

COMMITTED TO PROVIDING INNOVATIVE SOLUTIONS FOR

PLASMA

SURFACE TREATMENT

SHENZHEN NAEN TECH CO., LTD



- 01 COMPANY PRESENTATION
- 02 PLASMA INTRODUCTION
 - 03 PLASMA APPLICATIONS
- 04 PLASMA PRODUCTS



COMPANY PRESENTATION

• • • •

COMPANY PROFILE



Shenzhen Naen Tech co.,Ltd was founded in 2010. It is a leading plasma high-end equipment enterprise headquartered in china with a global orentastion. We specialize in providing highly competitive plasma surface treatment solutions to industries worldwide. As a leader in the international field of plasma technology, our company has devoted years to continuous research and development of plasma technology and equipment. Our flagship products include atmospheric plasma jet treatment machines, vacum plasma cleaning machines, plasma degumming machines, plasma etching machines, DBD device and more. These technologies have been widely adopted in industries such as semiconductor, consumer electronics, automotive manufacturing, new energy, biomedicine, and life sciences.

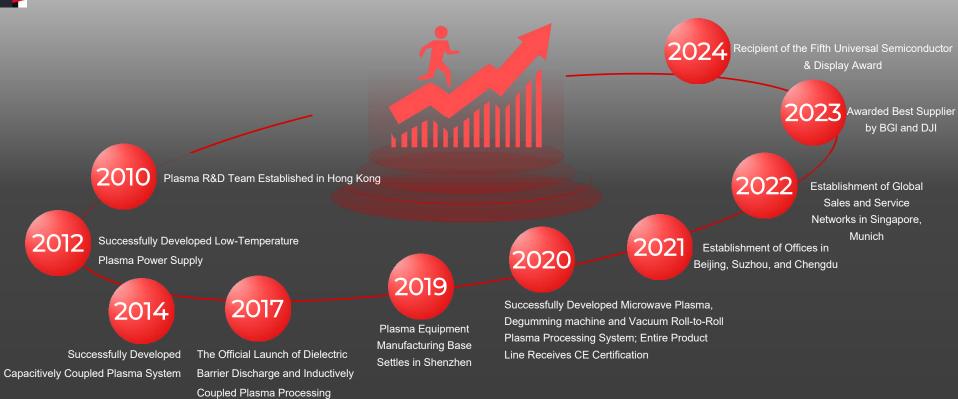
We actively pursue a globalization strategy to enhance our global competitivenes. Our products are curently sold in numerous countries and regions, including the United states, Canada, Germany, France, Australia, and Southeast Asia. To date, we have provided nearly 1,000 surface treatment solutions to global partners, with cumulative sales exceeding 30,000 sets. This success is attributed to the trust and support of our global clientele. We remain steadfast in our commitment to research and development, relentless innovation, and ensuring sustained global expansion to provide customers with superior quality and more efficient products and services.



DEVELOPMENT HISTORY

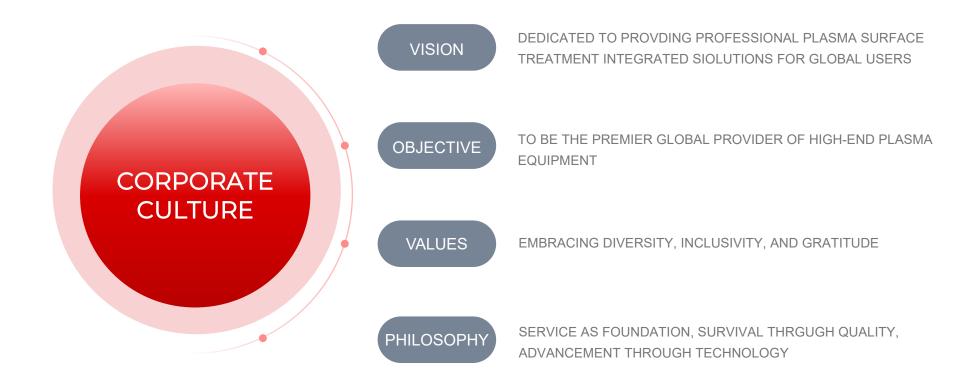
Systems





CORPORATE CULTURE





HONORS AND QUALIFICATIONS





































STRATEGIC LAYOUT

10 + 全球运营网络 提供全方位高质量服务

10+ Global Operating Network Providing Comprehensive High-quality Services

O 1家分公司 1 SUBSIDIARY

纳恩科技 (苏州)

○ 3个办事处

3 BRANCH OFFICE 成都、北京、武汉

○ 5个国际服务网点

5 INTERNATIONAL SERVICE POINTS 新加坡、俄罗斯、韩国、德国、墨西哥



客服体系

CUSTOMER SERVICE SYSTEM



5Min 对接需求 < 5分钟 Respond to inquiries < 5 Minutes









STRATEGIC ACCOUNTS



秉持"以服务为基础,以质量求生存,以科技求发展"的服务理念 纳恩科技已与5000+客户达成优质合作

Adhering to the service philosophy of "service as the foundation, survival with quality and development with technology", Naen Tech has established high-quality cooperation with 5000+ customers









CityU

香港城市大學

























4 學次州蘇



\$



A GA







OFILM

欧菲光



● 中州光电

●漁鳥



















中国电科

Hisense

滴信















雷曼光电

















































(M)





PLASMA INTRODUCTION

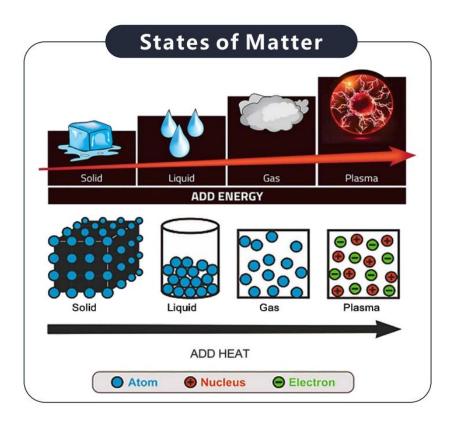
• • • •

WHAT IS PLASMA



Plasma is a form of matter that is composed mainly of free electrons and charged ions. It exists widely in the universe and is considered as the fourth state of matter besides solid, liquid and gas. Plasma is composed of a large number of free electrons and ions, which are electrically neutral in general.

In nature, we can observe the existence of plasma in lightning, aurora borealis, flame, sun and other phenomena. In artificial environment, plasma is also widely used in neon tube, welding process, flashlight and other fields.



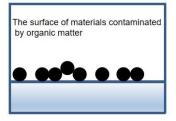
THE ROLE OF PLASMA

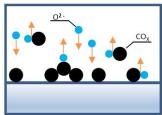


SURFACE CLEANING

REMOVAL OF ORGANIC CONTAMINANTS

- O₂ / Air / Ar
- Through physical bombardment and chemical reactions, organic matter is transformed into a gas phase and expelled

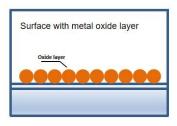


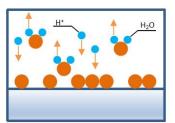


The surface of materials after plasma cleaning

REMOVAL OF OXIDE LAYER

- H₂
- Chemical reaction with the oxide layer





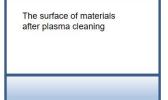
The surface of materials after plasma cleaning

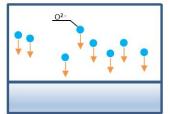
THE ROLE OF PLASMA

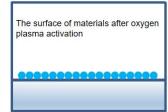


SURFACE ACTIVATION

- O₂ / Air
- Incorporating plasma-generated free radical groups into the surface of materials polarize the material surface





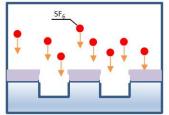


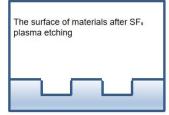
SURFACE ETCHING

The process of roughening and patterning the surface of a material using a specific plasma

- O₂ , Ar, CF4, SF6 etc
- Dry etching by chemical and physical methods

Mask

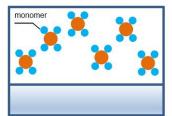


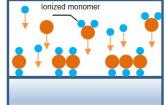


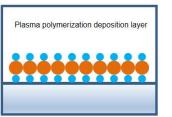
SURFACE COATING

Plasma polymerization reaction involves introducing precursor monomers into a vacuum chamber, ionizing them, depositing them onto the material surface, followed by polymerization to form a polymer layer

 Hydrophobic Layer、Hydrophilic Layer、Protective/Barrier Layer、Dry Lubricating Layer、Oleo-phobic layer







MANIFESTATION OF SURFACE ACTIVITY



CONTACT ANGLE MEASUREMENT

Water and any solid come into contact with each other to create an angle, known as the water drop angle. The surface energy of a substance can usually be judged by testing the size of the water drop angle on its surface. The smaller the contact angle, the better the surface wettability (hydhlicitv), making it easier to adhere; the larger the contact angle, the more hydrophobic the surface, indicating heavier organic contamination or poor surface adhesion.



MANIFESTATION OF SURFACE ACTIVITY



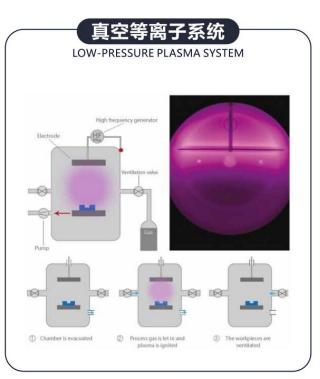
DYNE TESTING

The easiest way to test the dyne value is to use a dyne pen perpendicular to the plane of the test substrate and draw a line on its surface to determine its dyne value. Dyne value is available in various numbers, such as 36, 38, 40, 42 which represent corresponding surface tension coefficients. Generally, the higher the dyne value is, the greater the surface tension of the material is, and the better the bonding performance between the surface and another material is.

