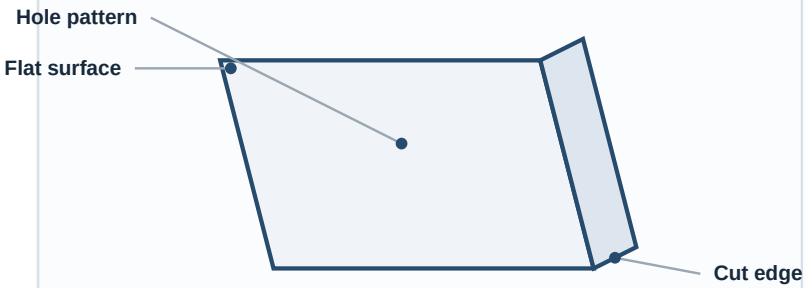
UNDERSTAND THE SURFACE BEFORE DESIGNING THE COATING.

Mounting Plate (Backplate) — Carrying components inside the enclosure; condensation/humidity, electrical insulation and screw/contact load during assembly. Before designing the right coating, we evaluate the material chemistry, the geometry and the service conditions together.

PART DIAGRAM — MOUNTING PLATE (BACKPLATE)



COATING CROSS-SECTION



Five questions define a coating system

1. **MATERIAL**
   Galvanised or hot-dip galvanised steel, 1.5–2.5 mm flat plate with a pattern of plain/threaded holes and cut edges.

2. **SURFACE**
   Oil and cutting residues are removed; zinc oxide is cleaned from galvanised surfaces and an active surface is created for zinc-compatible adhesion.

3. **GEOMETRY**
   Edge pull-back at the edges of plain and threaded holes and sharp corners at cut edges; a uniform film thickness is expected on the large flat surface.

4. **SERVICE CONDITIONS**
   Carrying components inside the enclosure; condensation/humidity, electrical insulation and screw/contact load during assembly

5. **PRODUCTION TARGET**
   High volume; low scrap with consistent film thickness and reliable adhesion on galvanising.

CONCLUSION: For the Mounting Plate, the goal is not just a good-looking finish; it is an electrically insulating powder-coated surface with uniform coverage including hole edges and good adhesion on galvanising.

FROM SURFACE TO PROCESS ENGINEERING FLOW

The Mounting Plate cannot be coated like just any part. A sound process needs measurement, pretreatment, the right coating selection, application and verification to work together.

01 **ANALYSIS** Substrate + surface
02 **PRETREATMENT** Cleaning + conversion
03 **COATING** Chemistry + film
04 **APPLICATION** Electrostatics + flow
05 **CURING** Time + temperature
06 **VERIFICATION** Test + record

A. Surface Characterisation

The condition of the substrate surface (cleanliness, roughness, oxide/scale and any weld zones) is determined. The right process starts with the right definition of the surface.

MEASURABLE INPUTS
Surface cleanliness • roughness • weld marks

B. Pretreatment Design

Alkaline degreasing + rinsing + a galvanising-compatible conversion coating (nano-ceramic/phosphate); controlled drying prevents outgassing on the zinc surface.

CORE TARGET
Clean, active, uniform, repeatable surface

C. Coating System Selection

An epoxy or epoxy-hybrid powder is selected for indoor insulation; good adhesion on galvanising, edge coverage and hardness are targeted.

DECISION CRITERIA
Durability • appearance • service life • cost

D. Application Engineering

Electrostatic powder coating, 60–80 µm; current limit and gun motion are set to reduce edge pull-back in the hole pattern, and the oven ramp is controlled to prevent gas blisters on galvanising.

