

#### SPECIAL FEATURES

##### EASE OF CONTROL

Through the use of time proportioning controls, with closed loop feedback, product temperature can be maintained within  $\pm 2^\circ\text{F}$  across the web. A thermocouple is located within a quartz thermowell, to accurately measure the emitter temperature of the heater. Power to the heater is provided through SCR power controllers or solid state relays, with optical pyrometers further enhancing the process control.

##### HEATER EMISSION MATCHED TO THE PRODUCT

Casso-Solar Technologies' Infrared Heater, Type "C" & "C+", has a tunable emission, to match the peak absorption point of the material being processed. Special multizone heaters can program a temperature profile into the product, if desired.

##### DESIGN FLEXIBILITY

Each Casso-Solar Technologies' Infrared Heater, Type "C" & "C+", is individually designed to the application. Sizes vary from as small as 2" x 2", up to 20" x 20", with the most common sizes in the 12" x 12" range. Wattages are available up to 50 watts per square inch, with voltages to match the power supply up to 600 volts. Multiple zoning is available, as are special thicknesses and custom mounting brackets, for easy installation.

##### REDUCED MAINTENANCE

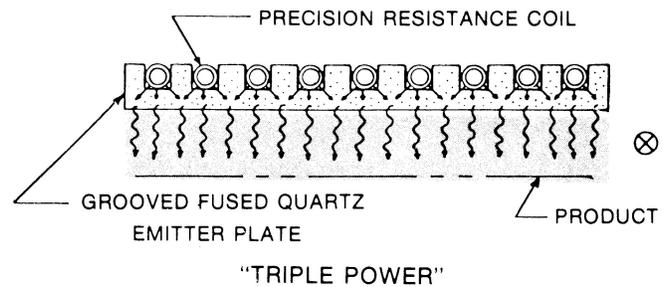
The simple, compact and sturdy construction of the Casso-Solar Technologies' Infrared Heater, Type "C" & "C+", allows it to be easily utilized in most applications. It does not require external reflectors, which must be periodically cleaned or replaced, to maintain high efficiency, nor does it require external cooling to prevent damage to the heater terminals or wiring. The fused quartz surface is self-cleaning, retaining high output efficiency throughout its long life.

**W**ith 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 fifty years of experience, Casso-Solar Technologies has been providing our customers the competitive edge.

#### TRIPLE POWER WITH GROOVED QUARTZ

Every Casso-Solar Technologies' Infrared Heater, Type "C" & "C+", has the back side of the fused quartz emitter plate specially grooved to generate the required characteristics demanded by the heater. Precision resistance coils are placed in the grooves, being surrounded on three sides by the fused quartz window, maximizing the energy output of the heater.

The grooving pattern defines the coil layout and secures the coils in position, maintaining uniformity over the life of the heater. These combined characteristics, along with accurate controllability, can provide system efficiencies of up to 89%. Consequently, power consumption can be reduced up to 50% on typical systems over conventional infrared heaters and special applications can realize a 60-70% savings.



#### FLAT QUARTZ MAKES THE DIFFERENCE

The Casso-Solar Technologies' Infrared Heater, Type "C" and "C+", incorporates a flat fused quartz emitter plate, manufactured through a patented process, that has the characteristics of being virtually transparent to the infrared energy generated within the module over the usable wavelengths of 2.25-6.0 microns. This corresponds to emitter temperatures of up to 1750°F (960°C) and 40 watts per square inch (6.2 watts per square centimeter) for Type "C" and 50 watts per square inch (7.75 watts per square centimeter) for Type "C+".

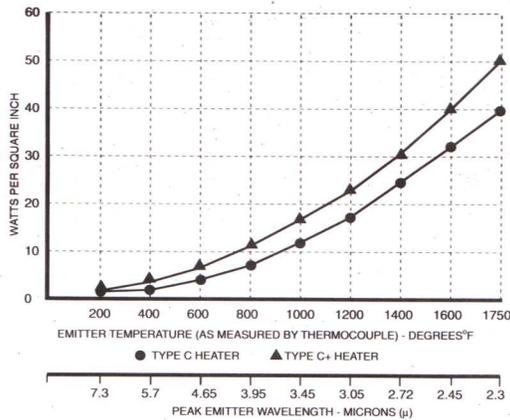
Being a very poor conductor of heat, the fused quartz emitter plate acts like a thermopane window, isolating the emitting source that is within the Casso-Solar Technologies' Infrared Heater module, from the ambient surroundings, keeping convection losses to a minimum.

The Type "C+" Heater is made from a high purity quartz material, allowing higher radiant efficiency and output.