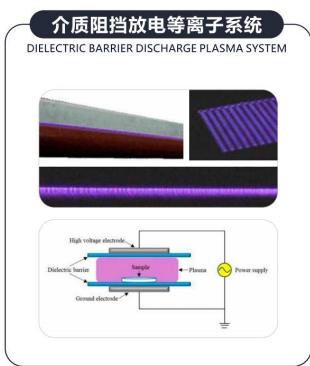


PLASMA DISCHARGE MECHANISM











03

PLASMA APPLICATION

• • • •



AUTOMOBILE MANUFACTURING









3C INDUSTRY









Application:

- Pretreatment before bonding and wrapping of door panels, steering wheels, bumpers and other automotive interior and exterior trim parts
- Foamed PU before pouring or before skin pasting
- Pre-treatment of spray paint, activation before flocking (instead of primer)
- Windshield bonding pre-treatment to improve adhesion
- Before bonding automotive lights, seals, ignition rings, sensor housings and other components
- Pretreatment of automotive electronics PCBA before gluing to improve adhesion
- Replace traditional primer processes: Improve the adhesion of the coating to the substrate, reduce costs and reduce environmental pollution

Application:

- In the middle frame of mobile phone/notebook, the TP module is cleaned and activated before dispensing to improve the adhesion
- Cover glass coating, cleaning and activation before screen printing
- Plasma cleaning prior to dispensing of laptop assembly to improve adhesion
- PCB/FPC bonding before cleaning, PTH before hole removal, pad organic contaminant cleaning
- The camera lens and module assembly process is cleaned and activated
- Pre-processing of silk screen printing for headphones, audio, notebooks, etc

Collaboration Clients





































SEMICONDUCTOR









Application

- Wafer surface cleaning, bonding, and degumming
- Injection molding resin/lead frame bonding
- D/B die attachment pretreatment
- Pretreatment before W/B wire bonding (oxide removal/organic cleaning)
- Pretreatment before molding
- Etching processes for organic thin films, silicon carbide, silicon nitride, etc.
- Substrate packaging ball planting (Bumping) / Under Fill bottom filling before cleaning and activation

BIOMEDICAL







Application

- Cleaning and activation of various catheters, culture dishes, stents, catheters and implants, improving biocompatibility
- Cleaning and activation of various pipettes, capillaries, microplates, and ELISA plates
- Cleaning and anti-fogging technology for various respiratory masks
- Cleaning and activation of CT and MRI equipment components
- Ultrasonic detection/blood testing/oral care products manufacturing
- Manufacturing of contact lenses and OK lenses
- PDMS and other microfluidic chip bonding pretreatment

Collaboration Clients































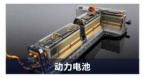


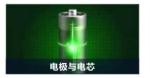




NEW ENERGY









OPTICAL COMMUNICATION









Application

- Photovoltaic glass, ITO/FTO cleaning and activation
- Cleaning and activation of glass coating (AF, AG, AR) before coating to improve adhesion
- Lithium battery pole piece welding, pretreatment before battery cell coating
- Pretreatment of positive and negative electrode materials of lithium batteries before coating to improve adhesion and clean organic matterDuring the manufacturing process of solar cells, materials such as molybdenum, aluminum, copper, stainless steel, glass, and thin films (PVC, EVA, PET, PI, PEN, ITO) are processed
- Power battery packaging pre-treatment to improve battery pack packaging quality and reliability

Application

- Lens coating and pre-treatment
- Remove dirt and organic matter from the surface of optical fiber connectors to improve adhesion
- Clean the surface of optical cables and improve surface wettability and adhesion
- Optical chip packaging process (such as active optical chips, passive optical chips, etc.)

Collaboration Clients



































DISPLAY INDUSTRY







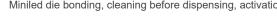


Application

- Miniled die bonding, cleaning before dispensing, activation
- LCD flexible film circuit bonding
- COG/COF binding pre-treatment, activation
- TFT cleaning before PL layer
- Improvement of blue OLED efficiency
- moisture removal
- Etching process

Application

- Activation and etching of carbon nanomaterials
- Study on Modification of New Polymers
- Research on Nanocoatings
- Military stealth materials/pretreatment of advanced military weapons and equipment materials
- Aerospace connection equipment/surface treatment before bonding of aerospace materials
- Textile printing and dyeing pretreatment to improve dyeing





