



TANK HEATING SYSTEMS



Solutions for Chemical Process Heating

The Early Years of Chromalox

It all began in 1915 when an electrical engineer named Edwin L. Wiegand invented and patented the very first metal-sheathed electric heater. Two years later, Mr. Wiegand founded Chromalox to deliver this breakthrough product to the market. Performing with unprecedented reliability, the patented heating element set the industry standard in value, quality, and dependability for electric heating. Today, those high standards continue as industries turn to Chromalox as their first choice in solving simple to complex electric heating applications.

Global Strength

Chromalox offers full design and engineering capabilities and is vertically integrated in manufacturing capabilities. This, plus more global third-party approvals than any other company in our industry, enables us to serve customers anywhere in the world.

Unrivaled Engineering

Our engineering support staff can help to integrate our products into your application and properly specify equipment so that you can be sure that the equipment will operate as required.

In the field, Chromalox has the largest and most experienced group of engineers available to assist you. The majority of our 300+ field sales representatives are degreed engineers, and all are experienced with Chromalox heating products and applications.

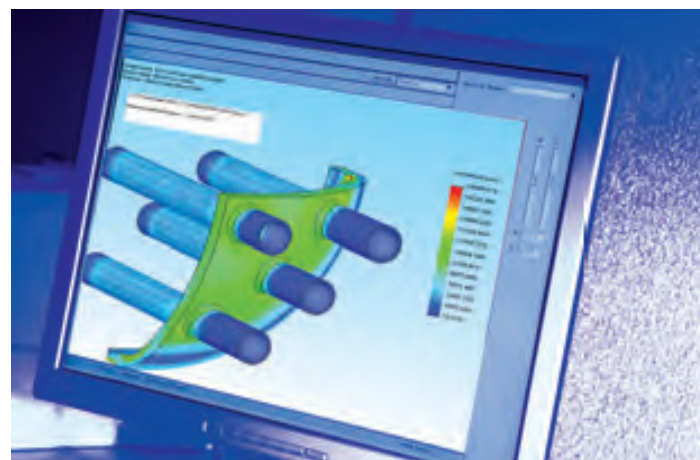
State-of-the-Art Manufacturing

Chromalox maintains six state-of-the-art manufacturing plants throughout the world with more than 634,000 ft² of manufacturing space. Our plants utilize automated machinery to ensure tightly controlled, repeatable quality standards. In addition to being vertically integrated, they also provide final assembly and functional testing.

Our manufacturing capability features computer-controlled, automated machinery to help quality. With ASME welding capability in-house since 1953, Chromalox has gained more in-plant experience than any other electric heater manufacturer for high-quality welding. Our experience enables us to perform ASME welding at a level unsurpassed in our industry.

Broadest Third-Party Approval

Chromalox is the only manufacturer with extensive systems manufacturing in North America, Europe, and Asia. Approvals and certifications include, but are not limited to, CE, NEC, UL, VDE, cUL, FM, CSA, MSHA, BASEEFA, Cenelec, ASME, PED, ATEX, GOST, and ISO 9001:2008.



Chromalox Heating Solutions are the Right Choice

- Clean
- Pollution-free
- No open flames
- No additional plumbing connection
- Quiet operation
- Simple operation
- Better efficiencies
- Precision control



For Any Style Tank

- Vertical
- Fixed or floating roof
- Mobile
- Underground (UST)
- Tanker
- Horizontal
- API 614
- Hopper
- Above ground (AST)
- Railroad



For Any Application

- Fire water
- Crude oil
- Fuel storage Potable Water (NSF/ANSI/CAN 61)
- Biodiesel
- Linseed oil
- Lube oils
- Vegetable oils
- Animal fats
- Diesel
- Freeze protection
- Asphalt
- Petroleum
- Frac drilling fluids
- Fuel oil
- Pitch and tar
- Liquid sugar
- Molasses
- Glycerin

