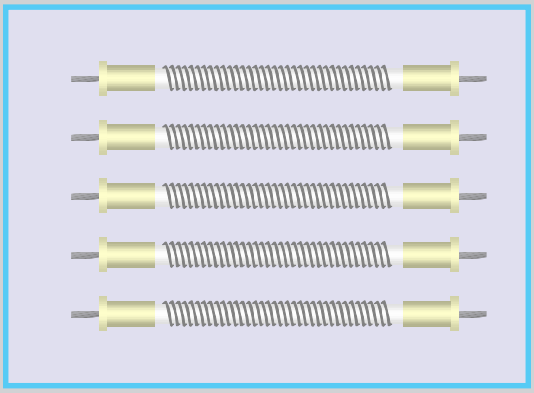
CASSO-SOLAR TECHNOLOGIES

PRODUCT BULLETIN P111
Furnace Tube



Quartz Furnace Heater ®

Glass Bending Oven With Quartz Furnace Heater ®

With new product and process technology under continuous development, production equipment is required to give precise and flexible control over production quality, while operating efficiently with minimum maintenance. With over 50 years of experience, Casso-Solar Technologies has been providing our customers the competitive edge.

SPECIAL FEATURES

HORIZONTAL OR VERTICAL OPERATION

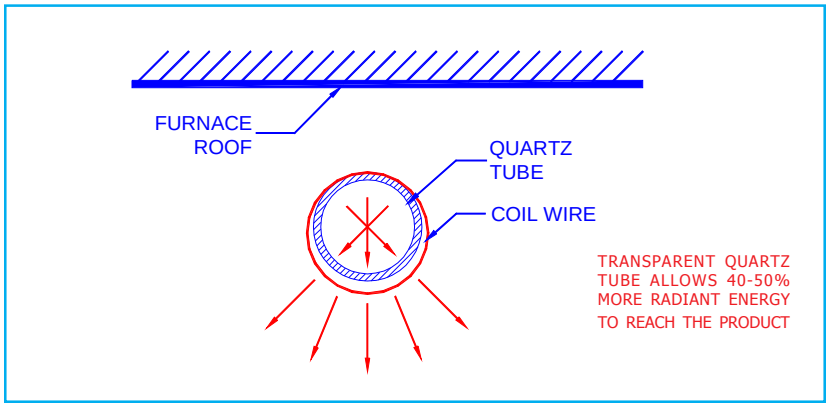
The Casso-Solar Technologies Infrared Heater Quartz Furnace heater can be configured to operate in the horizontal or vertical position. The vertical burn Quartz Furnace Heater will not experience coil sag, and will remain uniform in temperature during operation.

CUSTOM WATTAGE AND VOLTAGES

The Casso-Solar Technologies' Furnace Heater is available in watt densities up to 80 watts per lineal inch, depending on tube diameter, window size and availability of cooling air. Custom operating voltages are also available.

CONSERVES ENERGY

CASSO-SOLAR TECHNOLOGIES TUBULAR QUARTZ FURNACE HEATERS have the ability to direct 40-50% more energy toward your product as compared to conventional ceramic tube heaters. The Casso-Solar furnace tube utilizes a quartz tube core, allowing energy from the back of the coil to radiate through the quartz to the product. (See Diagram Below). Typical ceramic tube supports block this energy.



HIGHER POWER OUTPUTS

Due to its unique ability to effectively radiate more of its energy, higher wattage coils can be operated without exceeding the maximum allowable emitter temperature. Power outputs as high as 200 watts/inch (80 watts/centimeter) can be utilized.

STURDY CONSTRUCTION

A heavy wall quartz tube is used in the Casso-Solar Technologies Furnace tube construction. Quartz tube diameters can be chosen to accomodate your existing element design.

CONTROL

CASSO-SOLAR TECHNOLOGLIES QUARTZ FURNACE HEATERS can be used with a variety of control types including any existing furnace controls. Simple on/off circuits allow full heater power are utilized. If adjustment of power output is required for a heater or zone of heaters, phase angle fired SCR power or SSR's controllers can be used.

