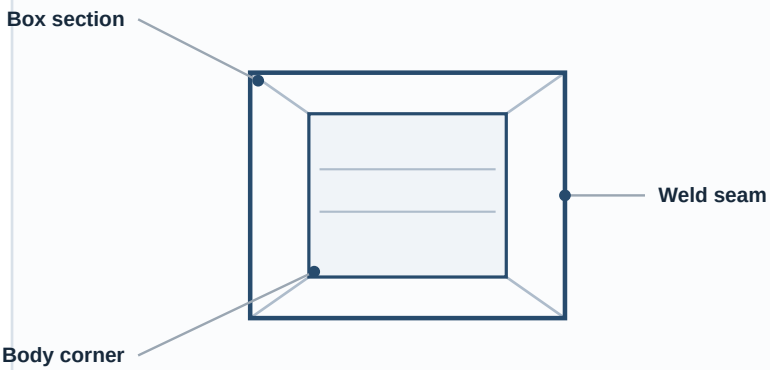
UNDERSTAND THE SURFACE BEFORE DESIGNING THE COATING.

Trailer & Equipment Chassis with Sheet-Metal Body — Open-field corrosion, fertiliser/soil contact, mechanical load, impact and UV. Before designing the right coating, we evaluate the material chemistry, the geometry and the service conditions together.

PART DIAGRAM — TRAILER & EQUIPMENT CHASSIS WITH SHEET-METAL BODY



COATING CROSS-SECTION



Five questions define a coating system

1 MATERIAL
Structural steel box-section chassis (S235/S355) and cold-rolled sheet body panels, 2–8 mm; welded load-bearing structure.

2 SURFACE
Mill scale, weld slag and oil are removed; box-section interiors and weld seams get special attention against corrosion.

3 GEOMETRY
Faraday areas inside box sections and along weld seams; risk of film thinning at body corner joints and corrosion from moisture build-up.

4 SERVICE CONDITIONS
Open-field corrosion, fertiliser/soil contact, mechanical load, impact and UV

5 PRODUCTION TARGET
Medium volume; target: corrosion resistance, consistent film thickness and coverage inside box sections.

CONCLUSION: For the Trailer & Equipment Chassis with Sheet-Metal Body, the goal is not just a good-looking finish; it is a consistent powder-coated surface with full coverage inside box sections that withstands open-field corrosion, impact and UV.

FROM SURFACE TO PROCESS ENGINEERING FLOW

The Trailer & Equipment Chassis with Sheet-Metal Body 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

Grit blasting (Sa 2½) or alkaline degreasing + phosphate/nano-ceramic conversion coating; a uniform, active surface in box sections and weld zones.

CORE TARGET
Clean, active, uniform, repeatable surface

C. Coating System Selection

For field corrosion and impact, a zinc-rich epoxy primer + polyester topcoat or a durable hybrid powder is selected; UV and scratch resistance are targeted.

DECISION CRITERIA
Durability • appearance • service life • cost

D. Application Engineering

Electrostatic powder coating, 80–120 µm; a charge/penetration recipe for box-section interiors and weld seams, and oven-profile monitoring for full cure in thick sections.

GEOMETRY EFFECT
Box section • Weld seam • Body corner

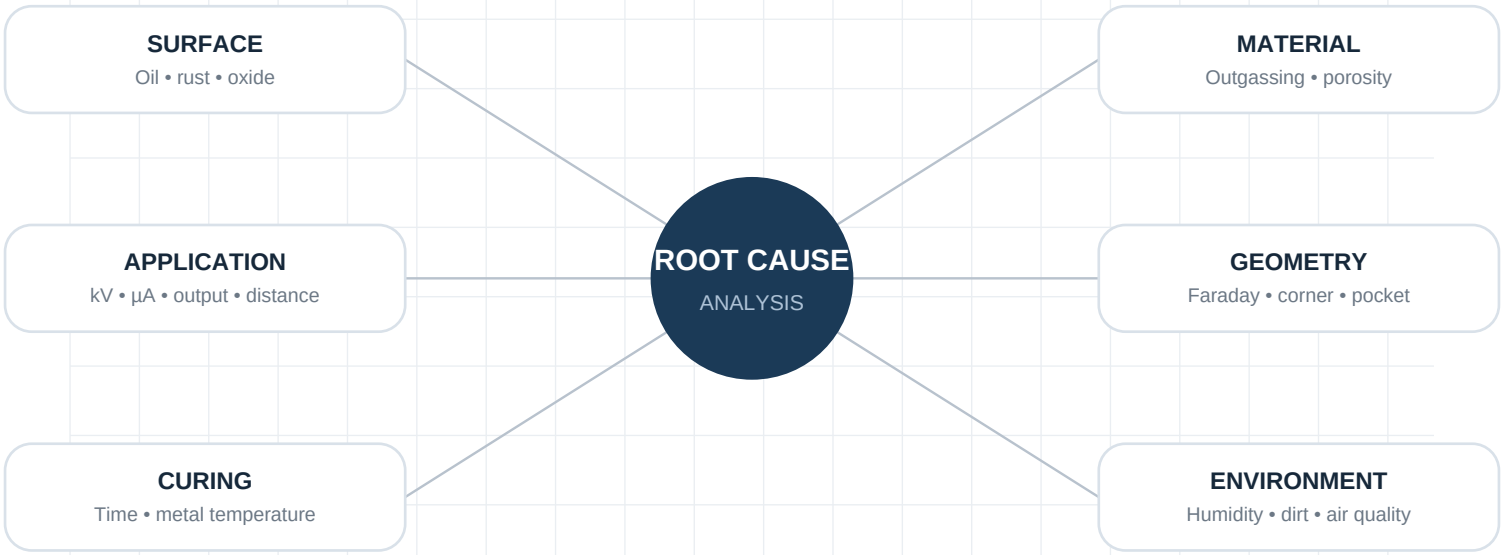
Managing the process with data, not by eye

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 Trailer & Equipment Chassis with Sheet-Metal Body 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 Trailer & Equipment Chassis with Sheet-Metal Body.

THE RIGHT EQUIPMENT, AT THE RIGHT SCALE.

For the Trailer & Equipment Chassis with Sheet-Metal Body, 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, weld seam, body corner, 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