STRONG3000

TECHNICAL DATA SHEET

Industry Sheet · Revision: November 2026

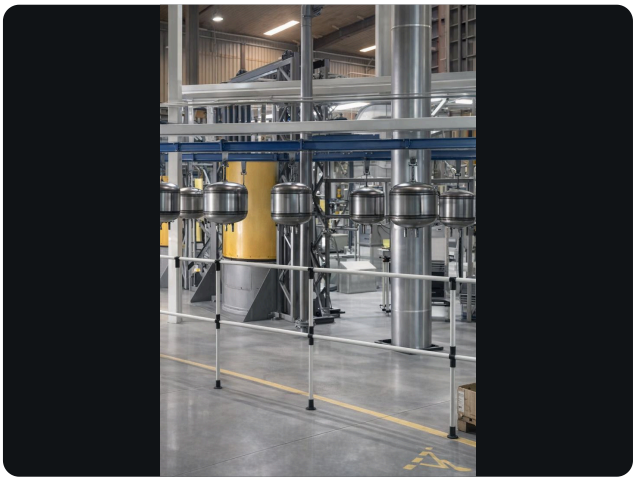
INDUSTRIES

Powder Enamel Coating Lines for Boilers & Water Heaters

Electrostatic vitreous powder enamel (~780–850°C firing) for the inner tank and powder coating for the outer casing — engineered for corrosion resistance, EN 12897 compliance and long service life in boiler and water heater production.

Open online

strong3000.com/en/industries/water-heaters/



OVERVIEW

Engineering for Water Heater & Boiler Enamel Lines.

A water heater combines two different coating processes. The inner tank is coated with electrostatic powder (vitreous) enamel for protection against hot water and corrosion — a glass layer fused to metal at approximately 780–850°C, not a paint. The outer casing (galvanized/steel jacket) is finished decoratively and protectively with powder coating cured at ~160–200°C. The two processes are clearly distinct: the tank is coated with electrostatic powder enamel, not wet enamel.

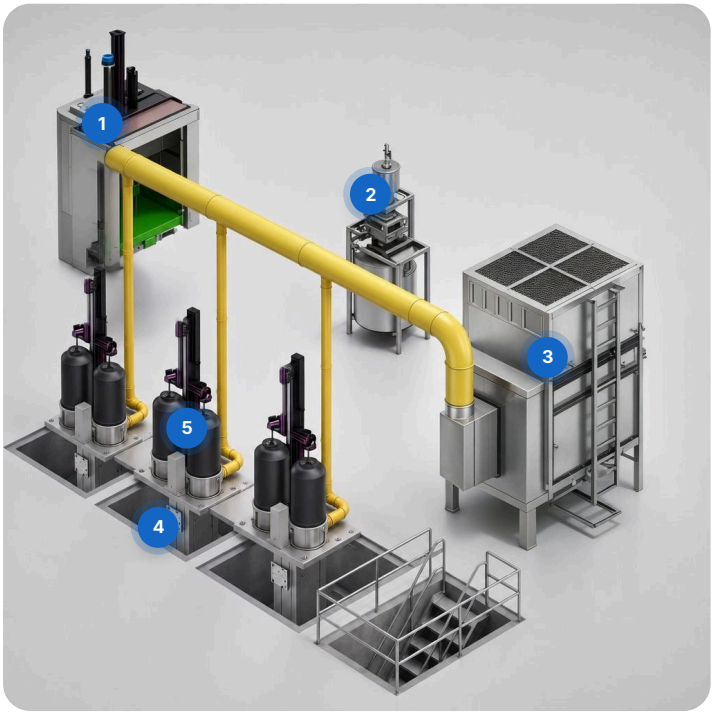
From individual application equipment to complete turnkey lines, we tailor the process to every tank geometry and production target.



SYSTEM LAYOUT

Boiler Inner Tank Powder Enamel Plant.

From our own engineering drawing: the STRONG3000 boiler coating plant where feeding, application, suction and recovery run as one closed loop.



1 **Feeder Cabinet**
Feeds powder enamel continuously to the station guns.

2 **Powder Enamel Recovery Center**
Sieves the extracted overspray and returns it for reuse.

3 **Suction Filter Cabinet**
Filters the air drawn from the tanks for clean exhaust.

4 **Painting Robots**
Vertical columns installed in a pit below floor level move the lance gun along the tank axis. A pit with stairs gives access for maintenance.

5 **Tank Stations**
Tanks stand at floor level; at each station two tanks are enamelled on the inside at the same time.



TANK STATION · DETAIL

Applied Inside the Tank, Extracted Inside the Tank.

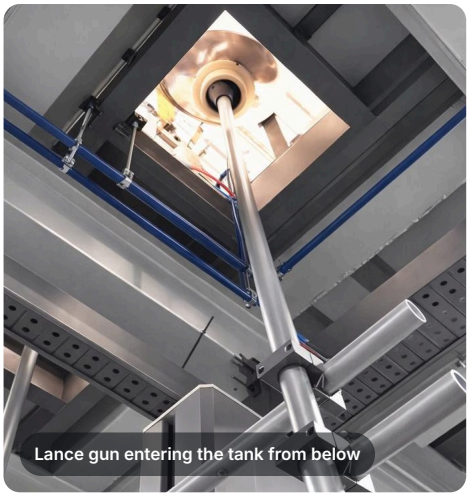
01 **Tank is seated on the station**
The boiler tank sits on the station by its bottom flange — the single entry point for the gun and suction.

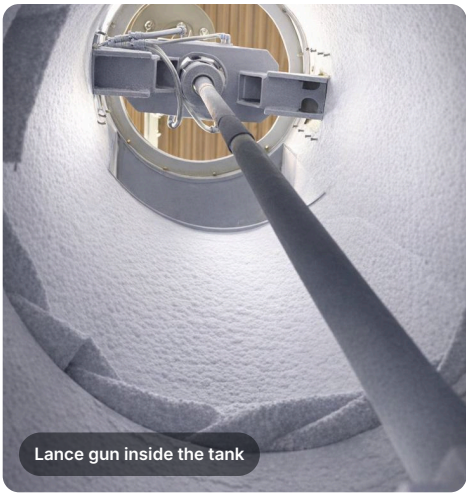
02 **The lance gun enters the tank**
The gun nozzle enters along the tank axis from below; the painting robot moves it vertically through the tank.

03 **Electrostatic powder enamel**
The inner surface — including welds and dished ends — receives an even layer of powder enamel.

04 **Suction and recovery**
The suction pipe extracts overspray from the tank; the recovery center sieves it and the filter cabinet cleans the air.


Painting robot and gun plate


Lance gun entering the tank from below


Lance gun inside the tank

APPLICATIONS

Parts We Help Coat.

A water heater brings two separate surface technologies together in a single body: interior surfaces in contact with hot water are fused with electrostatic powder (vitreous) enamel at ~780-850°C, while the outer jacket is finished with powder coating cured at ~160-200°C. Every part has its own challenges — internal weld seams, flange openings, tight coil passages. Below we summarize how we approach these parts; you can download part-specific technical datasheets (PDF) for the detailed engineering/metallurgy approach.



POWDER ENAMEL

Inner Tank (Hot Water Vessel)

Non-porous coverage of internal weld seams and dished ends is essential; electrostatic powder enamel verified by holiday testing for long life under hot water, pressure and fluctuating pH.

Technical Datasheet (PDF)

OWL Integration



POWDER ENAMEL

Flange & Heating Element Port (Bottom Flange)

Risk of Faraday effect and outgassing at heating element tube openings and weld joints; continuous protection with the same acid-resistant powder enamel as the inner tank.

Technical Datasheet (PDF)

OWL Integration



WET ENAMEL

Coil / Heat Exchanger (Enameled Tube)

Risk of runs and bridging in tight coils and small tube diameters; thin, acid-resistant wet (slip) enamel that preserves heat transfer for in-tank corrosion protection.

Technical Datasheet (PDF)



POWDER ENAMEL

Tank Bottoms & Tops (Dished Ends)

Edge pull-back at deep dished radii and continuity at the circumferential weld are challenging; seamless protection with the same powder enamel system as the inner tank.

Technical Datasheet (PDF)

OWL Integration



POWDER COATING

Outer Jacket / Casing Sheet

Adhesion on thin galvanized sheet and color consistency over large surfaces are critical; conversion coating + powder coating for a smooth, durable outer jacket finish.

Technical Datasheet (PDF)



POWDER COATING

Buffer / Storage Tank Bodies (Non-Enameled Line)

Large bodies with numerous socket outlets and external weld seams; conversion coating + powder coating for a uniform, corrosion-resistant exterior surface.

Technical Datasheet (PDF)

SOLUTIONS

The Right Process for Every Part in Your Boiler Enamel Line.

Powder Enamel
Electrostatically applied, fired vitreous enamel for the inner tank — protects against hot water and corrosion.

Powder Coating
Durable decorative and protective organic powder coating cured at ~160–200°C for the outer casing and jacket.

Automation
Reciprocators and robotics for consistent, high-volume tank production.

Turnkey Line
Complete finishing plants engineered around your tank enameling and casing painting production targets.

Smart AI Control
Adaptive control for repeatable results across a wide variety of tanks.

OWL Application
Uniform enamel thickness on deep tank interiors and cavities.

WHY STRONG3000 FOR WATER HEATERS

Tank Powder Enamel & Casing Powder Coating: A Single Integrator.

A water heater line requires two separate surface technologies: electrostatic vitreous powder enamel for the inner tank and organic powder coating for the outer casing. STRONG3000's expertise in both means a single partner can engineer both the corrosion-resistant tank enameling and the casing painting stages.

- ✓ Electrostatic powder (vitreous) enamel for the inner tank — with integrated holiday testing
- ✓ Separate powder coating line for the outer casing
- ✓ Enamel lines for solar boilers, storage tanks and buffer tanks
- ✓ EN 12897-compliant firing furnace process control (TEC management)
- ✓ High-volume automation & turnkey delivery

Related equipment: Powder Enamel Firing Furnace · Powder Enamel Gun · Enamel Injectors

CASE STUDIES

Enamel Projects from the Field.

Selected projects from STRONG3000 plants in operation.



Wet Enamel · Automatic Line

Valve & Pipe Wet Enamel Line

Automatic line-type wet enamel plant for the inside and outside of valves and pipes. Filtered, stackless application booths.

Country	**Germany**
Project No.	**0638**



Enamel Furnace · Pretreatment

Enamel Furnace, Washing & Drying Line

Sintering (enamel) furnace, washing and drying line for enameling plants.

Country	**Türkiye**
Project No.	**0851**



Powder Enamel · Automation

Automated Flat Part Enameling Plant

Automated enamel application and material handling plant for flat parts.

Country	**Türkiye**
Project No.	**1338**

See all case studies →

RELATED INDUSTRIES

Similar Surface Finishing Applications.

Home Appliances

Powder enamel coating lines for white goods interiors and powder coating lines for outer casings.

Cookware & Cast Iron

Wet (slip) enamel dipping and spraying lines for cast iron pots and pans.

Stoves, Heating & Flues

High-temperature powder coating and vitreous enamel coating equipment for stove and flue products.

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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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.