STRONG3000

TECHNICAL DATA SHEET

Solution Sheet · Revision: November 2026

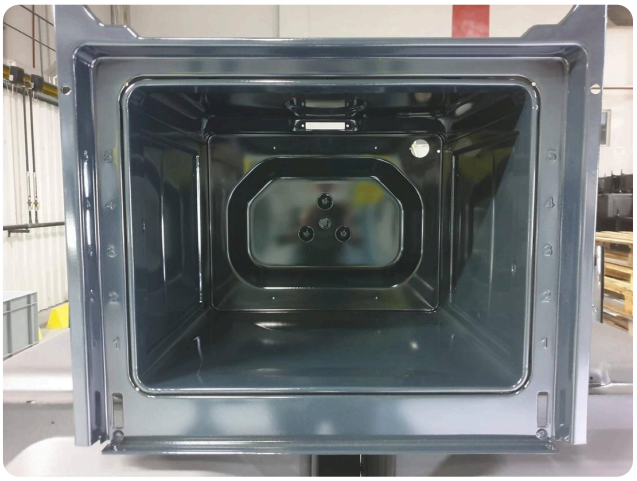
SOLUTIONS

Turnkey Powder Enameling Lines

Vitreous and porcelain enamel — a glass finish fused to steel and cast iron at high temperature. A core STRONG3000 engineering specialty, distinct from powder coating.

Open online

strong3000.com/en/solutions/turnkey-powder-enameling-lines/

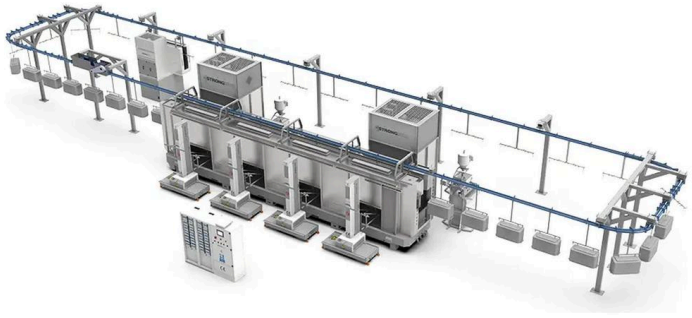


SYSTEM OVERVIEW

Glass Fused to Metal.

Powder enameling applies a vitreous (glass-based) enamel powder to metal parts, which is then fired at high temperature so it fuses into a hard, glass-like surface. The result is a finish that resists heat, corrosion, chemicals and abrasion far beyond an organic coating.

STRONG3000 engineers the complete enameling line — pretreatment, application, drying, high-temperature firing, powder recovery and automation — with deep experience in flat, deep and cavity part geometries.



Automatic · Deep parts

Deep-Part (Cavity) Enameling System

An automatic powder enamel system for deep parts such as oven cavities. Parts pass through the booth on an overhead conveyor while automatic gun reciprocators apply the enamel.

- Application by automatic gun reciprocators
- Parts are carried on an overhead conveyor
- Operated from the control cabinet

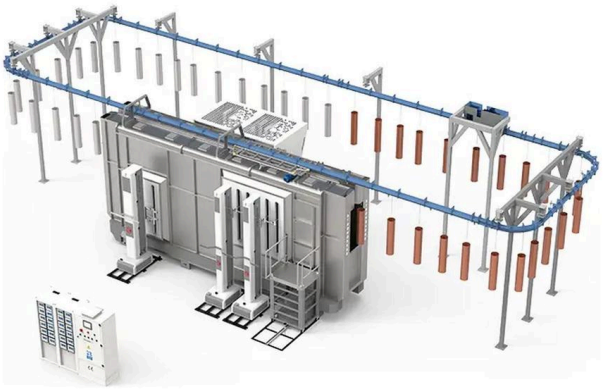


Automatic · Flat surfaces

Flat-Part Enameling System

An automatic powder enamel system for flat parts such as panels and sheets. The booth is sized to the part dimensions and line speed.

- Application with automatic guns
- Booth sized to the part dimensions



Automatic · Inside and outside

Pipe Interior and Exterior Enamel Coating System

A system that applies powder enamel to the inside and outside surfaces of pipes. The pipes hang vertically on the conveyor as they pass through the booth, and automatic gun reciprocators apply the enamel.

- Inside and outside surfaces in one system
- Pipes are carried hanging vertically on the conveyor
- Operator platform with stairs



Automatic · Rotary table

Automatic Burner Cap Enameling Plant

An automatic powder enamel plant with a rotary table for cooktop burner caps. The caps are coated on the rotary table by automatic guns.

