Plasma Treating

Plasma Cleaning Plastic Prior to Ultrasonic Welding

Dyne Technology Ltd, the UK and Ireland’s Number One supplier of Plasma Treatment technology, look at how Plasma improves the surface cleanliness of plastics.

A customer approached Dyne Technology when searching for a green and economical method of cleaning a 3D polyolefin component prior to the ultrasonic welding of small plastic brackets.

Plasma Cleaning offers a clean, green alternative to nasty environmentally damaging solvent based cleaners which the customer desperately wanted to avoid.

Why Plasma Cleaning?

Many are aware that Plasma provides a fast and effective treatment for the removal of organic contaminants from the surface of metal, glass and ceramic components; however, it is not widely known that Plasma is also excellent for removing organic contaminants from the surface of plastics.

How does it work? Plasma is created when a gas (usually compressed air) is subjected to a high-energy discharge: the gas breaks up into electrons, ions, highly reactive free radicals, short wave UV light photons and other excited particles. When these species are excited by a high-energy discharge, they effectively scrub the surface to be cleaned.

The type of Plasma Treatment equipment required is heavily dependent on the component undergoing treatment and your manufacturing process. In this instance, Atmospheric Plasma was the cleaning method of choice, but Vacuum Plasma also provides a uniform and reproducible process for the removal of organic contaminants from the material’s surface.
Atmospheric Plasma Surface Cleaning

Both Vacuum and Atmospheric Plasma can be used for surface cleaning plastics, however which one is right for you is highly dependent on your application.

Atmospheric Plasma offers an excellent option for those looking for targeted surface cleaning, perfect for our customer’s application of applying small plastic brackets.

Atmospheric Plasma can easily be integrated with both new and existing production lines; typically, integration with automation offers an excellent solution for targeted treatment areas due to the repeatability and consistency of treatment offered.

The Dyne Technology team has vast experience designing a breadth of robotic Plasma Treatment units, including robotic Atmospheric Plasma cells. When integrating Atmospheric Plasma with automation, the Dyne Technology engineers are always keen to ensure that the unit is both easy to operate and maintain alongside having a compact design and small factory footprint.

The PlasmaTEC-X Atmospheric Plasma system is an economical, environmentally friendly and efficient method of surface activation. Our customer required only a single nozzle, however if the need arises, production can easily be increased as up to eight Plasma nozzles can be operated from a single control box, even if they’re several metres apart.

The unit features a timer mode and boasts simultaneous and independent nozzle operation for true flexibility. Adjustable parameters allow for reliable and consistent surface activation and this is furthered by our “AirSave” feature which continuously monitors compressed air flow to ensure that the unit is consistently running at its optimum performance levels.
Dual Performance Technology

Did you know that following continued treating, Plasma will also “activate” the surface of plastics? Plasma Surface Activation is a highly effective, long lasting method of increasing the surface energy of plastics and rubbers, such as Polypropylene (PP) and Polyethylene (PE).

The increased surface energy allows for better wetting of adhesives, coatings and inks alongside contributing to a better chemical affinity between the adhesive and the substrate.

It’s important to note that Plasma Treating doesn’t alter the bulk property of the material, in fact, you won’t even be able to tell we’ve been there.

Trusted Advice...

If you’re interested in discovering more about the power of Plasma Treating and how it could provide a controlled and verifiable solution of improving adhesion and surface cleanliness, Dyne Technology are on hand.

You can contact the Dyne Technology engineers by calling our Lichfield based customer centre on +44(0) 1543 411 460 or email info@dynetechnology.co.uk.