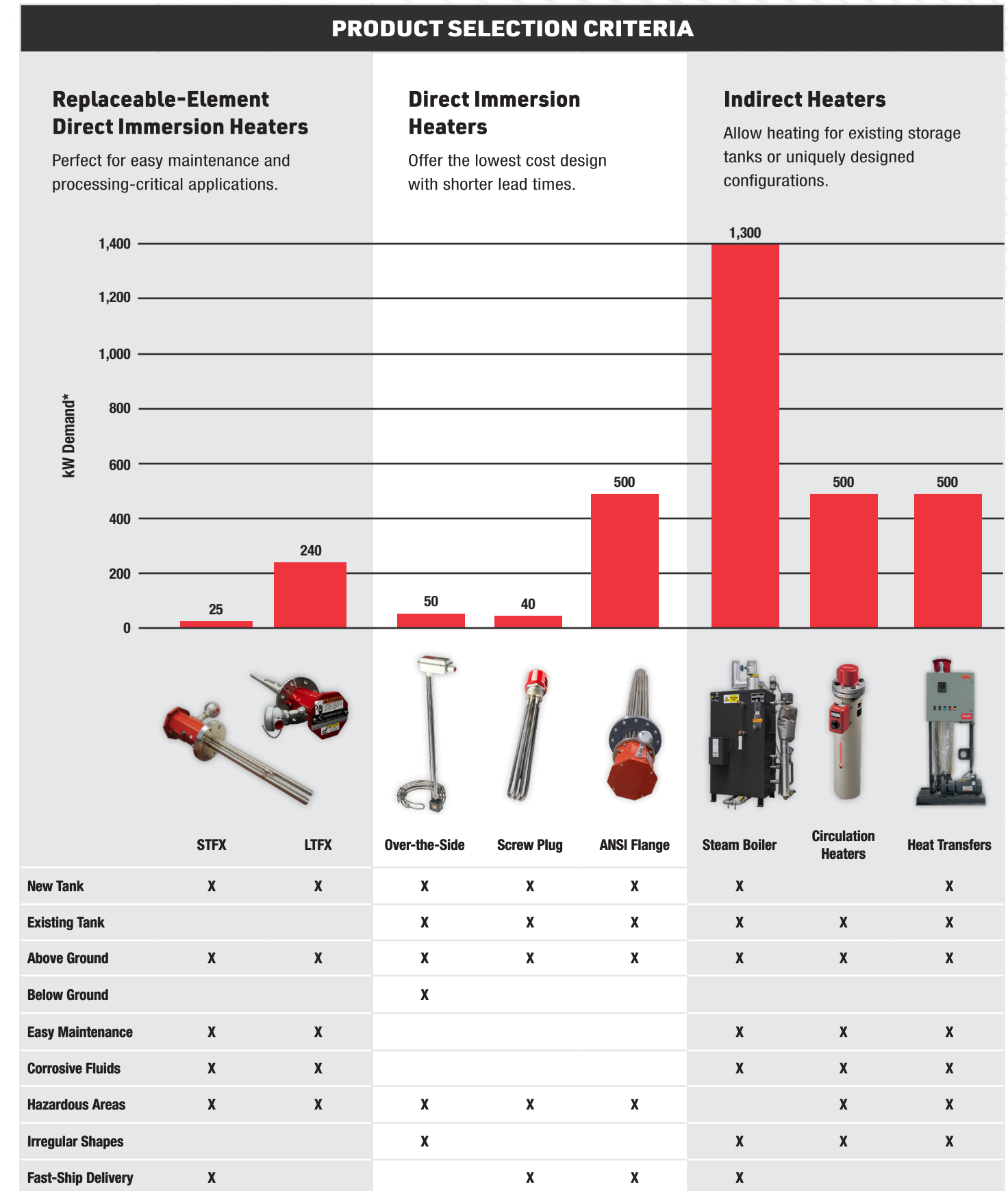


THE BEST ELECTRIC HEAT & CONTROL SOLUTION FOR YOUR PROCESS & APPLICATION

For 100 years, we have solved more process heating challenges and created more unique, customized solutions than anyone.

Chromalox is devoted to providing you with the most cost-effective heat and control solution for your application to keep your revenue generating processes on line. We excel at bringing our vast array of solutions and products to your most difficult heating problems no matter how extreme, corrosive, or hazardous your process and environmental conditions are. We have a virtually unlimited selection of heaters, controls, and configurations to ensure you get the exact equipment needed for your process and application.

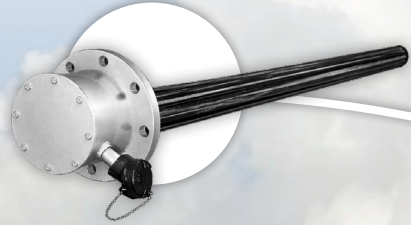
Select Your Tank Heater Style



*Higher kW rating can be provided for most products. The selection chart is a general guide for determining product style. Consult your Chromalox representative for expert advice in choosing the best product for your application.

