Industrial Decarbonization Solutions

With the global shift towards improved energy efficiency and reduction of Greenhouse Gas Emissions (GHG), the urgency to adopt clean and efficient heat energy sources is more critical than ever. Chromalox Electric Thermal Solutions address the demands of a changing industry centered around decarbonization of fossil fuel-based systems to avoid Scope 1 direct emissions as well as utilization of renewable energy sources for elimination of Scope 2 emissions. From steam generation and process heating, to building heat and thermal management, Chromalox has the technology to support your decarbonization journey today.

Steam & Hot Water Generation

Steam is the prevalent method of heat transfer across the industrial and commercial sectors due to its excellent thermal transfer properties. The primary method of steam generation comes from combustion of fossil fuels like natural gas, fuel oil, and coal, which all contribute to your facilities Scope 1 emissions. Chromalox offers a variety of solutions which can be used to decarbonize your steam generation, improve your energy efficiency and reduce your maintenance costs.

Chromalox Solutions:

- MVSGI Medium Voltage Steam Generator (4.16-7.2kV)
- Decentralized/Point-of-Use Steam Generators
- Heat Transfer Systems
- District Heating Systems

Temperature Management

Temperature management of tank and piping systems is a critical part of most industrial facilities. Where fossil fuels are combusted to generate heat through steam, hot oil, or other heat transfer mediums, a greater impact can be on the energy efficiency side. Industrial facilities often include long piping runs, or extensive coil networks through tanks that can face issues with leaking, heat losses, or failed components. By electrifying these systems you can place the heat directly where it's needed to avoid excessive losses or complex systems.

Chromalox Solutions:

- Self Regulating Heat Trace and Controls
- Mineral Insulated Heating Cable
- Tank Heaters
- Component Technologies

Process Heating

Thermal processes in manufacturing vary greatly from different media, temperatures, pressures and more. Chromalox Electric Thermal Solutions have the flexibility to replace fossil fuel-based process heaters in countless applications that span gas and liquid media in both safe and hazardous area locations.

Chromalox Solutions:

- DirectConnect™ Circulation Heaters
- Tank Heaters
- Heat Transfer Systems
- Process Air Heating Systems
- Component Technologies

Comfort Heating

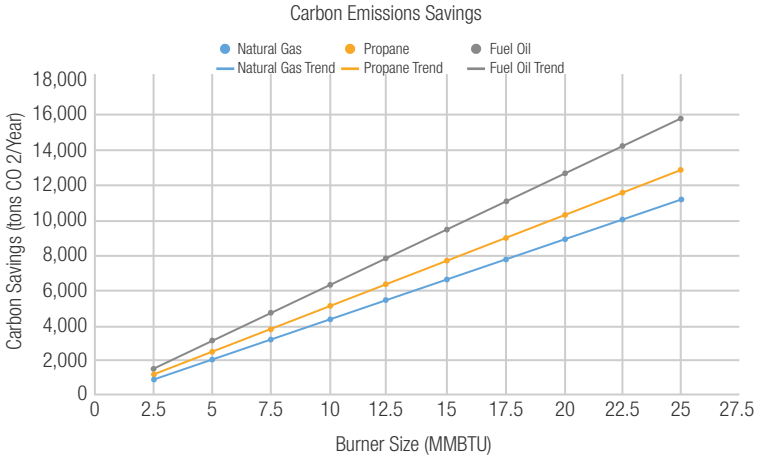
Industrial facilities and commercial buildings located in colder climates are faced with an additional source of carbon emissions that come from building heat and localized personnel heating. From gas blower heaters to additional steam or water infrastructure, comfort heating further contributes to facility emission levels that can be avoided through electrification.

