henniker plasma

Plasma clean
Improved wettability and adhesion
Functional nano-coatings

Plasma Surface Treatment

Nebula Advanced Plasma System

www.plasmatreatment.co.uk

Nebula Advanced Plasma Systems

Henniker advanced Plasma Surface Treatment Systems feature large format vacuum chambers along with many advanced features and the reliability of recipe driven PLC control.

They are configurable tools that are both robust enough for reliable, repeatable industrial processing and at the same time flexible enough for the research into, and development of, leading-edge plasma processes.

The Nebula range has been designed around our core technologies in plasma surface treatment and plasma process development. With chamber volumes ranging from 30L to 150L, each system may be configured with multiple parts trays and for either horizontal or vertical mounting arrangements. Additionally, a high-capacity rotary drum mechanism can be chosen for batch treatment of large numbers of small parts.

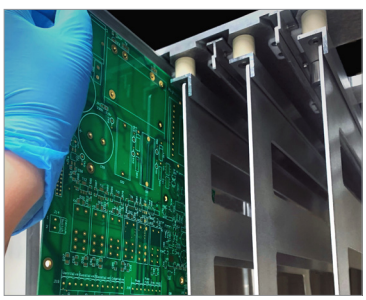
SUITABLE FOR

- Cleaning
- Adhesion Improvement
- Surface Activation
- Improved Wettability
- Nano-scale Functional Coatings
- Metals
- Polymers
- Composites
- Ceramics
- Glass

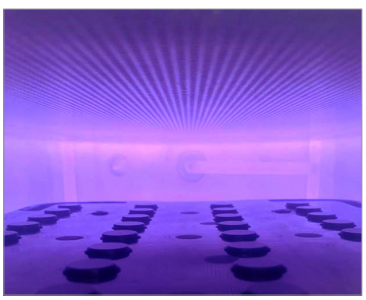
Each Nebula system can also be configured with a liquid dosing inlet. This is a fully automated device for the introduction of a wide range of monomers to produce permanently functionalized surfaces via plasma polymerization, greatly extending the range of plasma surface treatment possibilities in a single machine.

