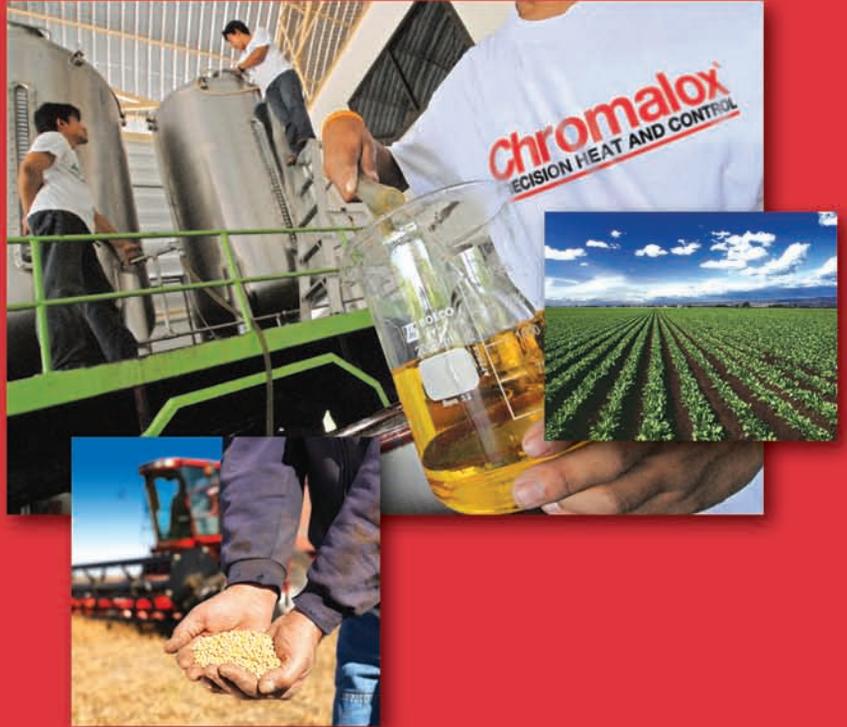


BISODIESSEL FUELS

chromalox®

Chromalox[®]
PRECISION HEAT AND CONTROL

Precision Heat and Control Systems
For Biodiesel Fuels Production



BIODIESEL PRODUCTION

WHY CHOOSE ELECTRIC HEAT?

- Consistent pricing
- Clean-running operation
- No pollution
- Quiet operation
- Reduced footprint and envelope size
- Minimal maintenance
- Low operating cost
- Safety
- Large turndown / precise control

Fatty Acid Storage Heating

Unitary immersion and suction heaters are used to maintain the feedstock materials at elevated temperature prior to being used in production. Sizes range from 5 to 500 kW, with integral control systems.

Feedstock Storage Tank Heating

Unitary immersion and suction heaters are used to maintain the feedstock materials at elevated temperature prior to being used in production. Sizes range from 5 to 500 kW, with integral control systems.

Process Lines

Electric heat trace is used for pipe temperature maintenance and freeze protection of process lines. Self-regulating cable and control systems are used for general-purpose and hazardous locations. Mineral-Insulated and constant-wattage cables are also available.

Blending and Mixing

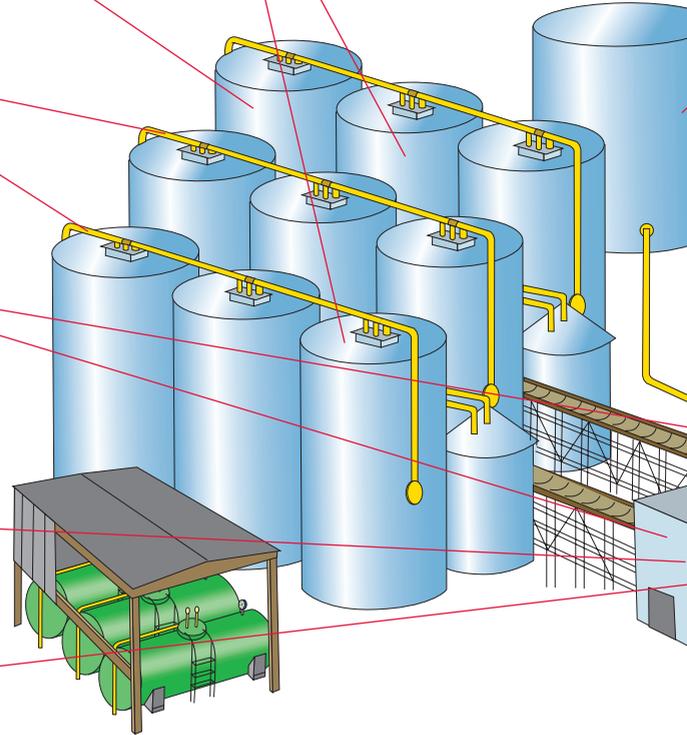
Circulation and immersion heaters are used to maintain processing temperatures during the blending and mixing of multiple feedstocks to create the correct formula prior to creating biodiesel fuel.