Whatever your process, whatever your application... If you have a tank, Chromalox has a heater.

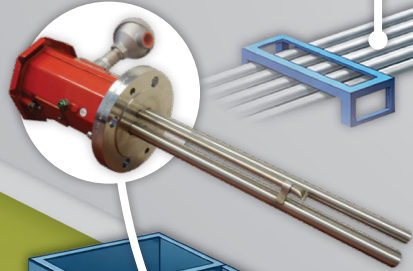
REPLACEABLE ELEMENT HEATER
Large Tank Flange LTFX Heater



PROCESS PIPING
Heating Cable



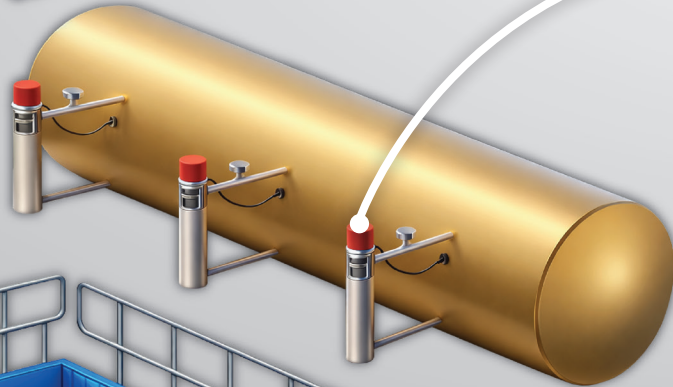
DIRECT HEATING
Small-Tank STFX Flanged Immersion Heater



CONTROLS & SENSORS



DIRECT HEATING
Circulation Heater Side-Arm Installation Heater



DIRECT HEATING
Over-the-Side Corrosion-Resistant Immersion Heaters



DIRECT HEATING
Flanged Immersion Heater



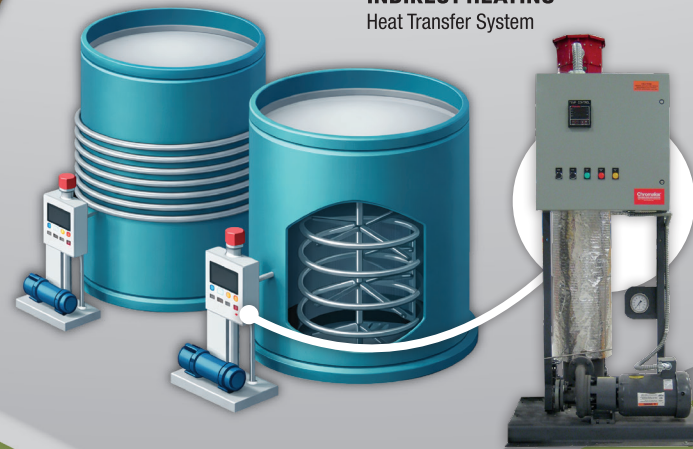
INDIRECT HEATING
Flexible Silicone Laminate Heaters



DIRECT HEATING
Custom Power Control Panel, IntelliPANEL® 3-Phase SCR Power Control Panel, DIN Controllers



INDIRECT HEATING
Heat Transfer System



DIRECT HEATING
Over-the-Side Corrosion-Resistant Immersion Heaters



DIRECT HEATING
Flanged Immersion Heater



Replaceable-Element Tank Heaters

Products for Easy Maintenance & Critical Applications

Chromalox offers two electric heating systems for storage tanks that feature a unique replaceable-element design. The heating elements can be removed and replaced without draining the tank—in most cases by one person with no special tools. This feature can save time and money as well as help maintain peak performance efficiency when the heating elements are replaced on a scheduled maintenance basis. These systems can be installed in above- or below-ground tanks made of steel, concrete, or fiberglass.

Complete with Chromalox controls, these replaceable-element tank heating systems can be operated with little or no manual attention. Heat can be applied by using strategically located sensors to monitor tank temperatures and energize the heaters. The heating operation may be fully automated by using timers and controllers to program the start and stop of both off-peak and daytime heating functions.

