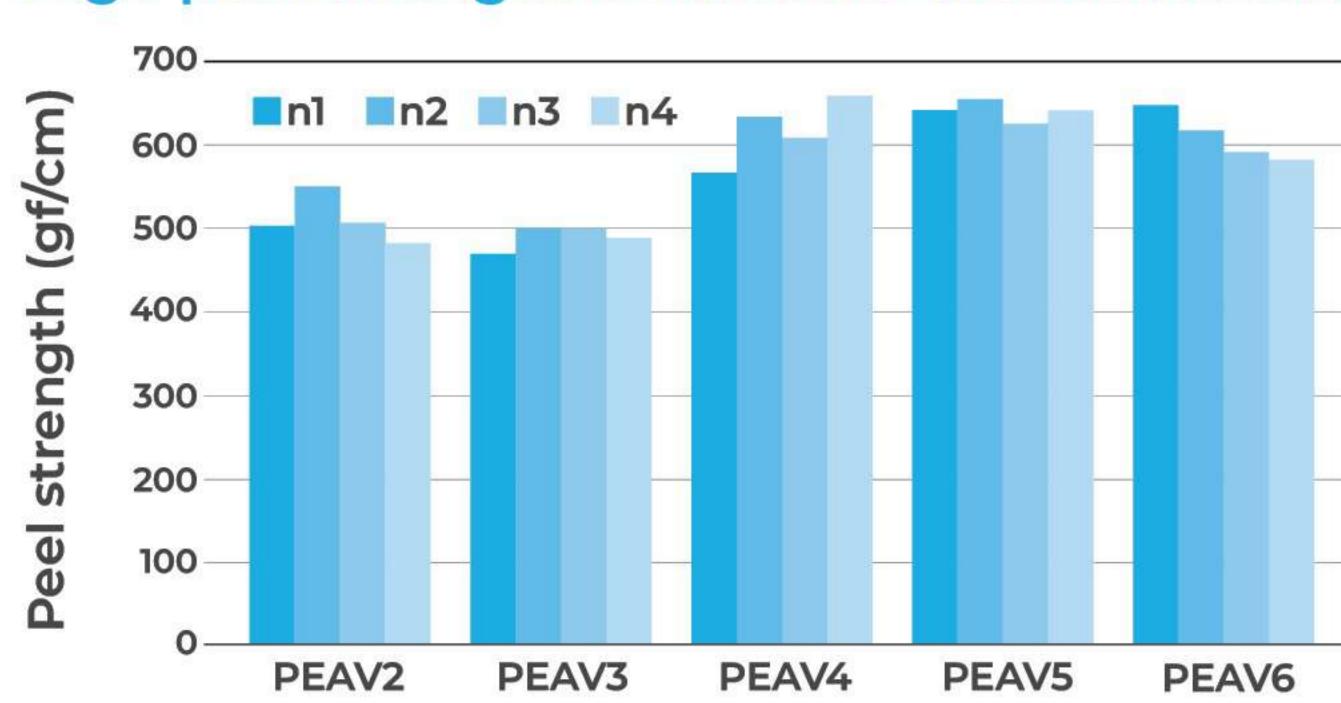




#### Frequency (GHz)

# **Electroless Copper Plating for Fine Pattern SAP** THRU-CUP PEAV6

#### High peel strength on smooth dielectric resin



## Features

- High plating coverage in small BVH.
- Good thickness uniformity.
- Good initial reactivity and high bath stability.
- Low internal stress.

