纳恩科技
NAEN TECH

Committed to providing innovative solutions
for material surface treatment.

NE-PE13F

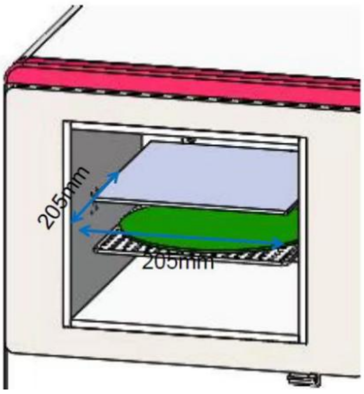
(Wafer Dedicated) LOW PRESSURE PLASMA ETCHING SYSTEM

NE-PE13F PROFILE

NE-PE13F is a vacuum plasma system specially designed for processing wafers and silicon wafers for degumming, cleaning and activation. Plasma treatment is the process of removing the photoresist by burning off the organics. Using a processing tool, monatomic plasma is created by exposing oxygen or fluorine gas at low pressure to high-power radio waves, which ionise it. This process is performed under vacuum to create a plasma that turns the photoresist to ash.

It is widely used in scientific research institutions, enterprise R&D units and small batch production proofing, including:

- Plasma cleaning organics
- Plasma surface activation to improve adhesion
- Wafer Cleaning
- Descum for WLP
- Stripping & Etch for WLP
- Wafer Pre-Treatment
- BCB & UBM Adhesion
- Dielectric Patterning
- Via Cleaning for WLP



NE-PE13F FEATURES

✧ **Compact, tabletop unit**

Weight: 45KG

Size: 600mm(L)×550mm(W) ×580mm(H)

✧ **Special cavity mechanism and discharge electrode for RIE**

The unique design of the chamber can adjust the distance between the electrodes, adjust the plasma intensity and density, greatly improve the processing capacity and efficiency, and ensure uniformity.

✧ **Adjustable power settings**

The max RF power is 300W which can be adjusted continuously.

✧ **Stainless steel cavity**

Durable high-quality stainless steel dedicated electrodes with tray.

Size : 240(L)×280(D)×200(H)mm

(8’’ wafers, compatible with 6’’ and 4’’)

✧ Self-developed power supply

Digital high-frequency plasma generator produces high-density contour particles to ensure outstanding cleaning effect.

✧ High precision float needle valve flow controller

Two gas channels are standard, supports various process gases, such as oxygen, argon, hydrogen, nitrogen, etc.

✧ Pro-environment

Dry processing, low gas emission, no hazardous emissions,no pollution to the air.

✧ 4.3’’ Touch screen

The whole process can be directly set and processed through the touch screen, which is intuitive and the process can be monitored in real time.

✧ Vacuum pump

Equipped with a high-speed vacuum pump, the ideal vacuum value can be reached within 30 seconds, saving the entire processing time.

✧ Fast treatment time

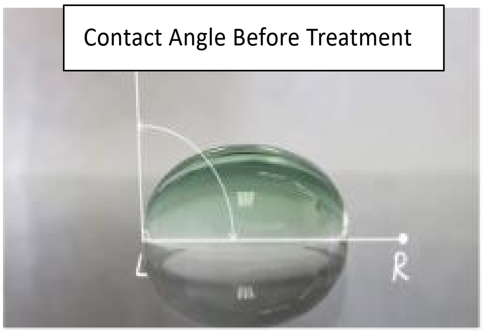
A cycle only takes two to five minutes, and processing times can be set according to demand, with a maximum processing time of 9,999 seconds.