- Glass cleaning, polarizer bonding pre-treatment

- PI film cleaning and activation

Collaboration Clients













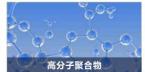






RESEARCH AND OTHERS

























海 纳 百 川 , 感 恩 相 遇



PLASMA PRODUCTS

• • • •

LOW-PRESSURE PLASMA SERIES



Desktop Low-Pressure Plasma Cleaner







- Compact and easy to install in appearance
- Utilizes German-patented plasma discharge technology
- User-friendly touchscreen interface supports both manual and automatic operation
- Offers multiple parameter settings or precise and reproducible results
- Fast processing time, environmentally friendly with no harmful emissions
- Ideal for routine laboratory research and small-scale production

Desktop Low-Pressure Plasma Cleaner



Models

								I
Model	NE-PE02	NE-PE05	NE-PE10	NE-PE25	NE-PE05F	NE-PE13F	NE-PE13FH	NE-PE25F
Cavity size (mm)	Ф100*270 (D)	Ф140*270 (D)	200*270*200 (L*W*H)	380*390*170 (L*W*H)	Ф143*270 (D)	240*280*200 (L*W*H)	240*280*200 (L*W*H)	380*390*170 (L*W*H)
Cavity volume (L)	2	5	10	25	5	13	13	21
Processing layers	1	1	2	2	1	1	3	1
Processing area (mm)	80*240	135*250	180*210	300*300	135*250	230*205	205*205	300*300
Plasma Generator	40 KHz/300W	40 KHz/300W	40 KHz/600W	40 KHz/1000W	13.56Mhz/200W	13.56Mhz/300W	13.56Mhz/300W	13.56Mhz/300W
Dimensions (L*W*H)mm	445×560×535	590×565×470	600×630×565	650×740×665	550×670×580	600×645×610	640×665×580	650×740×665
Facility Conditions		Voltage:AC220V; Gas Pressure:0.4-0.6Mpa						
Gas channel		Float Flowmeter/MFC,2 channels(Customizable)						
Vacuum Measurement		SMC Negative Pressure Gauge/Pirani Gauge						
Control System		PLC+HMI						
Vaccum Pump	Dry pump/oil pump							

Inductively Coupled Plasma Cleaner







- Heat-resistant quartz chamber material to prevent chamber wall contamination
- Inductive coupling discharge for higher and uniform ion density
- 13.56MHz independent solid-state RF power supply for continuous and stable power adjustment
- Low processing temperature with no thermal impact on sample surface
- User-friendly touchscreen interface, supporting manual and automatic operation
- Support for multiple parameter formula settings for precision and repeatability

Inductively Coupled Plasma Cleaner



Models

设备型号 Model	NE-Q05	NE-Q05H	NE-Q15	NE-Q15H	NE-Q30H		
腔体尺寸 Cavity size(mm)	Ф150*280 (D) Ф150*280 (D)		Ф250*300 (D)	Ф250*300 (D)	Ф350*300 (D)		
腔体容量 (L) Cavity volume (L)	5	5	15	15	30		
腔体材质 Cavity material	石英耐热玻璃 Quartz	石英耐热玻璃 Quartz	石英耐热玻璃 Quartz	石英耐热玻璃 Quartz	石英耐热玻璃 Quartz		
等 离子发生器 Plasma generator	13.56MHz/200W	13.56MHz/300W	13.56MHz/500W	13.56MHz/500W	13.56MHz/1000W		
外形尺寸 Dimensions(L*W*H)mm	510*600*600	550*675*660	755*880*1580	755*880*1580	855*800*1675		
厂务条件 Facility conditions	电压/Voltage: AC220V; 气压/Gas pressure: 0.4-0.6Mpa 电压/Voltage: AC38 50/60Hz						
工艺气路 Gas channel	浮子/MFC,2路(可定制) Float Flowmeter/MFC, 2 Channels(Customizable)						
真空测量 Vacuum measurement	负压表/皮拉尼真空计 Negative Pressure Gauge/Pirani Gauge						
控制系统 Control system	PLC + HMI						
真空泵 Vacuum pump	干泵/油泵 Dry pump/oil pump						

Powder-specific Plasma Cleaning Machine





Application

 Used for surface cleaning, etching, activation, grafting treatment of powdered and granular materials increasing surface tension, and enhancing hydrophilic properties.





- Dynamic rotation of the vacuum chamber ensures comprehensive treatment of samples from all angles
- Uniform efect with no dead-angle processing, making it ideal for surface treatment of small particles and powder samples

