

THE BEST TECHNOLOGY & SERVICE

CSP(Clean Solution Provide)

제품소개





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인사말

안녕하십니까

(주) 씨에스피는 반도체 및 LCD, AM OLED, TSP 등 각종 Cleaning Process에 필요한 Chemical Solution을 연구개발, 제조 및 공급하는 전문 업체로 고객이 요구하는 제품을 개발, 제조하여더많은 부가가치를 창출하고 고객 여러분과 함께 성장하고자 노력하고 있습니다.

또한, Chemical 분야 외에 각종 Cleaning 장비와 Parts 세정 설비 및 Chemical 공급 시스템도 개발, 설계, 제작하고 있습니다.

보다 더 나은 서비스로 고객만족을 이끌어가는 회사로 나아가기 위하여 신기술, 신제품개발, 품질 향상, 훌륭한 인재 확보를 끊임없이 진행하는 씨에스피가 될 수 있도록 많은 관심과 격려 그리고 아낌없는 충고와 조언 부탁드립니다.



EM 사업부

- CHEMICAL 개발 제품
- CHEMICAL 소싱 제품



EF 사업부

- OFFER 제품
- WET 설비

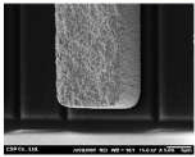
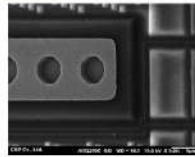
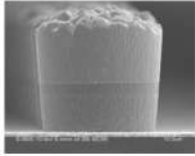
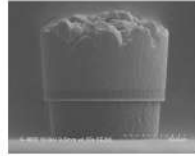
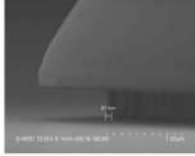
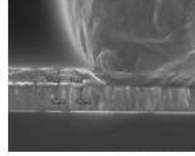
1. Electronic Material List

Technolgy	Application	Product Name	적용 가능 공정		납품 실적
Wet Etch	Gold Etchant	GME-C25/GME-I series	Gold Etching(WET)	Semi	한국 N社, 중국 N社
	Cu Etchant	WLC-C series	CU Etching(WET)		한국 H社, L社
	Ti Etchant	WLC-T series	Ti Etching(WET) (Bumping 공정)		한국 H社, L社
	SPCC Etchant	CS-200 series	Mold 공정 (후공정)		한국 A社, S社
Stripper/ Remover	PR Stripper	Cs-7 Series CS-105 WCT-5 Series	PR Strip 장비(WET)	Semi	한국 H社, S社
	Sealant Remover	WB-900SC	Display Sealant 공정	Display	한국 D社
	Metal Mask Remover	CS-550	OLED 공정 (Mask 도금 공정)		한국 W社
Cleaner	Carrier Tape Clean	CS-915	Mold 공정 (후공정)	Special	한국 N社, S社
	Ceramic Clean	CS-400 series	Etch, CVD 장비 Part's		한국 C社
	Oil Clean	CS-520D	Etch, CVD, PVD, IMP장비 Part's		한국 I社, C社, S社
	Metal ION Clean	CS-600M	Etch, CVD, PVD, IMP장비 Part's		한국 I社, C社, S社

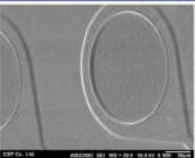
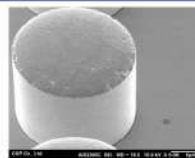
2. specific material list

Technolgy	Application	Product Name	적용 가능 공정		납품 실적
Metal Mask (Invar)	Invar Etchant	CS-313IA	Invar sliming & patterning	OLED	한국 A社
	Pattern Cleaner	CS-302MC	레이저 가공 이물 세정		한국 S社
	PR Cleaner	CS-550	Nega & positive PR 세정		한국 W社
	Fluorescent Cleaner	CS-700T	형광 잔유물 세정		
	Organic/Inorganic Cleaner	CS-701AC	유/무기 오염물 세정		한국 I社
	AgMg Etchant	CS-100SE	AgMg 제거		중국 S社
	Ag/ITO Etchant	CS-110SI	Ag/ITO patterning		한국 D社
	LiF remover	CS-701AC	LiF 제거		중국 S社
Silicon Cathode	Detergent	CS-500S	가공유/이물 세정	Semi	한국 T社, W社
	Si Etching	CS-SE410	Cathode 표면처리		한국 W社
Package	Solder Remover	CS-200SR	주석 합금(SnxCux) 보존	Package	한국 J社
			Sn – Cu 제거		

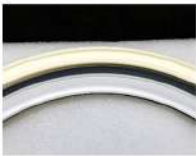
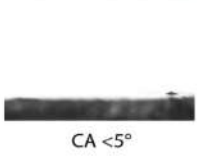
3. CSP Electronic Material _Wet Etch

Technology	Product Name	Application		Strong Point	Application
Wet Etch	GME-C25/GME-I series			상온 ~ 30 °C Dip Al damage 적음(KI 조성 대비)	Bump Process PVD Metal & Gold Bump Etch
	WLC-C series			상온 ~ 35 °C Dip or single spin 과수분해 1% 이하 / 24hr (@ 30 °C) Solder, Ti, Al, Ni 10 Å/min 이하	Cu etching
	WLC-T series			상온 ~ 45 °C Dip or single spin Solder, Cu, Al 10 Å/min 이하	Ti etching
	CS-200 series			30 ~ 50 °C Dip & 순환 SPCC / Ni 선택적 etching 가능 Cu loss 없음	PLP 공정 SPCC etch

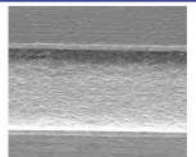
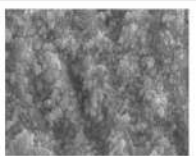
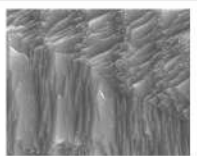
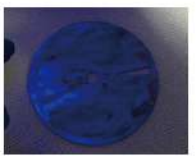
4. CSP Electronic Material _Stripper & Remover