## Plating deposition on smooth dielectric resin

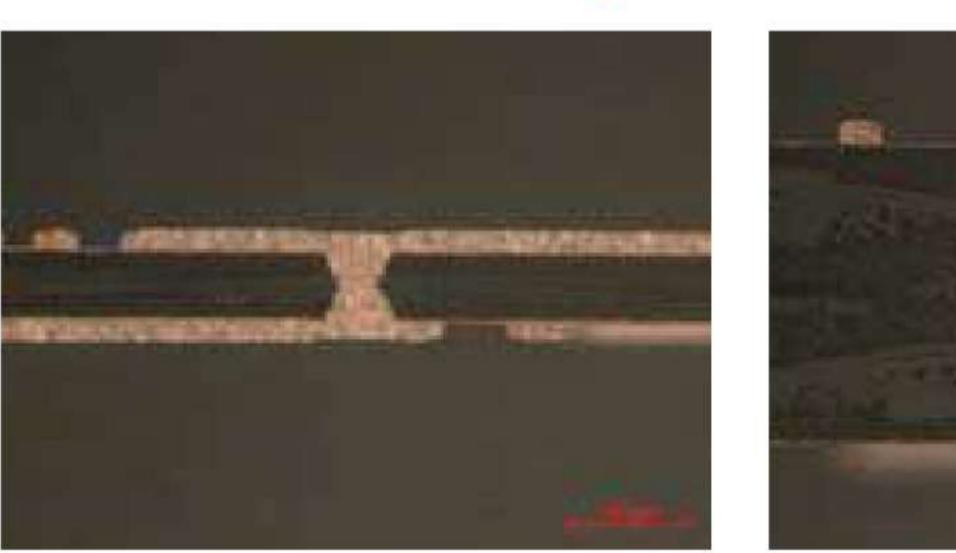
PEAV2 PEAV6 PEAV4 Surface view by SEM

# Additive for Electrolytic Copper Plating BVH/TH Filling for Fine Pattern

### Features

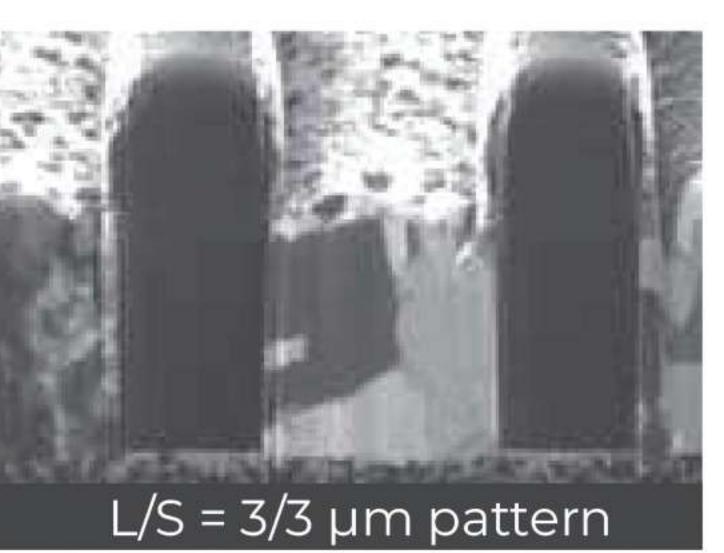
- BVH/TH filling for SAP and MSAP.
- Excellent thickness distribution for fine pattern plating.
- Additives concentrations in a process can be easily analyzed by CVS.

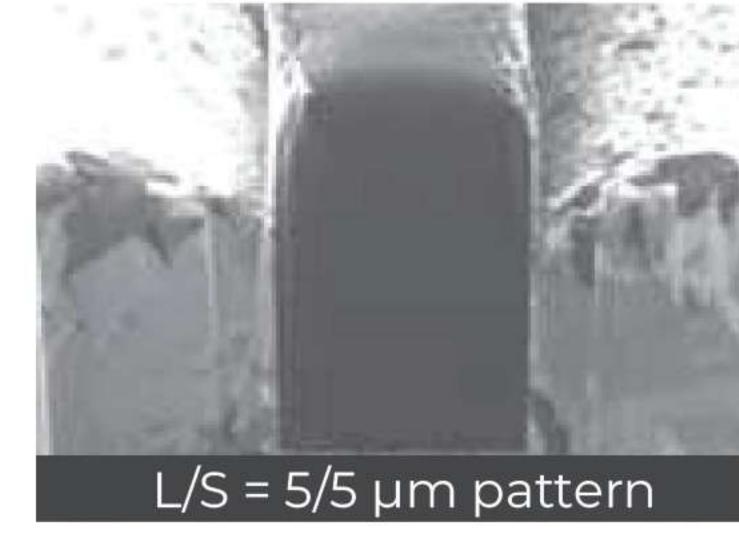
#### **BVH/TH filling**



- $\bullet$   $\Phi$ 75-d60  $\mu$ m LTH
- 0.97 ASD-70 min (15 µm)
- Φ90-d250 μm LTH
- 1.16 ASD-70 min (18 µm)

### Thin copper plating for fine pattern





Plating thickness: 5 µm on the surface

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# METAL · METAL SALT

PATA provides a worldwide variety of metal products such as Non-ferrous like Nickel, Copper, Zinc, etc. Furthermore, we also provide precious metals in plating grade for Electronic, PCB, and Aerospace industries.

## METAL

- NICKEL ANODE
- © COPPER ANODE
- ZINC ANODE
- CHROMIUM ANODE
- TIN ANODE

METAL SALT

- NICKEL SALT
- COPPER SALT
- SILVER SALT
- GOLD SALT
- POTASSIUM GOLD CYANIDE













# BASIC CHEMICALS

PATA furnishes a variety of chemicals with high quality and reasonable prices for serving your demand and saving costs. Whether plating process or ordinary usage, PATA always supports your needs. Also, RoHs and GHS documents are available in order to fulfill requirements.



# WASTEWATER TREATMENT

Wastewater treatment is to change wastewater conditions to suitable conditions and not harmful to the environment. We provide high-performance chemicals in water treatment under the name "PW CLEAN".

Our special process is for metal contaminated wastewater treatment. Furthermore, we also provide chemicals for RO/DI water production process.



#### QUALITY

Environmentally friendly and quality control of water discharge after treatment.

