



# POWER GENERATION





# VALUE-ADDED TEMPERATURE MANAGEMENT AND PROCESS HEATING SOLUTIONS FOR YOUR MOST DEMANDING AND COMPLEX APPLICATIONS

With the broadest product line in the industry, Chromalox provides advanced thermal technologies for more processes than anyone in the world.

## THE CHROMALOX DIFFERENCE

At Chromalox, we develop advanced thermal technologies for the world's toughest industrial heating applications. We do it better, and we've been doing it longer than anyone else. What separates us from the competition is our desire, ability, and dedication to applying our unique combination of technical competence, experience, and expertise, to understanding our customers' needs and providing them with an individualized custom heating solution. Our customers rarely require off-the-shelf solutions, and our quest to be innovative experts is unrelenting.

## CHROMALOX UNDERSTANDS EVERY FACET OF THE PROCESS

We provide advanced thermal technologies for more processes than anyone in the world. 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. Among them are process air heaters for inlet housings, circulation heaters for superheating, flanged immersion heaters for sulfur reduction, self-regulating cables and controls for freeze protection, and explosion-resistant industrial air heaters that keep process equipment warm for quick starts on peaker plants and free from moisture and freeze-ups.

## CHROMALOX MEETS YOUR MOST DEMANDING AND COMPLEX CHALLENGES

Built on opportunity and innovation, Chromalox has grown to serve an increasing number of global markets and industries. Today we are trusted experts with more global third-party approvals than any other company in our industry, capable of providing process heating solutions for customers anywhere in the world. It is our mission to find elegant solutions to the most demanding and complex challenges. These solutions help our customers improve their operating processes, enhancing productivity. This, and our investment in research and development in new technologies, will shape the future of industrial process heating as we continue to pioneer a new century of innovation.



## 1 FUEL-GAS CONDITIONING AND DEW POINT HEATERS

Electric in-line circulation heaters preheat and dry out supply gas streams to prevent corrosive condensation from forming and damaging turbine blades.

## 2 AUXILIARY STEAM GENERATOR

Compact auxiliary electric steam boilers supply on-demand steam during plant start-ups and when the heat recovery steam generator is not generating steam.

## 3 LUBRICATING OILS FOR TURBINES AND COMPRESSORS

Immersion heaters with or without replaceable elements provide direct heating of lubricants for turbines and compressors.

## 4 STORAGE TANKS

Storage tank facilities for products such as sodium hydroxide and DI water are heated with hazardous-duty flanged immersion heaters to ensure precise temperatures needed for process conditions.

## 5 FIRE WATER STORAGE

Large-tank heaters with replaceable elements ensure operational readiness for freeze protection applications.

## 6 HIGH-PRESSURE STEAM PIPING

High-temperature metal-sheathed heating cable is used for freeze protection on high-pressure steam piping in hazardous-rated area locations such as the Heat Recovery Steam Generator (HRSG).

## 7 EXHAUST STACK AND ACCESSORY MODULES

Hazardous-duty fan-forced and convection air heaters provide safe heating in places like turbine and vent fan enclosures, exhaust stacks, and accessory modules.

## 8 FREEZE PROTECTION AND HEAT-LOSS PROTECTION

Heat trace and controls counteracts heat loss from process equipment and piping, prevents solution precipitation, decreases viscosity or solidification of product, and provides freeze protection on water lines.

## 9 HAZARDOUS-LOCATION AIR HEATING

XtremeDuty™ fan-forced and convection air heaters prevent turbine compartments and other critical buildings from freezing by circulating warm air.

## 10 TURBINE AIR INTAKE

Large electric duct heaters warm incoming air to prevent icing on turbine blades in cold climates.

## 11 MOTOR AND ENCLOSURE HEATERS

Component strip heaters and flexible silicone laminate heaters for medium- to large-sized motors and enclosures prevent condensation agents from decreasing life and performance.

