Elgin, IL, October 11, 2023

**Plasma Surface Treatment Enables the Use of Completely New Material Combinations**

Plasmatreat’s technology offers solutions for composites and advanced materials

**Plasmatreat will be live on-site at CAMX at the Georgia World Congress Center in Atlanta, GA from October 30 to November 2. The company is the international leader in developing and manufacturing atmospheric pressure plasma systems for the pretreatment of various substrate surfaces. Plasmatreat will be available at Booth EE47 for exciting live demonstrations and discussions on multi-material bonding and plasma surface pretreatment.**

Plasmatreat’s Openair-Plasma® pretreatment is a crucial technology with various applications in various industries, including the composites industry. The use of plasma for microfine cleaning, surface activation, and nanocoating has transformative effects on materials, leading to lighter vehicles, safer components, and more environmentally responsible processes.

When materials are exposed to plasma, which is the fourth state of matter with high energy levels, the interaction causes significant changes in the surface properties of those materials. For instance, a hydrophobic surface can be transformed into a hydrophilic one through plasma treatment. This alteration of surface properties is highly beneficial in the composites industry, where the performance and longevity of composite materials are essential.

**Impacts in automotive and aerospace manufacturing**

Plasma technology can have a significant impact in the automotive and aerospace industries, particularly in the realm of lightweight construction and material bonding.

Plasma technology indeed offers several advantages in these sectors:

*Lightweight Construction:* Plasma technology allows for the use of thinner sheet metal and lighter alternative components made of plastics or composites. This is crucial in industries like automotive and aerospace, where reducing weight can enhance fuel efficiency and overall performance.

*Improved Adhesion:* Plasma treatments enhance the adhesion properties of surfaces, especially non-polar materials that are traditionally difficult to bond. This improved adhesion ensures reliable bonds between different materials, contributing to the structural integrity and safety of the final product.

*Replacing Traditional Joining Techniques:* The enhanced bonding capabilities offered by plasma technology often make it possible to replace traditional joining methods such as riveting or bolting. This not only simplifies the manufacturing process but also reduces the overall weight of the assembled structures.

*Environmental Benefits***:** Plasma technology eliminates the need for primers that are not only harmful to the environment but also pose health risks. By eliminating volatile organic compounds (VOCs) emissions associated with primers, plasma treatments contribute to more environmentally friendly manufacturing processes.

*Enabling New Material Combinations:* By using plasma treatment certain material combinations are possible that might not have been feasible otherwise. This expands the range of materials that can be used, offering engineers more flexibility in design and material choices.

*Versatility in Applications:* Plasma technology can be applied to a variety of materials, including metals, plastics, and composites, making it versatile for different applications within the automotive and aerospace industries.

**Plasma offers better durability and functionality**

Plasmatreat specializes in providing advanced systems and equipment for activating, cleaning, and coating surfaces using plasma technology. These systems are designed to harness the power of plasma to modify material surfaces effectively. By employing plasma pretreatment, the composites industry can enhance adhesion, improve coating quality, and ensure the overall durability and functionality of composite materials.

**Plasma pre-treatment is environmentally responsible**

In addition to its technical advantages, plasma pretreatment also aligns with the growing focus on environmentally responsible practices. By enabling more efficient and precise surface modifications, plasma technology contributes to the development of sustainable manufacturing processes, reducing waste and energy consumption.

As research and technology continue to advance, plasma pretreatment is likely to play an even more significant role in shaping the future of materials science and various industries, making processes more efficient, products more reliable, and manufacturing practices more environmentally responsible.

In summary, this technology plays a pivotal role in enabling lightweight construction, enhancing adhesion properties, and promoting environmentally responsible practices in key transportation sectors. These advancements are crucial for the development of efficient, safe, and eco-friendly vehicles, vessels and aircraft.

More information is available at: 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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**About Plasmatreat**

Plasmatreat is an international leader in developing and manufacturing 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 the textile industry, but the technology, cost and environmental advantages of 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.

More information is available at: [www.plasmatreat.com](http://www.plasmatreat.com)

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Images:

Close-up of a machine

Description automatically generated

Surface treatment with Openair-Plasma is a clean, reliable, cost-efficient method, which can be integrated inline in production processes. (Copyright Plasmatreat GmbH)

A close up of a machine

Description automatically generated

Material transformation with Openair-Plasma: new material combinations by pretreatment and bonding different plastics together, e.g. PP and PE or plastics with metal. (Copyright Plasmatreat GmbH)