Nebula 150

Vertical sample presentation

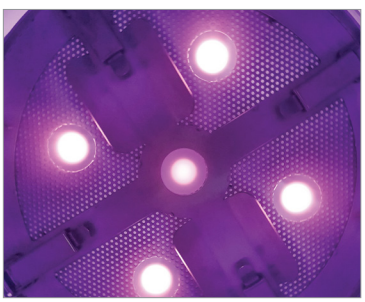


Horizontal sample presentation



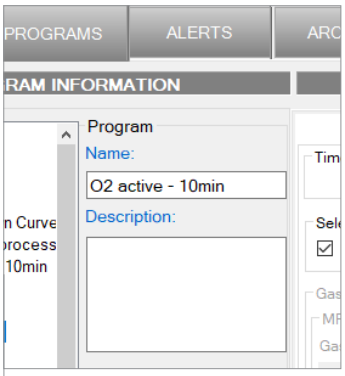
Touch-screen software

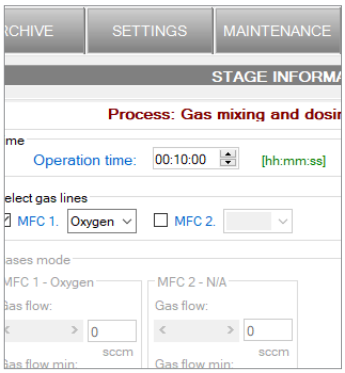
Rotating drum option

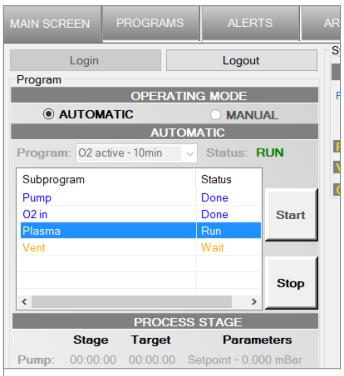


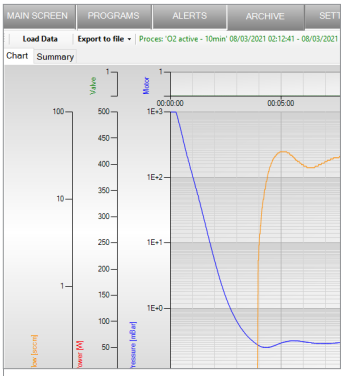
In Control

Nebula plasma systems operate under full PLC control via the Portals™ HMI, a dedicated user-friendly software interface featuring both simple recipe selection with user privilege access levels, and custom configuration options which address both research and production requirements. Integrated chart and MIMIC diagrams display each process stage in real time, with out-of-limit process alarms, safety interlock status, and automatic data archiving in .CSV format and in the form of a .PDF report.









Powerful Recipe
Editor & Library

The built-in recipe editors allow for complete processes to be specified with an unlimited number of steps. Each step in the process can have a unique set of parameters with every parameter having upper and lower thresholds. Password protected access allows suitably qualified personnel to create and edit recipes. Operators on the other hand can only execute processes from the drop-down recipe library. Up to three gases can be chosen from the extensive gas library and their mixing ratio varied and controlled in any step within a recipe. The high stability plasma power supply and PID controlled pressure regulation deliver highly reproducible results time after time.

Automatic/Manual
Operating Modes

Operators with appropriate access privileges can operate the system in fully manual mode, allowing for rapid testing of new process steps and aiding in system diagnostics.

The full user process library is available for execution in automatic operation mode.

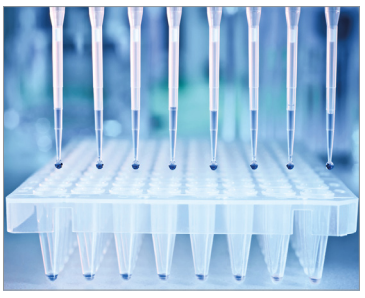
Traceability

All process data is time and date stamped and stored along with operator details for instant recall and display or for export for offline record keeping and analysis.

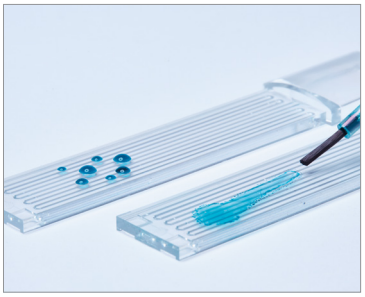
An optional barcode scanner can be used for further batch traceability in conjunction with plasma process indicator labels for hard copy evidence of successful processing.