## 12 MAINTENANCE FACILITIES AND WASH WATER SKIDS

Fan-forced and convection air heaters provide fast, efficient, economical heat, third-party certified for both gas and dust hazardous locations, heat enclosed spaces for comfort or freeze protection.

## 13 SERVICE AND MAINTENANCE

Annual on-site service visits ensure optimal operating conditions and help predict needed maintenance.

## 14 TEMPERATURE MAINTENANCE

Thermocouple and RTD sensors, electronic PID DIN temperature control units, and SCR power switching panels minimize temperature swings, increase life of the heaters, and provide tighter control.

## 15 AMMONIA VAPORIZATION

Circulation and duct heaters vaporize ammonia used in the selective catalytic reduction process to reduce pollution emission.

## CIRCULATION HEATERS

Circulation heaters operate as an electric heat exchanger by directly heating the process media in an in-line configuration. Units operate at nearly 100% efficiency and offer a compact heating solution. A wide selection of materials is available such as copper, carbon steel, stainless steel, or INCOLOY.\* Moisture- and explosion-proof terminal enclosures along with ASME, PED, KOSHA, and SELO are also options.



\*INCOLOY is a registered trademark of Huntington Alloys Corporation, Huntington, West Virginia.

## LARGE-TANK HEATING SYSTEMS

Chromalox offers four electric heating systems for above- and below-ground storage tanks. They feature a unique replaceable-element design whereby the heating elements can be removed and replaced without draining the tank. Very little upkeep is required, making them practically maintenance-free. When combined with temperature controls, power controls, and safety monitoring they provide complete tank heating systems.