With very little upkeep, as they are practically maintenance-free, the result is substantially reduced operating costs over alternative heating methods.

Small Tank Flange (STFX) Heaters

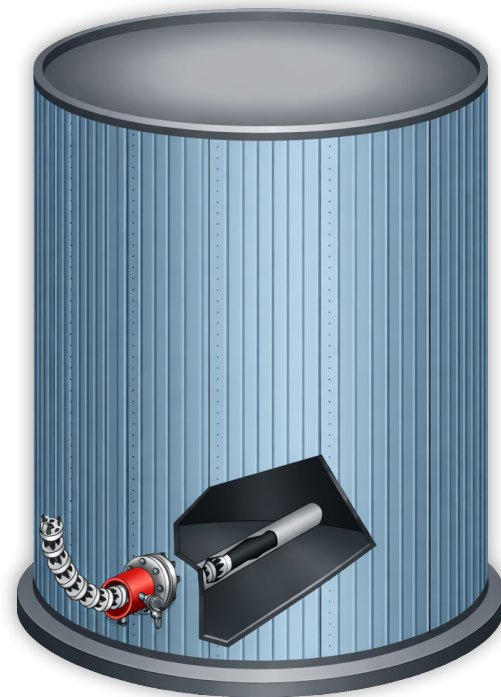
Chromalox® STFX units provide replaceable-element design in a compact setting so they are ideal for smaller, critical system tanks that need to remain filled for continuous operation and storage. These units comply with API-614 and can be used for such materials as lube oil, fire water storage, water solutions, asphalt, water/glycol, diesel, acidic solutions, ethanol, bio-diesel (B-100), glycerin, animal fats, vegetable oils, fuel oils, or similar types of liquids. Units are CSA-certified and can be provided with ASME.

Large Tank Flange (LTFX) Heaters

LTFX heaters provide low-watt-density heating over a large surface area while providing precise temperature control for such materials as fire water storage, asphalt, diesel lube oils, ethanol, bio-diesel fuel, glycerin, animal fats, vegetable oils, fuel oils, or similar types of liquids.

LTFX heaters consist of OCE elements that are inserted into schedule 40 NPS pipes, typically in carbon steel or 304SS. This rugged construction is well suited for corrosive applications. Alternative materials such as titanium, INCOLOY*, and 316 stainless steel are also available on request.

Minimal-space open-coil-element (OCE) style elements can be bent during insertion or removal to a vertical plane with as little as 12 inches (305 millimeters) of clearance. Each unit comes equipped with a Type J thermocouple for temperature sensing on the pipe wall and can be matched with a corresponding control panel, mounted separately or installed directly on the LTFX heater, to ensure seamless operation. The Standard ANSI flange provides a straightforward mating connection with no special modifications for quick and easy installation.



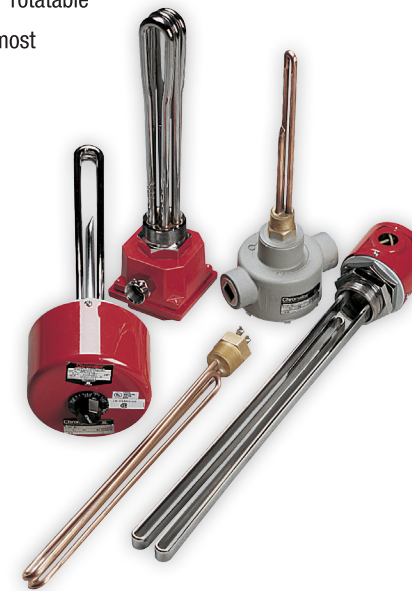
REPLACEABLE-ELEMENT HEATERS SPECIFICATIONS						
	Watt Density W/in.2 (W/cm2)	Power Rating kW	Voltage Vac	Operating Temperatures °F (°C)	ANSI Flange	Steam Boiler
STFX	5, 10, 20, 40 (0.8, 1.6, 3.1, 6.2)	1 to 25	120 to 600	0 to 750 (-18 to 399)	3 to 12	4 (1.22)
LTFX	9 to 12 (1.4 to 1.9)	4 to 240	240 to 600	0 to 750 (-18 to 399)	4 to 14	5 to 25 (1.5 to 7.6)

Direct Immersion Heaters

Because they heat by direct contact with water, oils, viscous materials, solvents, and solutions, direct immersion heaters can achieve virtually 100 percent energy efficiency. Various temperature control options permit very tight process temperature control. Many models are in stock, including models for specialized applications such as high-pressure and hazardous areas. Custom-engineered designs are also available.

