Plasma Surface Treatment

HPT-500 Benchtop plasma treater
The HPT-500 is a microprocessor controlled benchtop plasma treatment system which is ideally suited to surface activation, cleaning and modification of a wide range of materials including polymers, metals, glass and ceramics.

Available in single or dual gas inlet versions and with on-board gas mixing manifold, the HPT-500 is able to handle a wide range of gases for optimized treatments, including air, oxygen, hydrogen, argon, nitrogen and many others.

An optional vapor delivery inlet extends the use to liquid precursors and a corrosion resistant version expands the choice even further to address specific material treatments including:

- Plasma cleaning
- Plasma surface activation to improve adhesion
- Functional plasma coatings
- Plasma etching
- PDMS & microfluidic devices
- PEEK & other engineering polymers
- PTFE
- Metals
- Ceramics
- Glass & optical devices

Markets & Applications

Aerospace & Automotive

Composites
The HPT-500 features a 240mm W x 405mm L plasma process chamber in stainless steel with vacuum compatible materials throughout. Our proprietary, high stability HPS plasma generator is continuously variable over the entire 0-300W power range rather than being limited to discreet levels, delivering much finer control when processing delicate materials.

The 5.7 inch color touchscreen provides a rich, user-friendly interface. Variables such as gas flow rate, pressure, power level and plasma processing time can be freely set and then stored to produce a fully interlocked process cycle from a single keypress. A handy status display and end of process audible alarm informs the user of every step in the process.

With precision digital mass flow controllers and integrated pressure gauge, the HPT-500 delivers unmatched reliability and repeatability by removing common errors in gas flow and gas type settings which will be familiar to users of equivalent equipment that utilize manual needle valves. Convenient recipe store software, a unique feature, allows fixed repeatability.

Recipe store allows users to select and store up to four recipes. Each recipe contains unique settings for power level, plasma process time and pressure. The base model HPT-500 has a single gas inlet and optional second gas or vapor delivery inlet. The unit is prepared so that either option can be added at a later time if required, ensuring that future requirements can be accommodated without expensive reconfiguration.
“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
HPT-500 Specifications

<table>
<thead>
<tr>
<th>ENCLOSEMENT</th>
<th>BASE MODEL</th>
<th>OPTIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dimensions</td>
<td>W 533mm x H 600mm x L 615mm (+50mm on rear for cables)</td>
<td>~95lbs</td>
</tr>
<tr>
<td>CHAMBER</td>
<td>Stainless Steel</td>
<td>Rectangular</td>
</tr>
<tr>
<td>Form</td>
<td>240mm W x 240mm H x 405mm L</td>
<td>Rectangular</td>
</tr>
<tr>
<td>REMOVABLE PARTS CARRIER</td>
<td>Aluminum, stainless steel</td>
<td>Flat tray, multi-level shelf/electrode</td>
</tr>
<tr>
<td>Material</td>
<td>240mm W x 240mm H x 405mm L</td>
<td>Flat tray, multi-level shelf/electrode</td>
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<td>Dimensions</td>
<td>240mm W x 240mm H x 405mm L</td>
<td>Others to suit application</td>
</tr>
<tr>
<td>PLASMA POWER SUPPLY</td>
<td>Power: 0-300W, continuously variable output</td>
<td>Frequency: 40 kHz</td>
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<tr>
<td>PROCESS CONTROL</td>
<td>Interface: 5.7” Color TFT with recipe store</td>
<td>Gas channels: x1 MFC, x2 MFC or x1 MFC and x1 vapor inlet</td>
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<tr>
<td>Vent inlet</td>
<td>x1</td>
<td>x1</td>
</tr>
<tr>
<td>Connections</td>
<td>1/4” compression</td>
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</tr>
<tr>
<td>Process timer</td>
<td>1sec – 99.59min</td>
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</tr>
<tr>
<td>Recipe Store</td>
<td>Stores up to 4 x recipes with individual parameters</td>
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</tr>
<tr>
<td>Pressure gauge</td>
<td>Pirani sensor</td>
<td>Pressure gauge: Pirani sensor</td>
</tr>
<tr>
<td>Vacuum pump</td>
<td>10 to 15 m3/hr pumping speed</td>
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</tr>
<tr>
<td>Vacuum pump options</td>
<td>2-stage rotary pump (air/inert gas), PFPE rotary pump (oxygen compatible), dry pumps. All pumps include exhaust filter and connections</td>
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<td>SERVICES</td>
<td>90-120 VAC, 50-60Hz, 1500 VA (including pump), fused 10 A T</td>
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<td>Electrical</td>
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<tr>
<td>Power cord</td>
<td>6ft</td>
<td>6ft</td>
</tr>
<tr>
<td>Compliance</td>
<td>CE – UKCA - ROHS - WEEE</td>
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</tbody>
</table>

Benefits
- compact benchtop unit
- user friendly TFT interface
- recipe store
- fast treatment time
- precise & repeatable
- no hazardous emissions

Typical Process Results
- Material: PEEK
- Oxygen plasma
- 60 seconds

Contact Angle Before Treatment

Contact Angle After Treatment

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

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.

“The 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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Represented by: