Infrared Heating Systems for Powder Coating

The increasing need for environmentally friendly surface finishes and reduction of manufacturing waste has fueled tremendous growth in the use of powder coatings by many industries for a wide range of applications. To respond to this burgeoning interest, infrared heating technology has been uniquely engineered to cure powder coatings.

Infrared curing systems offer many advantages over traditional heat sources. The intense energy generated by the infrared source cures the thin layers of powder coating very quickly without heating the products. This results in significant energy cost savings as well as reduced stress on the product itself. The ability to apply infrared heat quickly also reduces the residence time and, as a result, saves valuable plant floor space devoted to the curing operation. In addition, the absence of air movement throughout the process prevents the coating from being disturbed before it is fully cured and avoids the introduction of contaminants.

Since many finishing operations process a wide range of product sizes, infrared heaters can be configured with individual zones to accommodate smaller products without running the entire system. This offers additional energy savings. Finally, the rapid heat-up and cool-down of infrared heaters result in quicker changeovers than would be possible using conventional hot air ovens.

To get the maximum benefits from infrared curing of powder coated surfaces, the complete curing system must be properly designed—from heater selection to location, spacing, zone controls and product handling. The design professionals at Radiant Energy Systems have years of experience incorporating the myriad variables of each individual application into a true energy-saving and space-efficient system that will yield the highest quality finished products.
Features

- Absence of air flow reduces powder runs and avoids introduction of contaminants.
- Minimal heating of product reduces cure time, energy use and cooling time.
- Individually adjustable heaters provide a flexible system with quick changeover.
- Individually controllable heaters allow users to run only the zones they need, saving energy costs.
- Preheating system can increase line speed by 50 to 100% on existing lines.
- Complete cure is achieved in 2 to 8 minutes as compared to 15 to 30 minutes in convection ovens.
- Shortened heating times translate into shorter cooling times.
- Reduced curing time translates into smaller ovens, saving valuable plant floor space.
- Preheat for UV coatings.
- Combination infrared and convection ovens.

Specifications

Heater Types
- Short, medium and long wavelengths
- Energy intensities
  - Electric 30 kW/sq ft (short wavelength)
  - 10 kW/sq ft (medium wavelength)
  - 2 kW/sq ft (long wavelength)
  - Gas 50 kBtu/hr-sq ft (fired)
  - 6 kBtu/hr-sq ft (catalytic)

- Time to temperature in 3 seconds (electric), 10 seconds (gas)

Power Sources
- Electric—to 600 volts
- Gas—natural or propane (IRI or FM conformity)

Types of Powders
- Epoxies, polyesters, silicones,nylons, hybrids and fluidized beds

Applications

- Aluminum Alloy Wheels
- Aluminum Extrusions
- Automotive
- Blanks for Appliances
- Cabinets
- Castings
- Construction Machinery
- Decorative Railings
- Electrical Components
- Fencing
- Filters
- Hardware
- Hot Water Tanks
- Lighting Fixtures
- Metal Cabinets
- Metal Coils
- Metal Sheeting
- MDF
- Office Furniture
- Outdoor Furniture
- Steel Shelving
- Garden Tools
- Tools
- Wire Racks
- Wood Furniture

175 North Ethel Avenue, Hawthorne, NJ 07506 • Tel: 973-423-5220 • Fax: 973-423-5228

www.radiantenergy.com
e-mail: info@radiantenergy.com
CONVEYORIZED INFRARED POWDER COAT GEL OVEN
CURE POWDER COATING ON A LARGE SHEET METAL BOX

CONSTRUCTION: Fabricated Construction
Approx. 30” x 62” x 3½” Deep with 1½” Lips

HEATER SETTING: Top 60%, Center 70%, Bottom 80%

CURE TIME: 3½ minutes

PART TEMPERATURE: 350º F Average
CURE POWDER COATING ON WIRE BASKETS

CONSTRUCTION: Welded Wire with Lip at Top
Approx. 36” x 24” x 10” Deep

HEATER SETTING: Top 70%, Center 80%, Bottom 90%

CURE TIME: 4 minutes
CURE POWDER COATINGS ON AN AUTOMOBILE WHEEL

CONSTRUCTION: Aluminum Casting With Heavy Weight Concentration in Hub Area

HEATER SETTING: Top 80%, Center 90%, Bottom 90%

CURE TIME: 9 minutes

PART TEMPERATURE: 340°F Average
CURING POWDER COATINGS ON FABRICATED STEEL & ALUMINUM PARTS

3 Zone, 16 ft. long Electric Infrared Oven

Line Speed 4 fpm, Cure Temp. 400°F
ELECTRIC AIR and INFRARED BATCH OVEN

- Three electric IR zones
- One hot air heater and circulating fan with temperatures at 500° F
- Heaters are adjustable to fit profile of heated parts
- Uniform heating to non-uniform parts
- Tunnel Length .......................... 11 ft.
- Connected Load .......................... 130 kw @ 480 v
GAS FIRED CATALYTIC HEATERS
FOR PRE-HEATING / PRE-DRYING

- Closed Loop Temperature Control
- Heater Spacing Easily Adjustable
- Excellent for Pre-heating / Pre-drying
GAS FIRED INFRARED HEATERS FOR CURING POWDER COATING ON A HORIZONTAL WEB

LINE SPEED – 50 FPM MAX., CURE TEMP. - 400°F
HEATED LENGTH – 6 FT. SPREAD OVER 30 FT.
OVERHEAD CONVEYOR INFRARED POWDER COAT PREHEAT/BOOST OVEN

- Large parts for construction machinery
- Improved finish on the coating
- Increased line speed
INFRARED CURING TUNNEL OVEN

Material to be Heated ...................... Evaporative Coils
Purpose of Oven ............................ Dry and cure coatings
Conveyor Speed ............................. 9 ft. /min.
Oven Heated/Cooling Length .......... 76”/36”
Oven Heated/Cooling Height .......... 66”/66”
Connected Load ............................ 183 kw @ 480v, 219 amps