



VALUE-ADDED HEATING SOLUTIONS FOR SOLAR POWER GENERATION

Chromalox provides advanced thermal technologies for more processes throughout the world than anyone, with the broadest product line and experience unmatched in the industry. We furnish full design and engineering for virtually any electric process heat and control operation. We complete the package with customized services ranging from startup and training, to ongoing maintenance diagnostics, to emergency response—all based on complete knowledge of your components, parts, and systems.

Allow Chromalox to harness the energy produced from the sun to provide a highly efficient and pollution-free heat source.

- ▶ We are the only company that can deliver both temperature management solutions and process heating solutions.
- ▶ We have experience with more industrial processes than any other company, both with end markets and applications.
- ▶ We are more vertically integrated than any other company. From component technologies up through site services, there is more Intellectual Property and know-how delivered organically by Chromalox than anyone.
- ▶ Chromalox has the largest team of localized technical sales engineers providing customers with individualized custom heating solutions.



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04/19



SOLAR POWER GENERATION

1 MOLTEN SALT STORAGE TANK HEATERS

Immersion heaters with replaceable element designs and circulation heaters are used to heat up and maintain temperature in both the hot and cold molten salt storage tanks.

4 ELECTRIC AUXILIARY BOILERS

Provide initial steam demand for turbine seals and provides steam when heat recovery steam generator (HRSG) is not in operation.

7 HEAT TRACE SYSTEM

Mineral insulated heat trace cables are used to maintain molten temperatures within process piping.

10 COMFORT HEATER

Building, turbine enclosures, and pump house heating for freeze protection and personnel heating.

2 THERMAL FLUID HEATERS

Thermal fluids such as Therminol™ and Dowtherm™ are used in parabolic troughs and require supplemental heating during the evening hours to maintain process temperatures.

5 STEAM SUPERHEATERS

Preheat seal glands on steam turbines and used to boost steam quality where required.

8 TUBULAR HEATER ASSEMBLIES

Customized tubular electric heater assemblies are used where additional heat input above what mineral insulated cable can provide are required.

11 TANK AIR VOLUME HEATING

Air duct heaters used to prevent molten salt storage tank stratification.

3 FEEDWATER HEATING SYSTEMS

Heats and circulates high temperature and high pressure water for preheating steam generator.