Technology	Product Name	Application		Strong Point	Application
Stripper/ Remover	CS-7 Series CS-105 WCT-5 Series			30 ~ 50 °C Dip & 순환 어는점: -10 °C 이하 Nega, Posi 겸용 Cu, Al damage free	Bump Process Liquid & Dry Photo Resist
	WB-900SC			40 ~ 60 °C Dip & 순환 Acetone 비교 1. 용해도 향상 2. 화재 위험 감소 잔유물 없음	Solar / LCD / OLED 접착제 제거 Sealant dispenser
	CS-550			30 ~ 50 °C Dip & 순환 수계 (40% 이상) PVC damage free Nega, Posi, Film (Nega) 겸용	Metal mask Shadow mask Glass / SUS / PP / PVC / PE

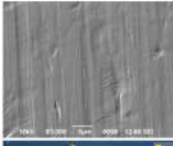
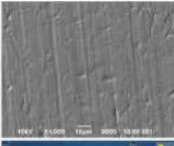
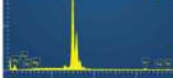
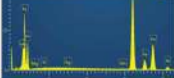
5. CSP Electronic Material _Cleaner

Technolgy	Product Name	Application		Strong Point	Application
Cleaner	CS-915			상온 Dip&순환 Cu, Ni, PI, Solder 손상 없음 12" tape 5매 / 1L IPA 용해도 20% 이상	Transfer tape 세정 접착제 제거액
	CS-400 series			상온 Dip&순환 Ceramic 손상 없음	Plasma 공정 Ceramic parts Aluminum / plasma burn 세정
	CS-520D			상온 Dip&순환 표면 이물 제거로 Backup time 감소효과 CA 63±1°	Al / Ceramic parts 초기세정 Etch / implant / diffusion 공정
	CS-600M			상온 Dip&순환 수용성 유기용매로 DI 세정 가능 Metal / PP / PE / PVC damage free	Al / Anodizing 초기세정 Etch / implant / diffusion 공정

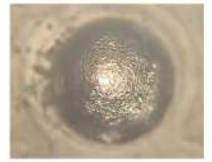
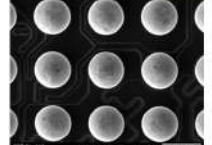
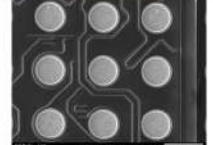
6. CSP Specific Material List _Metal Mask

Technolgy	Product Name	Application		Strong Point	Application
Metal Mask (Invar)	CS-313IA			50 °C Spray E/R: 25um/min 45° profile 구현 가능	Invar Sliming / Patterning
	CS-302MC			Mask 두께에 따라 상온 초음파 / 50 °C Spray&dip	Laser Patterning /Oxidation remove
	CS-550			30 ~ 50°C Dip & 순환 PVC, SUS damage free	Patterning 후 PR cleaning
	CS-700T			50 °C 초음파 NMP 세정 후 형광 잔유물 제거	OLED mask cleaning

7. CSP Specific Material List _Metal Mask

Technology	Product Name	Application		Strong Point	Application
Metal Mask (Invar)	CS-701AC			40 ~ 50 °C 초음파 유기/무기 세정 (EC 세정 대체 가능)	Al ₂ O ₃ remove
				40 ~ 50 °C 초음파 세정 후 SUS, Invar damage free	LiF remove
	CS-100SE			상온 Dip or 초음파 균일한 식각 Invar/SUS/수지계열 damage free	AgMg remove AgMg etching
					
	CS-110SI			상온 Dip or 초음파 균일한 식각 Invar/SUS/수지계열 damage free	Ag/ITO etching
					

8. CSP Specific Material List _Si cathode / Package

Technology	Product Name	Application		Strong Point	Application
Silicon Cathode	CS-500S			40 ~ 50 °C 초음파 DIW 회석 사용 가능 (min 10%) 장기간 사용 가능	Si cathode 탈지 Metal parts 탈지
	CS-SE410			50 ~ 60 °C 초음파 E/R 1um/min 이하 알칼리 조성 표면 조도 및 광택 향상	Silicon Cathode 표면처리
Package	Solder Remover			상온 ~ 30°C Dip SnCu 합금층 보존으로, Cu damage 방지	D-RAM recycle
				40 °C Dip remove 후 particle 최소화	Package rework

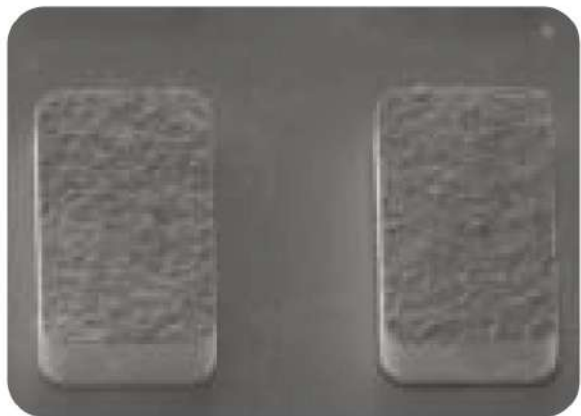
Appendix

GME-I series

PRODUCT

개요

- Gold 식각액



장점

- 사용온도 25°C
- Al loss 적음(KI 조성 대비)

적용분야

- Gold bump

	Dipping Etching	Shaking Etching
Etching rate (Å/min)	3000	3750

WLC-C series

PRODUCT

개요

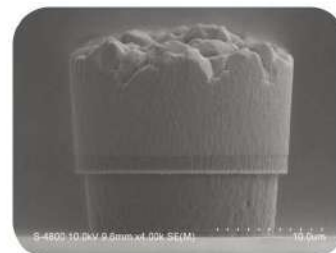
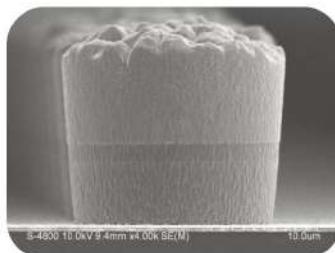
- Copper 식각액

