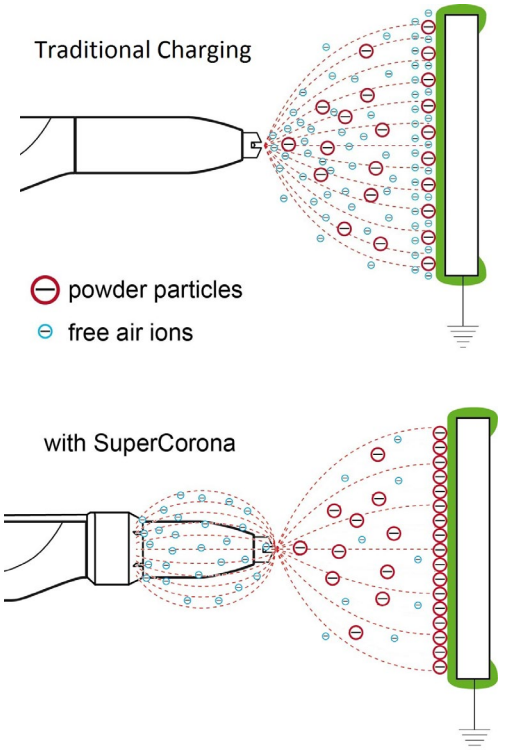
SuperCorona, the Best Solution for Smooth Surfaces

- In a Corona gun the high voltage electrode generates a big quantity of ions. Only a few ions charge the powder particles, the others remain free and are attracted by the part surface.
- The accumulation of ions on the part surface can produce "**orange peel effect**" and "**back-ionization**" problems.
- SuperCorona discharges the excessive free ions and significantly **improves the surface quality**.
- The free ions generate a strong electric field that makes it more difficult for powder to penetrate into corners and recesses (**Faraday Cage Effect**)
- SuperCorona discharges the excessive free ions and **facilitates the powder penetration**.



Gema

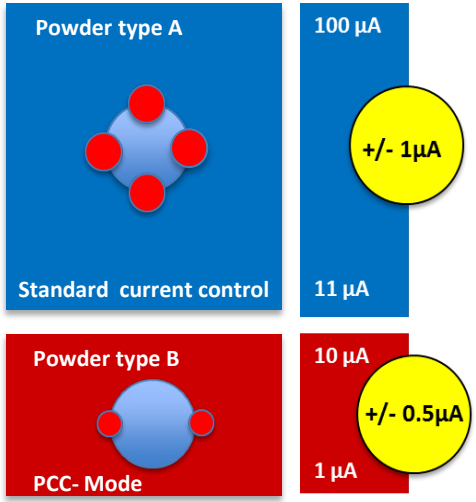
Controlled Powder Charging

Improved Surface Quality

Increased Powder Penetration

PCC Mode, the Perfect Control on Powder Charging

- Most common powders need the gun to deliver a **high level of charging current** (10 to 100 µA).
- Special powders (metallic, enamel, two coat / one fire powders) are high-chargeable and require the guns to deliver a lower and **well controlled charging current**, below 10 µA.
- Gema Precise Current Control (**PCC technology**) allows to control powder charging very precisely, with a resolution of only 0.5 µA until 10 µA.
- This is the ideal solution to provide the right amount of charges and achieve a **much better application quality**.



Gema

Precise Powder Charging

Improved Surface Quality

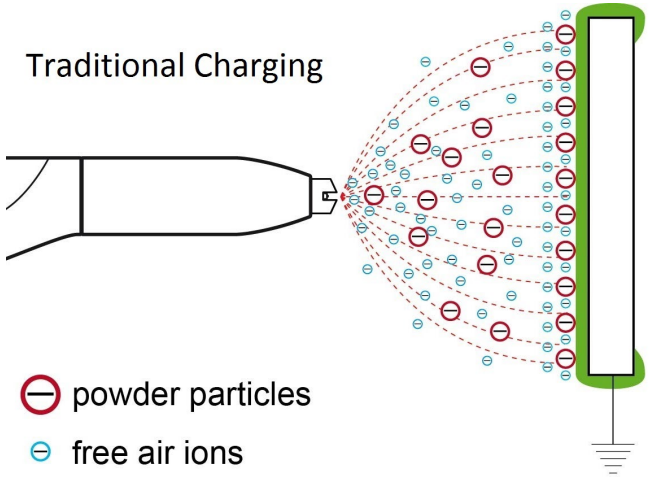
Ideal for Special Powders

Electrostatic Powder Coating

- Today’s powder coaters need to use a wide variety of powders, with different formulations and characteristics.
- Only the ideal charging of each powder ensures perfect coating results.
- Gema is offering innovative technologies to achieve the ideal charging of even challenging powders like structured and metallic powders, porcelain enamel, 2-coats 1-fire powders, etc.

Corona Charging: How Does It Work?

- In a **corona gun** the high voltage electrode generates a big quantity of air ions
- Only part of the air ions really charge the powder particles, the other ions remain free and are attracted by the surface to coat (which is grounded).
- The accumulation of free ions on the surface to coat can produce an uneven powder layer and the so called "**orange peel effect**" or "**back-ionization**" problems.



SuperCorona: How Does It Work?

- SuperCorona is an add-on accessory that can be easily mounted on any Gema gun.
- It can significantly improve **surface quality** and **powder penetration**, both for manual and for automatic guns.
- It can be removed for the powders that don’t need it.

