PVD-PECVD Coating Equipment for Components, Instruments and Tools

The Best Technology for Your Application

We offer equipment and processes for all types of PVD & PaCVD Carbon Coating Technologies:
- RF – Technology
- Pulsed DLC
- Sputtering
- Hybrid Technologies
- Hard Carbon

Based of your applications we select the technology which offers you the best performance and the lowest cost of ownership.

Contact us at: info@performcoat.com, www.performcoat.com
PerformCoat of Europe, 5A Sandy’s Row, London,E1 7HW, UK, +44 (0)203 286 1315
PerformCoat of Asia, 6F.,No.348, Sec.7, Chengteh Rd., Taipei, Taiwan, +886 (02) 28 28 27 50
PerformCoat of North America, 319 McIntyre Lane, Springfield, MI 49037, +1 865 321 3932
Together with our partner YSIPHYSICS, we offer you the most economical solution (equipment and process) for your application: Most DLC (Diamond-like Carbon) coatings are applied by PeCVD (Plasma Enhanced CVD) or a combination of PVD and PeCVD. The best choice for the technology and the type of equipment depends on the application (coating properties and quantity/geometry/size/material of the parts).

**RF Technology**

**Coating properties:** high density, high compressive stress, very low friction coefficient

**Typical applications:** engine parts for racing, plastic molds, watch casings and interior parts, high precision machine components

**Parts:** small to medium volume, complex geometries

**Equipment/process:** small vessels with very short cycles, deposition at low temperatures

**Equipment size:**
Ref PfC 400RF Plasma volume = Ø 320 x 380 mm
Ref PfC 500RF Plasma volume = Ø 500 x 500 mm

**Coatings:** High density DLC, SiC, SiOx, SiNx

**Pulsed DC Technology**

**Coating properties:** lower density, smoothness and hardness; post treatment sometimes required

**Typical applications:** automotive components, machine-wear components for textile and other machinery

**Parts:** high volume parts, long parts possible

**Equipment/process:** larger vessels available, process forgiving to batch loading, very cost-effective process

**Equipment size:**
Ref PfC 600 PeCVD Plasma volume = Ø 600 x 700 mm

**Coating:** DLC, SiC-DLC
Sputtering or arc combined with PeCVD

Coating properties: excellent adhesion on wide range of substrates, adjustable to properties of parts

Typical applications: automotive engine components such as tappets and piston pins, aerospace components, machine-wear components, razor blades

Parts: high and low volume

Equipment/process: large vessels available, process allows easy batch loading, equipment more expensive due to magnetrons for sputtering

Equipment size:
Ref PfC 650 SP/DLC Plasma volume = Ø 650 x 650 mm
Ref PfC 400 SP/DLC Plasma volume = Ø 400 x 380 mm
Ref PfC 450 Ar/DLC Plasma volume = Ø 450 x 500 mm

Coatings: DLC, Cr+DLC, CRN, Cr+CrN+DLC, WCC, WCC+DLC, Cr+WCC, CrN+Ic

Hard Carbon, H2-free DLC

Coating properties: thin/tight tolerance, extremely hard (close to 100% sp3), very smooth, high compressive stress, low friction, electrically isolating, excellent adhesion

Typical applications: cutting tools for machining of non-ferrous materials such as Aluminium, Copper, Graphite, Carbon and Glass Fiber Composites

Parts: high performance tooling, micro-tools

Equipment/process: smaller vessel, low temperature

Equipment size:
Ref PfC 600 Ta:C Plasma volume = Ø 600 x 250 mm

Coatings: H2-free DLC : Ta:C (tetra - amorphous carbon)

Plasma stripping Technology

Equipment designed to remove all kinds of DLC coatings including Multilayers.
Coating Properties

<table>
<thead>
<tr>
<th>Coating Material</th>
<th>DLC (amorphous)</th>
<th>CrN + DLC</th>
<th>CrN</th>
<th>Me-DLC</th>
<th>Hard-Carbon</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coating Material</td>
<td>A-C:H</td>
<td>CrN + a-C:H:W</td>
<td>CrN</td>
<td>A-C:H:W (WC/C)</td>
<td>Ta-C</td>
</tr>
<tr>
<td>Hardness (HV0.05)</td>
<td>2'500</td>
<td>2'500</td>
<td>2'300</td>
<td>1'650</td>
<td>5'300</td>
</tr>
<tr>
<td>Typical Thickness (µm)</td>
<td>1-5</td>
<td>1-5</td>
<td>1-10</td>
<td>1-4</td>
<td>1-2-5</td>
</tr>
<tr>
<td>Increasing of roughness Ra (µm)</td>
<td>0.02</td>
<td>0.02</td>
<td>0.02</td>
<td>0.02</td>
<td>0.01</td>
</tr>
<tr>
<td>Friction Coefficient against steel</td>
<td>0.15</td>
<td>0.15</td>
<td>0.4</td>
<td>0.15</td>
<td>0.05</td>
</tr>
<tr>
<td>Max Operating Temperature (°C)</td>
<td>350</td>
<td>350</td>
<td>750</td>
<td>300</td>
<td>400</td>
</tr>
<tr>
<td>Technology</td>
<td>RF/dc pulsed</td>
<td>PVD+DC pulsed / PVD+RF</td>
<td>PVD</td>
<td>PVD+DC pulsed</td>
<td>arc</td>
</tr>
</tbody>
</table>

Our equipments

- are user friendly with state of the art communication
- use the best proven high end power supplies and gas and vacuum components (e.g. Fronius, Huettinger, MKS, Edwards)
- have long life high precision stainless steel chambers and carusels
- have optimized processes with high reliability and repeatability
- are built for easy and minimal maintenance
- are offered with process customizing
- are available in various sizes

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