#### COST - SAVING

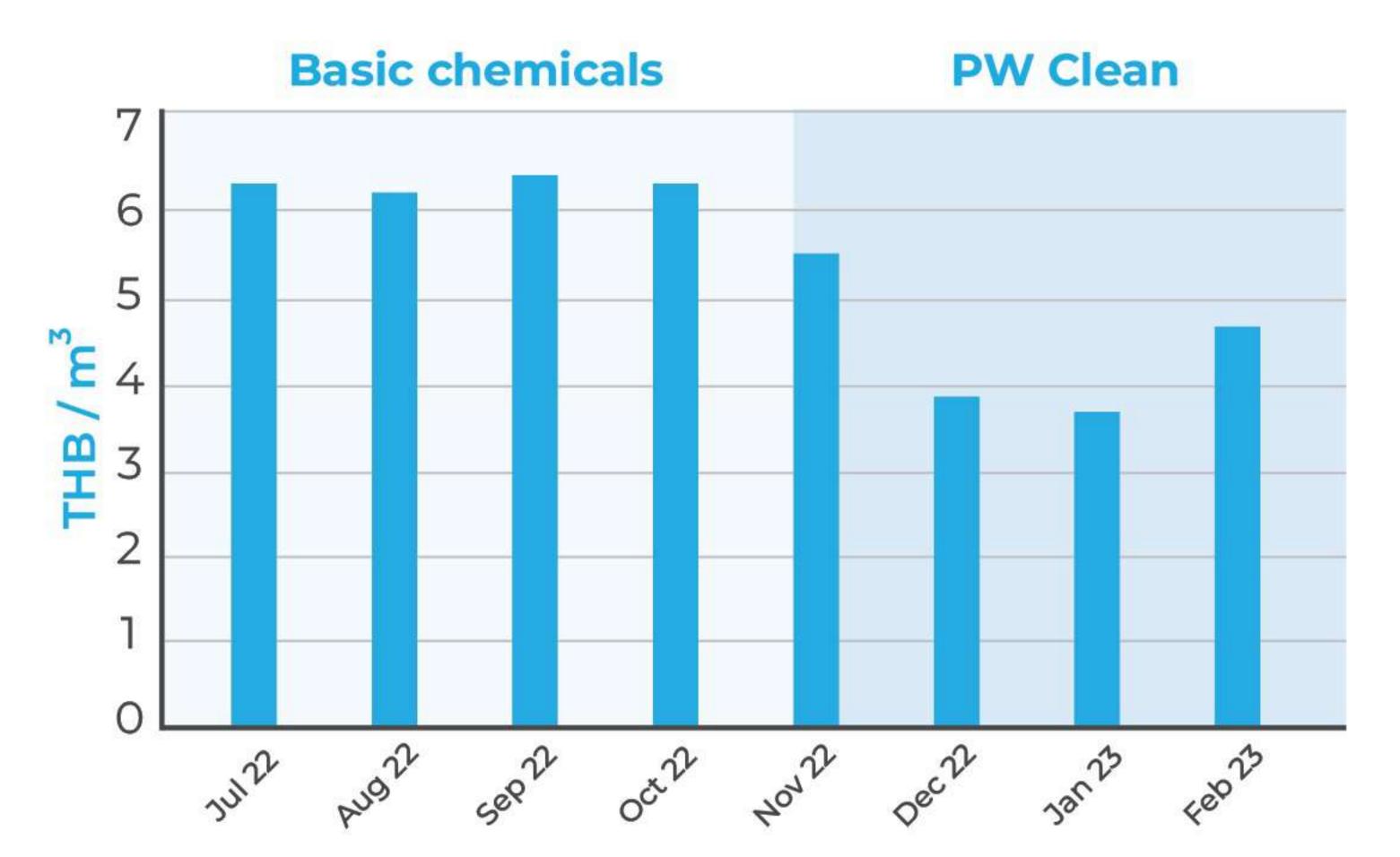
Reduce cost and control to be consistent with the treatment process.

Easy to use, adapt for customer existed processes, and manage working factors properly.

## Customer Savings

#### Treatment cost

Wastewater that is treated by special chemicals program saves treatment cost to 23%.



#### Sludge disposal cost

Sludge after treatment by special chemicals program reduce 46% compared with normal program, making saving sludge disposal cost.

