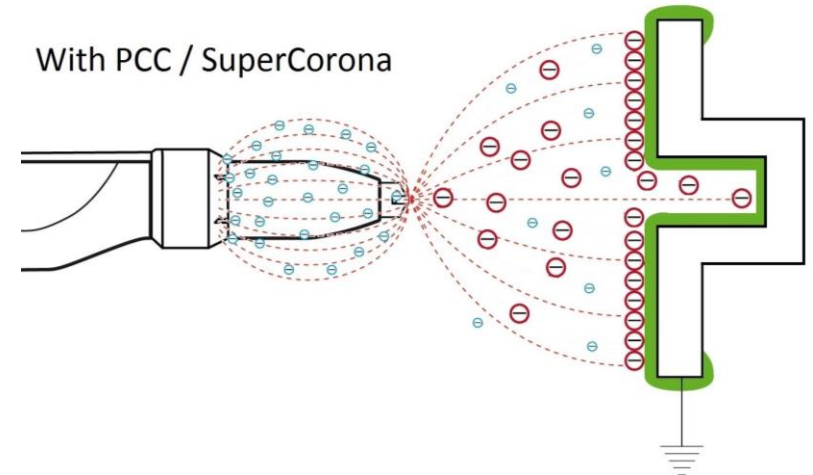


# PCC and SuperCorona improve quality

## Unique GEMA technologies to reduce powder overcharging

Improve penetration, reduce orange peel, back-ionization and picture frames even with difficult powders.



Ideal powder  
charging

Improved  
application quality

Improved powder  
penetration

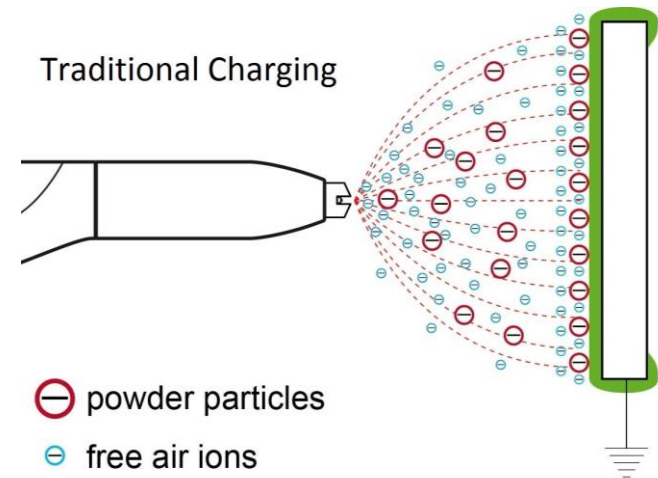
# Electrostatic powder coating

- 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.



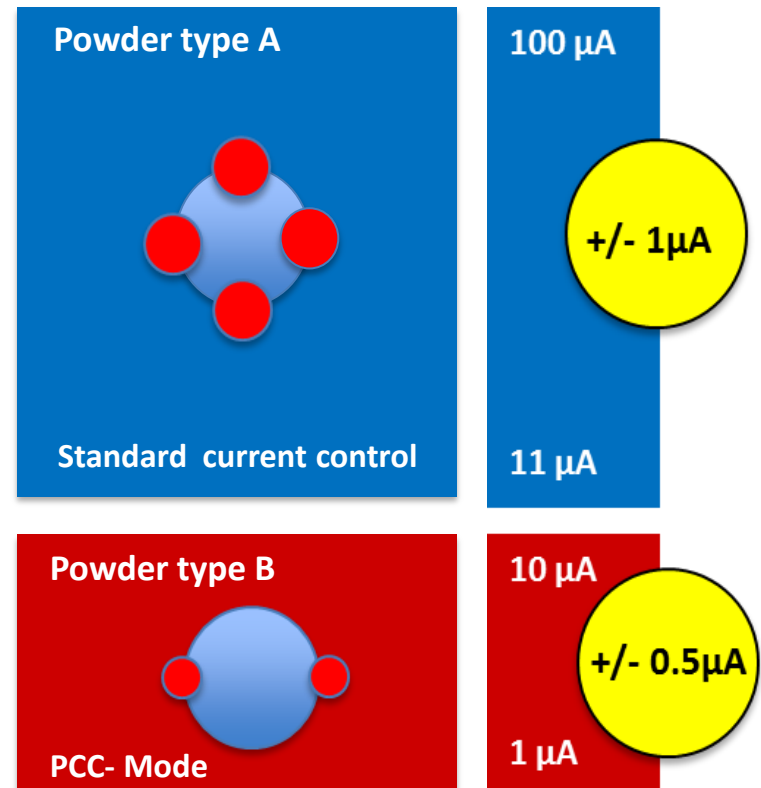
# Powder charging: how does it work?

- 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.



# Ideal powder charging

- **Most powders** need the gun to deliver a high level of charging current in the region of 10 to 100  $\mu\text{A}$ .
- **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  $\mu\text{A}$ .
- The precise charging **PCC technology** or the **SuperCorona add-on** are the ideal solution to provide the right amount of charges needed by each powder type
- This results in a much more efficient charging process and improved application quality.