6 FUEL GAS HEATERS

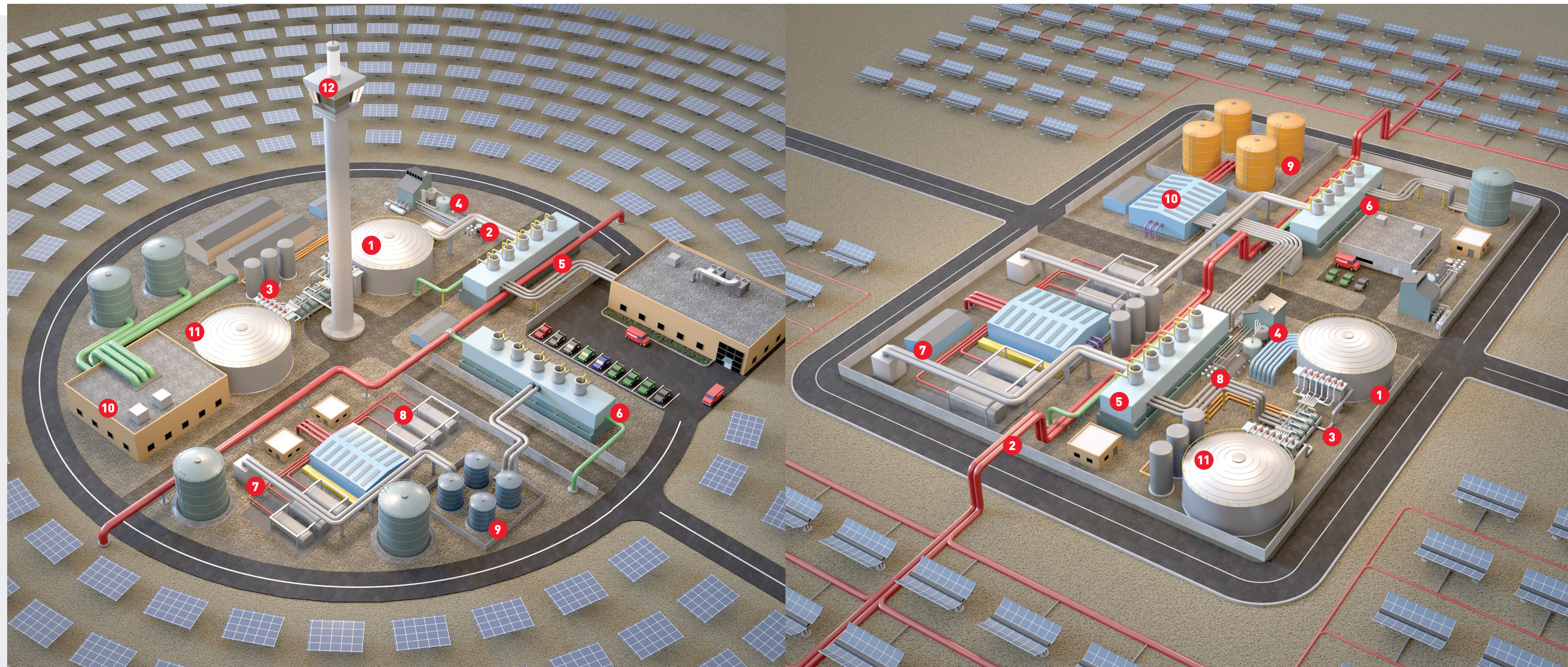
Heat incoming fuel gas streams for gas turbines and internal combustion engines which may be integrated with Concentrated Solar Plant.

9 DEMINERALIZED WATER, FIRE WATER, AND CHEMICAL SOLUTION STORAGE TANK HEATERS

Immersion heaters used for freeze protection and temperature maintenance.

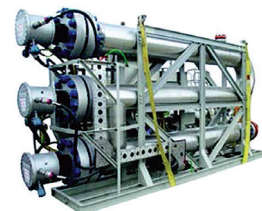
12 COLLECTION OVEN HEATING

Tubular heating elements provide supplemental heating for the collection oven area.



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.

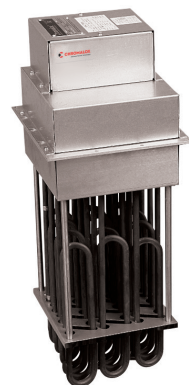
ELECTRIC STEAM BOILERS

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.



IMMERSION HEATERS

Immersion heaters can be installed directly in process media such as water, oil, solvents, viscous solutions, and gas streams. Units operate at nearly 100% efficiency and offer a compact heating solution. Common heater installation methods are flanged, threaded, or over-the-side designs, with a wide selection of materials such as copper, carbon steel, stainless steel, or INCOLOY*. Moisture- and explosion-proof terminal enclosures along with IEC, ATEX, and CSA are also options.



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, and 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.



DIRECTCONNECT™ MEDIUM VOLTAGE SYSTEMS

Chromalox DirectConnect™ medium voltage electric heating systems (7,200 V max rated) 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°F. Minimizes yearly maintenance to a few hours. Available in most process heaters, control panels, boilers, and heat transfer systems.



HAZARDOUS-LOCATION AIR HEATERS

Fan-forced and convection air heaters provide fast, efficient, economical heat for hazardous areas cleanly and safely. Heavy-duty construction for long, dependable service. Selections from our XtremeDuty™ platform are redesigned for particularly harsh areas. Units are offered with multiple third-party certifications and can be wall- or ceiling-mounted.



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.

