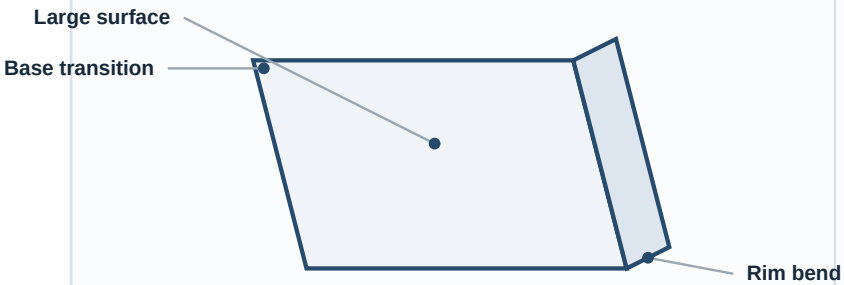
UNDERSTAND THE SURFACE BEFORE DESIGNING THE COATING.

Steel Pot Outer Panel / Decorative Outer Surface — Hob heat and thermal cycling, a visible non-food surface, frequent cleaning and decorative expectations. Before designing the right coating, we evaluate the material chemistry, the geometry and the service conditions together.

PART DIAGRAM — STEEL POT OUTER PANEL / DECORATIVE OUTER SURFACE



COATING CROSS-SECTION



Five questions define a coating system

1. **MATERIAL**
   Decarburised enamelling steel (EN 10209 / DC04EK), the outer surface of a 0.5–0.8 mm deep-drawn sheet body. Thin sections heat up quickly in the furnace; colour consistency is critical.

2. **SURFACE**
   Oil and scale are removed; a uniform, clean substrate with low gas release is essential on the decorative outer surface.

3. **GEOMETRY**
   A large visible outer surface and the rim bend; risk of colour/gloss deviation over the large area and edge pull-back at the bend and base transition.

4. **SERVICE CONDITIONS**
   Hob heat and thermal cycling, a visible non-food surface, frequent cleaning and decorative expectations

5. **PRODUCTION TARGET**
   High volume; colour and gloss consistency on the outside and a single firing compatible with the inner enamel.

CONCLUSION: For the Steel Pot Outer Panel / Decorative Outer Surface, the goal is not just a good-looking finish; it is a decorative enamel surface, consistent in colour and gloss across the large surface, that withstands hob heat and thermal cycling.

FROM SURFACE TO PROCESS ENGINEERING FLOW

The Steel Pot Outer Panel / Decorative Outer Surface 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**	**ENAMEL**	**APPLICATION**	**FIRING**	**VERIFICATION**
Substrate + surface	Cleaning + surface	Chemistry + coat	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

Alkaline degreasing, descaling, rinsing and drying; fast, uniform preparation and gas-release control on thin decorative sheet.

CORE TARGET
Clean, active, uniform, repeatable surface

C. Enamel System Selection

A heat-resistant decorative cover enamel with high colour-gloss consistency is selected; compatibility and CTE balance with the inner enamel in a single firing are observed.

DECISION CRITERIA
Durability • appearance • service life • cost

D. Application Engineering

Decorative cover frit is applied by electrostatic powder enamel; voltage, powder output and gun motion profile are set uniformly to avoid colour deviation on the large surface and to reach the rim bend.