Markets
& Applications

Medical
Plastics

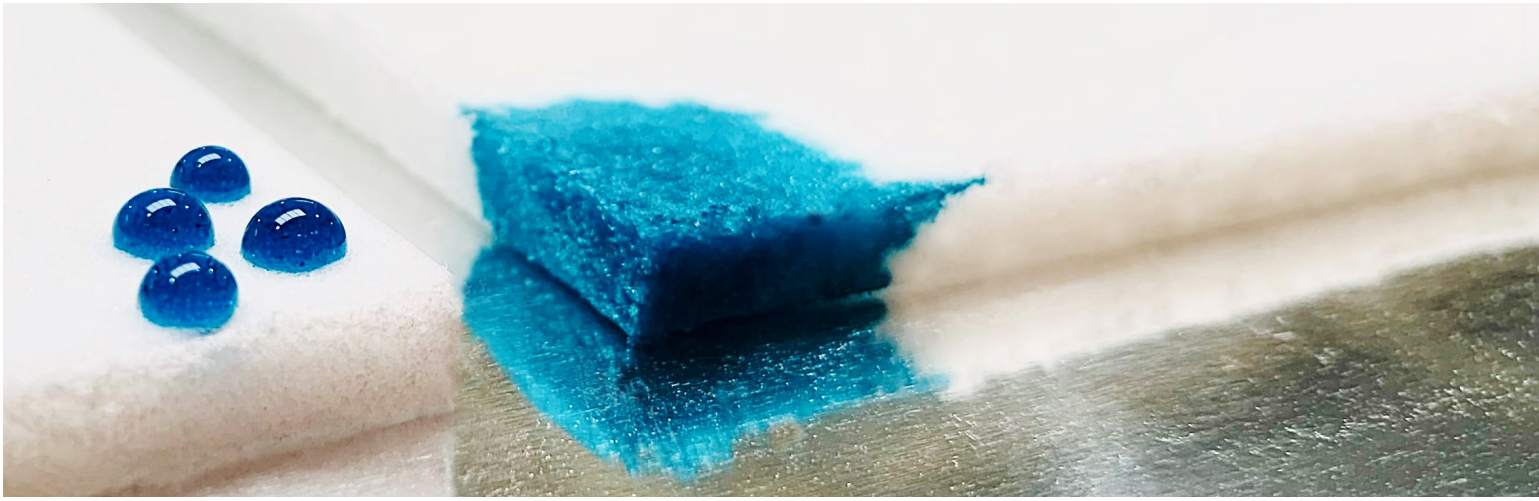


Microfluidics



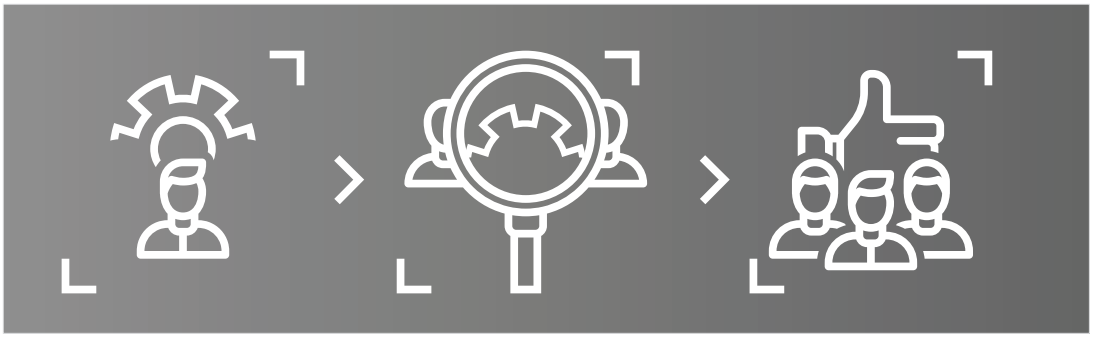
Plasma Coatings

Hydrophilic coating throughout porous polyethylene filter material



The optional liquid monomer inlet is a powerful additional feature for introducing liquid monomers to achieve functional coatings on a wide range of materials. Plasma coatings are uniform, durable and can be applied on any sample geometry to produce a wide range of properties including hydrophilic, hydrophobic and oleophobic surfaces, biocompatible chemistries and biomolecule immobilization.

Plasma coating steps are included in the recipe editor, in the same way as plasma cleaning or plasma activation steps, and are also executed with the same level of fine control in a completely automated way.



Proof of concept trials

We understand that plasma technology may not be familiar to you, that's ok, it's what we're here to help with.

We can provide a free, fast, no-nonsense proof of concept trial to show you what's possible.

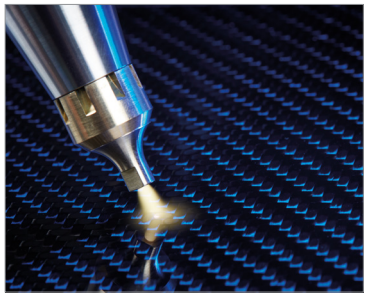
Contract treatment

We offer a fast and cost effective contract plasma treatment service for both small one-off requests and ongoing production.

Process development

We undertake in-house or on-site process development for a wide range of new applications, drawing on more than 20 years real-world experience.

- Access to our extensive process library
- Comprehensive surface testing methods
- Adhesion and coatings processes