Sludge reduction

46%

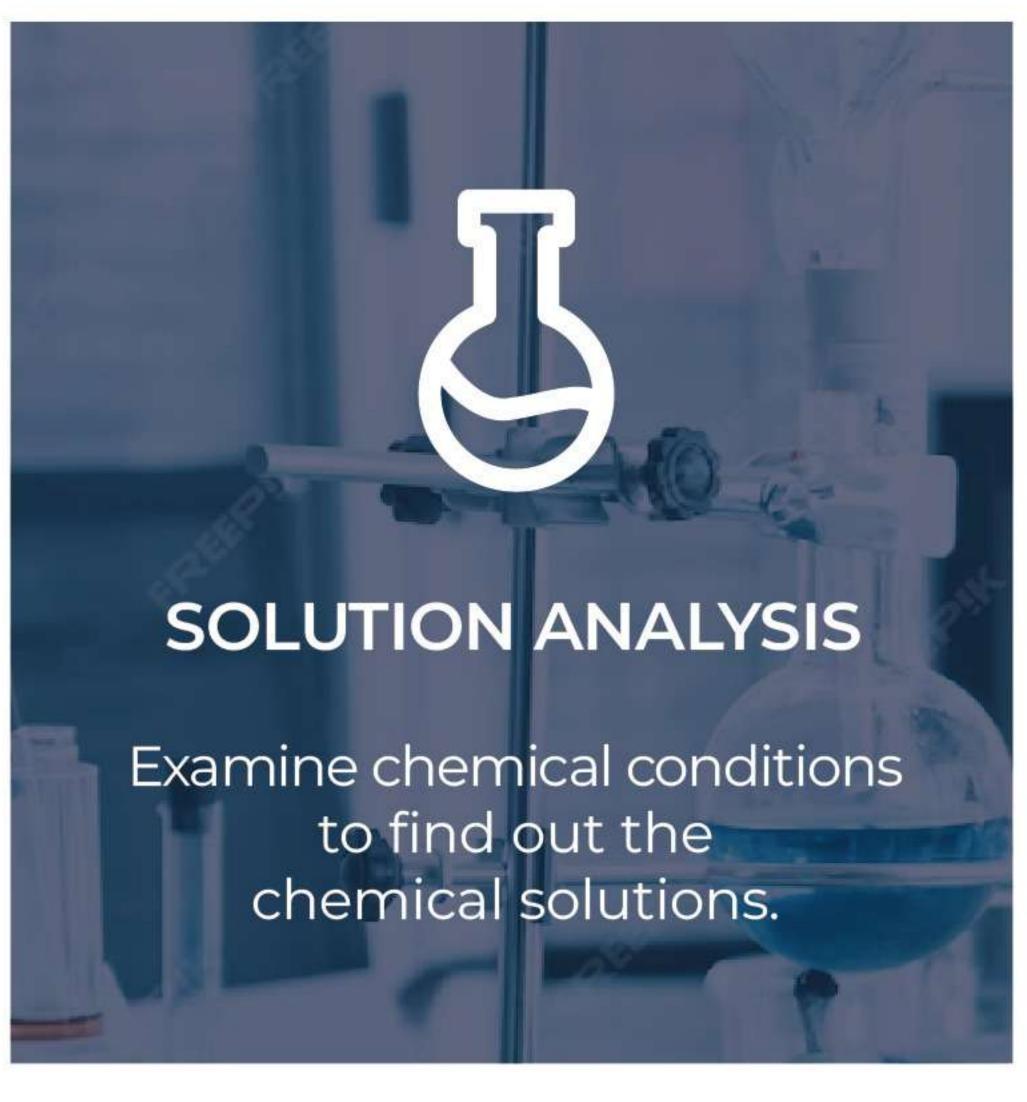


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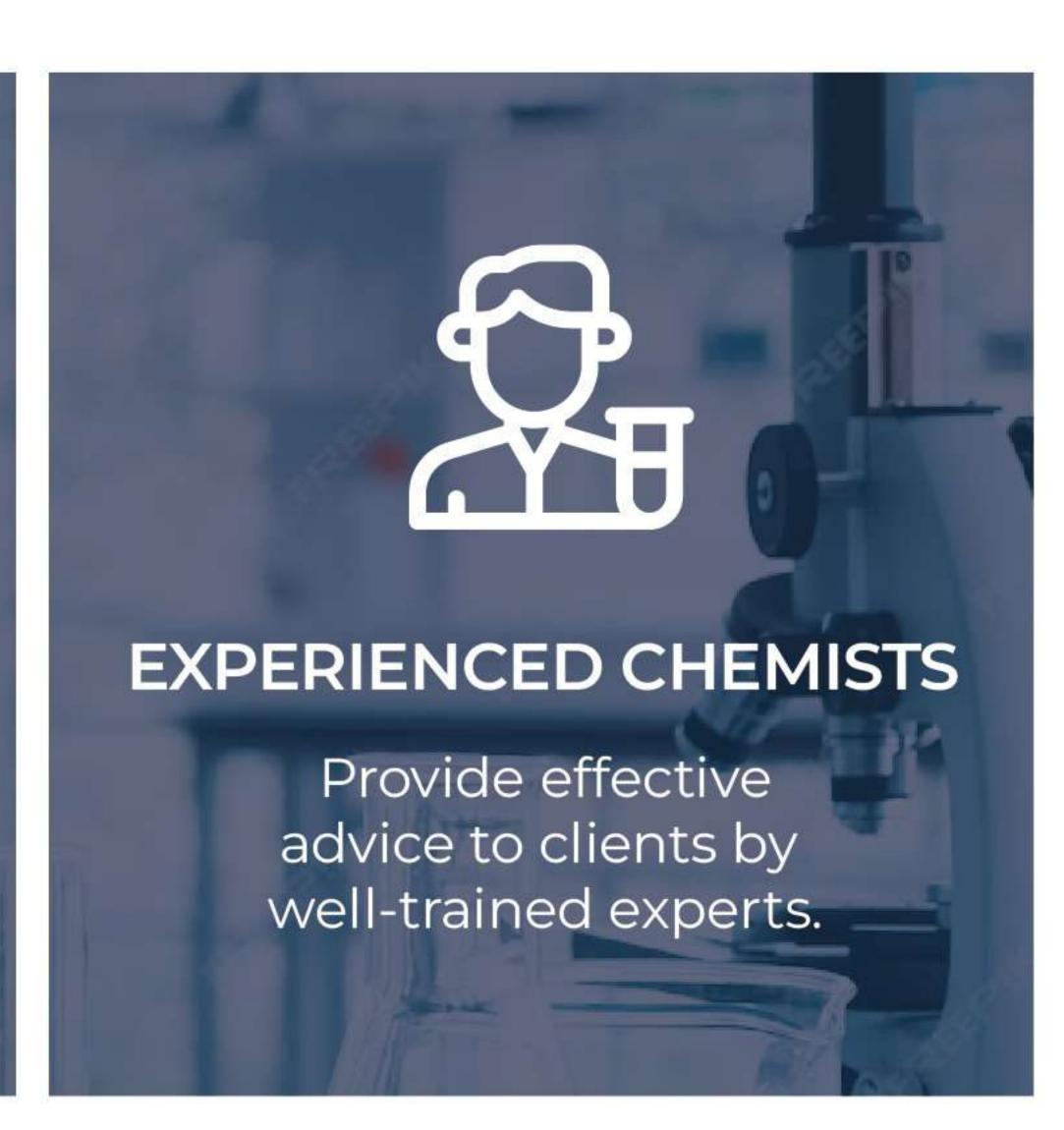
# LABORATORY SERVICE

"Customer smooth production and the lowest defects are our goal by working closely together"

We are professional to analyze and inspect customer's plating solutions accurately via well-trained and experienced chemists.