Powder-specific plasma cleaning machine



Models

设备型号 Model	NE-PE05X	NE-PE15X	NE-PE30X	NE-PE60X		
腔体尺寸 Cavity size(mm)	150(L)*150(W)*270(H)	200(L)*200(W)*350(H)	Ф300*320 (D)	Ф500*400 (D)		
腔体容量 (L) Cavity volume (L)	6	15	30	60		
滚筒容量(L) Drum capacity(L)	1.5	5	10	20		
等 离子发生器频率 Plasma generator frequency	40KHz/13.56MHz	40KHz/13.56MHz	40KHz/13.56MHz	40KHz/13.56MHz		
等离子发生器功率 Plasma generator power	300W/200W	600W/300W	1000W/500W	2000W/1000W		
外形尺寸 Dimensions(L*W*H)mm	650*740*535	700*790*585	870*740*1540	905*1070*1740		
厂务条件 Facility conditions	电压/Voltage: AC220V; 气压/Gas pressure: 0.4-0.6Mpa 电压/Voltage: AC380V,50/60Hz; 气压/Gas pressure: 0.4-0.6Mp					
工艺气路 Gas channel	浮子/MFC,2路(可定制) Float Flowmeter/MFC, 2 Channels(Customizable)					
真空测量 Vacuum measurement	负压表/皮拉尼真空规 Negative Pressure Gauge/Pirani Gauge					
控制系统 Control system	PLC+HMI					
真空泵 Vacuum pump	干泵/油泵 Dry pump/oil pump					

Integrated low-pressure plasma cleaning machine





- This product series is designed aroundourcore technology in plasma surface treatment and plasma process development, with chamber capacities ranging from 30L to 250L (larger chambers customizable)
- Combining advanced plasma technology, it enables reliable and repeatable industrial processing while remaining flexible enough for researchand development of cutting-edge plasma processes
- Customizable chambersizes and layers meet the varied usage needs of different customers

Integrated low-pressure plasma cleaning machine



Models

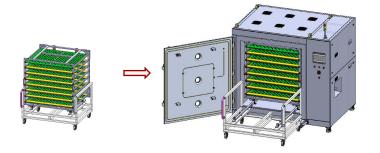
设备型号 Model	NE-PE40 (F)	NE-PE60(F)	NE-PE80(F)	NE-PE110(F)	NE-PE160(F)	NE-PE210(F)	
腔体尺寸 Cavity size(L*W*H)mm	350*405*300	400*450*370	450*465*355	500*500*470	550*600*500	600*600*600	
腔体容量 (L) Cavity volume (L)	42	66	80	117	165	210	
处理层数 Processing layers	4	6	6	8	8	8	
单层有效面积 Processing area per layer(L*W)mm	300*300	360*370	410*390	450*420	510*510	560*520	
等离子发生器频率 Plasma generator frequency	40KHz/13.56MHz	40KHz/13.56MHz	40KHz/13.56MHz	40KHz/13.56MHz	40KHz/13.56MHz	40KHz/13.56MHz	
等离子发生器功率 Plasma generator power	1000W/500W	2000W/500W	2000W/1000W	3000W/1000W	3000W/1000W	3000W/1200W	
外形尺寸 Dimensions(L*W*H)mm	685*830*1450	905*1070*1740	1100*1145*1760	940*1085*1765	1170*1190*1825	1350*1200*1850	
厂务条件 Facility conditions	电压/Voltage: AC380V,50/60Hz; 气压/Gas pressure: 0.6-0.8Mpa						
工艺气路 Gas channel	浮子/MFC,2路(可定制) Float Flowmeter/MFC, 2 Channels(Customizable)						
真空测量 Vacuum measurement	负压表/皮拉尼真空计 Negative Pressure Gauge/Pirani Gauge						
控制系统 Control system	PLC+HMI						
真空泵 Vacuum pump	干泵/油泵 Dry pump/oil pump						

Customized large cavity plasma surface treatnebt machine





- The cavity size can be customized, the maximum compatible product size is 2m*2m
- Cooling water circuit design to accurately control the temperature of the cavity and plate
- The most effective ion reaction space after simulation, more uniform treatment
- Adopt self-developed plasma source, automatic and precise matching
- Multiple safety protections, low power consumption



Customized plasma cleaning machine for material boxes





Product parameters

Model	NE-IC08		
Chamber size	600(W)*500(D)*450(H)mm		
Slots	8 grids (customizable)		
Generator	13.56Mhz/500W		
Vacuum measurement	Pirani		
Process gas	MFC, 2-way (customizable)		
Control system	PLC+HMI		
Vacuum pump	Dry pump/Oil pump		

Customized plasma cleaning machine for PCB boards







- Optimize gas consumption, and use CF4 and other gases economically and efficiently
- Proprietary electrode design provides maximum processing capacity and uniformity
- Special gas path design ensures that the gas is evenly distributed throughout the plasma chamber to achieve process uniformity lower operating costs

Microwave plasma cleaning machine





ECR料架(电子回旋共振)





- Plasmaexcited by high-frequency 2.45GHz
- No self-bias, no discharge pollution, effectively prevent electrostatic damage
- High plasma density and high production efficiency
- Ionic motion has low impact and does not generate UV (ultraviolet) radiation
- Suitable for cleaning process ofsensitive circuit and semiconductor process