GEOMETRY EFFECT
Hole pattern • Cut edge • Flat surface

Managing the process with data, not by eye

µm
FILM THICKNESS
Coating uniformity

°C
PART TEMPERATURE
Actual cure condition

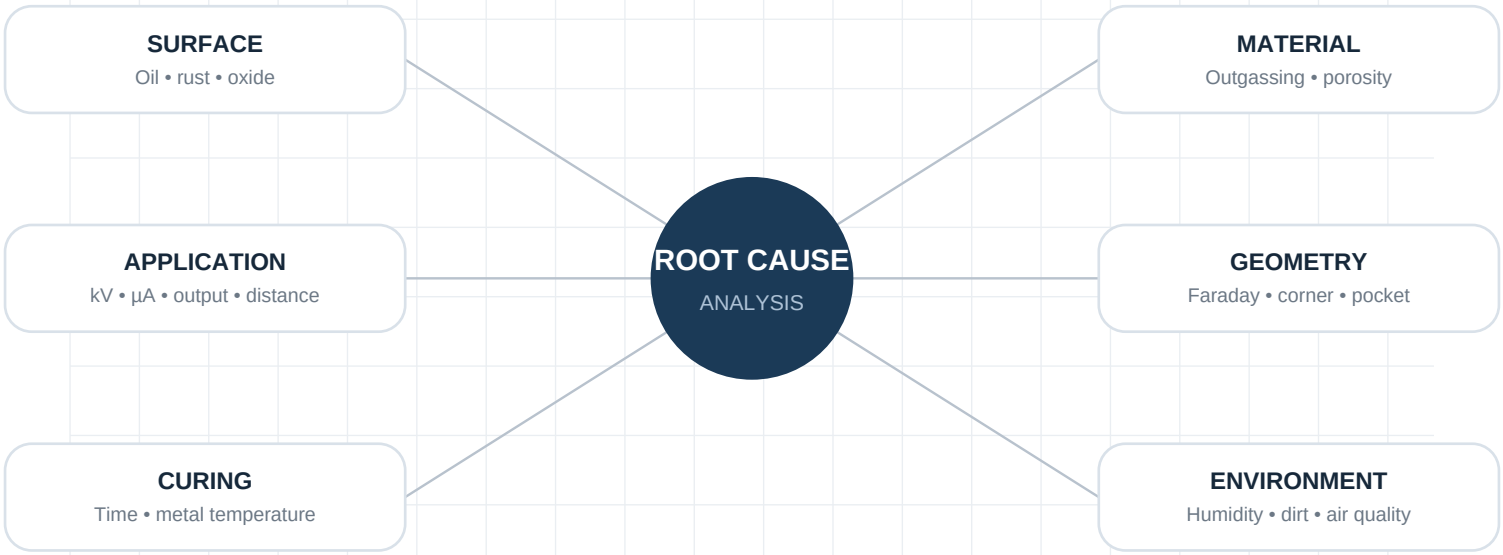
kV / µA
ELECTROSTATIC CHARGE
Transfer and penetration

Ω
GROUNDING
Charge dissipation and stability

ENGINEERING PRINCIPLE In the Mounting Plate process, we define a process window rather than a single parameter. The aim is to reproduce the same surface quality across different shifts and part conditions.

A SURFACE DEFECT IS A SYMPTOM, NOT THE ROOT CAUSE

Coating defects rarely come from a single setting. The same symptom may stem from surface preparation, material, electrostatic behaviour, film thickness or curing.



Common defects and diagnostic approach

POOR ADHESION

The coating detaches from the surface or fails in testing.

CHECK: cleaning / pretreatment / cure

ORANGE PEEL

Uneven flow; the surface looks wavy or rough.

CHECK: film / flow / temperature

PINHOLE / CRATER

Pinholes or local craters form on the surface.

CHECK: dirt / gas / humidity / oven

FARADAY ZONE

Insufficient penetration in deep corners and pockets.

CHECK: geometry / kV-µA / air

BACK-IONIZATION

Star/blister defects from overcharging.

CHECK: current / distance / thickness

UNEVEN THICKNESS

Thin and thick areas on the same part.

CHECK: position / motion / output

DIAGNOSTIC PROTOCOL

1 Define the symptom → **2** Measure the data → **3** Isolate the cause → **4** Test one variable → **5** Standardise

A GOOD SURFACE PROCESS must be measurable • repeatable • traceable • optimisable. This approach is the basis of part-specific application guides for parts such as the Mounting Plate.

THE RIGHT EQUIPMENT, AT THE RIGHT SCALE.

For the Mounting Plate, production volume drives the equipment choice. At low and medium volume, manual systems give flexibility; in series production, automatic systems apply the same recipe to every part.

LOW / MEDIUM VOLUME

Manual application



Elite / Elite Plus

Manual powder coating units; kV, µA and air settings.



Smart AI

Suggests settings for the part; guides the operator in manual work.



Manual Powder Coating Gun

Light, ergonomic hand gun.



Manual Powder Booth

Manual application and powder recovery.



Box Oven

Curing in batch production.

SERIES PRODUCTION

Automatic line



Automatic Powder Coating Gun

Series application in fixed or moving arrays.



Smart AI

The same application on every part, by recipe.



Single / Two-Axis Reciprocator

Automates the gun motion.



PVC Monocyclone Booth

Fast cleaning and powder recovery.



Powder Center

Fast colour change on automatic lines.



Conveyor Oven & Pretreatment

Surface preparation and curing on a continuous line.

PROJECT SUPPORT Share your line, your part and your production target, and we will define the equipment selection and the booth, oven and conveyor layout together. strong3000.com · info@strong3000.com · WhatsApp +90 537 353 54 19