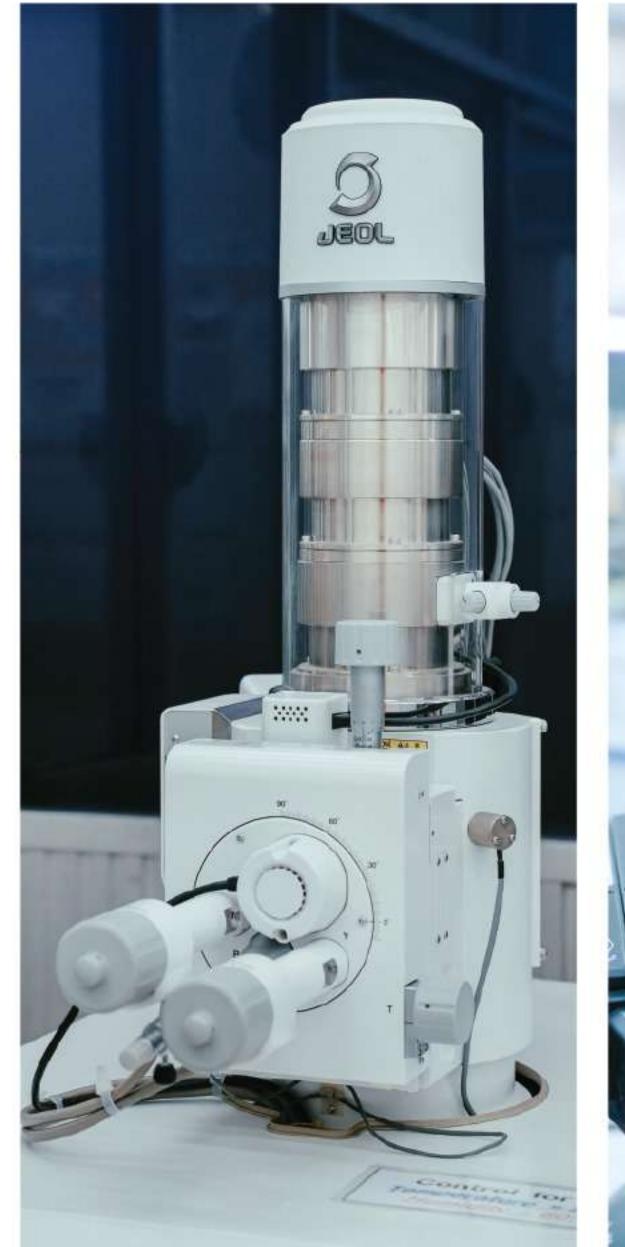






# ANALYTICAL INSTRUMENTS

We provide you high-quality instruments for analysis and maintenance of customer's plating solutions. Whether you face any problems on chemicals or workpieces, you'll pleasantly get solutions from us.