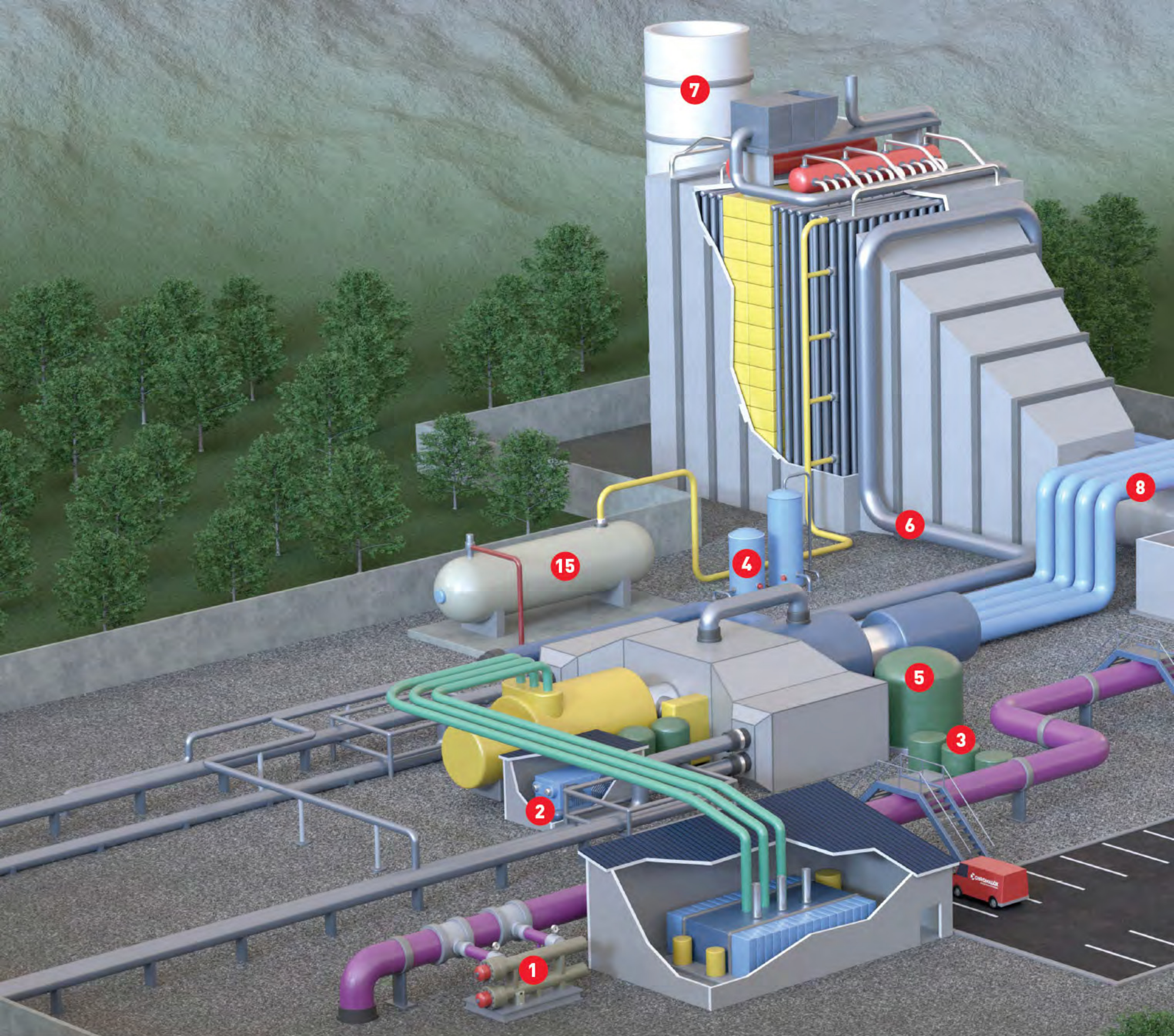


## ELECTRIC STEAM BOILERS

Units provide steam for any process need using a compact, flameless package. Ready-to-install units require only water and electric power supplies for zero-emissions operation. Carbon or stainless steel construction to UL, CSA, ASME, and PED codes.







## DUCT HEATERS

Available with power ratings up to several megawatts and capable of producing temperatures up to 1,200°F (650°C) for heating air or other gases. Tubular, finned tubular, and finned strip elements outperform gas, oil, and open-coil electric units in both heating efficiency and safety.



## COMPONENT STRIP AND FLEXIBLE SILICONE LAMINATE HEATERS

Component strip heaters, constructed with proprietary refractory cement and highly compacted, provide excellent convective or clamp-on conductive heat transfer. Flexible silicone laminate heaters are constructed for rugged use yet thin and lightweight, and are available in a variety of shapes ideal for confined spaces.



## HEAT TRACE AND CONTROLS

Provides freeze protection and counteracts heat loss from process equipment and piping, and prevents increase of product viscosity. Complete line of heat trace cable and installation kits available. Temperature control solutions include programmable, microprocessor-based, 1- to 72-circuit systems, and fully integrated wireless sensing and remote circuit monitoring and management of up to thousands of circuits across multiple panels.







## CONTROL SYSTEMS

Chromalox is the only electric heating equipment producer offering a complete line of discrete temperature and advanced SCR power controllers, sophisticated control panel systems, and accessories to efficiently manage the most basic to the most complex and demanding heating applications. Our C2i™ technology integrates and manages these controls as part of an enterprise-wide intelligent network of temperature sensing, process heating, and temperature management.



## XTREMEDUTY™ PRODUCTS

A suite of custom-engineered thermal solutions featuring proprietary engineering, material, and control technologies for the most extreme environmental and process conditions. Vertically integrated manufacturing systems yield customized solutions for any climate or process. XtremeDuty™ products carry the safety and security of stringent third-party certifications, and are subjected to intense performance and endurance testing through our in-house and partner test labs.



## DIRECTCONNECT™ MEDIUM VOLTAGE SYSTEMS

Chromalox DirectConnect™ medium voltage electric heating systems (up to 7,200 V) for heating applications greater than 1,000 kW (3.4 MMBtu/h). Reduces installation costs by up to 90%. Provides heater efficiency to nearly 99%. Controls heat to within 1°. Minimizes yearly maintenance to a few hours. Available in many of our process heaters, control panels, boilers, and heat transfer systems.





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