Steinhagen, February 6th, 2022

**Less energy, chemicals, CO2 – plasma technology increases the savings potential in industrial processes**

Plasma technology as an alternative to gas in pretreatment

**Environmentally friendly and energy-saving technologies are more in demand than ever in times of limited resources, rapidly rising energy prices and impending climate collapse. Companies are facing major challenges to minimize their nitrogen oxide and CO2 emissions as well as their energy consumption. Surface treatment with plasma improves adhesion in many industrial applications, such as bonding, painting, printing or gasketing different materials. In addition, plasma is the first choice when it comes to environmental protection and energy saving.**

**Plasma replaces harmful primers**

Chemical adhesion promoters (primers) are often used to improve the adhesion of various materials in industrial processes. Primers consist of 90-98 percent solvents, for which highly volatile hydrocarbons are used. In addition, their production is very energy-intensive. And: CO2 is produced during the use of primers and the (post-)combustion of the solvent. Meanwhile, Plasmatreat GmbH offers a cost-effective, environmentally friendly and energy-efficient alternative: dry surface treatment with Openair-Plasma, which can be carried out in a fully automated process. Here, the activation and fine cleaning of various surfaces prior to bonding, coating, painting or gasketing can eliminate the need for additional pretreatment with chemical primers. Subsequently, the use of modern solvent-free or even water-based adhesives, paints and varnishes is possible. This significantly reduces emissions of VOCs (volatile organic compounds) during production. Openair plasma also offers significant advantages in terms of energy consumption: A rotating nozzle used for plasma application requires only a minimum of electrical energy and, when operated with green electricity, produces no CO2 emissions.

**Plasma as an alternative to flame treatment - CO2-free is also possible**

Surface pretreatment by flame treatment, also used for activation, e.g. for improved bonding processes, is usually carried out with propane or methane gas. As with any combustion of organic substances, this produces a high level of CO2 emissions. In plasma technology, the nozzles for the open-air plasma application are operated with electricity and compressed air, in contrast to flame impingement. If renewable energy is used for this purpose, plasma treatment even takes place in a completely CO2-neutral manner. Plasma also enables completely new production processes. A plasma-activated surface enables optimum adhesion of UV-based printing inks, so that users can dispense with previously required, energy-intensive ink drying sections.

**Plasma enables the substitution of expensive, energy-intensive plastics**

The production of plastics is an energy-intensive process that consumes many resources. Growing raw material prices, increasing quality demands and the striving for more sustainability require new technologies in the processing of the valuable material. Here, too, plasma technology provides effective support: Openair plasma can be used to specifically modify the surface of plastics in order to improve the adhesive strength of adhesives and coatings in industrial applications and even to join together materials that were originally incompatible. Users thus benefit from an expanded choice of materials. For example, cost-intensive engineering plastics can be replaced by less expensive plastics, while saving energy at the same time. Current applications from the Plasmatreat portfolio show that, for example, the use of low-cost polypropylene (PP) as a substitute for acrylonitrile butadine styrene (ABS) not only reduces material costs but also energy consumption, as the plastic can be produced using significantly less energy.

"Resource-conserving, energy-saving and clean - these properties make plasma technology a contemporary alternative in many industrial processes. We provide comprehensive advice on all possible applications and, with our global network of subsidiaries and partners, take care of our customers, their processes and challenges," says Dr. Alexander Knospe, Head of Innovations at Plasmatreat GmbH.

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**About Plasmatreat**

Plasmatreat is an international leader in the development and manufacture of atmospheric plasma systems for the pretreatment of substrate surfaces. Whether plastic, metal, glass or paper - the industrial use of plasma technology modifies the properties of the surface in favor of the process requirements. Subsequent processes include bonding, painting, printing or gasketing.

Openair-Plasma® technology is used in automated and continuous manufacturing processes in almost every industrial sector. Examples include the automotive, electronics, transportation, packaging, consumer goods and textile industry, but the technology, cost and environmental advantages of the plasma technology are used in medical technology and in the renewable energy sector as well.

The Plasmatreat Group has technology centers in Germany, USA, Canada, China, and Japan. With its worldwide sales and service network, the company is represented in more than 30 countries by subsidiaries and sales partners.

For more information, please visit: [www.plasmatreat.com](http://www.plasmatreat.com)

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***Info box:***

**How Openair-Plasma and PlasmaPlus optimize industrial processes.**

When plasma with its high energy level comes into contact with materials, it changes the surface properties, for example from hydrophobic to hydrophilic. Plasma technology requires only compressed air and electricity for operation. Fine cleaning with Openair-Plasma gently and reliably removes dust, release agents, additives, plasticizers and hydrocarbons from surfaces. Especially with non-polar plastics, plasma treatment achieves surface activation. It supports the increase of surface energy by introducing hydroxyl groups and thus improves adhesion in subsequent processes such as bonding, printing, painting and sealing. Plasmatreat's PlasmaPlus technology can also be used to create targeted functionalized surfaces with defined properties by applying (depositing) nanocoatings, e.g. as an additional adhesion promoter layer.

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**Image:**

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Plasma is an environmentally friendly alternative to other pretreatment methods and users only need energy and compressed air. (Copyright: Plasmatreat GmbH)