Sales & Technical Information

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THERMOCOUPLE

For the most precise control of CASSO-SOLARTECHNOLOGIES QUARTZ FURNACE HEATERS, thermocouple feedback control is recommended. Thermocouples should be placed as close to the product as is practical. Consult Casso-Solar Technologies' sales engineers for advice on your application and process.

DESIGN FLEXIBILITY

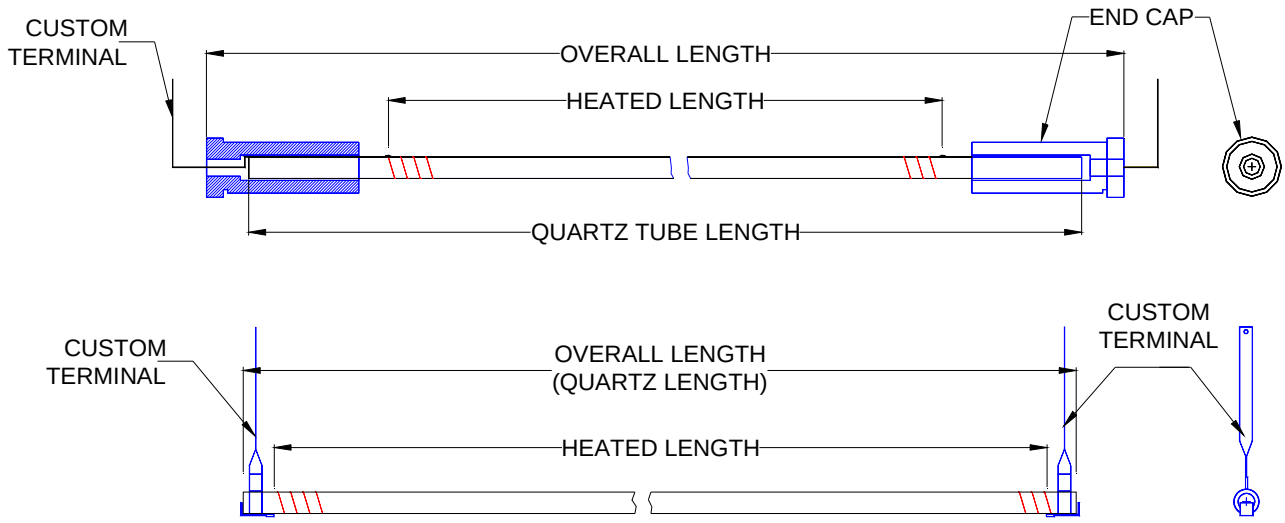
CASSO-SOLAR QUARTZ TECHNOLOGIES FURNACE HEATERS can also be designed to meet most wattage/voltage combinations. A variety of terminal and mounting arrangements are available as are custom designed ends to replace elements in existing furnaces.

CREEP RESISTANCE

Creep is the electromagnetic phenomenon which can cause coils to "bunch up" after repeated heating and cooling. CASSO-SOLAR TECHNOLOGIES QUARTZ FURNACE HEATERS utilize a special alloy coil wire which has a higher mechanical strength at elevated temperatures than conventional furnace resistance elements creating life expectancies that are 3-4 times greater than conventional elements.

IMPROVED ZONING

CASSO-SOLAR QUARTZ TECHNOLOGIES FURNACE HEATERS are supported by a quartz tube which allows more energy to pass through from rearset zones to your product. Tube wattage can be custom designed to put more heat in areas where it is needed most.



TYPICAL TERMINAL ARRANGEMENTS

SPECIFICATIONS:

WATT DENSITIES:	Up to 200 watts per lineal inch (80 watts per centimeter) generating watt densities
VOLTAGES:	120V, 240V 277V, 380V, 415V, 480V, 575V, 600V & Non-standard voltages
SIZES:	6" through 120" in length and longer
TUBE SPACING:	Heaters can be mounted as close as 1 1/4" centers
WAVELENGTH EMISSION:	2.5 - 6.0 microns
TEMPERATURE RANGE:	Up to1800°F(982°C)
COLD ENDS:	Cold ends are provided as required for terminal and mounting arrangements. Customer designs available
ELECTRIC CONNECTIONS:	Terminals can be provided for connection through furnace side walls or for connection through roofs and floors.
THERMOCOUPLE:	Consult our sales staff for recommendations on thermocouple and control configurations

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