장점

- 사용온도 20 ~ 50 °C
- 과수분해 1%이하/24hr(@ 30°C)
- Solder, Ti, Al, Ni 10 Å/min 이하

적용분야

- Semiconductor
- Bump process 등



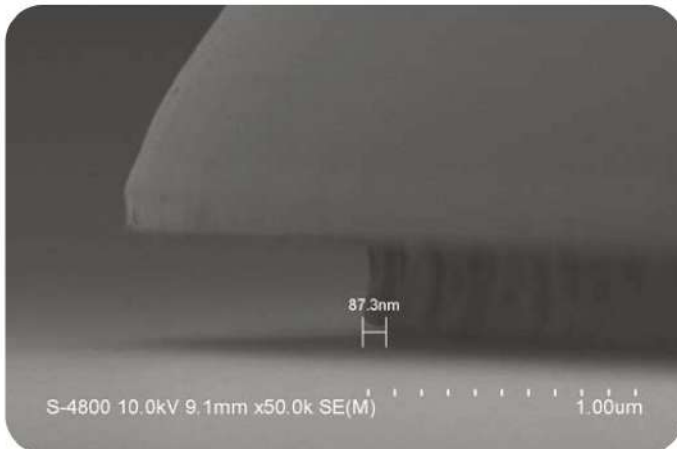
WLC-C Series	온도(°C)	Dip & Swing (Å/min)					
		Sputter Cu	Plated Cu	Sn-Ag	Ti	Al	Ni
	35	6000	4500	< 10	< 10	< 1	< 1

WLC-T series

PRODUCT

개요

- Titanium 식각액



장점

- 사용온도 30 ~ 50°C
- SOLDER, Cu, Al 10Å/MIN 이하
- 1ℓ당 10매 처리가능

적용분야

- Semiconductor
- Bump process 등

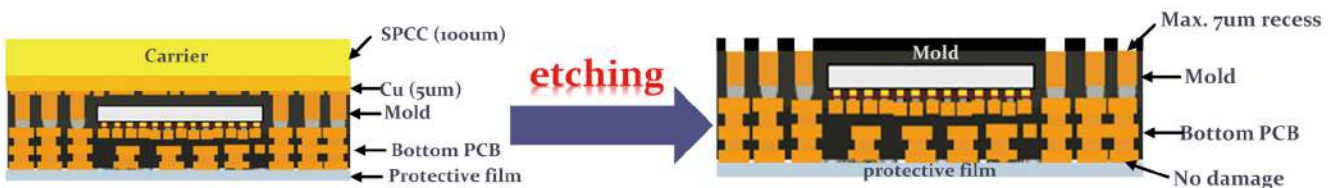
WLC-T Series	pH	30°C Dip / Spray (Å/min)				
		Ti-W	Ti	Sn-Ag	Al	Cu
	8	700	150	< 10	< 10	< 10
	8.5	1000	300	< 10	< 10	< 10
	9	1500	600	< 10	< 10	< 10

CS-200 series

PRODUCT

개요

- PLP공정 SPCC 식각액



장점

- SPCC 소재를 기반으로 Fan out 공정 후 SPCC 제거에 용이함
- 100um 120분 처리 시 완전 제거
- SPCC / Ni 선택적 etching 가능함
- Cu loss 없음

적용분야

- PLP 공정 SPCC etch



CS-7 Series

PRODUCT

개요

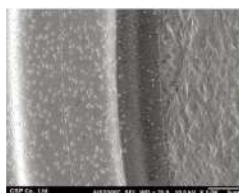
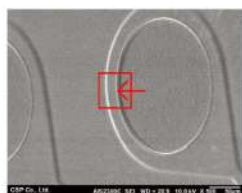
- Bump공정, Etch 후 PR stripper

Magnification

X500

X5.0k

Positive PR
PR : PWE300
(Thickness : 3um)



장점

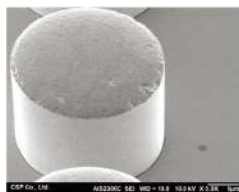
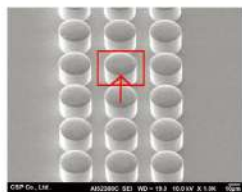
- 어는점 : -10°C 이하
- Nega, Posi 겸용
- Cu, Al damage free

Magnification

X1.0K

X5.0k

Negative PR
PR : THB151N
(Thickness : 10um)



적용분야

- Metal etch 후 PR strip
- MEMs PR strip
- Glass / SUS / PP / PE

WB900SC

PRODUCT

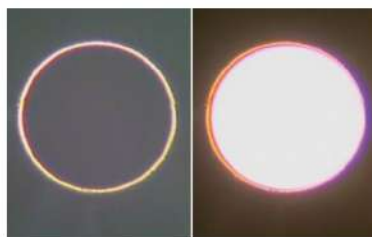
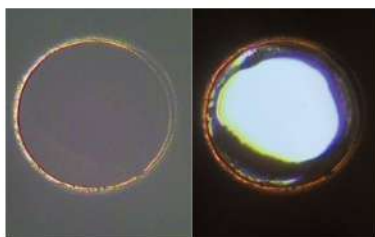
개요

- Sealant dispenser 세정액



장점

- Acetone 비교
 1. 용해도 향상
 2. 화재 위험 감소
- 잔유물 없음



적용분야

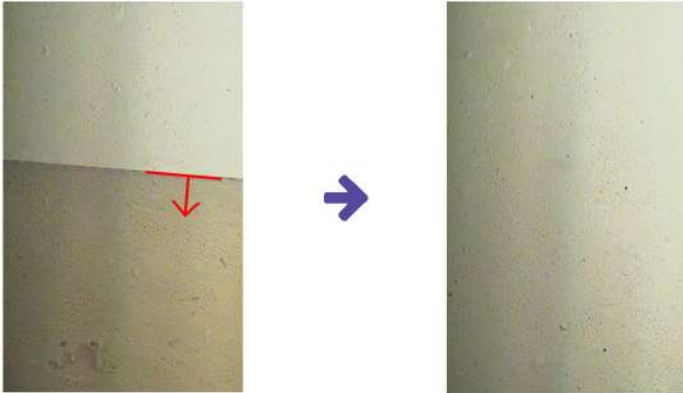
- Solar / LCD / OLED
- 접착제 제거
- Sealant dispenser