Microwave plasma cleaning machine



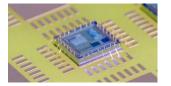
Product Parameters

设备型号 Model	NE -MW05	NE-MW15	NE-MW70		
腔体尺寸 Cavity size(mm)	Ф160×260 (D)	225(L)*290(W)*225(H)	390*470*400		
腔体容量 (L) Cavity volume (L)	5	15	79		
处理层数 Processing layers	1 层/Layer	1 层/Layer	6料盒/Magazine		
等离子发生器频率 Plasma generator frequency	2.45Ghz	2.45Ghz	2.45Ghz		
等离子发生器功率 Plasma generator power	1000W	600W	1000W		
外形尺寸 Dimensions(L*W*H)mm	730*584*382	505*530*452	1240*1290*1820		
厂务条件 Facility conditions	电压/Voltage: AC220V; 气日	电压/Voltage: AC380V, 50/60Hz			
工艺气路 Gas channel	浮子/MFC,2路(可定制) Float Flowmeter/MFC, 2 Channels(Customizable)				
真空測量 Vacuum measurement	负压表/皮拉尼真空计 Negative Pressure Gauge/Pirani Gauge				
控制系统 Control system	PLC+HMI				
真空泵 Vacuum pump	干泵/油泵 Dry pump/oil pump				

Application







Packaging field

Wire bonding\Eutectic welding\Improve the reliability of Die Bonding process

◆ Remove glue and coating treatment

Remove the photoresist for wafer\Motor flat copper wire paint removal layer\PCB substrate epoxy resin removal\Removal of graphite boat coating(SiN)\LED bracket solderingremoval

Redox treatment

Lead frame oxidation-reduction

Surface activation

Wafer surface activation/PCB substrate Die processing

On-line low pressure plasma cleaning machine





- Mainly designed for semiconductor integrated circuit IC packaging and LED bracket cleaning processes
- Can clean four different widths of products simultaneously, and the number oftracks can be increased or decreased
- Adjustable track width, compatible with products of different specifications and sizes, and independent sheet cleaning greatly improves cleaning uniformity
- Automatic transmission of lead frame, automatic return to the material box after cleaning, full automation, no contactreduce the risk of secondary pollution
- Proprietary discharge structure and gas path design greatly improve the eficiency and uniformity of plasma surface activation decontamination

On-line low pressure plasma cleaning machine



Product Parameters

腔体尺寸 Cavity size(mm)	340(L)*570(W)*60(H)(可定制/Customizable)		
适合产品规格 Suitable for product dimensions	158-300mm(L)*25.4-100(W)		
轨道数量 Number of tracks	4轨/5轨/6轨(可定制) 4 tracks/5 tracks/6 tracks (Customizable)		
等离子发生器 Plasma generator	13.56Mhz/1000W		
工艺气路 Gas channel	MFC,2路(可定制) MFC, 2 Channels(Customizable)		
真空测量 Vacuum measurement	皮拉尼真空计 Pirani Gauge		
控制系统 Control system	PLC+PC/HMI		
与MES系统联网 Networking with MES system	选配 Optional		
厂务条件 Facility conditions	电压/Voltage: AC380V, 50/60Hz; 气压/Gas pressure: 0.4-0.6MPa		
产品上下料方式 Loading and unloading method	自动升降,自动进、出料,产品片式清洗后,回到清洗前的存放位置 Automatic lifting, automatic loading and unloading. After the product is cleaned in sheet form, it will automatically return to its original position		
真空泵 Vacuum pump	干泵/油泵 Dry pump/oil pump		

Applications

□ **固晶前清洗** Cleaning before solidification



□◆ 上锡前清洗
□□ Cleaning before soldering



□◇ 引线键合前清洗
□□ Cleaning before wire bonding



有机污染物清洗

□◇ 有机污染物清洗 □□ Organic pollutant cleaning



□◇ **塑封前清洗**□□ Cleaning before plastic sealing

亲水性能提升

Improved hydrophilicity



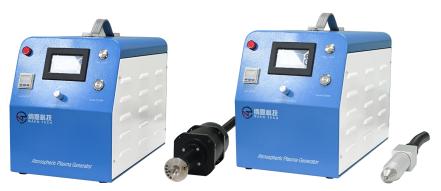




ATMOSPHERIC PLASMA SERIES



Atmospheric plasma cleaning machine



Nozzle Specifications

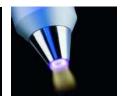
















Features

- The device is compact in size, convenient to carry and move, savingcustomers space for use
- Using German high-voltage excitation power circuit technology, high-density plasma is generated to ensure outstanding cleaning effect
- Emperature safety protection function, overload protection function, abnormal air pressureprotection function, short circuit and open circuit alarm protection function, and various misoperation protection functions
- Long service life, low maintenance and repair costs, convenient for customer cost control investment costs
- Can be installed in an In Line style on customer equipment production lines, reducing customer
- Multiple types of plasma spray guns and nozzles can be selected for use in different occasions, meeting the needs of various products and processingenvironments