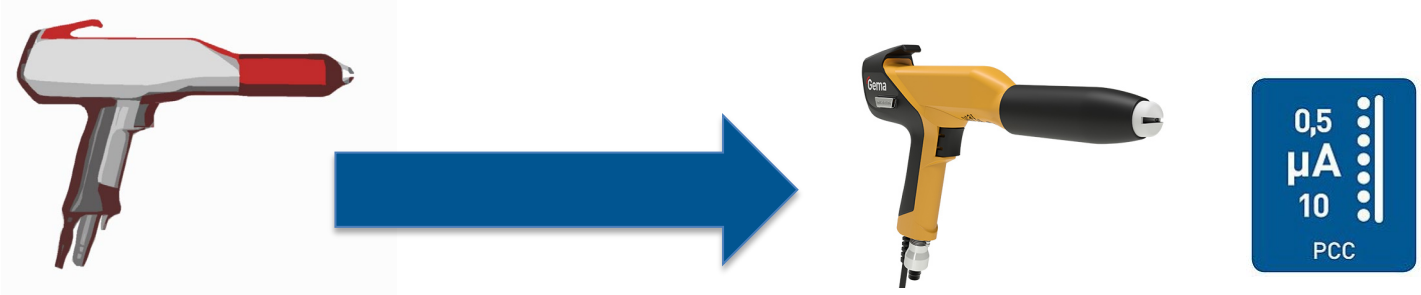
Precise Charge Control: How Does It Work?

Traditional Charging:
less precise, low resolution

- In traditional corona guns the regulations of the electrostatic parameters are not very precise.
- The actual value of the charging current can vary within a significant range in comparison to the set value.
- The parameters can be set only with a relatively large resolution (1 µA / 1 kV or more)

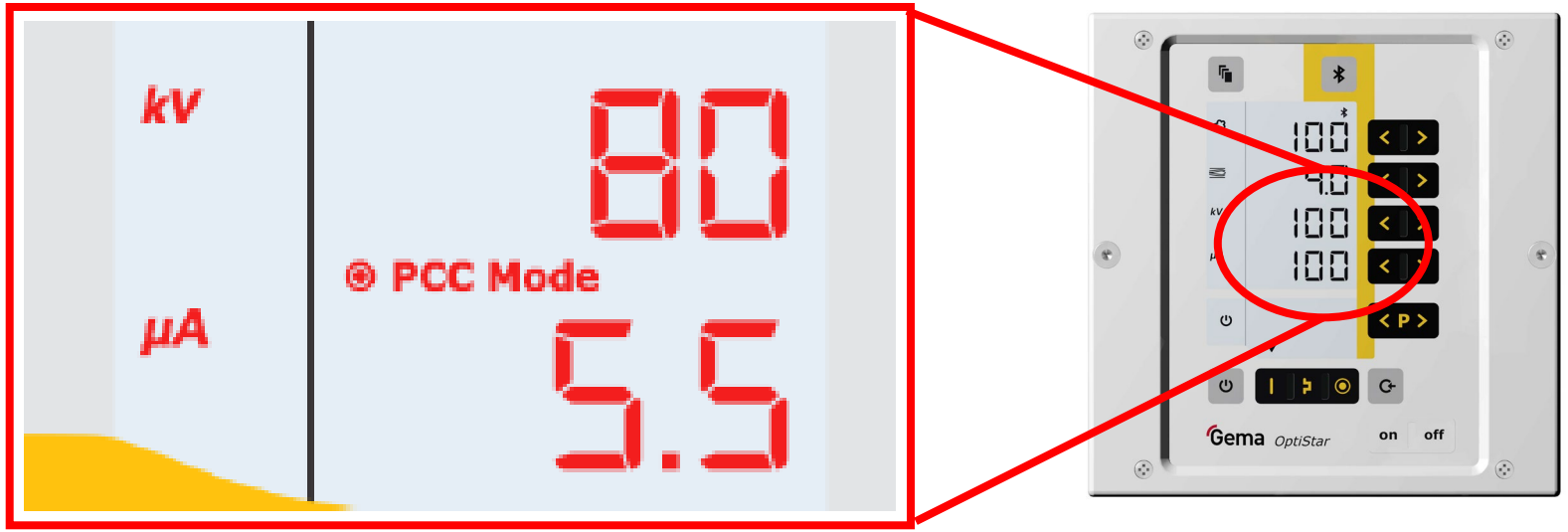
Precise Charge Control (PCC):
more precise, high resolution

- Gema has developed PCC, an electronic technology that allows more precise electrostatic regulations.
- The electrostatic parameters are kept within a much smaller variation band in comparison to the set values
- The parameters can be set with a smaller resolution (0.5 µA) and controlled much more precisely



Precise Charge Control Activation

- **Precise Charge Control** (**PCC**) mode is automatically activated when Current is set below 10 µA.
- The OptiSpray display showing the High Voltage and Current control turns red when PCC mode activates.



Improved Surface Quality

- Orange peel effect and back-ionization can happen when the guns are emitting too much charges. These charges accumulate on the surface to coat and create visual defects.
- **PCC** technology and **SuperCorona** help to optimize the amount of charges that are needed by each powder.

Results

- **much nicer surfaces,**
- **even with special powders,**
- **even when high film thicknesses are needed**

Improved Powder Penetration

- Powder penetration into corners is difficult because of the Faraday Cage effect.
- The electric field (created by the electrode and by the charges) pushes powder particles to the edges of the object, while the electric field is not getting into the corners.
- **PCC technology** and **SuperCorona** reduce the electric field generated by the free ions.

Results

- **Easier penetration into corners**
- **More regular powder distribution**
- **Powder savings**