Chromalox Solutions:

- Unit Heaters
- Radiant Heater
- Convection Heaters
- Electric Steam Generators
- Hot Water Generators

Carbon Emission Reductions

Reaching sustainability and GHG emission reduction goals requires major transitions from fossil fuel-based steam and process heating systems to cleaner sources of heat. Chromalox Electric Thermal Solutions provide a zero emission solution to eliminate your Scope 1 Direct Emissions. Utilization of renewable energy sources to power your Chromalox system can effectively negate Scope 2 emissions as well.



*Carbon savings are based on publicly available emission factors and typical operation of similar equipment with assumptions on rated efficiencies and cycling

Small Impacts

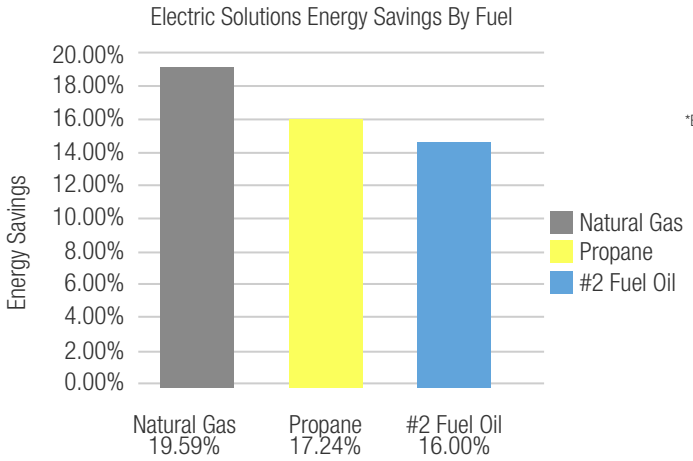
To progress towards long term goals, evaluating small impacts is a great way to reduce your facilities carbon emissions through either supplementing or decentralizing inefficient fossil fuel boilers. See below for potential small impacts that can get you on your sustainability journey today!

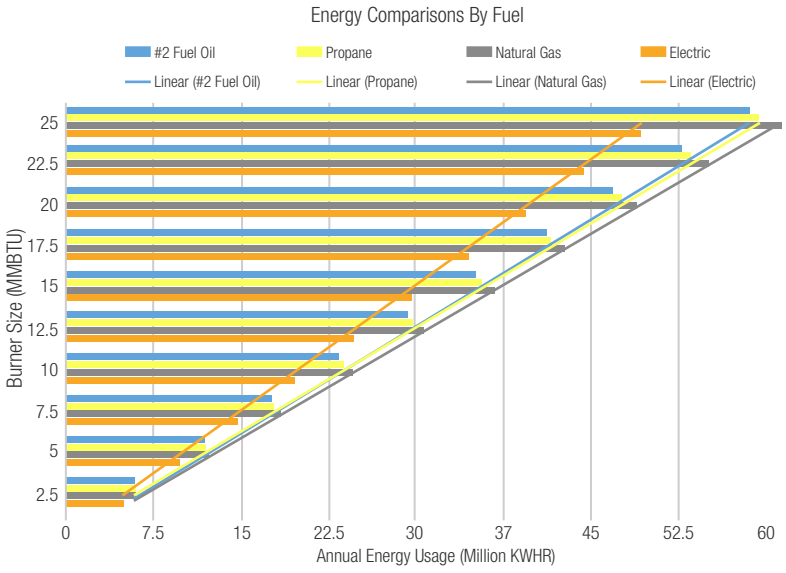
- Electric heat tracing systems
- Tank heaters to replace steam coils
- Point-of-use boilers to reduce centralized boiler burden and reduce heat loss from extensive piping network
- Electrification of comfort and radiant style heaters
- Component Technologies for oven & furnace applications

Energy Efficiency

Electrification of fossil fuel-based combustion equipment does not just render carbon reduction savings, but can lead to significant savings in energy usage. Electric heating systems are upwards of 99% efficient across all operating cases, unlike fossil based systems which are adversely impacted by:

- Turndown ratios
- Excess air percentages
- Fuel composition
- Boiler tube quality





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