

## INNOVATIVE PLASMA TECHNOLOGY

efficient and reliable

### piezo brush® PZ3

#### The world's smallest plasma handheld device with PDD® technology

The piezobrush® PZ3 has been developed as a compact plasma handheld device for use in laboratories, pre-development and assembly of small series. With a maximum power consumption of 18 W, cold active plasma with a temperature of less than 50°C is generated using Piezoelectric Direct Discharge (PDD®) technology. The heart of this handy plasma device is the piezo plasma generator TDK CeraPlas™ - a high-voltage transformer for generating cold atmospheric-pressure plasma.

#### Fields of application

- ◇ Joining technology
- ◇ Development and optimization of production processes
- ◇ Research facilities and laboratories
- ◇ Microbiology, microfluidics and food technology
- ◇ Medical and dental technology
- ◇ Prototype and architectural model making
- ◇ Small-scale production



#### Possible use cases

- ◇ Activation and functionalization of surfaces of various materials
- ◇ Optimization of bonding, painting, printing and coating processes
- ◇ Surface treatment of plastics, glass, ceramics, metals, semiconductors, natural fibres and composite materials
- ◇ Ultra-fine cleaning and odor reduction

#### Technical details

Electrical connection: 110-240 V / 50-60 Hz

Power consumption: max. 18 W

Weight: 110 g

Plasma temperature: < 50 °C

Treatment speed: 5 cm<sup>2</sup>/s

Typical treatment distance: 2 – 10 mm

Typical treatment width: 5 – 29 mm





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### Application examples – plasma activation with piezobrush PZ3

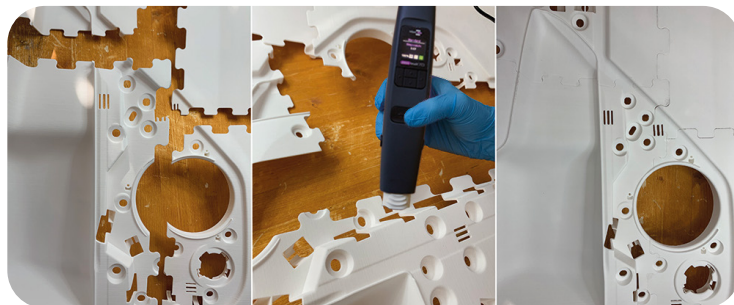
#### Printing on plastics

Many plastics such as polytetrafluoroethylene (PTFE) are difficult to print on. In the picture, only the right side has been treated with plasma before printing. The comparison clearly shows that the plasma pre-treatment of the substrate leads to a uniform print image, as well as to considerably better adhesion of the inks.



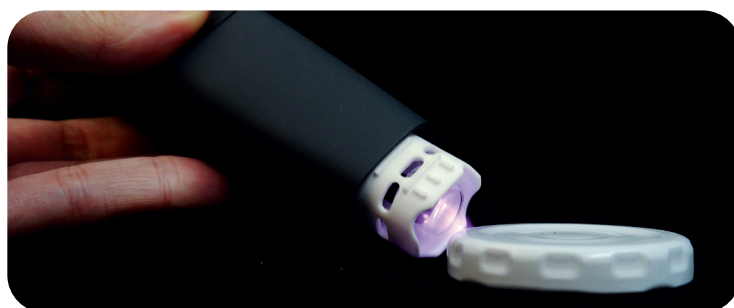
#### Bonding of 3D printed parts

Large parts are often produced in 3D printing by bonding of individually printed parts – but often with considerable adhesion problems. A plasma pre-treatment results in a significant improvement of adhesion. Up to three times higher bond strength can be achieved without the use of environmentally harmful wet chemical primers.



#### Plasma treatment before labeling

A coated metal cover is plasma treated with the piezobrush® PZ3 and the module Nearfield. The plasma treatment significantly improves the subsequent labeling on the cover. This is partly due to the fine cleaning and partly to the activation of the surface, both effects of the plasma pre-treatment.



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