CS-550

PRODUCT

개요

- OLED Metal mask PR stripper



(Negative PR , 모재: Ni alloy)

장점

- 수계(40%이상)
- PVC damage free
- Nega, Posi, Film(Nega) 겸용

적용분야

- Metal mask
- Shadow mask- Screen mask / plating mask
- Glass / SUS / PP / PVC / PE

CS-915

PRODUCT

개요

- Fan Out공정 Transfer tape 제거액



장점

- Cu, Ni, Pl, Solder 손상 없음
- 12" tape 5매 / 1L
- IPA 용해도 20% 이상



[SUPPORT CARRIER 세정 중]



[세정 후]

적용분야

- Transfer tape 세정
- 접착제 제거액

CS-400A

PRODUCT

개요

- Sputter 공정 Plasma burn 세정액

장점

- Ceramic 손상 없음
→ 열처리로 손상 예방
- 상온세정 가능

적용분야

- Plasma 공정 Ceramic parts
- Aluminum / Plasma burn 세정

* Alumina 소재 세정 전/후



CS-115

PRODUCT

개요

- Etch 공정 Dry parts 세정액

장점

- Fluorine, Aluminum 완벽 제거
- Quartz 손상 없음

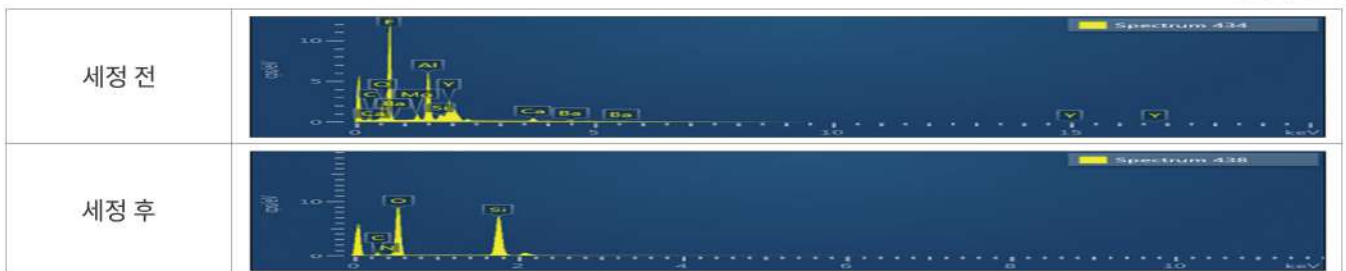
적용분야

- Etch 공정 Dry parts 세정
 - Quartz, Ceramic
 - Alumite

*세정 전/후



*EDS 분석 결과



Element.	C	N	O	F	Mg	Al	Si	Ca	Y	Ba	Total
Before Clean	13.82	-	10.41	50.94	1.49	11.50	0.87	1.25	8.20	1.50	100.00
After Clean	12.78	2.55	65.06	-	-	-	19.60	-	-	-	100.00

CS-520D

PRODUCT

개요

- Vacuum Chamber parts 표면 세정액

* Aluminum 소재 세정 전/후 contact angle 측정

구분	세정 전	Acetone	CS-520D
Positive PR PR : PWE300 (두께: 3um)	 CA 63±1°	 CA 45±1°	 CA <5°

적용분야

- Al / Ceramic parts 초기세정
- Etch / implant / diffusion 공정 등 Vacuum Chamber parts
표면 이물 제거로 Backup time 감소효과

CS-600M

PRODUCT

개요

- Vacuum Chamber parts Metal ion 세정액

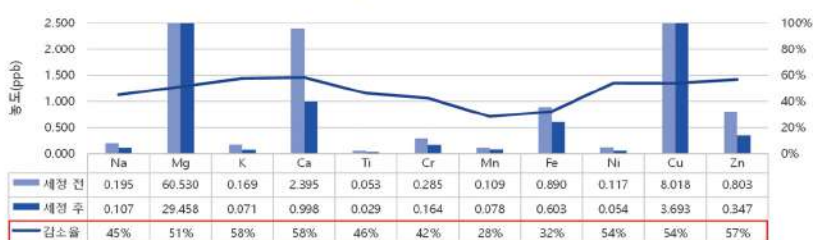
(Al Parts 세정 분석 결과)



분석 Metal

■ 세정 전 ■ 세정 후 — 감소율

(Anodizing Parts 세정분석 결과)



분석 Metal

■ 세정 전 ■ 세정 후 — 감소율

장점

- Parts 세정 후 metal ion에 의한 오염 감소
평균 metal 감소율 50% 이상
- 수용성 유기용매로 DI 세정 가능
- Metal / PP / PE / PVC damage free☑

적용분야

- Al / Anodizing 초기세정
- Etch / implant / diffusion 공정 등
Vacuum Chamber parts

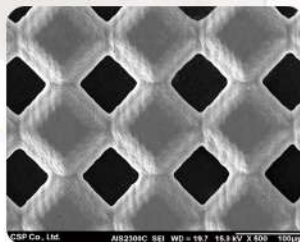
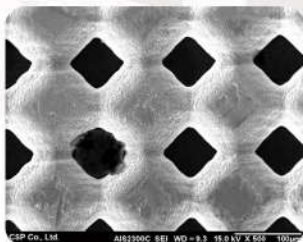
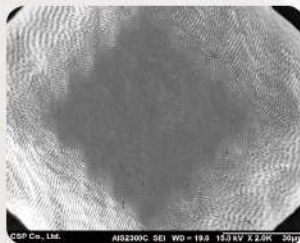


CS-300MC

PRODUCT

개요

- Laser pattern mask 세정액



장점

- Laser pattern 시 발생하는 Invar 산화물 완벽 세정
- 단순 dip 공정에서 세정 가능
- Metal / PP / PE / PVC damage free☑

적용분야

- Invar Laser pattern 후 세정



EF사업부 제품 리스트

Fisher Scientific

Fisher Scientific



Equipment

- Metal Mask Cleaner
- Single Spin Etching
- Wet Clean Station
- Chemical Supply System
- ETC



