Process Technologies Process Air Heating

In addition to our pressurized air or gas circulation heaters, described on previous pages, Chromalox designs and manufactures equipment to be installed on ducts and to heat air before its introduction Into processes. Standard design duct heaters can be supplied for baking ovens up to 200°C as well as drying ovens.

Chromalox can design and supply heaters and controls for special applications and customer requirements.

Special criteria may include any of the following: High temperatures (up to 700°C), corrosive fluids, Slight overpressure and slight vacuum, vibration or seismic resistant, special voltage, high output capacity. etc.

Our Capabilities

Heating Elements

- · With or without fins for heat dissipation
- Materials:
 - Stainless Steel304L /316L /321
 - INCOLOY 800/825
 - INCONEL 600
 - Uranus 86
 - Other metals according to the characteristics of the surroundings (temperature, corrosion risks)

Casing:

- With or without thermal insulation
- Reinforcement for pressure, seismic, shocks and vibration loadings
- Connect/on Box:
 Stood off for high temperature, with or without cooling fins
 - Waterproof up to IP55
 - For hazardous areas
- Materials:
 - Galvanized steel
 - Painted steel
 - Stainless Steel 304 /304L /316L
 - Other metals according to the characteristics of the surroundings (temperature, corrosion risks)



Duct Heater 4000 kW for Dehydration in the Agricultural Industry



Reinforced Duct Heater for Pressurized Flow



Duct Heater with Dissipation Plates for Outlet Temperature 650°C



Air heater for Nuclear, Bacteriologica and Chemical Shelter



Process Air and Radiant

Process Technologies Process Air Heating

FP-AH

ATEX certified ExDE Air Duct Heaters

- Air Duct Heaters for Hazardous Air in Hazardous Areas
- ATEX II 2 G ExDEII C T1 to T6 Certified Heaters
- Painted Cast Iron Terminal Enclosure to IP66
- Integral Over-Temperature Protection Devices
- \bullet Certified to -50°C to +60°C with Increased Standoff Distance

Variations Include

- Marine Finish
- Stainless Steel Duct



EP-AH

ATEX certified ExE Air Duct Heaters

- Air Duct Heaters for Hazardous Air in Hazardous Areas
- ATEX II 2 G ExE T1 to T6 Certified Heaters
- Stainless Steel Duct Section and Terminal Enclosure to IP66
- Integral Over-Temperature Protection Devices in ExDe Junction Box
- Certified for Ambient Temperatures -50°C to +60°C



BAT-EX

ATEX certified ExD Air Duct Heaters

- Air Duct Heaters for Non-Hazardous Air in Hazardous Areas
- ATEX II 2 G ExD II B or II C T1 to T6 Certified Heaters
- For Ambient Temperatures -50°C to +60°C

Variations Include

Stainless Steel Duct



PROCESS AIR AND RADIANT



Process Air and Radiant

Process Technologies Process Air Heating

Characteristics

Power

Up to several megawatts per unit

- Voltage: Up to 3000 VAC / VDC
- Temperature: Up to 700°C

Design

Calculations by suitable software

- Thermal exchange
- · Load supports
- · Seismic resistance

Construction According to:

- The customer specification
- Specific standards:
 - Railway
 - Marine
 - Nuclear

Inspection

Inspection by reputable organizations:

- VERITAS, DNV, SGS
- Lloyd's Register
- EDF / SQR



Air Heater for Railways



Duct Heaters 570 kW with Flanges ø 1600mm for Smoke Treatment



Fan Heater for Temperature Maintenance on Mechanisms of Heavy Vehicles



Duct Heater for Testing Propellers



Process Air and Radiant

Process Radiant Heaters Overview

- Metal Sheath, Medium Intensity & Medium Wavelength
- Wide Area Quartz Panels
- Ceramic Panels



Chromalox has been recognized as the predominate source of metal sheath radiant heaters since 1948. Since that time, radiant heat has become the preferred process heating method for a multitude of applications in various industries. This is due to the unique properties of the infrared heating process which provide a number of significant advantages over other conventional heat transfer methods.

High Efficiency — Infrared heaters create radiant energy to directly heat the product as opposed to a convection oven which is dependent on air circulation as the heat transfer medium. This results in more efficient energy usage and lower operating cost. By eliminating the air medium, radiant heating also reduces the losses associated with hot air ovens.

Shorter Oven Lengths — As a result of the greater heating rates, most products can be heated much more rapidly than in a convection oven. Due to shorter product heating cycles using radiant heat, less oven length is required to do the job. This can result in an oven length reduction of 30 to 50% as compared to convection oven designs.

Cleaner Environment — There are no dirty or contaminating products of combustion present with electric infrared heaters. Since infrared is not dependent on air as the heat transfer method, the air circulation in an infrared oven is kept at a minimum. The greater the volume of air circulated and the faster it is circulated, the greater the dirt factor and the product rejects due to dirt. Powder coatings and light weight materials can be heated rapidly due to low volume of air and low velocities.

Close Product Temperature Control — Infrared heat can be easily controlled and directed. Electric infrared heaters can be "zoned" to provide a high heating zone in one zone and a lower heating rate in another. Infrared heaters are very responsive to control changes; accurate and consistent product temperature control to within extremely close tolerances are possible.

Lower Initial Cost — Due to the simplicity of an electric infrared heating system, initial costs and maintenance costs are lower.

When infrared is the method deemed most suitable for your application, the Chromalox product line provides the largest selection of elements, fixtures and controls. There are many factors to consider: size, heater response, heater efficiency and heater pricing. Chromalox is a major supplier of INCOLOY[®] sheath, ceramic, quartz panel and ceramic composite panel types of elements.

