

Plasma clean  
Improved wettability and adhesion  
Functional nano-coatings

# Plasma Surface Treatment

## Cirrus & Nimbus Atmospheric Plasma



# Cirrus & Nimbus Atmospheric Plasma

The Cirrus & Nimbus are, respectively, single and dual nozzle atmospheric plasma treatment systems ideally suited to surface activation, cleaning and modification of a wide range of materials including polymers, metals, glass and ceramics.

Both models are extremely simple to operate via the front panel soft-keypad and can also be interfaced with external control equipment using the rear panel Sub-D connector providing a variety of I/O control inputs and status read-back to ensure seamless operation with production lines or robot cells.

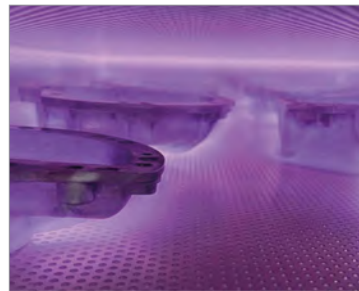
The Cirrus & Nimbus operate from a standard single-phase electrical outlet and require only compressed air for operation. The compact controller features an interlocked airflow regulation unit as standard so that no ancillary equipment is required.

The Cirrus & Nimbus address a range of specific material treatments including;

- Plasma cleaning
- Plasma surface activation to improve adhesion
- PEEK & other engineering polymers
- PCBs
- Metals
- Ceramics
- Glass



## Markets & Applications



**Aerospace & Automotive**

**Composites**

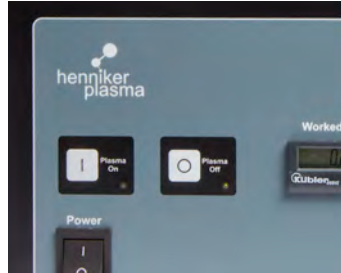


# Plasma Environment



## Plasma Environment

The Cirrus & Nimbus deliver a ~10mm diameter plasma plume directly to the place where it's required. The compressed air plasma has the effect of microscopically 'sandblasting' the surface whilst simultaneously chemically activating it. Our proprietary, high stability plasma power generator allows for high line speeds when operated as part of a continuous processing facility.



## Process Control

The compact control unit can be operated manually or interfaced with existing control equipment. Plasma start and stop signals are supplied via a rear panel Sub-D connector. All important parameters are available on the same connector for read-back and monitoring.



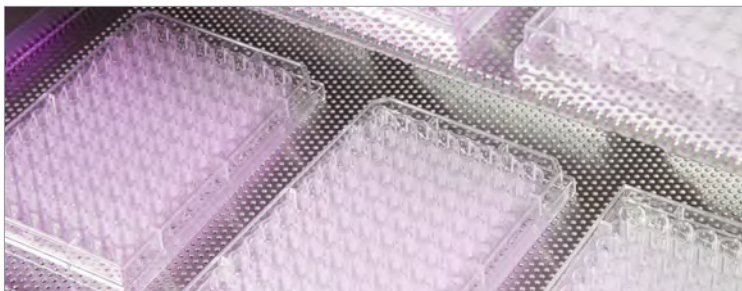
## Repeatable & Reliable

The Cirrus & Nimbus only need a compressed air supply for operation. Plasma parameters and gas delivery are continuously monitored and controlled to deliver the same result irrespective of changes in gas delivery characteristics. The unit features a number of electrical and compressed air safety interlocks that ensure long term, trouble-free operation.

