



1 *Localized, suitable for in-line application, and environmentally friendly: Atmospheric pressure plasma coatings for adhesion promotion and corrosion protection.*

**Fraunhofer Institute for
Manufacturing Technology
and Advanced Materials IFAM
– Adhesive Bonding Technology
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PROCESS DEVELOPMENT WITH ATMOSPHERIC PRESSURE PLASMA TECHNOLOGY

Atmospheric pressure (AP) plasma technology is being increasingly used in industrial production because it can be easily incorporated into existing process chains.

The plasma technologies that are available at the Fraunhofer Institute for Manufacturing Technology and Advanced Materials IFAM allow the cleaning, activation, or coating of all kinds of materials and components of complex geometry at atmospheric pressure.

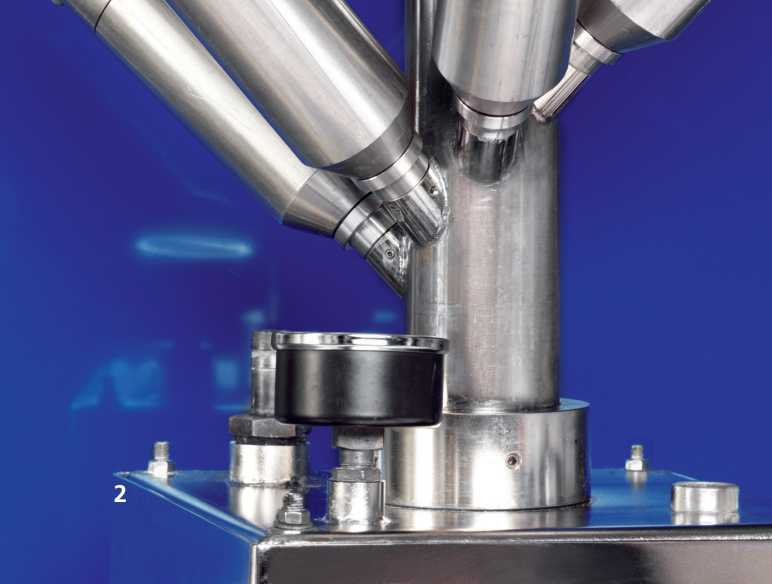
In close collaboration with industrial partners the Fraunhofer IFAM is involved in the following activities

- Fundamental research on AP plasma technology
- Testing new applications
- Developing industrial applications
- Optimizing tools for plasma generation and for special applications
- Developing automated, quality controlled AP plasma treatments, e. g. using robots

Example applications

- Cleaning and removal of auxiliary production materials, e. g. release agents
- Activation of polymers which are difficult to bond or coat
- Improvement of the dispersion properties of fillers (particles)
- Deposition of
 - ➔ Adhesion promotion layers
 - ➔ Corrosion protection layers
 - ➔ Release layers

Bulk goods and also web materials can be treated.



Advantages of AP plasma technology

- | Suitable for in-line applications
- | Can be incorporated into existing production lines
- | Can be tailored for specific customer demands
- | Suitable for robot technology
- | Low space requirements

Economic aspects

- | High process reliability
- | No special requirements for safety and workplace protection
- | Involves the use of harmless and favorably-priced process gases, e. g. compressed air
- | No finishing work required
- | Can be fully automated

Environmental compatibility

- | High workplace safety
- | Compliance with the German Emission Control Act (BlmschG) and Technical Directive on Air Quality Control (TA-Luft) without additional equipment
- | Replaces bath processes by an environmental eco-friendly process
- | No problematic waste

Portfolio of the Fraunhofer IFAM

- Consultancy
- Provision of samples
- Process development
- Production and plant concepts
- Technology transfer

- 2 Atmospheric pressure plasma plant for modifying particles.
- 3 Improvement of the dispersion properties of nanoparticles in paint by treatment with atmospheric pressure plasma (right: treated).