Plasma
Cleaning

Nebula Specifications

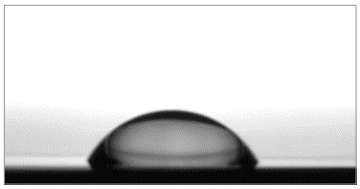
	BASE MODEL	OPTIONS
ENCLOSURE		
Dimensions	W 612mm x H 1875mm x L 852mm (+200mm on side for cables)	
Weight	~200-250lbs depending on model	
CHAMBER		
Material	Stainless Steel	
Form	Rectangular	
Dimensions	30L (300x300x365mm), 50L (300x300x560mm), 100L (400x400x625mm), 150L (400x600x625mm), user defined	
REMOVABLE PARTS CARRIER		
Material	Aluminum/Stainless Steel	
Form	Flat horizontal trays, vertical carriers, rotary drum, user defined	
PLASMA POWER SUPPLY		
Power	0-1000W, continuously variable output	
PROCESS CONTROL		
Interface	15" Color TFT, Windows10, PLC control	unlimited steps/recipes with user access privileges
Gas channels	1 - 3 Digital Mass Flow Controllers	monomer dosing inlet
Vent inlet	x1	soft ventilation option
Purge inlet	x1	
Connections	1/4" compression	
Pressure gauge	Pirani sensor	Baratron gauge
Vacuum pump	12 to 40 m3/hr pumping speed	
Vacuum pump options	2-stage rotary pump (air/inert gas), PFPE rotary pump (oxygen compatible), dry pumps. All pumps include exhaust filter and connections	
SERVICES		
Electrical	380-400 VAC/3~/N/PE, max. current 16A/phase, 50Hz	
Compliance	CE – UKCA - ROHS - WEEE	

Henniker strive for continuous improvement and specifications are subject to change without notice

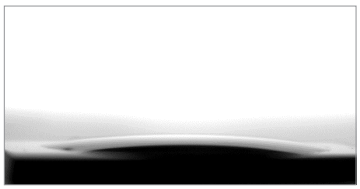
Benefits

- compact stand alone unit
- user friendly recipe driven interface
- unlimited recipes and steps per recipe
- fast treatment time
- precise & repeatable
- no hazardous emissions
- versatile options

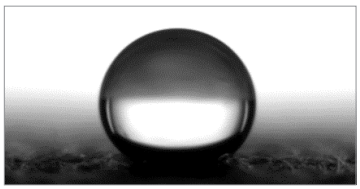
Versatility



Untreated



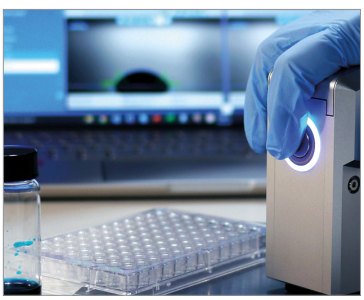
Hydrophilic coating

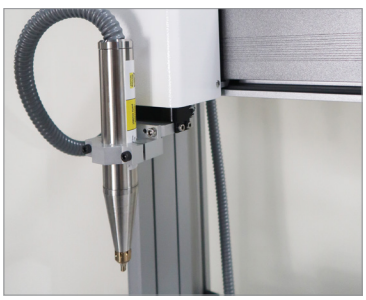


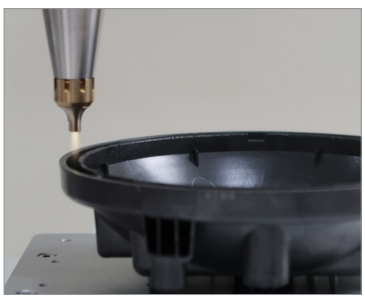
Hydrophobic coating

Products & Services

- benchtop systems
- high throughput systems
- atmospheric plasma
- robot systems
- surface test & analysis
- process development







About Henniker

Henniker Plasma 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.

Services

Contract plasma treatment

Our technical staff will be happy to discuss contract treatments, from small one-off batches to regular, large throughput requirements.

Proof of concept treatment

Let's discuss your application and then we will provide a quick, no-nonsense feasibility study.

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 with the whole picture.

After sales support

We are proud of our reputation for being approachable, thorough and easy to work with.

"Henniker's after sales support is first class. They have always been extremely responsive if we have ever had need to call on them."

Steve Rackham, Teledyne

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.

"The low risk option of hiring a plasma unit for evaluation was a key reason that we chose to work with Henniker and one that enabled us to proceed with confidence."

Dr. Chris Nicklin, Reinnervate

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.

"The technical team at Henniker are very knowledgeable and supportive and always approachable. I have found it a pleasure to work with them."

Simon Baxter, BAE Systems, AI

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