Screw Plug Immersion Heaters

Screw plug immersion heaters consist of tubular heating elements in a threaded hex plug. Some models are provided with a thermowell for the temperature control sensor and a variety of electrical enclosures for electrical connections. They screw directly through threaded openings in tank walls to heat liquids, viscous fluids, forced air, and gases by direct contact. A patented 360° rotatable housing is available on most models to facilitate easy conduit connections.



Over-the-Side Immersion Heaters

Over-the-side immersion heaters are designed for installation in the top of the tank with the heated portion directly immersed along the side or at the bottom. They take up little space, eliminate the need for tank penetrations, are easily removed for service, and provide ample working space inside the tank. Custom-configured elements evenly distribute heat by direct contact in numerous applications, including acid and alkali solutions. Mounting configurations include L-shaped, side-mount, top mount, and deep-tank installation.



Flanged Immersion Heaters

Ideal for heating liquids in pressure vessels and tanks, flanged immersion heaters are hairpin-bent tubular elements welded or brazed into a flange and provided with electrical enclosures. Chromalox flanged immersion heaters are available in a wide selection of flange sizes and with a variety of electrical enclosures. Most units are UL-listed and CSA-certified or can have ATEX certification. ASME or PED code construction is also available for high pressure applications. Many models are in stock. configurations include L-shaped, side-mount, top mount, and deep-tank installation.



DIRECT IMMERSION HEATERS SPECIFICATIONS						
	Watt Density W/in.2 (W/cm2)	Power Rating kW	Voltage Vac	Heated Length in. (m)	Riser Length in. (m)	
Screw Plug	Up to 85 (13.2)	Up to 40	120 to 600	Up to 54 (1.4)	—	
Over-the-Side	Up to 70 (10.9)	Up to 40	120 to 600	Up to 64 (1.6)	Up to 144 (3.7)	
Flanged	Up to 75 (11.6)	500+	120 to 600	Up to 168 (4.27)	—	
	Screw Plug Material	Flange Material	Element Sheath Material	No. of Elements	Screw Plug Size in.	Flange in. 150 lb.
Screw Plug	Steel, Brass, 304/316SS	—	Copper, Steel, 304/316SS, INCOLOY, Titanium	1 to 3	½ to 2½	—
Over-the-Side	—	—	Copper, Steel, Stainless Steel, INCOLOY*, Titanium, Teflon* (Fluoropolymer), Quartz	3 to 9	—	—
Flanged	—	Steel, Brass, 304/316SS	Copper, Steel, 304/316SS, INCOLOY, Titanium	3 to 147	—	3 to 20

* INCOLOY is the registered trademark of Huntington Alloys Corporation. Teflon is a registered trademark of E.I. du Pont de Nemours and Company.

Indirect Heating

A distinct advantage of indirect heating is that the heater can be serviced without draining the tank. A large centralized steam boiler can handle multiple tanks from a single location or by smaller point of use boilers. Using circulation heaters or heat transfer systems can limit the overheating conditions that can occur with some materials when using direct immersion heating.

Steam Boilers

For any commercial or industrial facilities looking to transition away from fossil fuel powered processes and towards electric steam, our modular steam boilers are designed to provide zero-emission steam, whether replacing a centralized fuel-fired system or delivering steam directly at the point of use—such as jacketed vessels or steam coils.



Circulation Heaters

Chromalox circulation heaters are packaged units consisting of a flanged immersion heater mounted in a thermally insulated heating chamber for efficient heating of a flowing medium by in-line or side-arm operation. Thermocouple sensors can be provided to connect to most any controller. Select from many terminal enclosures, sheath and vessel materials, flanged connections, and controls. Chromalox offers optional ASME, PED, and KOSHA certification. Many models are in stock.



Heat Transfer Systems

Chromalox heat transfer systems are safe, versatile, user-friendly heating systems for process tank heating applications requiring closely controlled process temperatures. Engineered and constructed with carefully matched components, these systems provide easy installation and trouble-free operation in your application.



