

World's smallest, highly effective handheld plasma treatment device

The [PiezoBrush PZ3 Handheld Plasma Surface Treatment Device](#) from Relyon Plasma is suitable for use in manual or semi-automated production, new product development, and in research and development settings such as a laboratories. It is simple, safe and intuitive. With a maximum power consumption of 18W, its unique Piezoelectric Direct Discharge (PDD®) technology is used to generate cold active plasma at a temperature of less than 50°C. Application of the plasma changes the surface properties of materials, which can have positive impacts on processing and end use; these include improved wetting and adhesion. Benefits include improved workflow, removal of wet chemicals from production, faster processes and overall quality.

PDD technology is the heart of the PiezoBrush PZ3. It transforms a low input voltage in such a way that very high electric field strengths are generated, which dissociate and ionize the surrounding air. The compact design of PDD technology makes it possible to integrate atmospheric pressure plasma generation into a small, handheld device.

There is hardly any temperature impact on substrates during surface treatment with the PZ3, opening up applications on a very wide range of materials, including thermally sensitive ones. Non-conductive materials such as plastics, glass, ceramics or natural materials such as organic fibres, textiles and leather show very good results after plasma treatment using the device's standard module. Conductive materials such as metals, CFRP, indium tin oxide or conductive plastics are treated with the nearfield module. Each module is readily replaced in a few seconds without tools and is plug and play.

We had great success with the forerunner to the PZ3, the **PiezoBrush PZ2**. The new model has an increased maximum power and allows a treatment speed of 5 cm²/s and a treatment width of up to 29 mm. Even on materials that are very difficult to treat, such as high-density polyethylene (HDPE), a

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surface energy of 72 mN/m can be achieved after plasma treatment. It also has a new intuitive control and display panel, offering power adjustment, various process timers and real time diagnostics.



The compact handheld instrument is very versatile, and is readily deployed into a wide range of applications. No external gas supply is required. Prior to bonding, treated surfaces are functionalised by the plasma, with subsequent adhesive joints showing a significant improvement in adhesive force. It can replace chemical pre-treatments and primers. Plasma surface treatment improves the adhesion of printing inks and varnishes, as the treated surface is optimally wetted by the ink, increasing print

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quality and image definition. Cold plasma is also used for fine cleaning by oxidising thin layers of organic contaminants. Successful projects include the treatment of 3D printed models, wire bond pads on PCBs, microfluidics, TPU films in wearables, dental implants, and the bonding of low surface energy polymers like polypropylene and polyethylene.

Get in touch about your application and see how the **PiezoBrush PZ3** can have a positive impact on your processes.

Supplied by:

intertronics

INTERTRONICS

12a Station Field Industrial Estate, Banbury Road, Kidlington

Oxfordshire England OX5 1JD

t 01865 842842 e info@intertronics.co.uk

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