Steinhagen, February 22nd, 2023

**Higher-quality, longer-lasting, more environmentally friendly printing**

InPrint 2023: Pretreatment with plasma for brilliant printed images on challenging substrates

**Pretreatment with plasma significantly improves printing ink’s adhesion to a wide range of surfaces and produces brilliant, long-lasting results on materials that are difficult or impossible to print on with conventional methods. At booth 2340 at InPrint in Munich, which will take place from March 14th to 16th, 2023, Plasmatreat GmbH will demonstrate how it is possible to print in high-quality in an efficient and environmentally friendly way on challenging substrates such as plastic, metal and glass** **- by using special pretreatment methods. Plasmatreat is the global market leader in atmospheric plasma technology, and at Europe’s leading industry get-together for print tech, the company will present innovative surface treatments that can be used for nearly any material.**

An ideal printed image should be brilliant, high-coverage, and durable, regardless of the substrate’s characteristics. However, many materials have characteristics that make printing difficult. Creating the required surface quality, it is often necessary to use chemical pretreatment which is harmful to the environment; many companies would like to avoid using conventional solvent-based inks and adhesion-enhancing primers. Plasma technology is rightly an alternative here. It is a universal problem-solver: Plasmatreat’s Openair-Plasma and PlasmaPlus technologies facilitate VOC-free pretreatment of a wide range of substrates, allowing companies to print on them using methods such as digital printing with UV-curing systems. Using UV inks increases the efficiency of the printing process: The inks cure extremely rapidly, without the need for a large number of energy-intensive ovens; this also means that the waiting times before the surfaces can be processed are minimal. At the same time, users also benefit from the well-known advantages of digital printing: efficient manufacturing of products in small batches, or personalized or customized individual items.

**Plastic: Brilliant printed images, even on recycled materials**

In printing, the cheaper standard plastics such as PP or PE pose particular challenges for the industry. Their low surface energy results in inadequate wettability, making them very difficult to print on. Openair-Plasma pretreatment increases the substrate’s surface energy, significantly improving wettability. The result is a considerable increase in adhesion, which allows printing ink to form a long-lasting, wear-resistant bond with the surface. This highly targeted pretreatment method can be used to create high-quality, long-lasting prints on a wide range of plastic products, from pens and toothbrushes to computer keyboards, parts in automotive like switches and displays and cups made of recycled materials. Additionally, plasma technology is particularly important when it comes to printing on recycled plastics, because the raw materials are not always sorted entirely correctly, and the inconsistent quality of the material makes it difficult to print on. Openair-Plasma also offers an effective solution here. Plasmatreat will demonstrate this solution at InPrint by showing a “crinkle cup” made of recycled PP. It was printed using UV digital printing and without an additional bonding agent – and the result is an impressively high-quality, durable print.

**Metal or glass: Enhanced effectiveness with PlasmaPlus**

In contrast to non-polar plastics, metal and glass have inherently polar surface characteristics. PlasmaPlus plasma technology comes into play to protect the printing on metal and glass, for example, against changing temperatures or other environmental influences. PlasmaPlus technology can further optimize the process of printing, and in some cases, it can actually make it possible in the first place. The ultra-thin PlasmaPlus coating PT-Print is applied to the surface immediately before printing. It makes chemical pretreatment or additional priming of the substrate unnecessary. The process is dry, meaning that the surface can be worked on again immediately afterwards, and it ensures that the printing ink forms a direct and permanent bond with the metal or glass substrate. By not using solvent-based inks or chemical pretreatment, plasma paves the way for manufacturing processes that are both sustainable and cost-effective. The various applications of plasma have already proven successful in numerous different industries. In the metalworking industry, for example, plasma is used in can manufacturing – in cases where large metal surfaces need to be pretreated before the cans are shaped, or where finished products have to be pretreated before printing. Plasma treatment also produces excellent results when applying ink to metal components such as stainless steel or chrome – in the automobile industry, for example. For substrates made of glass, plasma technology has proven its worth in a wide range of different areas and industries. The technology is used in the cosmetics industry to print on high-quality perfume bottles, in the pharmaceutical and medical industry for wear-resistant printed images on medical items made of glass, and in the solar industry for printing conductive UV inks onto glass modules – these prints are an integral aspect of the module’s functionality.

**PFW100 Openair-Plasma jet – For flat surfaces**

With its new PFW100 plasma jet, Plasmatreat offers the perfect jet for pretreating flat components or surfaces that are used for processes involving high speeds and covering broad areas, such as the phase before the printing process. The PFW100 is particularly well suited for pretreating heat-sensitive materials such as thin plastic films or textiles such as non-wovens. It can also be used for cleaning glass and metal surfaces. The PFW100 delivers consistent pretreatment at a width of 100 mm per plasma jet and relative speeds of up to 200 m/min. A modular layout of multiple jets allows users to flexibly vary the width of the area to be treated.

**Bring a material sample for on-site testing**

The right plasma system and the optimal jet – specifically customized for each application by Plasmatreat – can often solve the issue of printing on challenging materials and geometries. InPrint attendees can visit Plasmatreat in booth 2340 to discover whether this innovative technology can also solve their printing problems. The atmospheric plasma technology experts will test samples brought in by visitors directly at the company’s booth and provide an initial assessment right away. “When printing on challenging materials such as plastic, metal, or glass, plasma technology – in combination with digital printing and specially developed UV inks – is as efficient as it is environmentally friendly, and it has the potential to be a universal problem-solver for demanding printing jobs,” emphasizes Joachim Schüßler, Head of National Sales at Plasmatreat GmbH.

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

***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 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)

**Images:**

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Cups made of recycled PP are printed by using UV digital printing and without an additional bonding agent – the result is an impressively high-quality, durable print. (Copyright: Plasmatreat GmbH)



Surface pretreatment with Openair-Plasma from Plasmatreat supports vibrant colors, crisp images and long-lasting quality in printing applications. (Copyright: Plasmatreat GmbH)(ca. 7.000 Zeichen inkl. Leerzeichen)