SEM /EDS MICR

MICROSCOPE

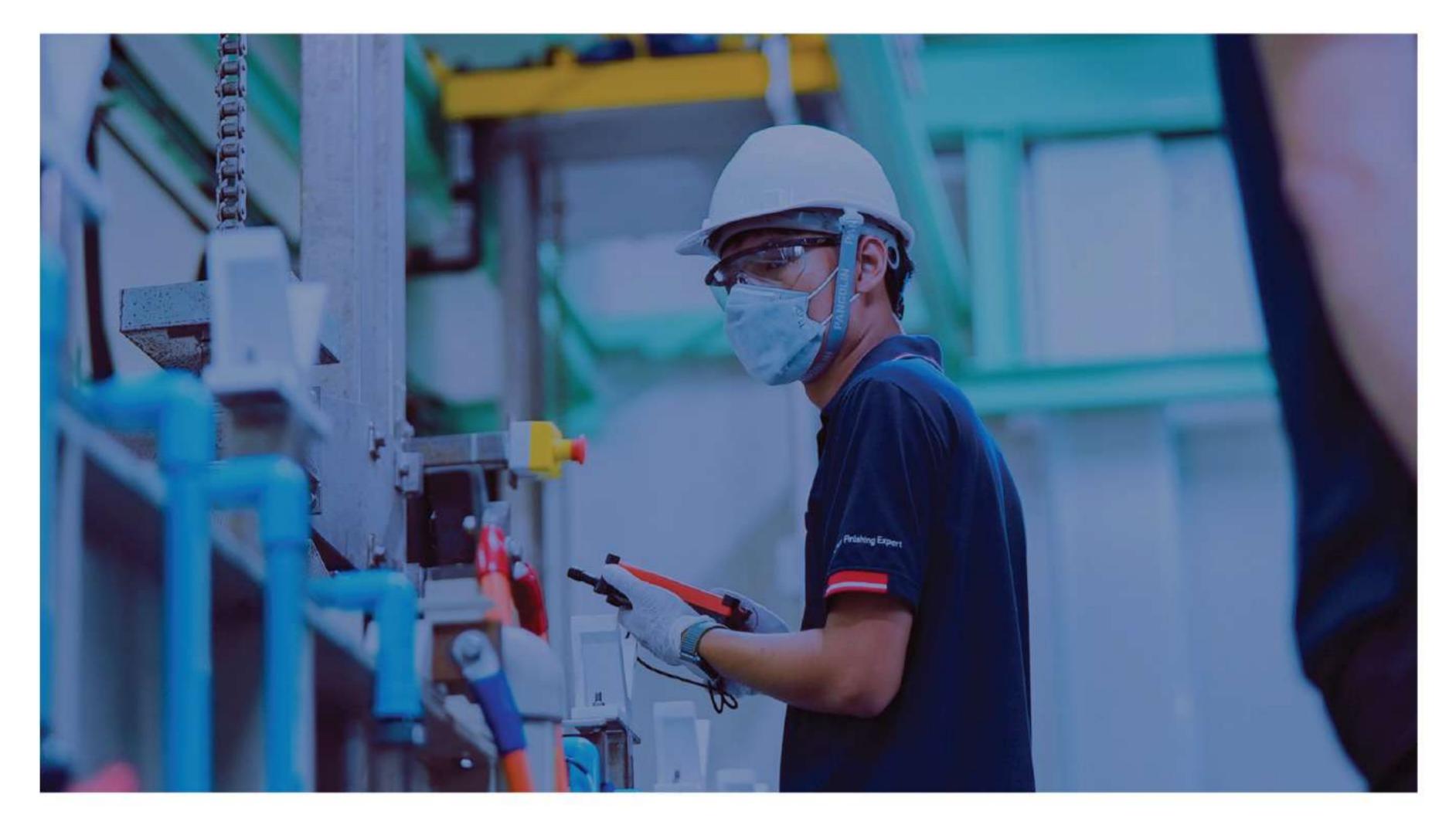
HPLC

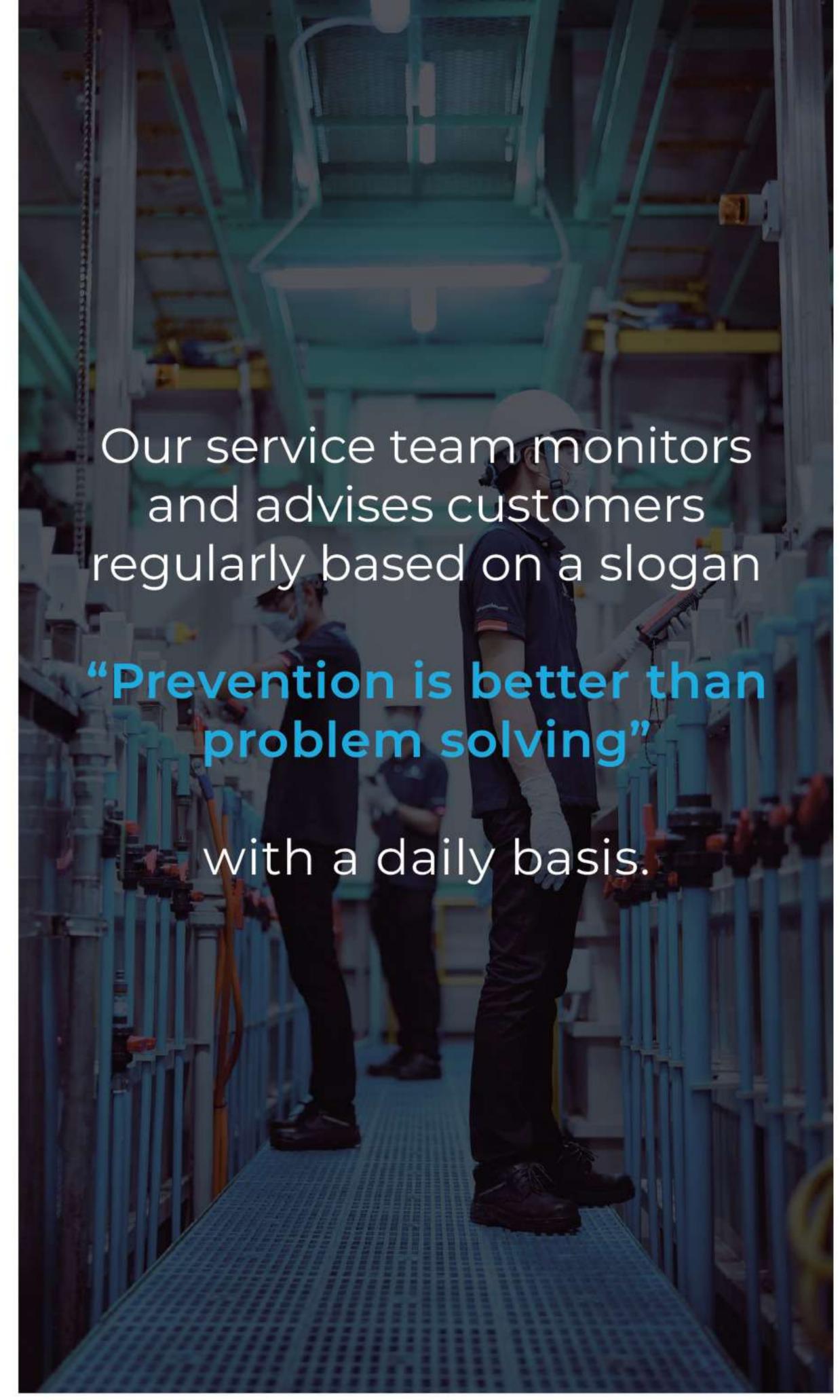
IPC - OES

X-RAY

## TECHNICAL SERVICE







## WEHAVE



#### CONSULTING AND ADVISING

• Give consultation and advice on chemicals and processes.



#### CHEMICAL TREATMENT

Support all operation types with quality products.



#### ONSITE SOLUTIONS

Expert team provides first-class support and consultation.



#### RESEARCH & DEVELOPMENT

Rigorous R&D is the back-bone of our success.