ABB Concentration Meter

Dual Containment Tube

- 약액별 배관 색상 구분
- 안전 사고 방지



PEA Tube

Neoflon EFEP/ETFE Film

EP Coil Tube

CMP PAD



AM OLED Metal Mask Cleaner (Open Mask) – Dipping Type



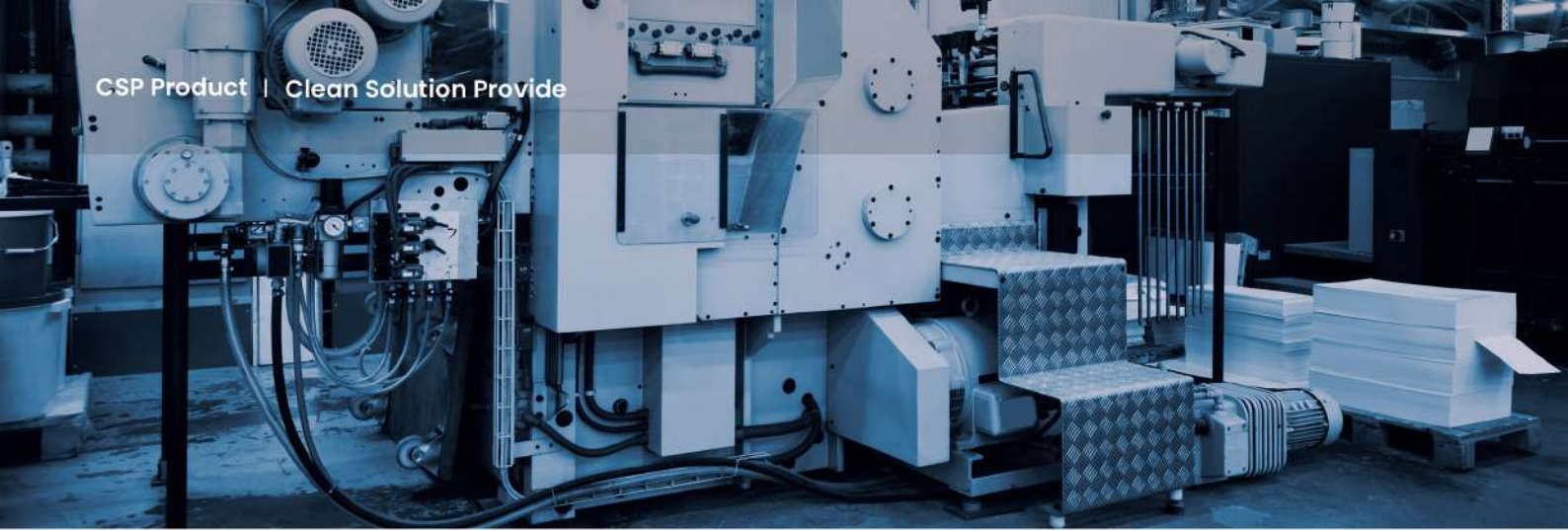
유, 무기 Metal Mask Clean Processor

[Features]

- Dimension : 41,370mm * 12,000mm * 4,000mm
(Mask 사이즈 별 차이 있음)
- Mode : Auto Mode
- Control : PLC + PC
- 4.5G ~ 6G 사이즈 대응

[Specification]

- Chemical : TWN200, KOH, IPA New Concept Solution
- Bath Material : SUS316L
- Temp : 30~60°C
- 자동표면 검사기, Dryer 적용
- IEC Ex Assembly Explosion Proof 인증(독일)



| AM OLED Metal Mask Cleaner (Open Mask) – In-line Type



| In-Line type Metal Mask Cleaner

[Features]

- Dimension : 15,000mm * 5,000mm * 2,800mm
- Mode : Auto Mode
- Control : PLC
- 6G Half 사이즈 대응 (4.5G~8G 대응 가능)

[Specification]

- Chemical : NMP, New Concept Solution
- Bath Material : SUS304 EP
- Temp : RT~60°C
- No Use IPA
- Hot Wind Dryer 적용

Wet Clean Station

PRODUCT

Wet Clean Station (Auto Cassette Less Type 200 & 300mm)



Dram & Logic Wet Processor

Features

- Full Auto Mode (OHT / OHS / AGV Interface)
- 200mm ~ 300mm Wafer Etch & Clean
- User Graphic Interface / ≥ 20 " Touch Screen

Specification

- Process : Chemical (Clean & Etch) -> DIW (Rinse / Final Rinse) -> Dry : Marangoni & Spin Dryer
- Etch Clean Solution - Oxide / Nitride / PR / Diff' / Photo
- Wafer Broken Inspection (In/Out) - Auto Wafer Count & Inspection
- CE Certification & Semi S2-93

Single Wafer Spin Etching & Cleaner (200 & 300mm)



Single Wafer Spin Processor

Features

- 2 ~ 8 Heads System
- Chemical Etching & Clean Process
- Touch Screen Operation
- Real time display of system condition

Specification

- Chemical Mixing Features
- Uniformity : $\leq \pm 1\%$
- Spin : Servo Motor ≥ 3000 rpm
- Chemical & DIW Nozzle
- X,Y,Z-Axis Transfer
- Transfer Robot Install

Process Recipe

- H2SO4 PR Strip
- HF/BOE Etching Process
- H3PO4 SiN Strip Process
- CH3COOH+HF Etching
- SC-1 Clean Process
- DIW Rinse & Spin Dryer

○ Wet Clean Station (Etching, Removing oil, final Cleaning for Si-Cathode product)



Si-Cathode Final Cleaner

Features

- Dimension : 7,100 * 2,600 * 2,500
(depend on Config.)
- Mode : Auto Mode
- Control : PLC

Specification

- Config. : Load → Acid#1 → Rinse#1 → Acid#2
→ Rinse#2,#3 → Hot DIW → IR Oven → Unload
- Bath Material : PP / PVC / SUS316 EP
- Temp : RT~100℃
- TR moving / Agitation / Rolling / Bubbling / Ultrasonic
- Supply Chemical Solution

FOUP / FOSB Cleaner

PRODUCT



Auto FOUP Cleaner

Features

- 2 ~ 8 Heads System
- Chemical Etching & Clean Process
- Touch Screen Operation
- Real time display of system condition

