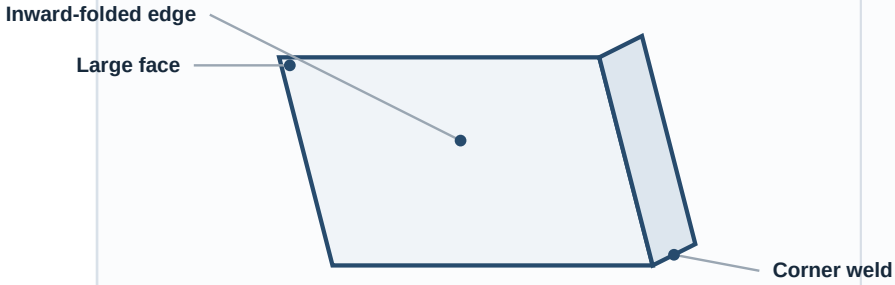
UNDERSTAND THE SURFACE BEFORE DESIGNING THE COATING.

Facade Cassette Panel (Folded Sheet Panel) — Facade UV, weathering, chloride load and low tolerance for visible defects on large surfaces. Before designing the right coating, we evaluate the material chemistry, the geometry and the service conditions together.

PART DIAGRAM — FACADE CASSETTE PANEL (FOLDED SHEET PANEL)



COATING CROSS-SECTION



Five questions define a coating system

1. **MATERIAL**
   Aluminium sheet (EN AW-3003 / 5005), 2–4 mm; CNC-folded and corner-welded into a cassette with inward-folded rear edges.

2. **SURFACE**
   Sheet oil, fingerprints and folding residues must be removed; uniform etching on the large flat face and extra preparation at the weld zone due to its different microstructure.

3. **GEOMETRY**
   Inward-folded edges and corner welds carry a risk of Faraday cage and edge pull-back; colour-gloss and orange peel deviation on the large flat face are critical.

4. **SERVICE CONDITIONS**
   Facade UV, weathering, chloride load and low tolerance for visible defects on large surfaces

5. **PRODUCTION TARGET**
   Medium-high volume; a fast line with panel-to-panel colour and gloss matching (batch consistency).

CONCLUSION: For the Facade Cassette Panel, the goal is not just a good-looking finish; it is a weather-resistant powder-coated surface, fully covered including folded edges, that matches panel to panel in colour, gloss and texture across large faces.

FROM SURFACE TO PROCESS ENGINEERING FLOW

The Facade Cassette Panel 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

Degreasing, etching, rinsing and chrome-free conversion coating; closed with a deionised rinse that leaves no water spots or marks on the large face.

CORE TARGET
Clean, active, uniform, repeatable surface

C. Coating System Selection

Qualicoat class 2 superdurable polyester for facades; for metallic/mica effects, a single-coat metallic or clear-topcoat system is chosen to control flop.

DECISION CRITERIA
Durability • appearance • service life • cost

D. Application Engineering

Powder coating, 60–90 µm; a reciprocator stroke/speed recipe for film uniformity on the large face and coverage of folded edges, and stable gun-to-part distance and charge for metallics.

GEOMETRY EFFECT
Inward-folded edge • Corner weld • Large face

Managing the process with data, not by eye

µm
FILM THICKNESS
Coating uniformity

°C
PART TEMPERATURE
Actual cure condition

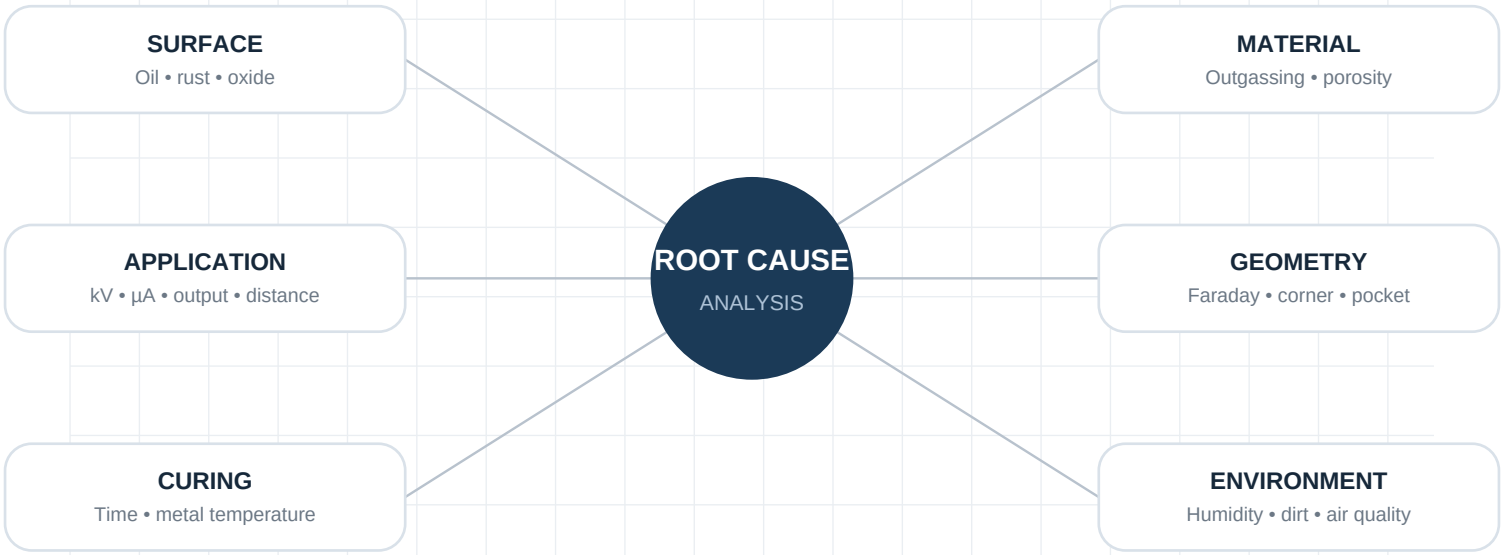
kV / µA
ELECTROSTATIC CHARGE
Transfer and penetration

Ω
GROUNDING
Charge dissipation and stability

ENGINEERING PRINCIPLE In the Facade Cassette Panel 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 Facade Cassette Panel.

THE RIGHT EQUIPMENT, AT THE RIGHT SCALE.

For the Facade Cassette Panel, 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