Atmospheric plasma cleaning machine



Models

	Model	NE-ATD01/02/03	NE-ATR01/01/03
	Processing width	2-10mm (optional)	25-80mm(optional)
Plasma Nozzle	Weight	1kg	5kg
	Processing Temperature	40-60 °C	
	Processing Height	5-15mm	
	Processing Speed	10-300mm/S	
	Size	244mm*474mm*310mm	
Plasma Generator	Weight	10KG	
	Frequency	15Khz~32Khz	
	Power	1200W (adj	ustable)
	Cable Length	3-5m(customizable)	
	Gas	dyy compressed air without oil or water	
Unity Machine Parameter	Input Gas Pressure	≥0.4MPa(4Kg)	
rarameter	Output Gas Pressure	0.1-0.3MPa(1-3KG)	
	Power Supply	AC220V,50/60Hz	
	Work Environment	23±10°C,humi	dity 30±10%

Offline Atmospheric Plasma Cleaning Machine



Features

- Can be paired with a professional motion platform, one-keystart, simple operation.
- Various configurations available, including single or double stations, single or double heads, to meet diverse needs.
- Customizable motion platform, can be equipped with safety protection cover to ensurework safety

Application

- Through atmospheric plasmatreatment, materialsurface adhesion canbe improved, and the surface hydrophilicity can be enhanced.
- Pre-treatment before dispensing improves adhesion strength, before screen printing enhances screen printing adhesion, and before inkjet coding enhance sink adhesion





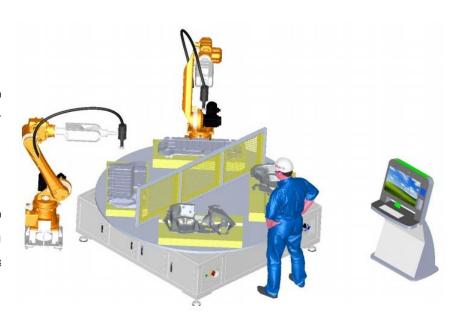


On-line Atmospheric Plasma Cleaning Machine



Product introduction

- Atmospheric plasma automation system, through the seamless combination
 of automation equipment and atmospheric plasma components, users car
 quickly realize the application of surface treatment of various products.
- At present, it is mainly used in the automotive industry, mobile phone industry, packaging industry, silk screen industry, and surface treatment o various special-shaped products. Through the robotic arm, it is suitable for various industries and various products of various types. Users can choos different atmospheric plasma spray guns according to different product requirements, which are suitable for the surface treatment of different products.



On-line Atmospheric Plasma Cleaning Machine



Product Description

Atmosphericplasma cleaning machines can be customized with multi-head assembly line solutions or integrated into production lines for online processing. They can be tailored to meet specific industry requirements and offer diverse applications in various scenarios.



Robotics arm with plasma nozzle



4 plasma spray nozzles



In-line dual plasma spray gun



8 plasma spray nozzles



In-line dual channel



10 plasma spray nozzles

Thin Film Corona Discharge Device







Features

- Utilizing stable, advanced, and reliable high-power generator
- Equipped with automatic protection against over voltage, overload, overcurrent, short circuit, and stalling
- Used to increase the surface tension of thin films, enhance adhesion, and facilitate the adsorption of printing ink

Processing surface	Singlr-sided/Double-sided optional
Film width	0-2000mm(customizable)
Electrodes	Ceramic or mental electrodes(optional)
Corona roller	Metal, ceramic, rubber-covered, coated rollers(optional)
Film thickness	0.2-1mm
Applicable materials	High molecular polymer films such as PP、PET、PTFE、 PE, aluminum foil, copper foil, etc
Tension correction	Automatic tension correction
Processing speed	Both winding and unwinding equipped with driving force, 0~100m/min
Corona power	0~10KW Adjustable 43

Sheet Corona Discharge Device





Features

- Short processing time, fast speed, can be directly connected to the production linefor processing
- Suitable for surface treatment of various non-conductive polymers/conductive sheets, plates, films, etc., such as polypropylene, polyethylene, polyvinyl chloride.various glasses, PMMA, PS, etc., to improve the adhesion of product surfaces

Parameters

Processing width	100~1000mm	
Processing speed	15-40m/min	
Processing thickness	1-5mm	
Operating frequency	15KHZ-25KHz	
Operating power	6KW	
Output voltage	10-15KV	
Input voltage	AC220V±10%	

DBD Plasma Cleaning Machine

















Features

- Original imported core parts, using a unique discharge structure, with a normal treatment temperature lower than 45°C
- The processing effect is uniform and stable, and it is not easy to have phenomena such as arcbreakage,arc deviation,and arc starting
- Independently developed plasma generator to ensure plasma uniformity and stable processing
- Plasma modules are suitable for various narrow spaces and can be installed on production linestoachieve continuous production operations
- Low gas cost,usingN2/CDA mixture gas
- Customizable according to the width of the product

