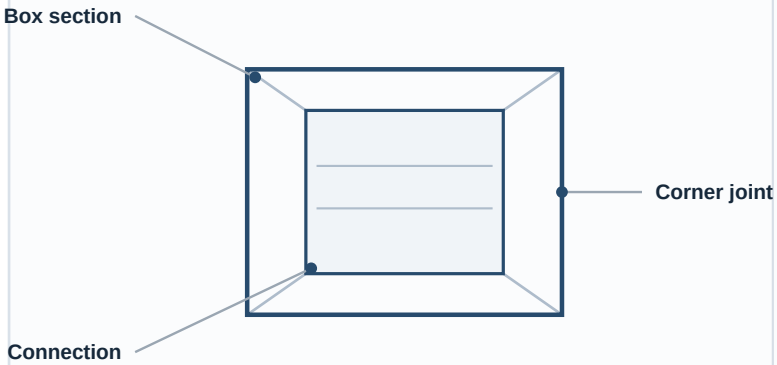
UNDERSTAND THE SURFACE BEFORE DESIGNING THE COATING.

Washing Machine & Dishwasher Chassis/Panel — Humid, vibrating operating environment, condensation and repeated load. Before designing the right coating, we evaluate the material chemistry, the geometry and the service conditions together.

PART DIAGRAM — WASHING MACHINE & DISHWASHER CHASSIS/PANEL



COATING CROSS-SECTION



Five questions define a coating system

1. **MATERIAL**
   Galvanised steel chassis and body panels with box sections and corner joints.
2. **SURFACE**
   Oil and residues are removed; an active surface ensures adhesion in a vibrating environment.
3. **GEOMETRY**
   Faraday effect in chassis corners and box sections; risk of adhesion loss under fatigue at vibrating connections.
4. **SERVICE CONDITIONS**
   Humid, vibrating operating environment, condensation and repeated load
5. **PRODUCTION TARGET**
   High volume; corrosion resistance and consistent film thickness.

CONCLUSION: For the Washing Machine & Dishwasher Chassis/Panel, the goal is not just a good-looking finish; it is a powder-coated surface that resists corrosion and adhesion loss in a humid, vibrating environment.

FROM SURFACE TO PROCESS ENGINEERING FLOW

The Washing Machine & Dishwasher Chassis/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	02	03	04	05	06
ANALYSIS	**PRETREATMENT**	**COATING**	**APPLICATION**	**CURING**	**VERIFICATION**
Substrate + surface	Cleaning + conversion	Chemistry + film	Electrostatics + flow	Time + temperature	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

Phosphate / nano-ceramic conversion coating; critical preparation for corrosion resistance and adhesion.

CORE TARGET
Clean, active, uniform, repeatable surface

C. Coating System Selection

A powder with high crosslink density suited to a humid/vibrating environment is selected.

DECISION CRITERIA
Durability • appearance • service life • cost

D. Application Engineering

Powder coating, 60–80 µm; charge and gun settings ensure coverage of box-section interiors.

GEOMETRY EFFECT
Box section • Corner joint • Connection

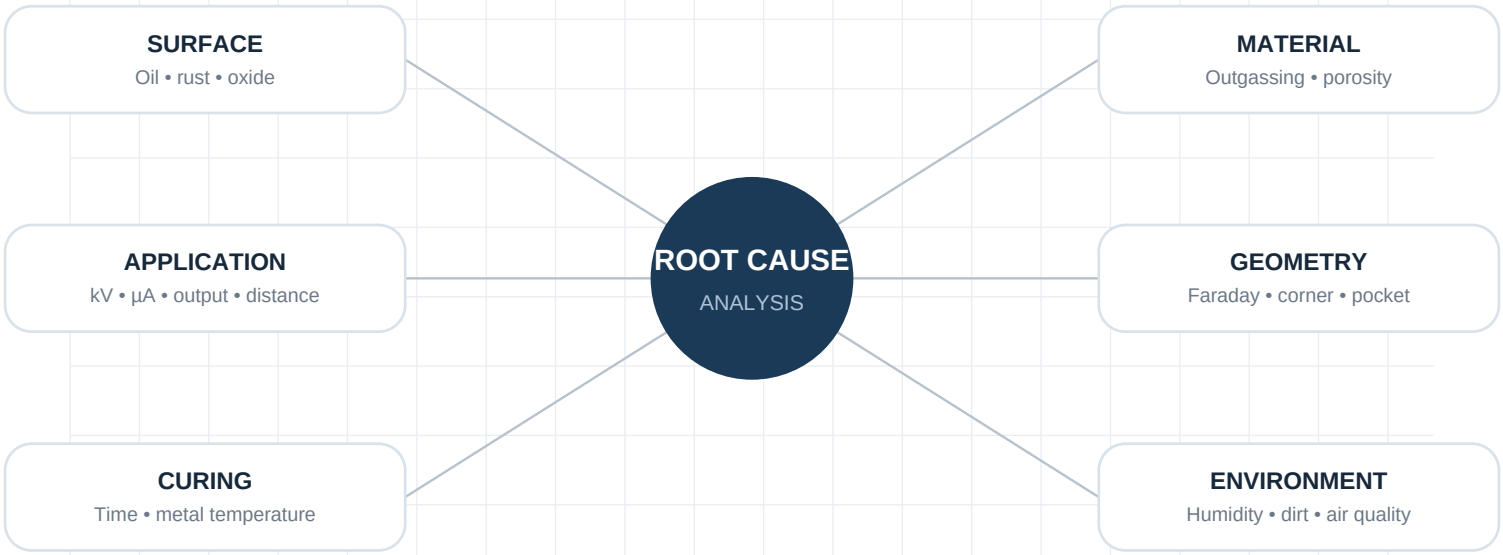
Managing the process with data, not by eye

µm	°C	kV / µA	Ω
FILM THICKNESS	**PART TEMPERATURE**	**ELECTROSTATIC CHARGE**	**GROUNDING**
Coating uniformity	Actual cure condition	Transfer and penetration	Charge dissipation and stability

ENGINEERING PRINCIPLE In the Washing Machine & Dishwasher Chassis/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 Washing Machine & Dishwasher Chassis/Panel.

THE RIGHT EQUIPMENT, AT THE RIGHT SCALE.

For the Washing Machine & Dishwasher Chassis/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.



OWL + Smart AI

Recipe-based, zone-by-zone application in difficult areas.



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.

OWL INTEGRATION In difficult areas such as box section, corner joint, connection, OWL applies targeted, zone-by-zone coating with a Smart AI recipe. For details, see the “OWL — Cavity” application sheet.

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