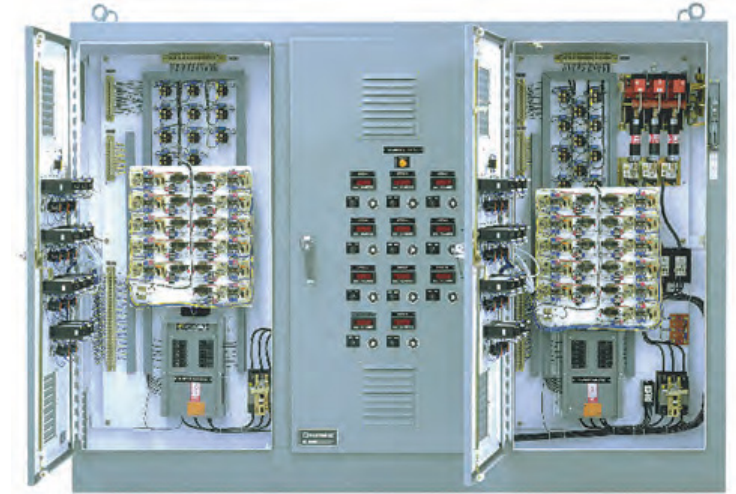
Panels/Controls/Sensors

From sensors to multi-loop electronic controls to standard and custom control panels, Chromalox will design the ideal system for your plant application.

Our PCA & PCS models are specifically designed for Chromalox heating equipment to provide proper power and temperature control. Proportional power control is available for precise heating. Contactor power control is also available for more static applications like water freeze protection or basic tank heating. Units come completely assembled with the selected power control and a variety of options to choose from such as integrated temperature controllers, overtemperature controllers, disconnects, outdoor locations packages, and many other features.

For quick turn solutions our Pick and Ship CPCA panels are stocked in both Contactor and Proportional control options.

Sensors include thermocouples and RTDs that directly, consistently, and accurately measure product temperature. Stock accessories include thermowells, wiring, indicating meters, timers, and recorders in addition to electromechanical contactors, thermostats, and thermostats.



INDIRECT HEATERS SPECIFICATIONS				
	Watt Density W/in.2 (W/cm2)	Power Rating kW	Voltage Vac	Maximum Temperature °F (°C)
Circulation	20 to 100 (3.1 to 15.5)	0.5 to 500+	120 to 600	1,500 (815)
Heat Transfer	—	6 to 500+	240 to 600	750 (399)
	BHP	Power Rating kW	Voltage Vac	Steam lbs/hr
Steam Boiler	3 to 133	Up to 1300kW.	480 or 600	100 to 4,550

The Chromalox Difference

Chromalox Meets Your Most Demanding & Complex Challenges

We invented electric heating technology, created an industry, and pioneered applications in new markets for the past 100 years. We are problem solvers who help our customers by innovating and developing new thermal technologies that will improve their operating processes and enhance productivity. We are dedicated to and excel at finding and applying elegant solutions to the most demanding and complex challenges. This and our investment in research and development in new technologies will shape the future of industrial heating as we continue to pioneer a new century of innovation.

Chromalox Can Improve Your Operating Costs

Our standardized designs can reduce your installed cost as well as your eventual replacement cost. Our electric process heaters require minimal maintenance and calibration. Using Chromalox third-party-certified electric package systems results in reduced insurance premiums for you—lower than those offered to competitors using fuel-fired systems.

Chromalox Can Improve Your Process Efficiency

Chromalox control panels, coupled with the precision and reliability of Chromalox heaters, optimize temperature control and shrink variations in efficiencies. Chromalox power controls, SCRs, and proprietary software precisely sequence heaters, balance electrical loads, control soft starts, and correct power factors, providing process control and operating efficiency.

Resources to Get the Job Done

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 electronic order entry system at chromalox.com. Same-day delivery is available for many items. In addition, factory offices, stocking representatives, and over 500 authorized distributors carry Chromalox components and systems for same-day pickup and delivery. For assistance, call 1-800-443-2640.

Technical Assistance at www.chromalox.com

Go to www.chromalox.com anytime, day or night, for valuable information in product literature, product specs, training manuals, and technical documentation. You'll find answers to questions about anything from electronic temperature controllers and fluids, to material compatibility, corrosion, and wire sizing.



Chromalox Service Solutions Ensure Optimum Performance & Extend Service Life

From startup and training to ongoing maintenance diagnostics and emergency response, we offer customized service solutions to ensure the quality and continued success of your process.

