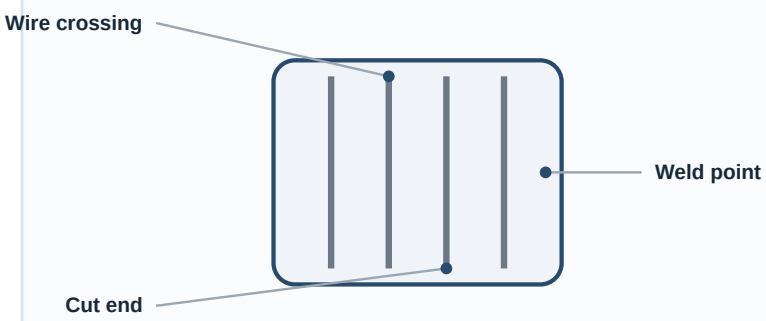
UNDERSTAND THE SURFACE BEFORE DESIGNING THE COATING.

Cable Trunking & Wire Mesh Tray — Cable support; indoor humidity/condensation or outdoor UV and salt spray, wear and contact during installation. Before designing the right coating, we evaluate the material chemistry, the geometry and the service conditions together.

PART DIAGRAM — CABLE TRUNKING & WIRE MESH TRAY



COATING CROSS-SECTION



Five questions define a coating system

1 MATERIAL
Galvanised steel wire or perforated sheet; welded wire mesh cable trays and trunking profiles. The thin wire section heats up fast and has sharp ends.

2 SURFACE
Oil and weld residues are removed; zinc oxide is cleaned from the galvanised wire and an active surface ensures uniform adhesion at weld points.

3 GEOMETRY
Faraday effect and powder build-up at wire crossings and weld points, sharp edges at cut ends; the open mesh geometry makes rear-side coverage difficult.

4 SERVICE CONDITIONS
Cable support; indoor humidity/condensation or outdoor UV and salt spray, wear and contact during installation

5 PRODUCTION TARGET
Medium-high volume; corrosion resistance through consistent coverage and edge protection on mesh and trunking profiles.

CONCLUSION: For the Cable Trunking & Wire Mesh Tray, the goal is not just a good-looking finish; it is a corrosion- and wear-resistant powder-coated surface with uniform coverage including crossings and the rear side, and protected edges.

FROM SURFACE TO PROCESS ENGINEERING FLOW

The Cable Trunking & Wire Mesh Tray 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; fast, uniform, zinc-compatible preparation for thin wire.

CORE TARGET
Clean, active, uniform, repeatable surface

C. Coating System Selection

Epoxy-hybrid powder indoors and polyester powder outdoors; edge coverage and corrosion and wear resistance are targeted.

DECISION CRITERIA
Durability • appearance • service life • cost

D. Application Engineering

Electrostatic powder coating, 60–90 µm; a low ramp rate, suitable charge and, where needed, double-sided/robotic application cover the rear side and crossings of the open mesh and its Faraday zones.

GEOMETRY EFFECT
Wire crossing • Weld point • Cut end

Managing the process with data, not by eye

µm
FILM THICKNESS
Coating uniformity

°C
PART TEMPERATURE
Actual cure condition

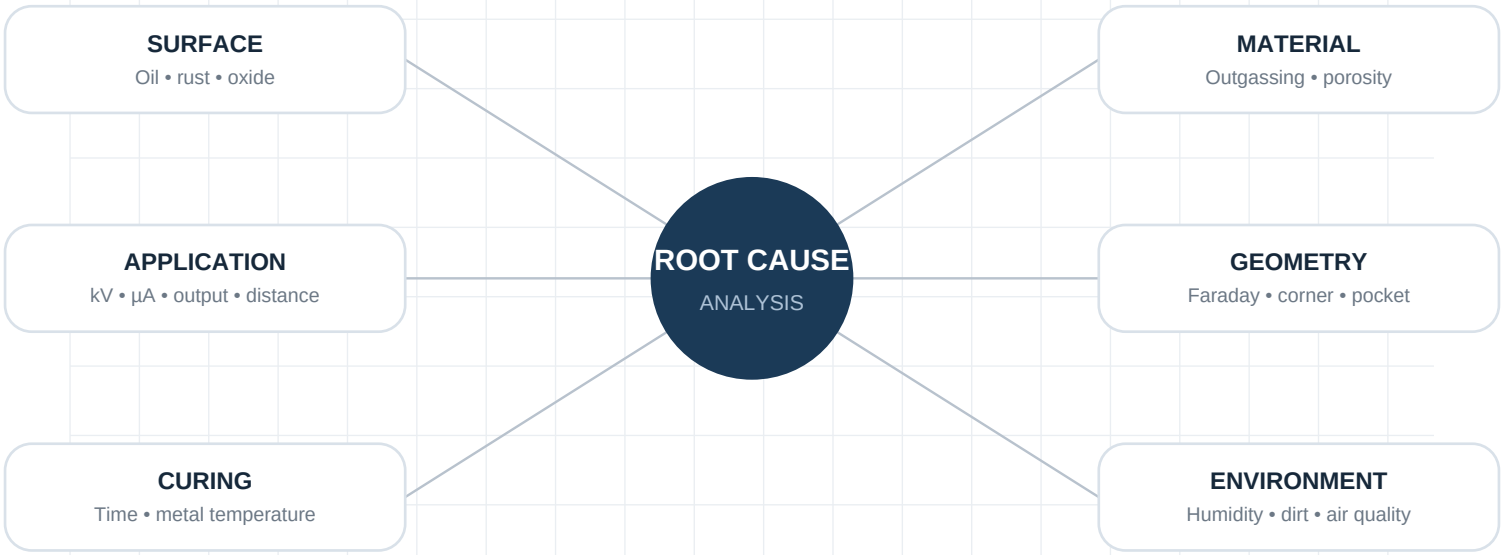
kV / µA
ELECTROSTATIC CHARGE
Transfer and penetration

Ω
GROUNDING
Charge dissipation and stability

ENGINEERING PRINCIPLE In the Cable Trunking & Wire Mesh Tray 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 Cable Trunking & Wire Mesh Tray.

THE RIGHT EQUIPMENT, AT THE RIGHT SCALE.

For the Cable Trunking & Wire Mesh Tray, 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 wire crossing, weld point, cut end, OWL applies targeted, zone-by-zone coating with a Smart AI recipe. For details, see the “OWL — Wire & Mesh” 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