Discharge Mode	DBD	
Generator	300W~15KW(optional)	
Processing Width	10mm~2000mm(customizable)	
Processing Height	1~3mm(suggestion 1.5mm)	
Gas Usage	ultra-pure nitrogen gas and compressed air	
Cooling Method	air cooling: ≤300mm water cooling: >300mm	
Length of high-voltage line	3.5 meters or 6 meters (customizable)	
Assembly line operation	support available, specific solutions can be provided	
	according to customer needs	

١

PLASMA ETCHING MACHINE

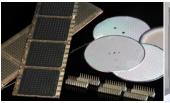


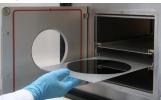
RIE

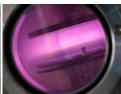
The equipment utilizes capacitively coupled plasma (ccp) discharge to dissociate process gas molecules entering the etching chambergenerating plasma. Some reactive species in the plasma react chemically with the exposed surface of the material to be etched. Meanwhile, underthe inluence of RF bias voltage, positive jons in the plasma physically bombard the surface of the material to be etched achieving the purpose of chemically and physically combined etching.



The equipment utilizes radio frequency (RF) antennas to generate high-density plasma in the discharge chamber through inductive coupling, The etching workbench simultaneously introduces RF bias voltage. Under the influence of RF bias voltage, the plasma vertically bombards the exposed surface of the material to be etched, and undergoes chemical reactions with the material surface, achieving the purpose of chemically and physically combined etching of the sample.













PLASMA ETCHING MACHINE



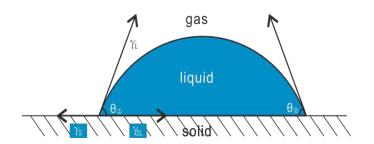
Models

Model	NE-RIE-601	NE-ICP-601	
Power	600W, RF power source, including automatic matching	Upper electrode (coupling electrode): 1000W;Lower electrode (bias electrode): 600W, RF power source including automatic matching	
Cavity size	Ф 300mm (c	or Φ 350mm)× H300mm	
Number and size of samples	6 inches (or 8 inches), 1 piece or multiple pieces scattered		
Etching non- uniformity	±3% - ±5%		
Vacuum level indicators	Ultimate vacuum: $\le 2 \times 10^{-4}$ Pa Pumping speed: The system is purged with dry N ₂ to break the vacuum, briefly exposed to atmosphere, then pumped down to 9×10^{-4} Pa ≤ 40 min		
Etching gas	Fluorine-based or less corrosive gas		
Etching rate	0.5-4µm/min(Depending on specific materials and processes)		
Workbench	Automatic lifting, adjustable etching distance within the range of 60mm to 120mm. Includes independent water cooling to control the sample stage temperature between 10°C and 35°C		
Operating mode	Fully automatic + semi-automatic control		

ADDITIONAL DEVICES



Contact Angle Measurement Instrument





Parameters

Model	NE-A1	NE-A2	NE-A3
Operating models	Manual droplet dispensing	Manual droplet dispensing	Automatic
Camera	1.3 megapixels	5 megapixels	5 megapixels
Light source	White LED cold light source flash	Blue LED cold light source direct illumination	Blue LED cold light source direct illumination
Maximum sample size	Within 16 inches, thickness	Within 10	Within 12
that can be measured	up to 20mm	inches(expandable)	inches(expandable)
Measurement range	0 ~ 180°		
Precision	< 0.1°		
Resolution	0.01°		

ADDITIONAL DEVICES



Ultrasonic cleaning machine

- The cleaning tank is made of high-qquality stainless steel, seamlessly formed in one piece, ranging from 2L to 200L, fully meeting different needs.
- The ultrasonic working time and cleaning temperature are adjustable, with digital real-time display.
- Supports single or multiple frequency options, with continuously adjustable power.
- The outer shell pf the cleaner is made of high-quality stainless steel plate, and the cleaning basket is argon welded with stainless steel mesh.
- Multi-tank cleaning can be customized according to customer needs.



ADDITIONAL DEVICES



PCBA cleaning machine

- Organic and inorganic pollutants such as rosin flux, water-soluble flux, no-clean tux and solder paste can be thoroughly cleaned after pCB welding.
- Stainless steel construction, excellent workmanship, rugged and resistant to acid and alkali cleaning fluids
- The built-in filter unit can realize the recycling of solution and reduce the amount of solution
- Multiple DI water rinses, high standard cleanliness
- Double-layer cleaning basket, which can load PCBA in layers



CONTACT US

Contact Info

- Headquarters: Floor 5, Building A, Huamingcheng High-tech Industrial Park,
 Guangming District, Shenzhen
- Branch: Room 908, Block B, Modern Plaza, No. 8 Weiye Road, Kunshan City, Jiangsu Province
- Telephone: 0755-2359 5097 / 173 0440 3275
- E-mail: sales@naentech.cn

Website

https://www.naenplasma.com

https://www.cnplasma.com

To learn more about "Naen Plasma", Please follow the following media accounts







公众号

抖音号

视频号