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# LOGISTICS

## WAREHOUSE SERVICE

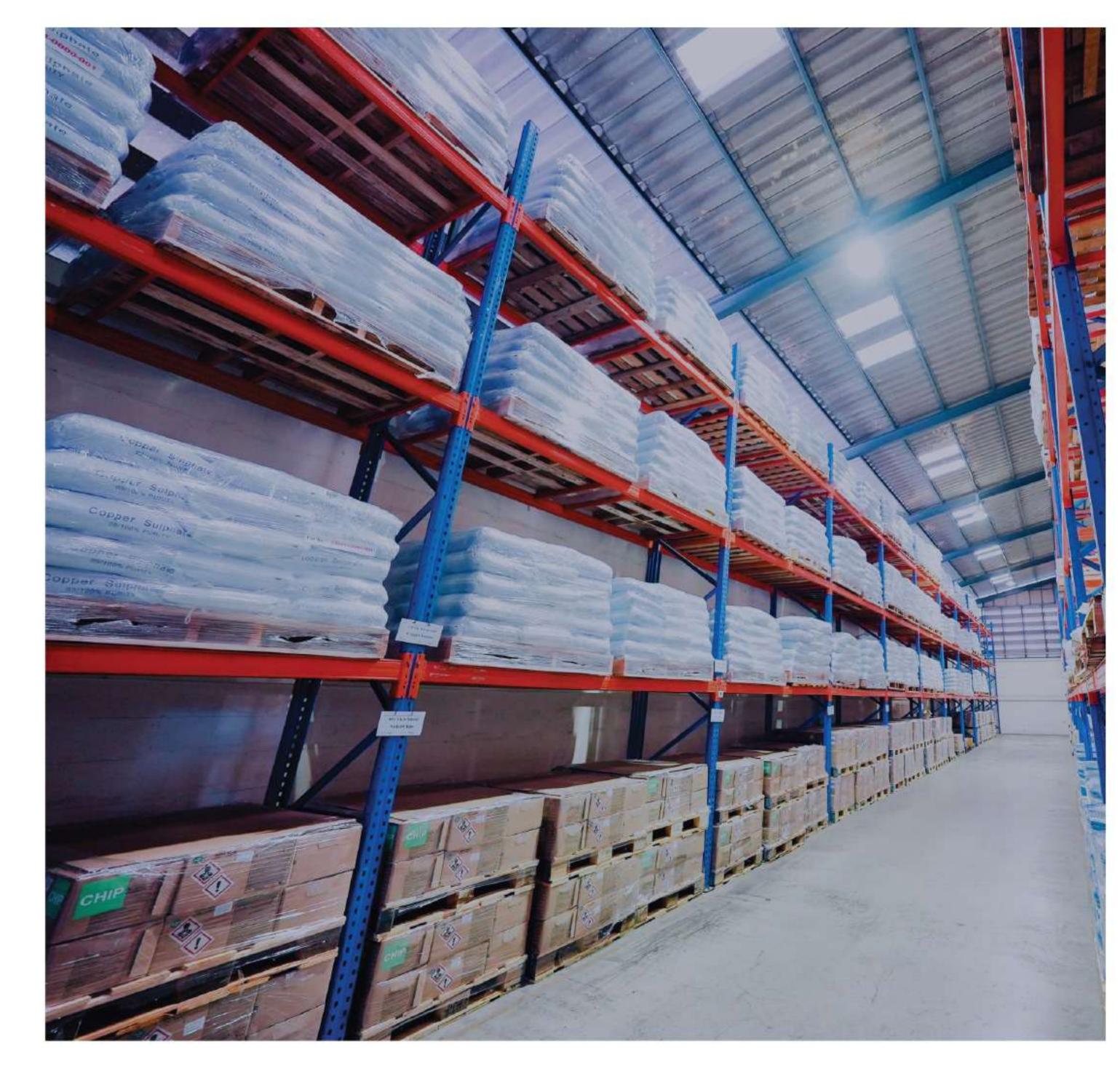
We have our own warehouse with an efficient inventory system to manage a variety of chemical products for serving our customer requirements to complete all ranges of products.