Startup & Commissioning

New equipment startups can often delay project timelines. Minimize any chance for costly setbacks by having a Chromalox qualified engineer for on-site startup and commissioning the mechanical, electrical, instrumentation, and control equipment for any system we have built, anywhere in the world. They will assist with initial equipment startup and perform a complete review of the installed system to ensure optimized integration into your facility, increasing overall efficiency. You will save time and know that your product was installed correctly.

Emergency Service

Emergency on-site service is also available when the situation demands it. Chromalox understands the importance of being prepared and ready to produce. That's why our service technicians are available 24x7 and will come to you anywhere in the world.

Chromalox Cold Weather Contracts

Cold weather can be a strain on much of your system's equipment. To help you avoid unplanned downtimes that can occur due to cold weather Chromalox offers a package of pre-season planning and preventive maintenance services to ensure proper equipment operation before the cold weather strikes.

Chromalox Service Contracts

Chromalox Service Contracts deliver efficient emergency response and preventive maintenance, helping to eliminate problems before they arise. Chromalox field service personnel are experts at maximizing the performance of your process heat and control systems with a variety of on-site services including multi-point inspections, guaranteed emergency response times, site reports, and replacement parts availability.

Professional Services

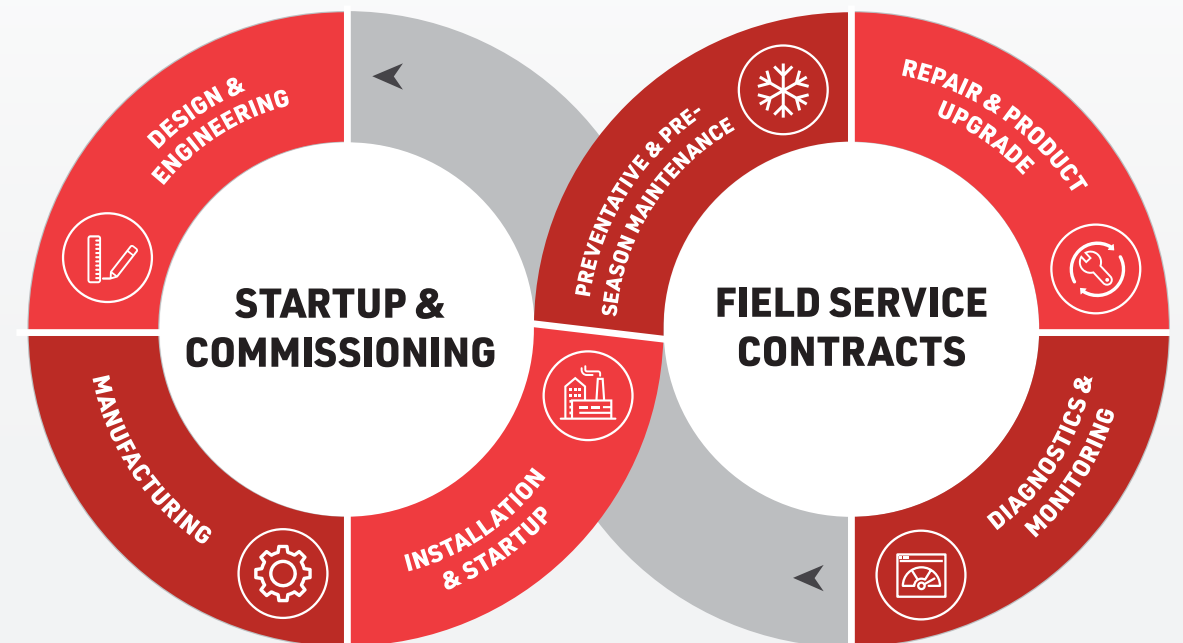
Chromalox comprehensive service solutions also include a selection of professional services to help integrate, operate, and service Chromalox heating and control equipment for your application.

Isometric Drawings: Chromalox will generate 2D and 3D drawings that show how Chromalox heating and control products are integrated into your application.