# Precise Charge Control: how does it work?

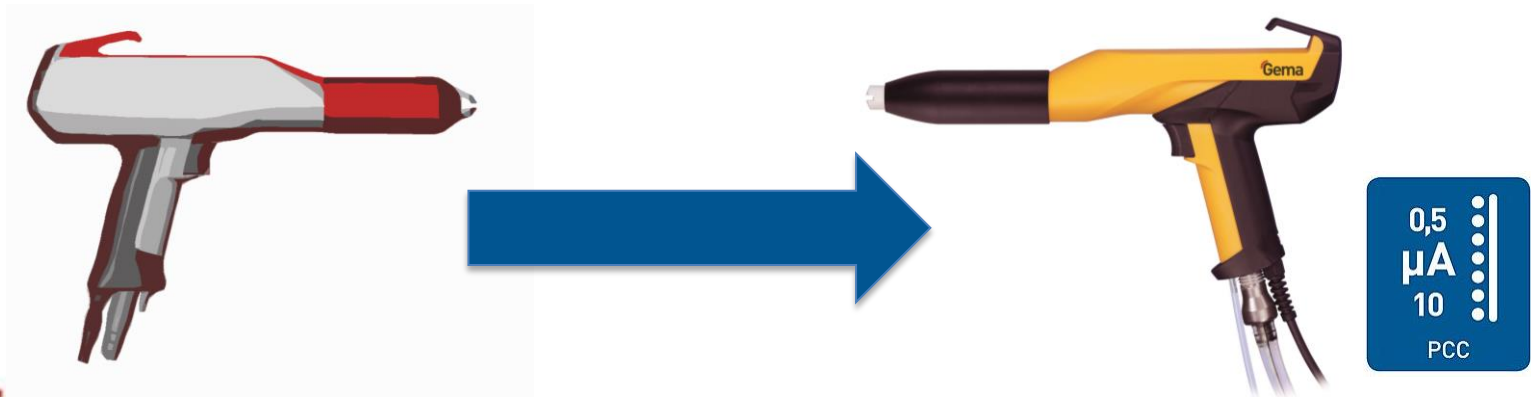
## Solution for **high-chargeable powders** **0.5 to 10 $\mu\text{A}$**

### 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.
- As a consequence the parameters can be set only with a relatively large resolution (1  $\mu\text{A}$  / 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  $\mu\text{A}$** ) and controlled much more precisely



# Precise Charge Control activation

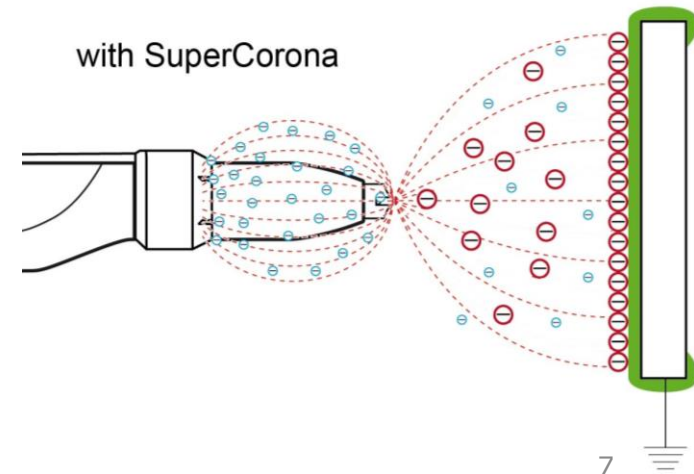
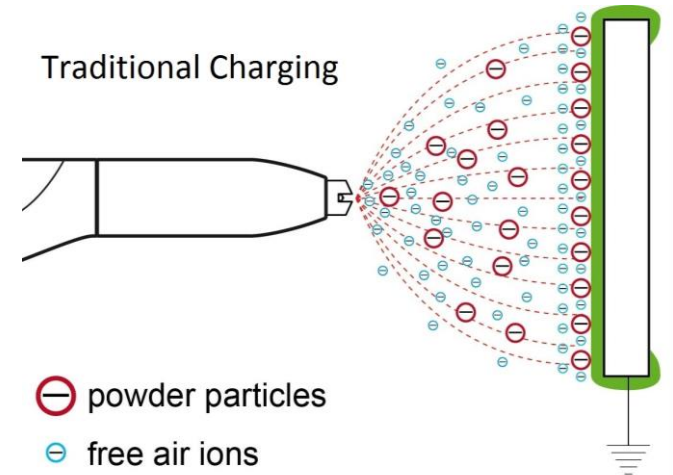
- **Precise Charge Control (PCC)** mode is automatically activated when Current is set below 10  $\mu\text{A}$ .
- The OptiSpray display showing the High Voltage and Current control turns red when PCC mode activates.



# SuperCorona: how does it work?

## Solution for **low-chargeable powders 11-100 $\mu\text{A}$**

- In a corona gun the high voltage electrode generates a big quantity of air ions
- Only a few air ions really charge the powder particles, the other ions remain free and are attracted by the surface to coat (which is grounded).
- The high 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** discharges the excessive free ions to ground and avoids overcharging of the powder and of the surface to coat.



# 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.
- **Advantages:**
  - **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.
- **Advantages:**
  - **Easier penetration into corners**
  - **More regular powder distribution**
  - **Powder savings**