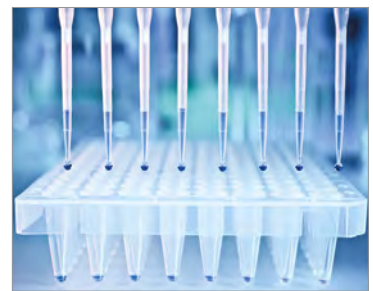


## Versatile

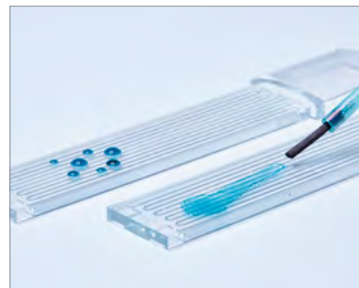
The Nimbus extends the overall functionality with dual plasma heads operating from the same single controller. This can be useful for treating multiple areas, larger areas or in place of multiple line passes. The Cirrus & Nimbus can also be supplied fully integrated with a 3-axis table robot system for commonly performed batch processes.



## Medical Plastics



## Microfluidics



# Some of Our Clients



*"Henniker provided visible results from the outset and confirming that we made the right decision in choosing a local UK manufacturer."*

Queen's University Belfast



*"We obtained quality results with their unit within minutes of setup & consistent results thereafter. The support they have provided has been rapid and helpful."*

Making Lab, Francis Crick Institute



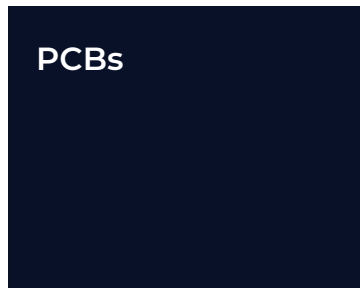
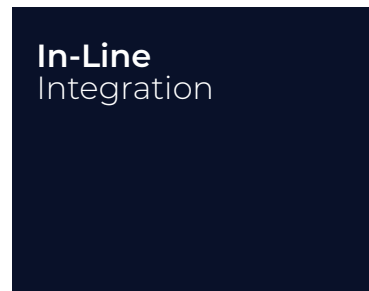
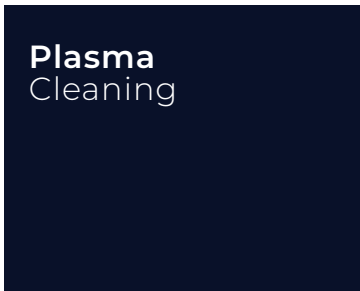
*"We are very impressed with the ease of use and reliability of our plasma unit and were producing results within minutes of setting it up."*

Warwick University



*"Our collaborative work with the team at Henniker was a very positive experience and one that we look forward to developing further."*

TWI



# Cirrus & Nimbus Specifications

## BASE MODEL

CONTROLLER	
Dimensions	W 483mm x H 177mm x L 451mm (+50mm on rear for cables)
Weight	~10kg, including plasma nozzle
PLASMA NOZZLE	
Connection	3m flexible umbilical to controller rear
Weight	~ 0.5kg
Dimensions	ø 32mm x L 210mm
Treatment width	~10-12mm with standard applicator "mode" nozzle
Options	Finite nozzle = ~8-10mm treatment area, for narrow channels
PLASMA POWER SUPPLY	
Power	300W, nominal
Frequency	40 kHz
PROCESS CONTROL	
Interface	Front Panel - soft key pad Rear Panel - SUB D connector, 15 pin
	- Outputs:
	- I/O System ready
	- HV on/off
	- Inputs:
	- Remote Interlock
	- Plasma on / Plasma off
SERVICES	
Electrical	210-250 VAC, 50Hz, 1000 VA (including pump), fused 6.3 A T
Gas	Compressed air - dry, oil free, 5-8bar, 6mm push fit
Power cord	Suited to region
Compliance	CE - UKCA - ROHS - WEEE

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

## Benefits

- compact benchtop or rack-mount unit
- user friendly soft-key interface
- I/O subsystem for line integration
- integrated gas monitoring & control
- precise & repeatable
- treatment of polymers, glass, ceramics, metals

## Typical Process Results



Images demonstrate increased wettability on metal and polymer samples following plasma treatment.



## Products & Services

- vacuum plasma systems
- high throughput systems
- robot systems
- proof of concept trials
- 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

### Henniker Plasma

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Represented by:

