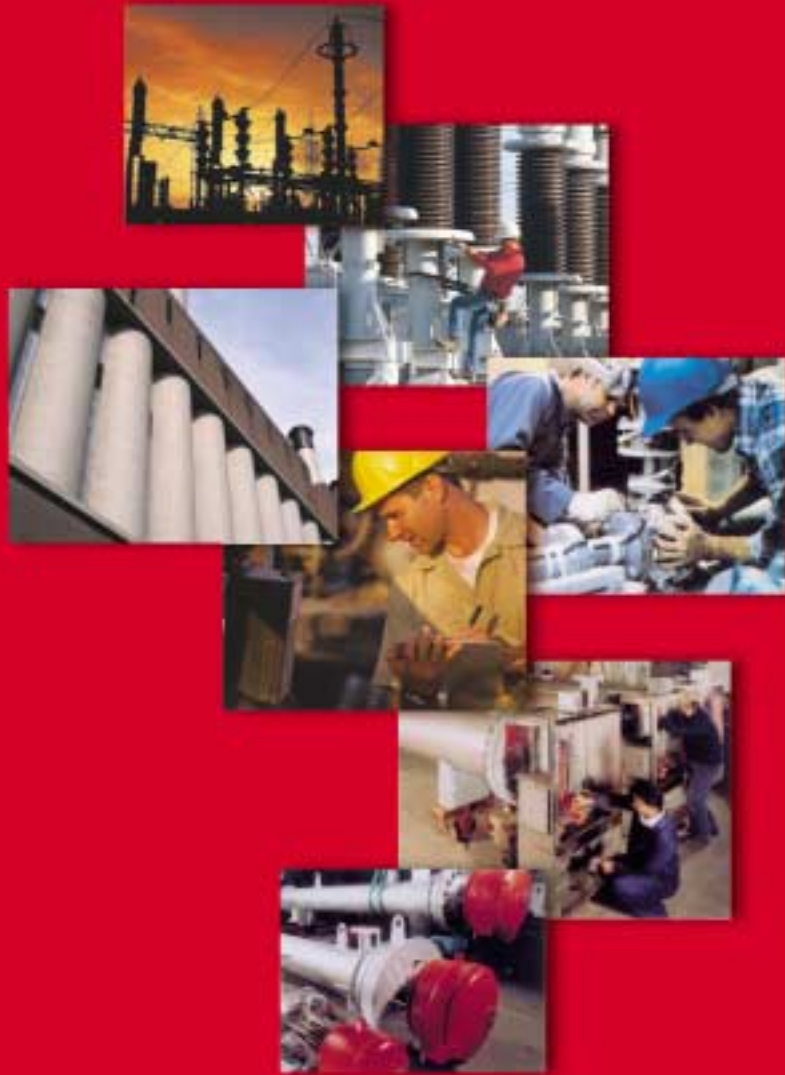


**Chromalox**<sup>®</sup>  
PRECISION HEAT AND CONTROL

**Generating Value-Added Heating Solutions  
for the Power Generation Industry**



POWER GENERATION

# VALUE ADDED

## CHROMALOX HAS YOUR HEAT AND CONTROL SOLUTIONS

With the broadest product line in the industry, Chromalox provides precision heat and control systems for more processes than anyone in the world. We provide solutions for industries as diverse as transportation, pharmaceuticals, chemical processing, the military, . . . and power generation.



### ASSURING YOUR PROCESS PERFORMANCE WITH CHROMALOX



#### The Chromalox Difference

Some companies build heaters and controls. Chromalox does more. We provide value-added heating solutions throughout power generation plants.

The difference between these two approaches is the difference between uncertainty and assurance. It's the difference between having a supplier who just sells equipment and having a partner who can help you save time and money even before startup, who works with you to maximize process efficiency and minimize downtime, and who provides the field service and technical support to get the job done. That's value-added. And you get it from Chromalox.



## TECHNOLOGIES THAT REFLECT AN UNDERSTANDING OF POWER GENERATION



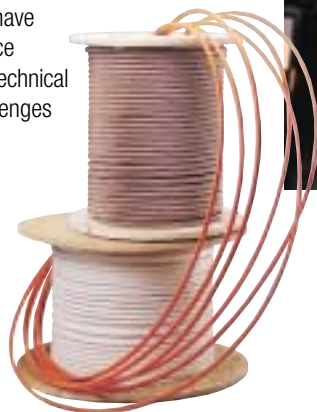
### Chromalox Understands Every Facet of the Process

From process air heaters for inlet housings to flanged immersion heaters for exhaust stacks and sulfur reduction. From circulation heaters for superheating to self-regulating cable and controls for freeze protection. Explosion-resistant comfort heaters that keep process equipment warm for quick starts on peaker plants and keep equipment free from moisture and freeze-ups. Our expertise, combined with the most stringent material and manufacturing standards you'll find in the industry, provides you with an array of products you can count on to perform at each critical process phase.



### Chromalox Meets Your Specific Challenges

With that kind of experience behind us, Chromalox understands the unique challenges that power plant builders, managers, and maintenance personnel face. And we have the knowledge, experience base, local support, and technical skills to meet those challenges with you.



## CHROMALOX HAS A LONG HISTORY OF INNOVATION IN THE POWER GENERATION INDUSTRY

Chromalox has been developing better means of applying electrical heat for the power generation industry since 1915. That year, we introduced the world's first metal-sheathed heating element.

# INCREASING PRODUCTION, MAINTAINING EQUIPMENT, REDUCING OPERATING COST

Chromalox precision heat and control products can help save costs in the face of market and environmental issues. For example, our flanged heaters and controls can be used in conjunction with water purification and deionization systems to preheat make-up water and turbine wash water. By generating all of the heat within the water, Chromalox flanged heaters are virtually 100 percent energy efficient while Chromalox controls help ensure maintenance of precise temperatures.



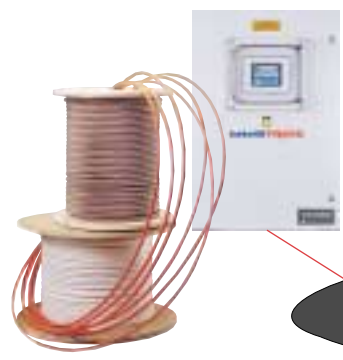
### Air Duct Heaters

Chromalox designs process air duct heaters specifically for the power generation industry. For instance, our designs optimize the heating of air fed into combustion and prevent condensation. Durable INCOLOY® sheath elements provide for outlet temperatures of up to 1,200°F.



### General-Purpose Convection Heaters

Chromalox general purpose convection and blower-type units are ideal for heating enclosed spaces such as wash water skids. They provide freeze protection and faster cold starts. Their Fintube® heating system consists of corrosion-resistant steel furnace-brazed to the tubular heating element to assure long life and superior heat transfer. Casing is a heavy-gauge steel with adjustable louvers.



### Heat Trace Cable and Controls

Chromalox heat trace cable and controls can save energy and reduce maintenance as well as the risk of overtemperature in places like water injection and cooling modules. They provide reliable process temperature stability and freeze protection for pipes, valves, and tanks

#### Self-Regulating Heat Trace Cable

Provides reliability, is energy efficient, and permits single-layer overlapping to reduce risks of burnout. No.16 AWG buss wires allow for long circuit lengths. Optional braiding provides groundpath while overcoat provides water resistance.

#### Constant Wattage Cable

Provides constant heat output to 350°F. Rugged construction can withstand steam cleaning while de-energized. Optional tinned-copper braid permits use in some hazardous areas. Fluoropolymer jackets available for corrosive applications. Can be cut to maximum circuit length.