Specification

- Dimension : 2,400 * 3,200 * 2,450 (300mm Auto Cleaner)
- Mode : Auto / Semi-Auto
- Control : PLC + PC

Chemical Delivery System (CDS)

PRODUCT



Chemical Delivery System

Features

- Mode : Auto & Half Auto mode
- Auto Signal Interface
- 1ST, 2ND Piping Connection
- Real time display of system condition
[≥15" Touch Screen Install)

Specification

- SC-1 Mixing Supply System
- DHF & BOE Measuring Demand
- Developer (TMAH) Mixing Supply System
- Organic Chemical Supply System

Specification

- Organic CDS 방폭인증
- 자동소화 장치

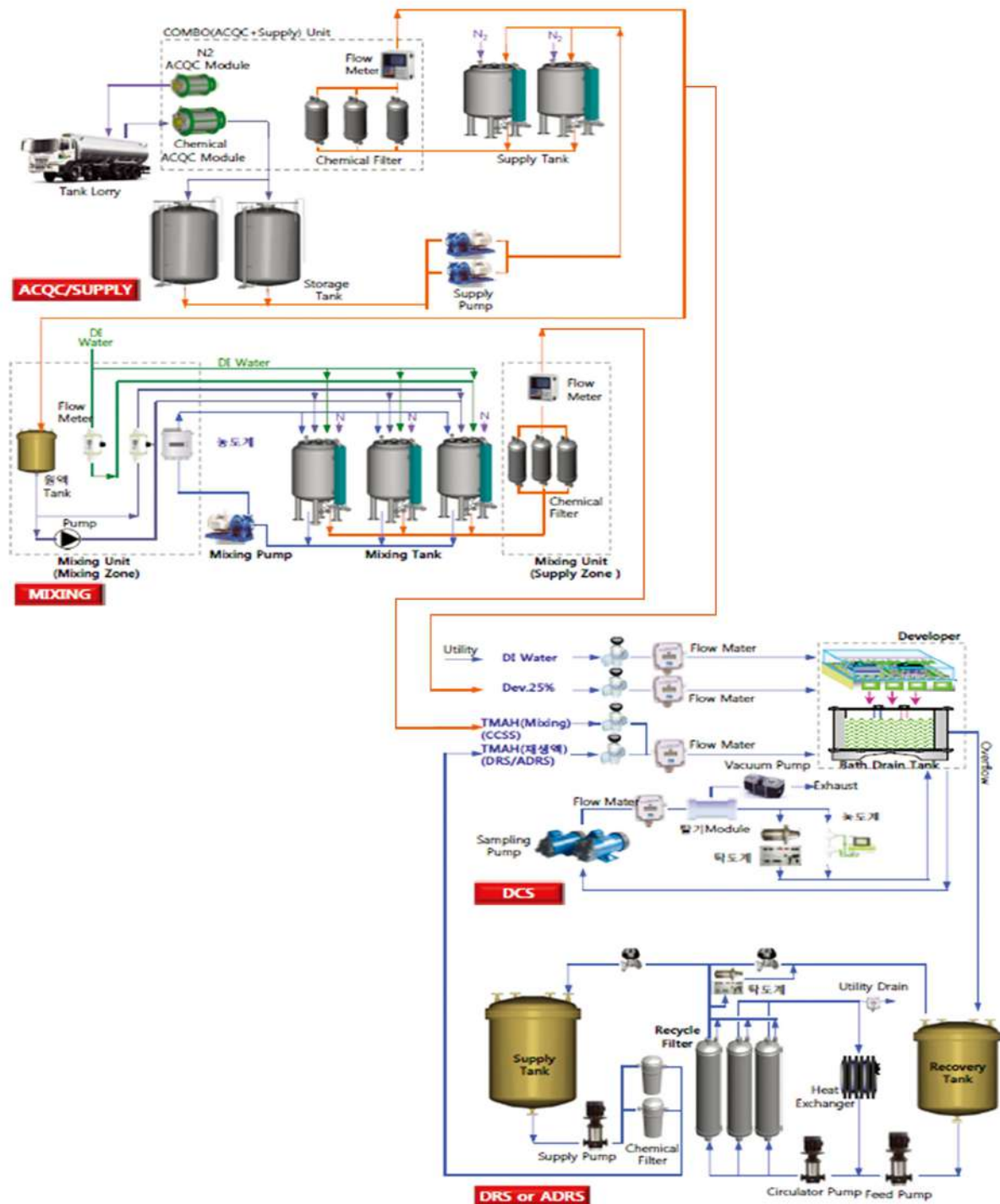
CCSS

PRODUCT

CCSS(Central Chemical Supply System) Out line

전자급 화학 약품을 지정한 장소에서 필요한 시기에 적절한 양을 자동으로 공급하는 시스템.

사용 지점(point of use)에서 보내는 신호에 따라 약품(산, 알타리, 현상액, 스트립프, 유기, 등)보관 탱크로부터 반도체 제조장비로 직접 공급, 제어 및 감시 기능이 프로그램에 의해 자동화 되어 있음



CHEMICAL 농도계 (WPA)

PRODUCT



Specifications

- Multi type chemical 농도분석기기 (8Chanel)
- N-IR Sensor CStandard chemical 5종류 (SC-1, HF, BOE, H2SO4Boil, Etchant)
- Special chemical Soft 개발 가능
- Maker ABB社(CANADA)

CHEMICAL 농도계 (TALYS)

PRODUCT



Specifications

- Size : 350mm(W) x 260mm(D) x 368mm(H)
- Weight : 20 Kg
- Communication Protocol : ModBus TCP
- 소비전력 : <100W (일반운영조건)
- 운영환경 : 15 ~ 35°C, <95% RH non-condensing
- Certificate : CE, FCC, cTUVus, laser safety
FDA/IEC/EN 60825-1, RoHS, WEEE