- Part feeding via rotary table
- Application with automatic guns
- Booth, guns and table in one body



Automatic · Tank interior

Boiler Inner-Tank Powder Enamel Plant

An automatic powder enamel plant for boiler and water heater tanks. The lance gun enters the tank through the bottom flange; excess powder is extracted from inside the tank and recovered.

- Two tanks are coated at the same time at each station
- Painting robots in a pit below floor level
- Extraction from inside the tank and powder recovery

Image coming soon

Color center · 2, 3 or 4 colors

Multi-Color Powder Enamel Booth System

A powder enamel system that applies more than one color in a single booth via a color center. The standard build has 4 colors; it can optionally be built for 2 or 3 colors.

- The color center switches between 4 colors
- Option: 2 or 3 colors
- All colors are applied in one booth

KNOWLEDGE CENTER

Powder Enamel or Powder Coating?

The two processes look similar on the line, but the material, temperature and result differ. We explain the basics and the differences in the Knowledge Center.



POWDER ENAMEL

What Is Powder Enamel?

What vitreous enamel is, what happens at 780–850 °C on steel and 530–570 °C on aluminum, and where powder enamel and wet enamel diverge — an end-to-end guide.

9 min read · Guide



POWDER COATING

What Is Powder Coating?

Electrostatic charging, the cure window and recovery — how a powder coating line works.

7 min read · Fundamentals



COMPARISON

The Difference Between Powder Coating, Powder Enamel and Wet Enamel

Which part needs powder coating and which needs enamel? A decision guide based on temperature, durability and cost.

6 min read · Comparison

PROCESS FLOW

Every Stage, Engineered for Firing.



Pretreatment

Degreasing & cleaning



Drying

Moisture removal



Application

Enamel powder



Recovery

Powder recovery



Firing

High temperature



Automation

Control & conveying

PRETREATMENT · WASHING

Multi-Stage Washing Line.

Surface preparation before enameling is carried out with a spray (tunnel) or dip washing line consisting of degreasing and rinsing stages. A surface free of oil and dirt is the foundation for the enamel to fuse properly to the steel.



Conveyorized · Tunnel

Spray-Type Washing Line

As parts travel through the tunnel on the conveyor, degreasing and rinsing solutions are sprayed through pressurized nozzles at each stage. The continuous flow gives repeatable surface preparation in series production.

- Staged degreasing and rinsing
- Spraying through pressurized nozzles
- Number of stages and tunnel length to suit the part



Tank series · Hoist

Dip-Type Washing Line

Parts are lowered fully into the degreasing and rinsing tanks in sequence by a hoist. The solution also reaches inner cavities and deep surfaces that spraying cannot reach.

- Successive degreasing and rinsing tanks
- Hoist transfer between tanks
- Reaches inner cavities and deep parts



DRYING · MOISTURE REMOVAL

Drying Before Enameling

After washing, parts are freed of moisture in a dry-off oven before the enamel is applied. Because water left on the surface directly affects how the enamel powder adheres and the surface quality after firing, drying is sized to the part geometry and line speed.

OVENS · ENAMEL FIRING

Enamel Firing Ovens.

The enamel powder (glass frit) is fired at about 780–850°C to fuse it to the steel. Ovens are sized to the part load and line speed, with gas or electric heating.

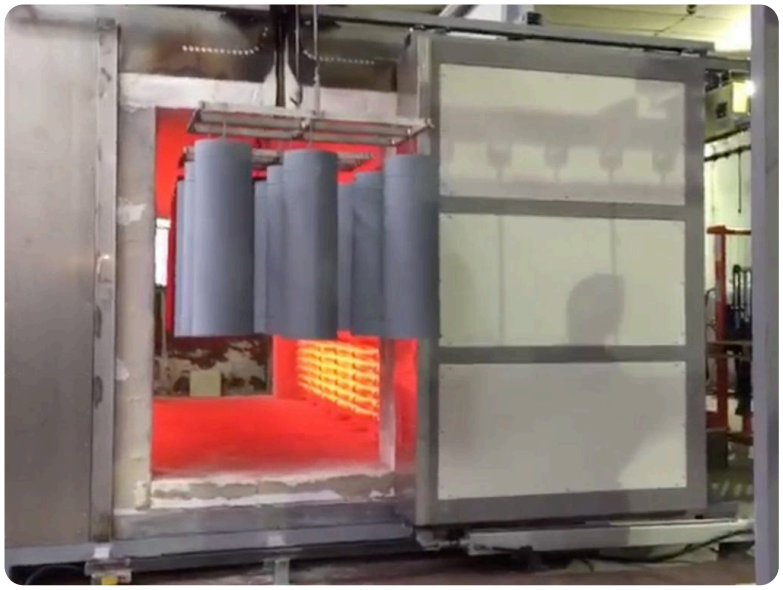


U-turn conveyor

U-Type Enamel Oven

The conveyor makes a U-turn inside the oven, so the entry and exit are on the same side. It takes up less floor space than a long straight tunnel.

