CPI expert in Atmospheric plasma since 2001 within a strong group
Plasma is the 4th state of matter: ionized gas
Plasma vs Corona

**PLASMA**
- Large web width
- Controlled atmosphere
- Homogenous treatment
- No damagesurface
- No backside treatment
- High performance treatment
- **Long lasting effect**
  - Cleaning
  - Activation
  - Grafting
  - Coating
- **Wide material range**
- Common technology
- **Cost**

**CORONA**
- Very large web width
- Common technology
- **Cost**
- Cleaning
- Activation
- **Grafting**
- **Coating**
- Uncontrolled atmosphere
- Aggressive chemistry
- Limited range of materials
- Inhomogeneous treatment
- **Pin holes**
- Backside treatment
- **Low efficiency**
- **Temporary effect**

Es = 60mN/m

Plasma is offering Larger capabilities

Microscopy (AFM) image of BOPP film
1 µm x 1 µm images (Tapping)
Pioneer Laboratory is now delivering Industrial solutions

Industrial roll-to-Roll Atmospheric plasma
- Research & development
- Trials for specific applications
- Dedicated Analysis
- Toll manufacturing
- Equipment provider
Dopant: Could be introduce in PPM with Plasma gas to optimize surface treatment.
Removal of surface contamination without substrate degradation
Cleaning of ITO coating on PET contaminated by protective PE film

High Speed Performing and Long lasting treatment, higher surface energy
Substrate, Gas and Dopants are changing Grafting Chemistries
Specific molecules (precursor) are added to the plasma gas. Those molecules are activated by the plasma and react with the sample surface to form a thin film.

Coating nature depends on precursor AND plasma chemistry.
Industrial Plasma Release Solution

**Capabilities | 3 Plasma ranges – Coating / Ximo**

- Controllable Release Force
- Multi-Substrate: PE, PP, PET, PI...
- Compatible with PSA, PU, composite resins
- Stable performances, width, Length, Lots & Time
- Ultra Low extractible
- Recyclable
- Low environmental impact
- Compact device

**TEM cross-section image**
Showing 10nm Coating
Plasma treated Film re-extruded in pellets to testing strips

<table>
<thead>
<tr>
<th>Uncoated PET</th>
<th>Coated PET</th>
</tr>
</thead>
<tbody>
<tr>
<td>Visocity (cm³/g)</td>
<td>59.6</td>
</tr>
</tbody>
</table>

Plasma treatment does not alter polymer chain length

Our Plasma coated Films can be re-extruded and re-molded
Capabilities | Production Capacities

- 2150m² Production including:
  - clean room
  - Laboratory

- 5 roll-to-roll plasma tool install up to 2 Meters width

Location

4ème avenue n°59
ZAC Saint Charles
13710 Fuveau - France
Capabilities | Contacts

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Questions?