CHEMOD-SC1	Chemometric Modeling for SC1 Solution	NH4OH : 0~3w/w% H2O2 : 0~7w/w% H2O : 90~100w/w%	20~70 °C
CHEMOD-SC2	Chemometric Modeling for SC2 Solution	HCl : 0~7w/w% H2O2 : 0~6w/w% H2O : 88~100w/w%	20~70 °C
CHEMOD-BOE	Chemometric Modeling for BOE Solution	NH4F : 22~41w/w% HF : 0~10w/w% H2O : 55~77w/w%	21~35 °C
CHEMOD-BHF	Chemometric Modeling for BHF Solution	NH4F : 0~22w/w% HF : 0~10w/w% H2O : 65~100w/w%	21~35 °C
CHEMOD-DHF	Chemometric Modeling for DHF Solution	HF : 0~2w/w% H2O : 98~100w/w%	21~35 °C
CHEMOD-ST250	Chemometric Modeling for H2O and NH3 in ATMI ST250 Chemical	NH3 : 0~2w/w% H2O : 25~45w/w%	22~45 °C

Dual Containment Tube

PRODUCT

solution & Eye care effect

- Minimize Leak Point with 300M(1,000') long distance without connector.
- Easy to work with one-piece construction & cost 30% Down.
- Good wear and abrasion resistance.
- Continuous use temperature up to 500 ° F(260°C).



Secondary Tube			Primary Tube			Minimum Bend Radius (mm)	Product Possible (M)
FEP Tube OD (inch)	ID/OD Tolerance (mm)	Wall Thickness (mm)	Primary PFATube OD (inch)	ID/OD Tolerance (mm)	Wall Thickness (mm)		
1.900	0.508	2.413±0.25	1.500 (1*1/2")	0.254	2.438±0.25	R 750	150M
1.250	0.381	1.905±0.25		0.203	1.574±0.20	R 400	300M
1.000	0.254	1.574±0.20	0.750 (3/4")	0.203	1.574±0.20	R 300	300M
0.750	0.203	1.574±0.20	0.500 (1/2")	0.152	1.574±0.20	R 229	300M
0.500	0.203	1.574±0.20	0.250 (1/4")	0.127	1.574±0.20	R 76	300M

*Reference : 25A = R330 (3/8" , 1/2" , 3/4" Apply), 40A = R385 (1/2" , 3/4" , 1" Apply), 50A = R450, 65A = R575

Picture of Korea Bumping Line Installation



PRODUCT _ PFA TUBE

- Chemical resistance
- Heat resistance (-40 – 260°C)
- Weather resistance
- Non-viscosity
- Low friction coefficient
- Excellent electric characteristics and transparency
- Applied in the pipe using different kinds of liquid chemicals, pure water, and ultrapure water



Neoflon EFEP/ETFE Film

PRODUCT

특징

- 내열성, 안전성 : $-200^{\circ}\text{C} \sim +200^{\circ}\text{C}$ 의 폭넓은 온도 영역에서 사용가능
- 내약품성 : 불활성, 강산성, 강알칼리성 화학물질 침투 없음.
- 내후성 : 장기간 옥외 노출에도 높은 광선투과성과 기계특성 유지
- 광선투과성 : 50미크론 필름에서 전광선 투과율 95%
- 비점착성
- 전기적특성, 절연성 : 얇은 피막에서도 높은 절연강도 발휘



Film 규격

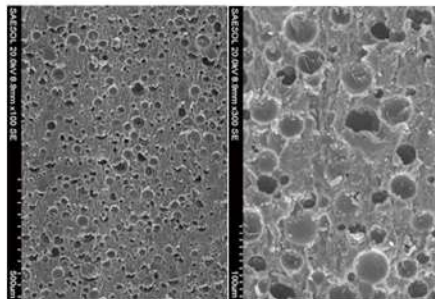
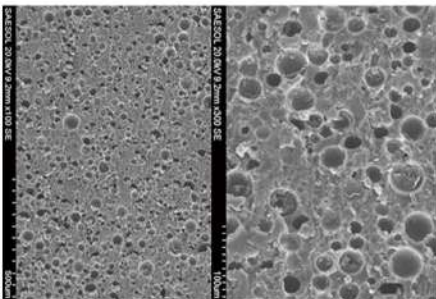
Thickness	Width	Length
100 μm	1,000 mm	120M
	1,200 mm	120M
50 μm	1,000 mm	120M
	1,200 mm	120M

적용사례

- 전지전자분야 : 프린트기판, 전자부품 등 이형 필름
- 태양전지용 필름
- 반도체/LCD 분야
 - AM OLED INKJET PRINTING DUMMY FILM
 - CMP CHAMBER & WINDOW CMP SLURRY 오염 방지
 - LCD PHOTO FUME 확산 시 오염 방지 및 CLEANING 간편화
 - GAS 사용장비 COVER 및 내부 부식방지 COATING제
- 금형장비 이형제
- SOLAR CELL 완성품 오염 방지 COVER 제

CMP PAD

PRODUCT



Property	Unit	CMP PAD _ GtoN BP7x		
Pad Size	Inch	30"(IC1010대체)	20"(IC1010대체)	20"(IC1000대체)
Top THICKNESS	mm	2.00 ± 0.05	2.00 ± 0.05	1.20 ± 0.05
Stack THICKNESS	mm	3.60 ± 0.15	3.05 ± 0.15	1.95 ± 0.15
DENSITY	g/cm ³	0.780 ± 0.025	0.780 ± 0.025	0.780 ± 0.025
HARDNESS	Shore D	58.5 ± 3	58.5 ± 3	58.5 ± 3
ELASTIC MODULUS	MPa	69.0 ± 15	69.0 ± 15	69.0 ± 15
GROOVE DEPTH	μm	770 ± 30	770 ± 30	450 ± 20
GROOVE PITCH	μm	3000 ± 30	3000 ± 30	1500 ± 15
GROOVE WIDTH	μm	490 ± 25	490 ± 25	250 ± 15

EP Coil Tube

PRODUCT

- 적은 용접
- 빠른 설치
- 온라인 MTR을 통한 손쉬운 검증
- 세계적 수준의 품질 보증
- 1/8", 1/4", 3/8", 1/2" Seamless Tubing
- 시공 시간 단축



□ How to install EP-TUBE (Coil : Stick) #1

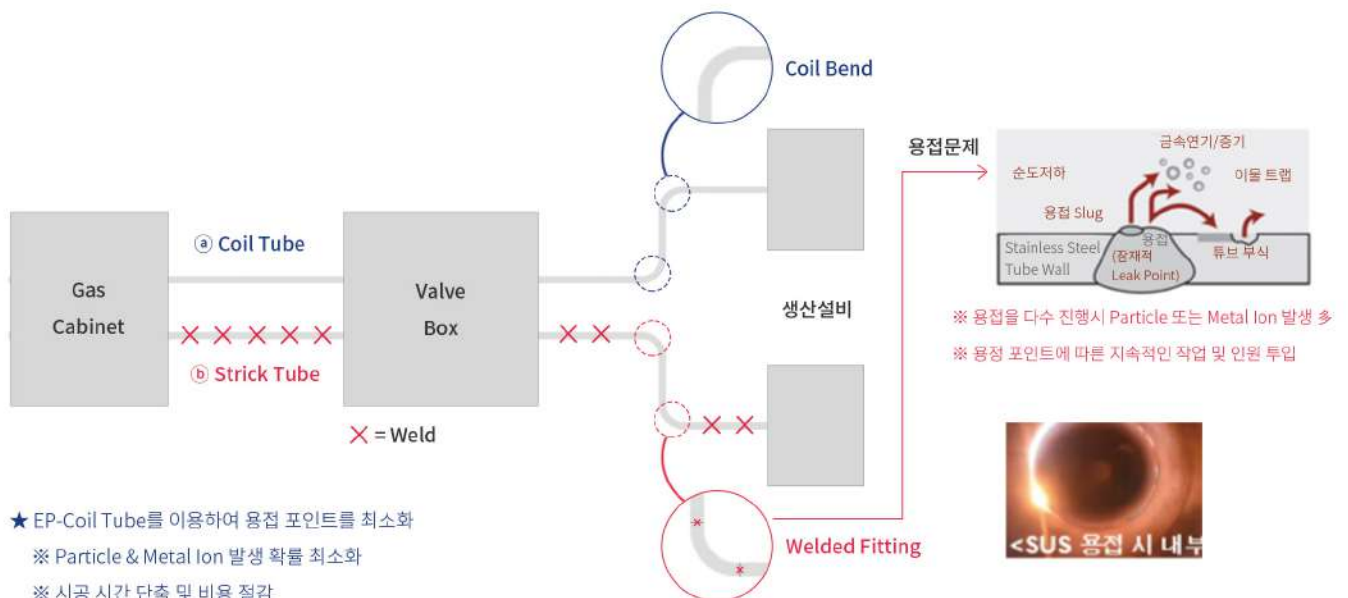
① Coil Tube 시공 (개선안)



② Coil Tube 시공 (개선안)



□ How to install EP-TUBE (Coil : Stick) #2

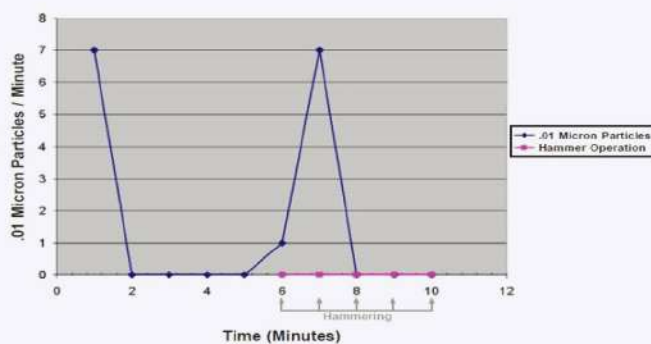
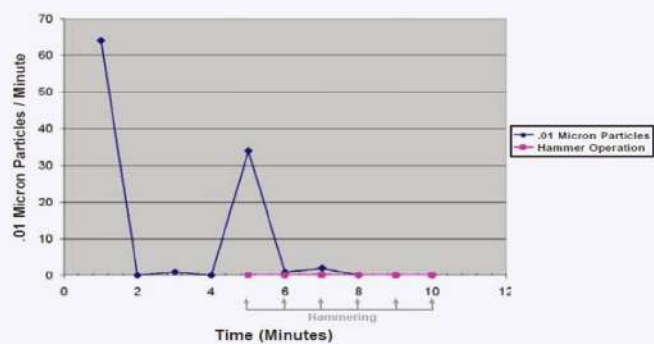


EP Coil Tube

PRODUCT

EP Coil Evaluation Data

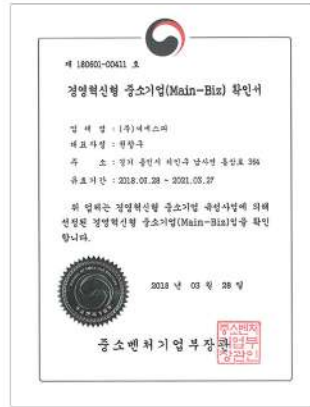
Typical Value Parameter	Tech 50CR EP Coil			Tech 50 Stick	Tech 50 Spec
	As shipped	Post bend/ straighten	Post Pull/Straighten		
Ra uin	4.8	6.5	6.5	4.9	10 MAX
Defect count (SEM)	4.3	9.9	14.0	13.6	40 MAX
ESCA (Cr/Fe Ratio)	3.3	3.0	3.7	2.8	1.5 min
ESCA (Cro/FeO Ratio)	4.5	4.6	6.2	4.1	3.0 min
Oxide Thickness (Å)	32.5	25	24	28.5	20 min



품질인증 / 경영 인증현황



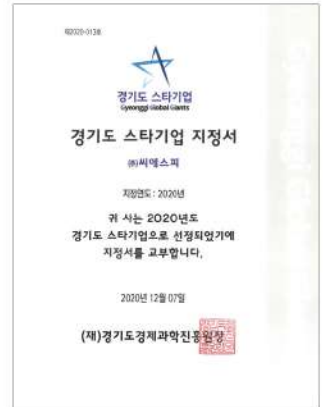
이노비즈인증서



메인비즈인증서



경기도유망중소기업인증서



경기도스타기업지정서



ISO9001 인증서



ISO14001 인증서



ISO45001 인증서



기업부설연구소인정서

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