- Entry and exit on the same side
- Less floor space than a straight tunnel
- Continuous firing on the conveyor

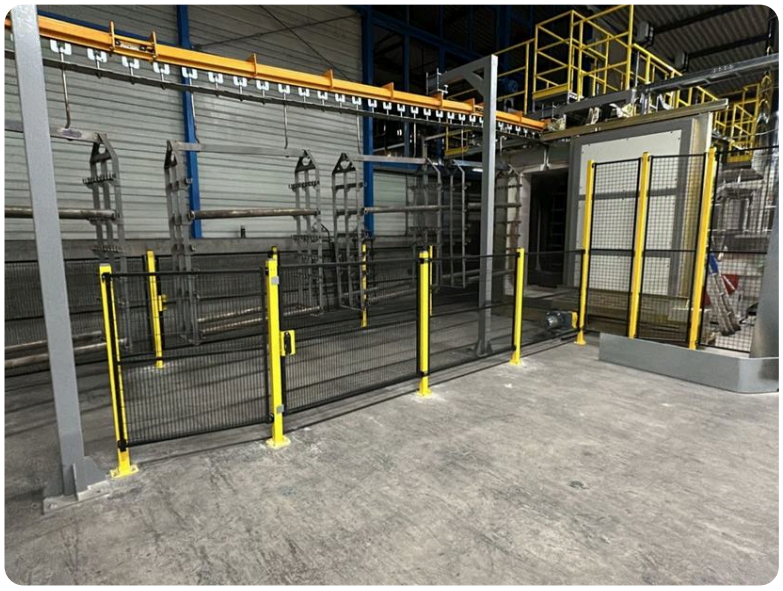


Step-by-step

Box-Type Enamel Oven with Door

A batch oven that works step by step. Parts enter the oven on hangers, the sliding door closes and firing takes place; the door then opens and the parts come out.

- Closed firing behind a sliding door
- Step-by-step operation
- Batch firing for varied parts



Conveyorized · Continuous

Line-Type Enamel Oven

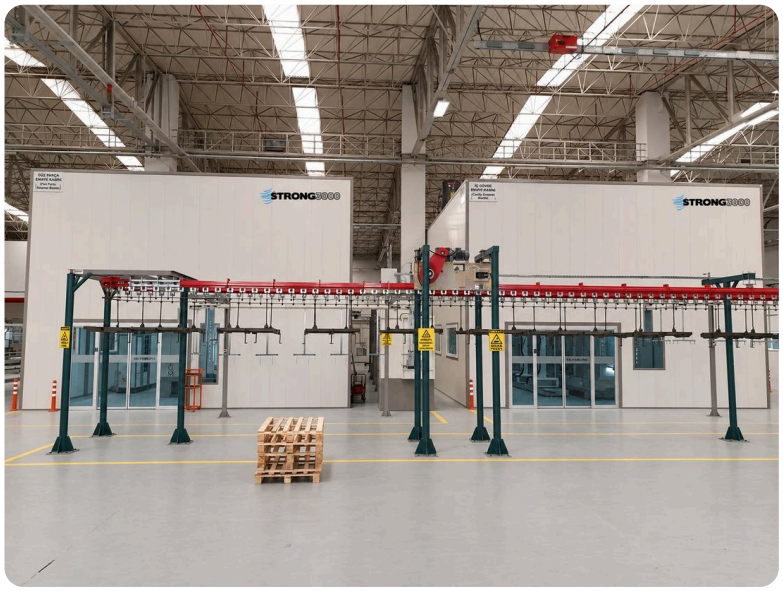
Parts are fired as they pass continuously through the oven on the overhead conveyor. It is intended for high-volume series production lines.

- Continuous firing on the overhead conveyor
- For high-volume series production
- Oven length to suit the line speed

OPTION

Climate Room.

If required, the application area is enclosed in an insulated room with controlled temperature and humidity, so coating conditions stay stable regardless of the season.