#### Mineral Insulated Cable

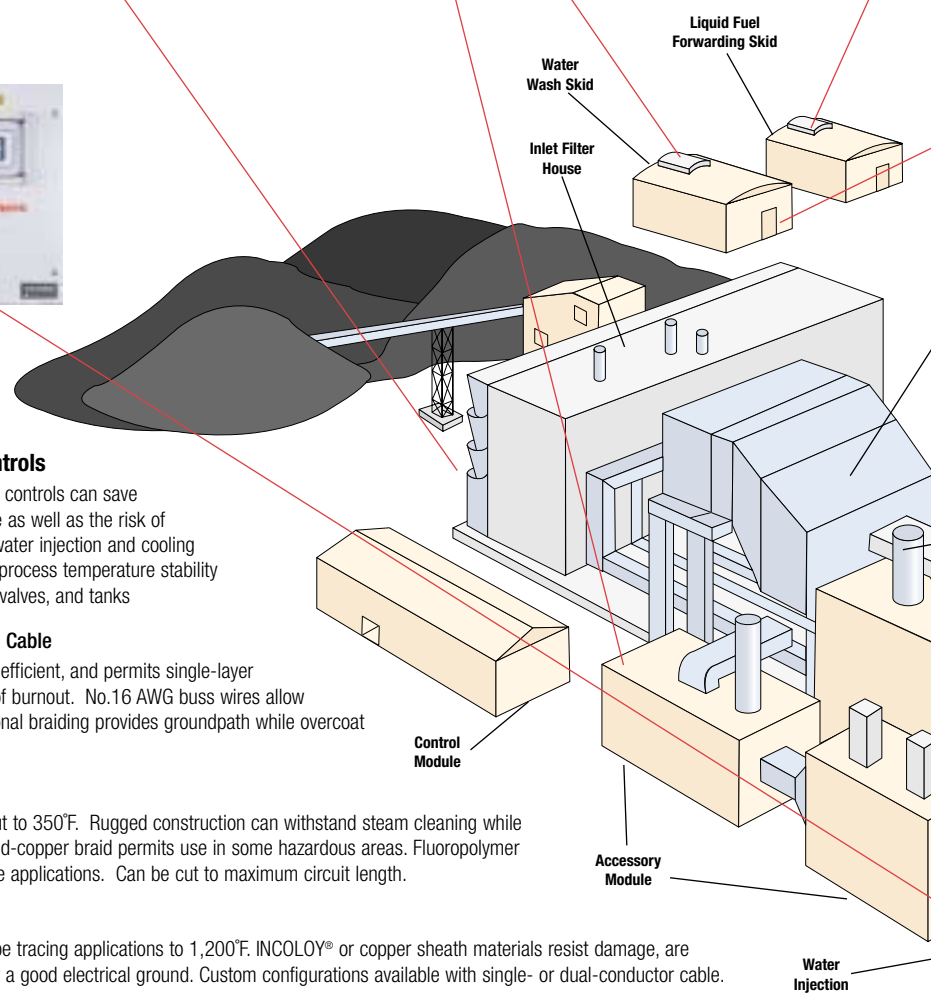
Ideal for the most rugged pipe tracing applications to 1,200°F. INCOLOY® or copper sheath materials resist damage, are fire resistant, and provide for a good electrical ground. Custom configurations available with single- or dual-conductor cable.

#### IntelliTRACE™ Controls

A complete control solution for heat trace applications with a modular design for selection of only the features needed for specific heat trace installations, minimizing the purchase price and simplifying system configuration. Single-channel system using micro-processor-based control. Comes completely pre-wired and assembled. Easily programmed standard features further simplifies installation, start-up, and use. All IntelliTRACE systems are designed for universal inputs. Each unit comes in a NEMA 4X glass fiber reinforced enclosure that includes a solid-state relay (30A at 40°C), mounted on a heatsink, and with a current transformer to measure operating current. Optional GFI modules have a shutdown contactor and illuminated reset switch. A terminal block is used for field connections on all units.

#### Custom Power Control Panels

Panels engineered with solid-state controls built to the most rigid standards and sized for virtually any application or specification. Select from many NEMA-type enclosures, single- or three-phase load requirements, voltages, transformers, fusing, contactors, firing cards, and more. We can design the power control panel best-suited for your specific application.



INCOLOY® is a registered trademark of Inco Alloys International.  
Fintube® is registered trademark of Chromalox, Inc.



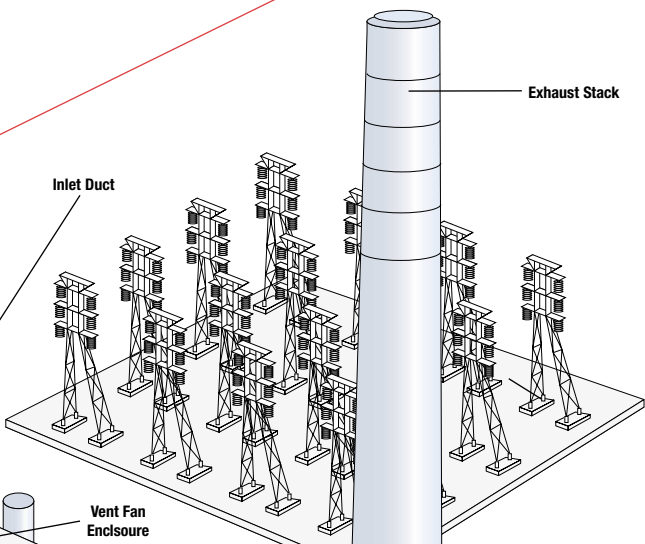
### Fuel Oil Heaters

Chromalox inline fuel oil heaters coupled with Chromalox controls are designed to save you substantial energy costs in areas such as liquid fuel forwarding by providing precise heating and tight temperature control for higher fuel burn efficiencies. Inline heaters heat only the amount of material that is to be pumped from storage, so the entire amount does not need heating. Electric heat provides 100 percent efficiency because all heat produced goes into your process. Their weather-proof construction makes them ideal for outdoor installation. Enclosures are moisture- and explosion-resistant.



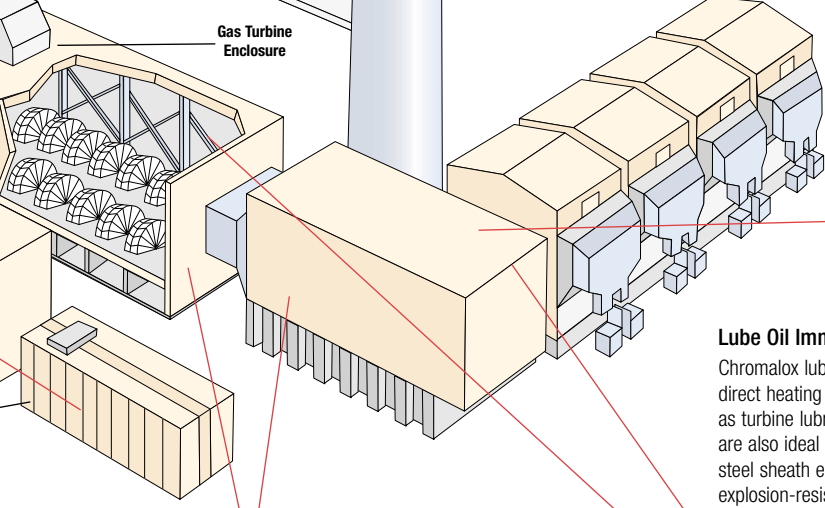
### Flanged Immersion Heaters

The stainless steel sheath elements and thermowells in our flanged immersion heaters are ideal for process water applications such as water wash. A wide variety of ANSI and customized flanges are available, as are element lengths to 240 inches and ratings up to 500 kW. We can also rebuild large flanged heaters to reduce costs.



### Hazardous Duty Convection and Blower-Type Heaters

Ruggedly designed for use in areas in which the possibility of explosion or fire exists, Chromalox hazardous duty convection and blower-type heaters provide safe heating in places like turbine and vent fan enclosures, exhaust stacks, and accessory modules. UL listed and CSA- and MSHA-certified models are available for wall or ceiling mounting. Ratings range from 1.8 to 39 kW.



### Lube Oil Immersion Heaters

Chromalox lube oil immersion heaters provide highly efficient, direct heating to lubricating oils used in plant areas such as turbine lubricating systems and accessory modules. They are also ideal for freeze-protecting tanks. Units feature carbon steel sheath elements and thermowells. Moisture and moisture/explosion-resistant terminal enclosures are also available.



### Temperature Controls, Sensors and Accessories

Chromalox has the thermocouple sensors, electronic PID temperature controls, and SCR power panels to minimize the possibility of heater damage from operation during overtemperature conditions.



### Gas Superheaters

Chromalox gas superheaters are used to preheat gas streams up to 1,400°F, preventing corrosive condensation from forming and damaging expensive turbine blades. INCOLOY® sheath elements and stainless steel vessels enhance safety and service life.

ENERGY MARKET

## NOx EMISSIONS REDUCTION

Chromalox precision heat and control products can play a vital role in reducing nitrogen oxide emissions in coal-fired plants. Our immersion heaters in aqueous ammonia solution tanks can provide reliable heat for the vaporization of ammonia injected into selective catalytic reduction (SCR) systems. Chromalox controls can provide the direct monitoring for operation and overtemperature protection so critical in SCR systems.

# VALUE ADDED

**LOCAL TECHNICAL SUPPORT, CUSTOM DESIGN**

The industry's largest and most experienced engineers are right there in the field with you. The majority of our 300+ field sales representatives are degreed engineers, and all are experienced with Chromalox heating products and applications. Our innovative design engineers are ready to work with your local Chromalox representative to custom-build a precision heating and control system for any application need you have.

