

APPLICATION INFORMATION

Plasma Activation of EPDM/TPE Profiles

Openair-Plasma® replaces mechanical brushing or primer coating

Door seals in today's cars are made almost entirely of EPDM compounds. They have to fit very well, reduce noise, look and feel good as well as being affordable to produce. And in winter, it's imperative that the seals don't freeze to the car body. It's standard practice to apply coatings in the form of flock or lubricating varnishes to meet these requirements. Adhesion of such systems to the very non-polar elastomers is a challenge and has been solved in the past by rotating wire brushes. This process is difficult to monitor and generates a great deal of dirt particles, including carbon dust, which is highly flammable.

Openair-Plasma® technology, due to its simplicity and reproducibility, has rapidly overtaken this process and is now widespread in the industry. Plasma pretreatment is used during extrusion to prepare plastics and elastomers for downstream coating, flocking, tape application or 2-component extrusion. The environmentally friendly surface modification enables direct adhesion of the treated materials – without dirt. Plasmatreat's integrated process control guarantees consistent coating quality.

Key advantages of the Openair-Plasma® and "Plasmatreat Exact" processes:

- Pretreatment of extensive areas, large process window due to highly homogeneous plasma beam and rotating plasma jets
- Fast and accurately reproducible jet setting due to complete automation
- Up to 12, individually controllable plasma sources
- PFW10/RD1004 with 100% plasma monitoring
- User-friendly, compact C shape, easy to clean

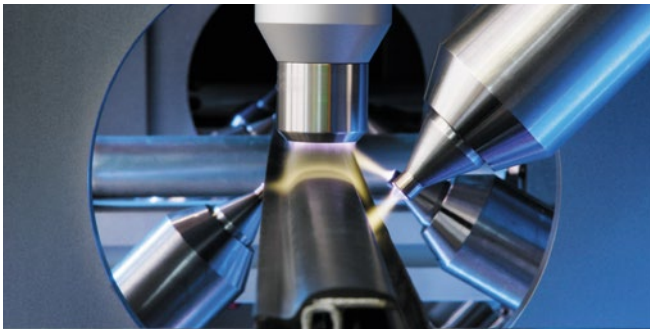


Fully automated plasma system - "Plasmatreat Exact" with 12 jets

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For use in extrusion:

- Use of static or rotating nozzles possible (depending on the material, working area and profile geometry, combinations may be necessary and useful)
- Reproducible adjustment of the nozzle position to the profile
- Fully automatic or manual with scales
- High flexibility and reproducibility
- All-embracing monitoring of the plasma process



Profile pretreatment using plasma jet

For use in assembly:

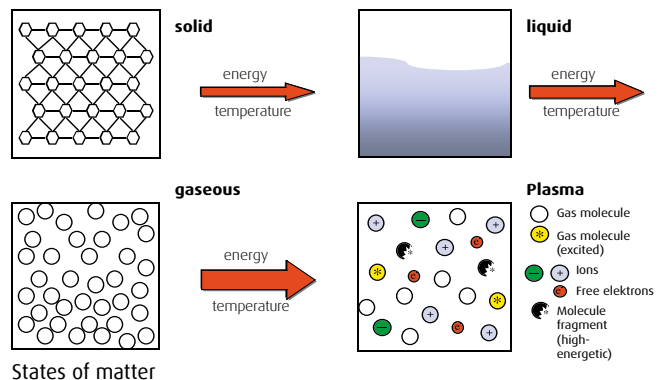
In addition to pretreatment in extrusion, plasma treatment is also used increasingly in assembly. In this case, handling of the mainly rotary plasma jets can be done manually or with an industrial robot. It's possible to combine the application of flock/varnish with pretreatment in one handling system.

The main advantage in assembly is that the profile sections can be pretreated dust-free and much faster with consistently high adhesion.

What is plasma? How does it work?

A controlled electrical discharge is ignited inside plasma jets. Using a defined flow of air, reactive components of the arc are separated via this discharge and transported outside of the jets. The high voltage required for generation remains inside the jets.

When the escaping reactive and ionized air hits the surfaces to be treated, it brings about both chemical and physical changes. The surfaces are cleaned of contamination with hydrocarbons such as greases and extrusion aids. Free radicals are frequently created in the form of hydroxyl and carboxyl groups which enable various suitably matched coatings to attach to them. They can be applied more thinly with the same effect and require no aggressive components to promote adhesion.



States of matter



Gap-filling pretreatment using rotary plasma jet

One step ahead

Openair-Plasma® treatment paves the way for water-based coating systems. It is only possible to meet the stringent test requirements of the automotive industry with very efficient pretreatment at the highest level. Plasmamatreat has more than 20 years' experience in the treatment of EPDM profiles from a large number of installed systems.