Personnel Warmth & Equipment Freeze Protection

Radiant heaters, portable heaters, heavy-duty forced-air heaters, and general-purpose blower-heaters provide comfort heat for work stations and large employee areas as well as freeze protection of parts and equipment.

Warm Water Wash

Circulation heaters are used for pre-heating the process water used in the washing/purifying of biodiesel fuel.



Large-Tank Heating Systems

Chromalox offers four uniquely designed electric heating systems for large storage tanks. Complete with Chromalox® controls, these large-tank heating systems can be operated to maintain materials at the proper temperatures with little or no manual attention. Strategically located sensors monitor tank temperatures and energize the heaters, while timers and controllers fully automate the heating operation.



Process Heaters

Chromalox immersion heaters apply heat directly at virtually 100 percent efficiency. Basic mounting options include threaded, flanged, and over-the-side designs. Various temperature control options permit very tight process temperature control. Our circulation heaters are designed to heat a flowing medium using in-line or side-arm piping configurations. A wide selection of kilowatt ratings, materials, vessel sizes, terminal enclosures, control features, and mounting methods are available.



Comfort Heaters

Chromalox electric comfort heaters provide efficient, economical heat for warehouse, shipping/receiving, distribution, and manufacturing areas. Convection, forced-air, and radiant heaters provide safe, clean, fast heat. Heavy-duty construction affords long, dependable service.



Glycerin Storage Tanks

Unitary and standard immersion heaters are used to maintain the glycerin by-product storage tanks at the necessary 120° to 130°F temperature to prevent solidification. Steel and stainless steel materials can be used as needed depending on the type of glycerin being stored (crude or pure).

B100 Storage Tanks

Unitary and standard immersion heaters can be used to maintain the B100 holding tanks at the typical 70° to 80°F temperature to prevent solidification. Steel and stainless steel materials can be used as needed.

Diesel Fuel Storage

When blending is done on-site, tank heaters are used to freeze-protect the diesel and blend tanks.

Distribution Lines

Electric heat trace is used for pipe temperature maintenance and freeze protection of distribution lines that load the finished products onto transportation.

Rail Car Heating

Steam boilers can be used to heat railroad tank cars up to transportation temperature, typically 120°F, when filling the car with biodiesel fuel prior to shipment.

Alcohol Recovery

In certain processes, circulation heaters are used in the separation and recovery of methanol and water from the biodiesel fuel.

Drying

Circulation and immersion heaters are used to pre-heat the blended oils to drive off any moisture that may have accumulated in the system. This prevents the formation of soaps during the transesterification process.

Transesterification

Circulation and immersion heaters are used to accelerate the chemical reaction during the transesterification process, typically at temperatures of 150° to 160°F.

Boilers

Constructed of carbon or stainless steel with fiberglass insulation to ASME or PED code, Chromalox steam boilers and steam generators are safe, versatile, and efficient energy management systems that provide low- or high-pressure hot water or steam. They are packaged units that are completely assembled and ready to install, needing

only a water feed-source and electric power hook-up to operate from existing distribution voltages, making installation simple.



Heat Trace and Controls

Heat trace is used to counteract the heat loss from process equipment and piping through its insulation, to prevent solution precipitation and the increase of viscosity or solidification of product, and to provide freeze protection. Chromalox offers a variety of heat trace cable; temperature control, monitoring, and management in one, modular package; and all of the necessary components needed to complete the installation, including splices, power connection boxes, and water-resistant end-seal terminations.



Control Systems

From basic, low-cost temperature and process controllers, to monitors and overtemperature controls, to more sophisticated control systems like the Chromalox® intelliPANEL™ 3-phase SCR power control panel featuring unique color touchscreen technology, Chromalox can design the right system for your plant's needs. We are the only heating element supplier offering a complete line of controls, control panels, and accessories.



WHY CHOOSE CHROMALOX?

- Broadest product line and experience unmatched in the industry
- Precision-engineered heat and control systems for more alternative fuels processes throughout the world than anyone
- Vertical integration in manufacturing capabilities
- Full design and engineering for virtually any electric process heat and control application

BIODIESEL PRO

Chromalox Value-Added Products and Services Are Available Worldwide



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