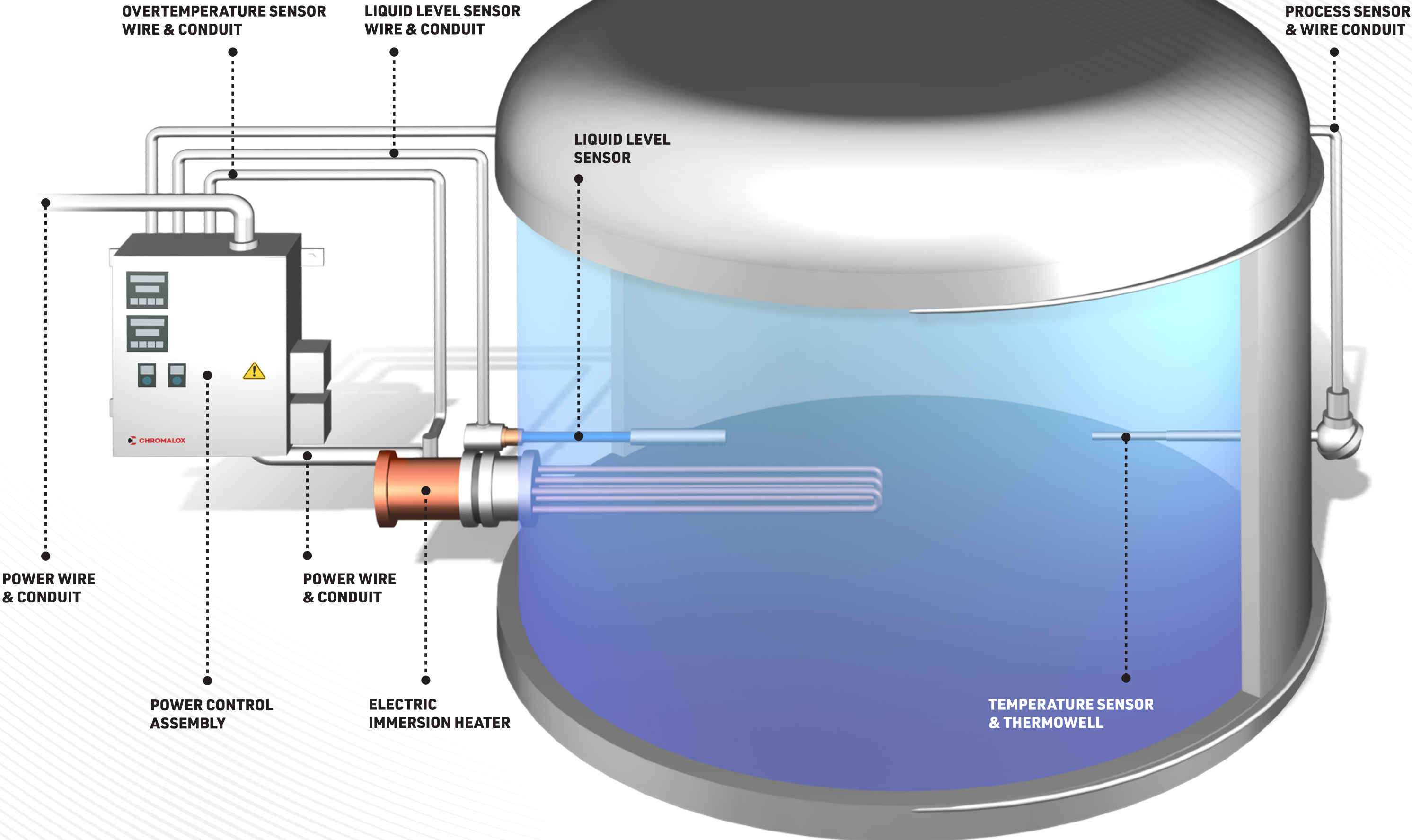
Training: Chromalox offers on-site training of your personnel to help ensure that your Chromalox equipment is properly operated. Expertly trained personnel can better achieve the best results in your process, as well as optimize equipment service life and maximize intervals between required maintenance.

Diagnostics and Troubleshooting: Our experienced engineering staff can help to optimize your process. They are well-versed in diagnosing and correcting process issues, and can custom-design heaters and controls that meet your exacting requirements.

For any Chromalox Service Solution call 1-800-443-2640



Typical Heater Installation





SCAN THE QR CODE TO EXPLORE OUR WORLDWIDE LOCATIONS AND FIND YOUR LOCAL SPECIALIST:

www.chromalox.com | sales@chromalox.com