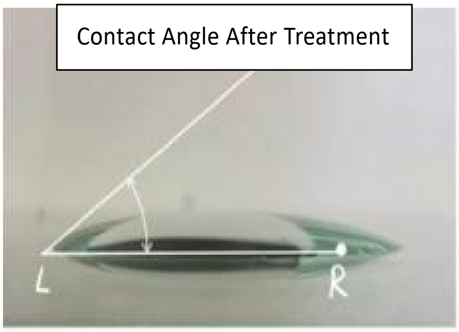
NE-PE13F SPECIFICATIONS

	STANDARD MODEL	OPTIONAL
Overall dimensions		
Size	600mm(L)×550mm(W) ×580mm(H)	
Weight	80KG(Including vacuum pump)	
Plasma generator		
Power	0-300W(Adjusted)	Specified by customer
Frequency	13.56Mhz	
Radiation-resistant high-frequency matcher	High-speed automatic matching within 0.1s, network communication supported	
Vacuum chamber		
Cavity material	316 stainless steel, military grade seal (8K mirror surface to ensure the cleanliness of the cavity)	
Cavity volume	13.5L	
Cavity size	240(L)×280(D)）×200(H)mm	
Effective processing range	230（W）*205(D)mm	
Applicable product	8’’ wafers, compatible with 6’’ and 4’’	
Uniformity	≤±15%	
Discharge electrode		
Electrode	High conductive aluminum alloy special electrode	
Discharge modes	CCP & RIE	
Electrode gap	Can adjust the distance between the electrodes, adjust the plasma intensity and density, greatly improve the	

	processing capacity and efficiency, and ensure uniformity.	
Gas Control		
Gas flow controller	High precision float needle valve flow controller	MFC
Flow value	0-500ml	Specified by customer
Gas channel	2 channels(supports various process gases, such as oxygen, argon, hydrogen, nitrogen, etc.)	3 & 4 channels
Vacuum measurement		
Vacuometer	SMC	Pirani gage
Pumping system		
Pumping speed	16 m^3 /H, oil pump with filter	Dry pump
Limiting vacuum	1PA	
Control system		
Touch screen	4.3’’	
PLC	Panasonic	
Software	Plasma control system with independent patent: 3 - level permissions, auto/manual modes, recipe param setup/storage/call, alarm history query, IO monitoring.	
Real-time monitoring	Power, vacuum degree, air pressure, gas flow rate, working hours, etc.	
Alarm function	Vacuum anti-misoperation, power anti-misoperation, air pressure alarm, phase sequence alarm	
Condition		
Power Supply	220V	Specified by customer
Type of air pipe	Φ 6mm	
Gas purity	99.999%	
Gas pressure	0.3-0.6Mpa	
Exhaust port	KF25	

TYPICAL PROCESS RESULTS


Contact Angle Before Treatment


Contact Angle After Treatment

ABOUT NAEN TECH

Naen Tech are an international leader in the design, development and manufacture of plasma surface treatment systems & advanced plasma processes.

Our products are installed worldwide and trusted to deliver consistent, reliable results in both leading research institutes and in critical manufacturing steps.

We are experts in plasma technology and surface science. We are trusted partners, valued for our courtesy, professionalism and dedication to delivering the correct solution for our clients.

OUR SERVICES

❖ **Contract plasma treatment**

We have more than 10,000 customer cases around the world, and we are equipped with technicians who can meet the plasma needs of various industries, and will provide a quick, no-nonsense feasibility solution for the surface treatment needs of different segments!

❖ **Surface testing laboratory**

With a comprehensive suite of surface analysis equipment, we are able to conduct a wide range of surface property tests, both before and after plasma treatment, in order to provide you a professional report with the whole pictures and videos.

❖ **After sales support**

The equipment is guaranteed for one year free of charge and provides lifetime technical services.

If the equipment fails (non-human damage), we will arrange after-sales personnel to follow up within 24 hours until the fault is eliminated.

❖ **Rental plasma systems**

We carry a wide range of our standard equipment in stock and available for short or long term hire. This is particularly useful for in-house proof of concept trials or to satisfy short term contract work.

❖ **Method development**

We have invested significantly in laboratory facilities to assess, test and investigate all aspects of plasma surface modification on a wide range of materials. Coupled with extensive in-house and real-world knowledge, we can usually deliver a tailored treatment quickly and efficiently to suit your individual product or production needs.