

Cu-Coating on plastic

Fine Powder Coating (FPC) with Openair® Plasma

for new surface applications and products

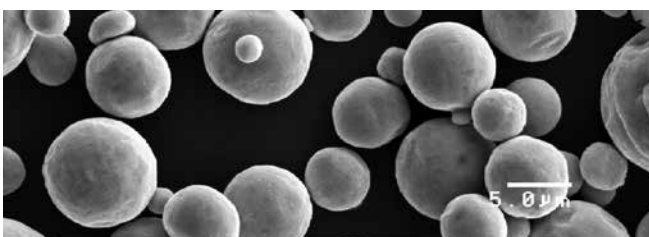
Fine Powder Coating – the principle

New innovative applications and products require intelligent combinations of different material and surface properties. The Fine Powder Coating (FPC) technology from Plasmatreat enables the production of functional coatings for new surface applications. The FPC process uses fine metallic powder like copper, aluminium, tin, etc. for the coating of thermally sensitive materials and products. In combination with the Openair® Plasma technology from Plasmatreat innovative functional surfaces of plastics, metals, glass or composites are created.

Fine powder particles are injected into the highly energetic Openair® arc load. The fine metal particles absorb the thermal plasma energy. Due to the high temperature in the center of the plasma beam the particles become molten allowing them to combine to form a coating. The kinetic energy of the plasma carries the particles out of the Openair® arc load onto the substrate to create a homogenous metallic layer.

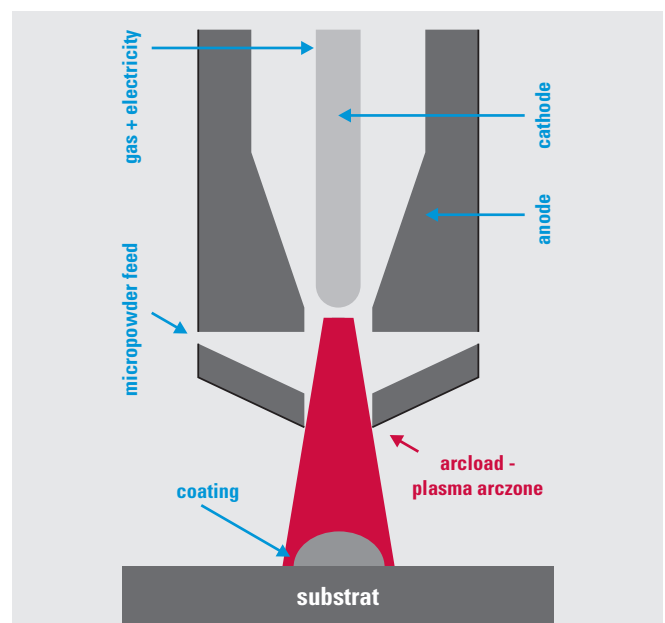
New products and materials with desirable properties can be generated for different requirements:

**Tribology, Corrosion Resistance, Conductivity,
Solderability, Heat transmission**



Cu-Powder

photo: ecoCOAT GmbH



Fine Powder Coating (FPC) mit Openair® Plasma

Process technology

Only a robust process technology allows the production of reproducible and high quality coating of thermally sensitive surfaces and products. The Fine Powder Coating FPC-technology consist of the main components:

- Powder
- Powder feeding system
- Plasma system

The precise matching of the powder, the powder feeding system and the plasma system determine the characteristics of the deposition layer. Coating and process parameters are as follows:

Substrate temperature	T <100° C
Layer thickness	1 – 100 µm
Deposition width	3 – 6 mm
Grain size range	0.6 – 25 µm (D50)
Prozessgeschwindigkeit	100 – 200 mm/s
Process gas consumption	air, nitograbProcess gas consumption 10 – 60 NLiter/min

Übersicht der Substrate und Pulver

SUBSTRATES	
METAL	Stahl, Edelstahl, 42CrMo4, Mn16Cr5, Cu-ETO, Cu, Al, Al Druckguss, Mg, Edelmetalle
POLYMER	ABS, Aramide, PA, PMMA, PP, PC, PI, PEEK, PVC
COMPOSITE	CRP, GRP
CERAMIC	AlO, SSiC, glass, Graphit, Si
SEMICONDUCTOR	BatiO, BeTe, Mo

Powder	
METAL	Cu, Al, Sn, Ni, Ag, Au, Zn,
CERAMIC	CUSN, SnAg, ZnNi, AlMg, NiCr
SEMICONDUCTOR	Ni-C, Ni-SiC, CIGS, WCu

Kooperation

Plasmatreat GmbH, Steinhagen and ecoCOAT GmbH cooperate in this new technology sector:

Plasmatreat:

- Systems for applying cold, conductive coatings in the plasma to sensitive surfaces
- Integrated process control for optimum production reliability and reproducibility
- Low-wear technology for long production cycles
- Global service and sales network
- More than 20 years' experience in the development, production and distribution of atmospheric plasma systems

ecoCOAT:

- Process automation
- Laboratory and prototype systems
- Small and large volume production
- Contract coating
- Powder delivery systems
- Monitoring
- Control
- Documentation
- Powder storage and handling
- plasma GRIP® FPC for the industrialization of friction-enhancing coatings



Plasmatreat – your worldwide partner for cleaning, activating and coating solutions with Openair®-plasma