Steinhagen, September 27th, 2022

**K Show 2022: Plasma technology - the environmentally friendly "signpost" revolutionizes plastics processing**

**The performance of plasma in the processing of plastics solves many questions: Plasma specifically changes the surface properties of the non-polar material and turns it into a surface that can be easily printed, bonded, painted and sealed. But what exactly happens during plasma treatment and how can it be used industrially? Plasmatreat GmbH, based in Steinhagen, the world market leader for atmospheric plasma technology, will provide answers at its booth I65 in Hall 11 at the K Show, which takes place in Düsseldorf from October 19 - 26.**

Plasma pretreatment is the key technology for ultra-fine cleaning, activation and coating of almost all materials. At K Show, Plasmatreat, a specialist in atmospheric plasma processes (Openair-Plasma), will be demonstrating how it can be used with plastics to solve many problems: Plasma makes completely new materials and material combinations industrially usable, enables the use of solvent-free coatings and adhesives, and makes processes more efficient and environmentally friendly. In addition, previously incompatible materials can be processed together, creating entirely new material composites.

**Activation: Non-polar surface becomes polar**

Plasma is very reactive and can interact with surfaces, liquids or microorganisms. If it comes into contact with solid materials, e.g. plastics, the applied plasma changes important properties. The surfaces of most plastics are mostly non-polar, i.e. they have only a low surface energy. With Plasmatreat's patented Openair-Plasma technology, atmospheric plasma is applied with pinpoint accuracy and gently to the material surface to be treated using simple compressed air. In the process, the reactive plasma components cause chemical reactions in which oxygen- and nitrogen-containing groupings, the two main components of the process gas air, are incorporated into the surface - the surface energy is significantly increased and a so-called activation takes place. This ensures significantly improved wettability of the substrate and increases adhesion: adhesives, inks or coatings achieve strong adhesion - without the need for conventional pretreatments, e.g. solvent-based primers.

**Coating: Effect further increased**

The effect of plasma can be increased even further: With the PlasmaPlus technology developed by Plasmatreat, nanocoatings are applied to the surface which, for example, can be both superhydrophobic and super hydrophilic. A special nozzle head is used to inject the plasma jet with an additional precursor tailored to the specific application. The precursor is excited by the plasma so that the substance attaches to the material surface as an extremely thin layer, binds firmly and produces functional surface properties individually tailored to the process. The nanocoating can, for example, result in even better bonding or painting of the plastic.

**What can be achieved with plasma activation and coating?**

The possibilities opened up by the effect of plasma for the industrial processing of plastics in different industries are enormous: Plasma applications from Plasmatreat make originally non-compatible materials compatible (e.g. PMMA and PP), facilitate the processing of recycled materials (and enable e.g. high-quality printing results), allow the change in industrial processes from a high-priced engineering plastic to a lower-priced plastic (ABS to PP), replace processes that pollute the environment, and overall stand for more efficiency and good reproducibility.

**Plasma in research - an example:**

Together with several research partners, including TU Dresden, Plasmatreat is pursuing an exciting project: Metal and thermoplastic become a hybrid component.

Hybrid components, in particular metal-plastic composites, are increasingly being used in the lightweight construction of modern vehicles, railroads or aircraft. The joint project, called hypro, which is funded by the German Federal Ministry of Education and Research (BMBF), is investigating how these can be constructed and economically mass-produced. Under the coordination of a well-known vehicle component manufacturer and with the participation of the TU Dresden, the University of Paderborn, Plasmatreat and other project partners, research is being conducted into competitive ways of using hybrid materials in industrial applications, using the example of a safety-relevant automotive component. Plasmatreat is responsible for the pretreatment (ultra-fine cleaning) of a component-specific metal component with Openair-Plasma and the application of an adhesion promoter layer using PlasmaPlus technology for the thermal bonding of a polymer. The fully automated plasma coating-based pretreatment is being tested on a wide range of metallic materials. In particular, the project is also working on the integration capability in assembly lines for series production as well as disassembly and repair concepts. "We are already using plasma technology in bonding processes to produce hybrid components, for example for the automotive industry. In this case, we are testing the direct gating of a thermoplastic to metal in the injection molding process. The declared aim is the cost-effective production of hybrid components for the automotive industry in quality-assured processes," explains Magnus Buske, Head of RnD at Plasmatreat.

Plasmatreat at K from October 19 to 26, 2022 in Düsseldorf, booth I65, hall 11.

(5.495 characters with spaces)

**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.

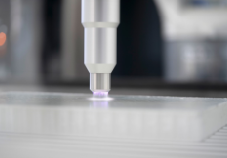
Openair-Plasma® technology is used in automated and continuous manufacturing processes in almost every industrial sector. Examples include the automotive, electronics, transportation, packaging, consumer goods and textile industry, but the technology, cost and environmental advantages of the plasma technology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

(968 characters with spaces)

**Images:**

****

Plasma makes completely new materials and material combinations industrially usable, enables the use of solvent-free coatings and adhesives, and makes processes more efficient and environmentally friendly. (Copyright: Plasmatreat)

****

Plasmatreat's PlasmaPlus technology is used to apply nanocoatings to surfaces that can be, for example, both superhydrophobic and superhydrophilic. (Copyright: Plasmatreat)