## ADDING VALUE WITH UNRIVALED DESIGN CAPABILITIES, SERVICE, AND SUPPORT



### Chromalox Can Save You Time and Money Even Before Startup

#### Lower maintenance and installation expenses

Chromalox electric process heaters require minimal cleaning and calibration. Our standardized designs reduce your installed cost as well as your eventual replacement cost. From heater assemblies and skid fabrication to integration with controls and sensors, our complete engineered systems reduce installation labor, reduce startup time, and ensure proper operation to specifications. In addition, Chromalox will provide engineering assistance in integrating our products into your process.

#### Reduced insurance premiums

Using Chromalox ASME- and FM-certified electric package systems may result in lower insurance premiums for you—lower than those offered to competitors using fuel-fired boiler systems.

#### Broadest third-party approval

Chromalox is the only manufacturer with extensive systems manufacturing in the U.S. and Europe. Approvals and certifications include, but are not limited to, CE, NEC, UL, VDE, cUL, FM, CSA, MSHA, BASEEFA, Cenelec, ASME, PED, ATEX, GOST, and ISO9000.

#### Lower training costs

Our in-house engineering and software capabilities allow us to design simple operator interfaces. These advanced designs can reduce your business' training time and expense, as well as increase repeatable operation. In addition, Chromalox has available training tools and resources to assist you in installation, startup, and operation.

### Chromalox Can Improve Your Process Efficiency

#### Custom-design for special needs

Chromalox can design heating solutions for any spatial requirement you might face. Our engineers will custom-design the right product to meet your unique application needs. If an element, sensor, control, or packaged system that we carry in stock doesn't exactly fit your needs, we'll custom-build it—either expertly adapting an existing product or designing and manufacturing a completely new one. We are responsive partners, eager to help you produce prototypes for new products and systems. With our experienced design engineers and extensive manufacturing capabilities, we'll work with you to develop innovative designs in the shortest possible turnaround times.



### Reducing process variation

Control panels coupled with heaters optimize temperature control and shrink variations in efficiencies, allowing a better burn.

### Flattening out electrical fluctuations

Chromalox power controls, SCRs, and proprietary software precisely sequence heaters, balance electrical loads, control soft starts, and correct power factors.

### Chromalox Can Help Minimize Your Downtime

#### Quick parts replacement

Chromalox maintains vast inventories of repair and replacement parts for immediate shipment and same-day or next-day delivery. Our toll-free service line can answer your questions quickly at 1-800-368-2493.

#### Tightening process control with enhanced diagnostics

Chromalox offers proprietary controls and software for shorted SCRs, ground fault, current monitoring, partial load failure detection, and other failure modes. These provide process controls and alarms that protect your processes and equipment.

#### Support marked by prompt, expert troubleshooting

In addition to information available in product literature and at our website, factory and local engineers can offer answers that return your equipment to service quickly. Factory-trained engineers or technicians will visit your site to evaluate your problem and define the best solution. Call 1-800-443-2640 for the representative closest to you. Or visit [mychromalox.com](http://mychromalox.com).

### Technical Assistance on the Internet at [www.chromalox.com](http://www.chromalox.com)

#### Answering your questions 24 hours a day, 7 days a week

This website offers product specs, training manuals, and technical documentation day or night. You can find answers to questions about anything from electronic temperature controllers, pumps, and fluids to material compatibility, corrosion, and wire sizing.



**UNMATCHED STOCK,  
RAPID DELIVERY**

Chromalox maintains an inventory of nearly one million items. We also operate the fastest delivery system in the business. We can ship any component or system we stock within 24 hours through our [chromalox.com](http://chromalox.com) electronic direct order entry system. Same-day delivery is available for many items. In addition, factory offices, stocking representatives, and over 2,000 authorized distributors carry Chromalox systems and components for same-day pickup.

# Chromalox Value-Added Products and Services Are Available Worldwide

## Worldwide Customer Service

Argentina	Ecuador	Iran	Puerto Rico
Australia	Egypt	Israel	R.O.C. (Taiwan)
Austria	El Salvador	Japan	Russia
Belgium	England	Korea	Saudi Arabia
Bolivia	France	Kuwait	Singapore
Brazil	Germany	Lebanon	Sweden
Canada	Greece	Malaysia	Switzerland
Chile	Guatemala	Mexico	Thailand
China	Honduras	Netherlands	Turkey
Colombia	Hong Kong	Nicaragua	United Arab Emirates
Costa Rica	Iceland	Norway	United States
Dominican Republic	India	Pakistan	Venezuela
	Indonesia	Peru	

**Chromalox**<sup>®</sup>  
PRECISION HEAT AND CONTROL

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