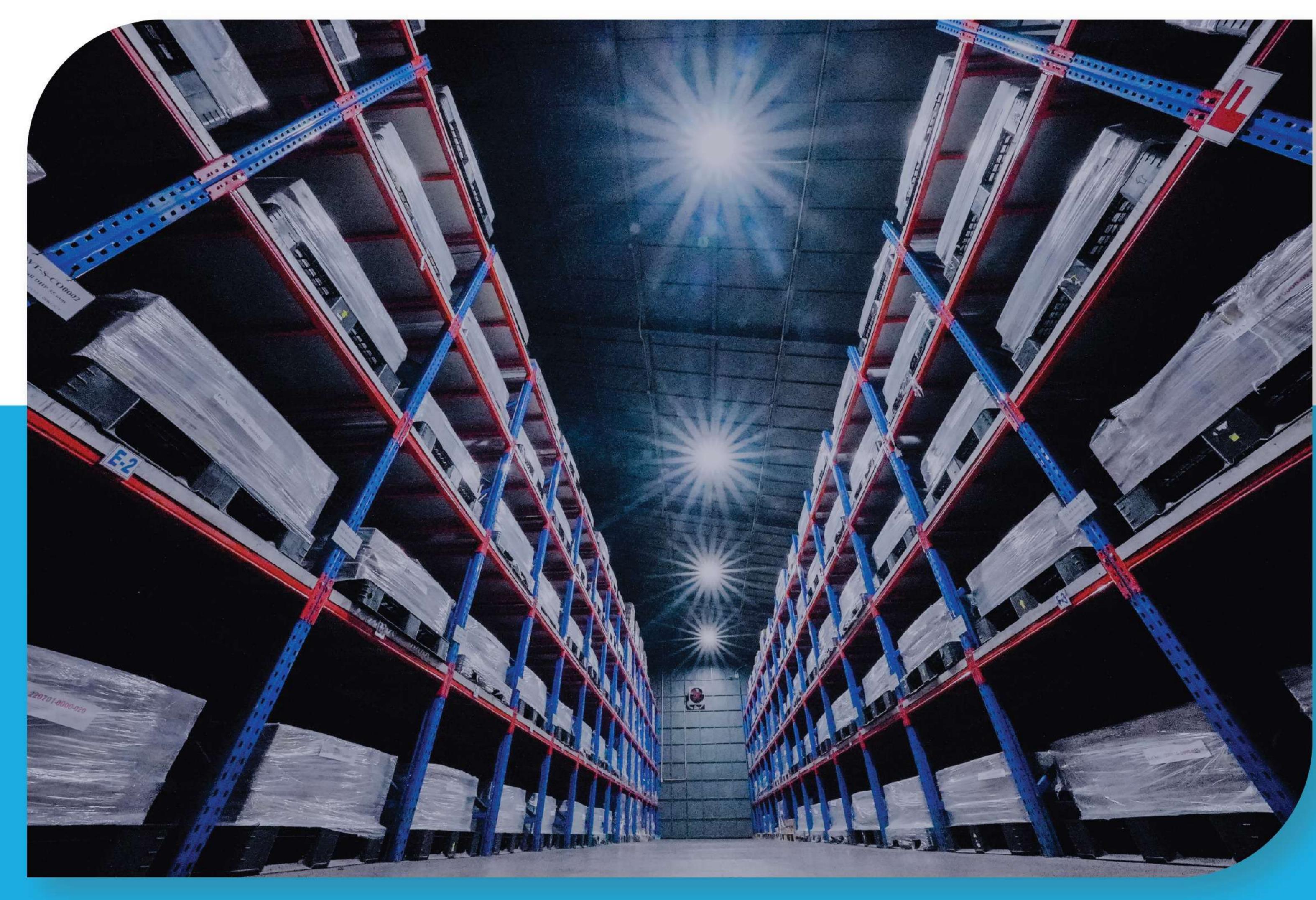
**OUR OWN WAREHOUSE** 

COST SAVING

INVENTORY MANAGEMENT

STORAGE, PICK, PACK, AND DISPATCH







# LOGISTICS DELIVERY SERVICE

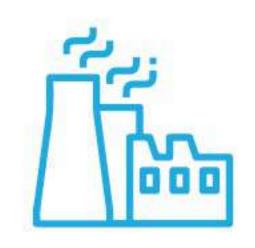
We serve speedy delivery that is on time and in time to keep our customers seamless productions. In case the customer accidentally runs out of stock, we can urgently arrange a special delivery.



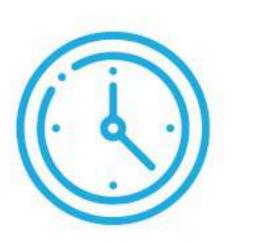
Legal compliance



License for hazardous chemicals

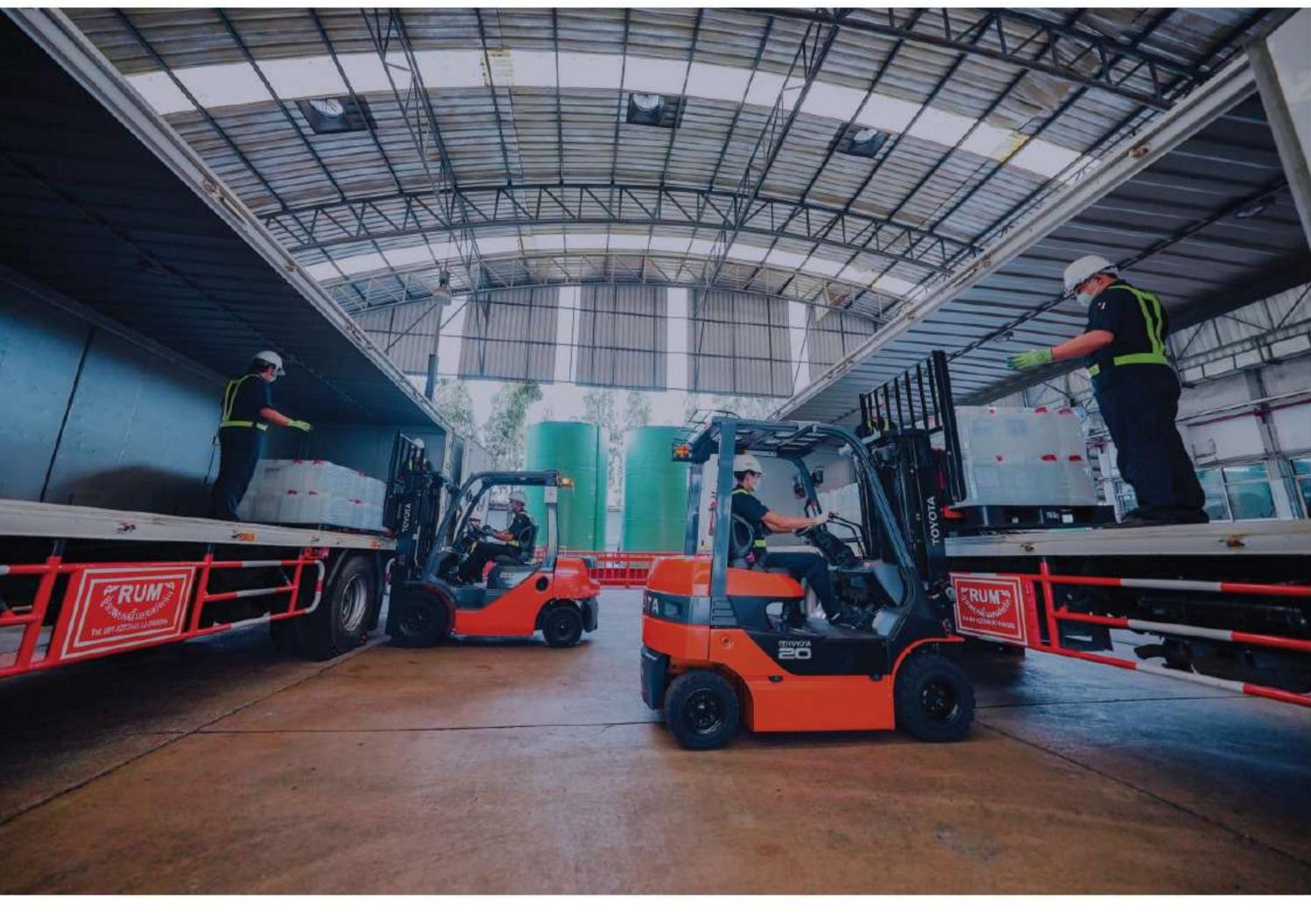


Emergency delivery



Realtime track & trace





We also provide a lorry and truck service as well as a delivery service that is available 24/7.

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