

Munich, November 14th, 2023

PTU from Plasmamatreat for Advanced Semiconductor Packaging

Openair-Plasma for easily integrated surface treatment with a variety of scalable functions

Plasmamatreat GmbH, the world leader in atmospheric plasma technology, has developed the Semiconductor PTU, a surface treatment production cell for the semiconductor industry. It can be easily integrated into existing production lines, offers numerous scalable functions and helps users in the industry to further improve their product quality.

Plasma Treatment Units (PTU) are production cells from Plasmamatreat. They offer various handling and automation options for efficient and reliable processes in surface treatment and handling of assemblies and components in the electronics industry. They are specially adapted to individual process requirements for various Openair-Plasma applications and can be seamlessly integrated into existing production lines.

Semiconductor PTU: Tailored to the needs of the semiconductor industry

With the Semiconductor PTU, Plasmamatreat has developed an efficient solution tailored to various semiconductor applications for cleaning, activation and coating. The cleaning process with potential-free Openair-Plasma reliably and effectively removes all organic and silicon-based contaminations as well as electrostatically charged dust from the substrates. The surface is activated, resulting in a high surface energy (over 72 mN/m). This ensures the best possible wettability of the surface and prepares the product for further processing in subsequent processes, e.g. die bonding, wire bonding or underfill. The increased wettability allows the adhesive to spread and adhere to the surface in the best possible way. Openair-Plasma systems can also be used to create different nanocoatings. These so-called PlasmaPlus coatings can have various characteristics. For example, they prevent epoxy bleed out, re-oxidation or serve as corrosion protection. The Semiconductor PTU is used prior to the following process steps: wire bonding, chip bonding, pre-molding, thermocompression bonding, underfill, metal oxide reduction.

Faster, more accurate, more environmentally friendly

The Semiconductor PTU optimizes manufacturing processes in the semiconductor industry by treating the product surface in a matter of seconds, depending on the type and number of plasma nozzles used and the area to be treated. Users benefit from consistent, precisely reproducible results and high process speeds. Inexpensive process gases are used: only compressed air is required for most processes. This keeps operating costs low.

In addition, the environmentally friendly, VOC-free technology does not require the use of solvents. The Semiconductor PTU has a small footprint compared to conventional processes, such as space-intensive and batch-processing vacuum systems.

"Potential-free ultra-fine cleaning with Openair-Plasma is a highly efficient alternative to vacuum plasma, which is widely used in the semiconductor industry. The big advantage of our Semiconductor PTU is its inline capability. In addition, our systems are particularly suitable for site-selective surface treatment - with these features we optimally address the needs of the industry," explains Nico Coenen, Global Director Electronics Market at Plasmatreat.

More information is available at: www.plasmatreat.com

Visit Plasmatreat auf der productronica, in hall A2, booth 445.

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Images:



In the Semiconductor PTU, Openair-Plasma is used to effectively remove all organic and silicone-based contaminants as well as electrostatically charged dust. (Copyright: Plasmatreat GmbH)