GEOMETRY EFFECT
Large surface • Rim bend • Base transition

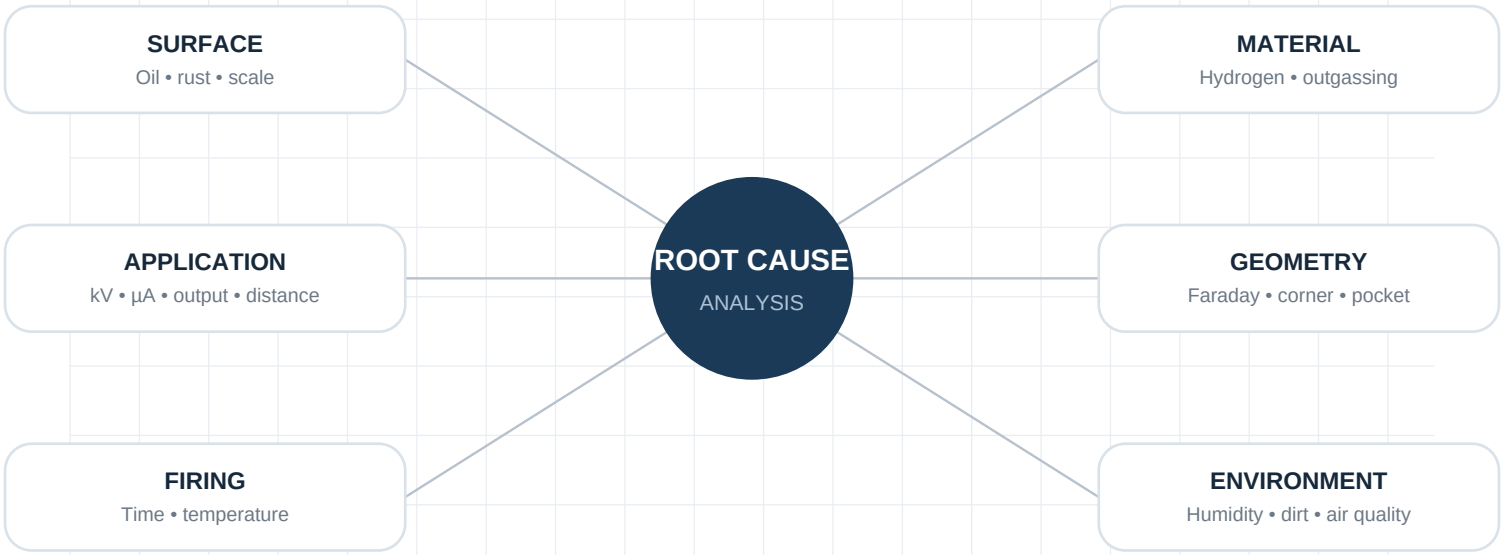
Managing the process with data, not by eye

µm	°C	kV / µA	Ω
COAT THICKNESS	**FIRING TEMPERATURE**	**ELECTROSTATIC CHARGE**	**GROUNDING**
Enamel coat uniformity	Actual firing condition	Transfer and penetration	Charge dissipation and stability

ENGINEERING PRINCIPLE In the Steel Pot Outer Panel / Decorative Outer Surface 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

Enamel defects rarely come from a single setting. The same symptom may stem from surface preparation, the steel structure, electrostatic behaviour, coat thickness or firing.



Common defects and diagnostic approach

POOR ADHESION

The enamel detaches from the substrate or fails the impact test.

CHECK: surface / pretreatment / firing

FISH-SCALING

Scale-shaped enamel spalling appears after firing.

CHECK: steel / hydrogen / firing

PINHOLE / BLISTER

Pinholes or blisters 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 Steel Pot Outer Panel / Decorative Outer Surface.

THE RIGHT EQUIPMENT, AT THE RIGHT SCALE.

For the Steel Pot Outer Panel / Decorative Outer Surface, 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



Smart (Powder Enamel)
Control unit for powder enamel application.



Powder Enamel Gun
Manual gun suited to enamel powder.



Powder Enamel Injectors
Feeding for abrasive enamel powder.



Powder Enamel Booth
Part-specific manual application booth.



Box Enamel Furnace
Firing in batch production.

SERIES PRODUCTION

Automatic line



Smart Automatic Powder Enamel
Line application with automatic guns.



Reciprocator
Automates the gun motion.



Automatic Powder Enamel Booth
In-line application and powder recovery.



Ultrasonic Recovery
Sieves recovered powder and separates foreign metal.



Powder Enamel Firing Furnace
Continuous firing, U-type or line-type.

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