Temperature · Humidity control

Controlled Application Environment

Panel construction, climate control and air circulation keep the application zone under stable conditions. The room is planned together with the booth and application equipment.

- Temperature and humidity control
- Insulated panel construction
- Filtered air supply

CORE EQUIPMENT

Designed for Enamel.



Enamel Application

Manual and automatic powder enamel guns, with OWL intelligent motion for deep and cavity parts.

Explore →



Enamel Booth & Recovery

Easy-clean booths and recovery engineered for enamel powders and multi-color work.

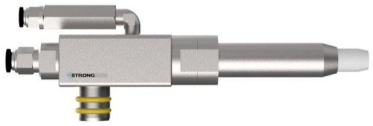
Explore →



Firing Ovens

High-temperature firing ovens (box, conveyor and U-type) dimensioned to part and throughput.

Explore →



Powder Management

Enamel injectors, sieving and feeding tuned to enamel powder behavior.

Explore →



Automation

Reciprocators, robotics and conveyor control for consistent, high-volume enameling.

Explore →



Pretreatment

Degreasing and surface preparation suited to steel and cast iron substrates.

Explore →

APPLICATIONS

Where Enamel Is Essential.

Oven Cavities

Oven cavities & components



Explore →

Cookware

Steel cookware & panels



Explore →

Boilers & Water Heaters

Water heater & boiler tanks



Explore →

Cooktops & Grates

Cooktop surfaces & grates



Explore →

Appliance Panels

Appliance panels & washer tubs



Explore →

Stoves & Flues

Stove bodies & flue pipes



Explore →

Also: Architectural & signage panels

ENGINEERING & MANUFACTURING

Designed. Engineered. Manufactured. Under One Roof.

STRONG3000 combines mechanical and electrical engineering, automation, control software and application technology in a single organization — so responsibility for the whole line stays in one place.

Mechanical Engineering
Booths, conveyors, ovens and recovery hardware.

Electrical Engineering
Power, control cabinets and line wiring.

Automation
Reciprocators, robotics and PLC control.

Control Software
Smart AI platform and line integration.

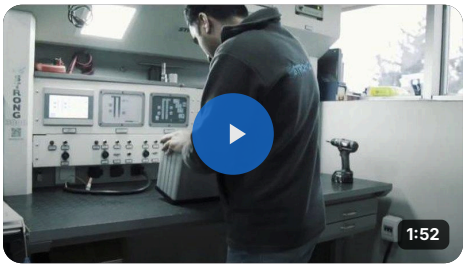
Application Technology
Gun, injector and powder delivery development.

FAT & Commissioning
Factory acceptance testing and on-site start-up.



VIDEO

See It in Action.



Powder Enamel Systems — Promotional Film
Watch on YouTube ↗



Deep-Part (Cavity) Powder Enamel Booths
Watch on YouTube ↗



Enamel Firing Oven Line
Watch on YouTube ↗

CASE STUDIES

Enamel in Production.



Powder Enamel · Cavity

Cavity Powder Enamel Plant

Cavity (oven interior) electrostatic powder enamel coating plant for Silverline.

Project No. **0472**



Powder Enamel

Cavity Powder Enamel Plant

A powder enamel coating plant project for cavity parts.

Project No. **1356**



Powder Enamel · Automation

Automated Flat Part Enameling Plant

Automated enamel application and material handling plant for flat parts.

Project No. **1338**

See all case studies →

WHY STRONG3000?

The Engineering Difference.

We don't sell equipment and walk away; we stay with your line from design through commissioning and beyond.

Integrated Engineering

Machinery, electrical, automation and software under one roof — not sourced and assembled.

In-House Technology

Smart AI and OWL are original STRONG3000 technologies developed in-house.

Proven Experience

25+ years of engineering; installation, commissioning and service in 40+ countries.

24/7 Support

Phone, remote connection and 24/7 live support via WhatsApp.

Quotes & Technical Consulting

Tell us about your part, capacity and process. A STRONG3000 engineer will get back to you with a tailored proposal.

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Web	strong3000.com/en/solutions/turnkey-powder-enameling-lines/

FOR A QUOTE, PREPARE

- Product to Be Coated
- Max. Part Dimensions
- Required Capacity
- Number of Colors
- Daily Color Changes
- Coating Process
- Project Timeline

Values are typical ranges; final values are confirmed per project by STRONG3000 engineering. This sheet summarises the product page on our website; scan the QR code for the latest information.