#### Sales & Technical Information

**1-845-354-2010**

Fax: 1-845-547-0328  
Website: [www.cassosolartechnologies.com](http://www.cassosolartechnologies.com)  
E-mail: [sales@cassosolartechnologies.com](mailto:sales@cassosolartechnologies.com)

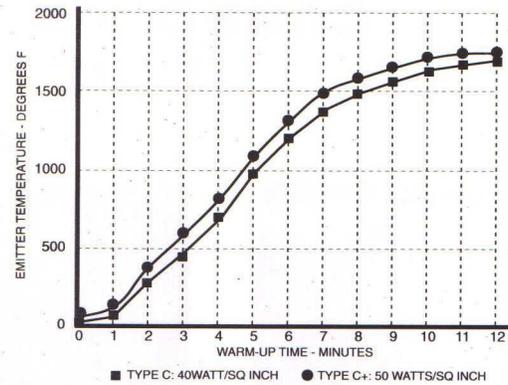


### EMISSION OUTPUT CURVE

The emission output curve at left compares emitter temperature versus watt density and the corresponding wavelength emitted for a specific emitter temperature. For example, a Type "C" emitter temperature of 1300°F, would correspond to a peak wavelength of 2.85 microns with a free air watt density of 22 watts per square inch. The key to efficiency is to select the emitter wavelength that best matches the peak absorption of the product to be processed.

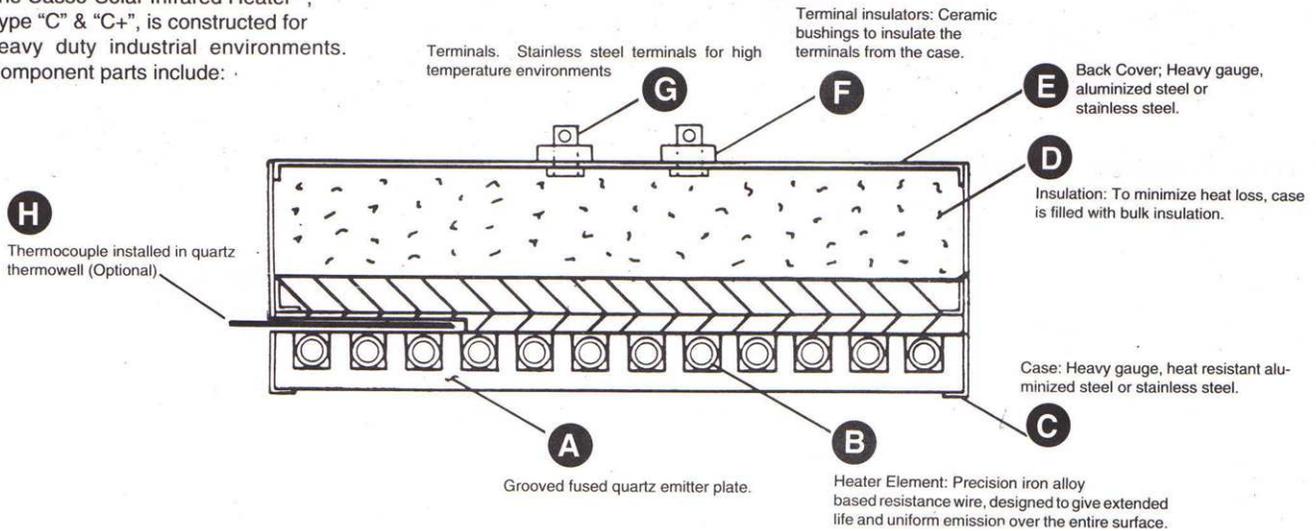
### WARM-UP CURVE

The warm-up curve at right, shows the response time of the Type "C" & "C+" heaters, as measured by the thermocouple, from a cold start to maximum temperature. Changes in temperature, or partial warm-up, will be along this characteristic curve.



The Casso-Solar Infrared Heater<sup>®</sup>, Type "C" & "C+", is constructed for heavy duty industrial environments. Component parts include:

### SPECIAL HEAVY DUTY CONSTRUCTION



### SPECIFICATIONS

- WATT DENSITIES:** Up to 40 watts per square inch (6.2 w/cm<sup>2</sup>) on Type "C". Up to 50 watts per square inch (7.75 w/cm<sup>2</sup>) on Type "C+"
- VOLTAGES:** Up to 600 volts. 50/60 Hertz.
- SIZES:** All heaters are built to order. Nominal recommended sizes between 10" x 10" (25 cm x 25 cm) and 14" x 14" (35 cm x 35 cm). Maximum size single module, 20" x 20" (50 cm x 50 cm).
- THICKNESS:** 3" (7.62 cm) standard. Thicknesses down to 1" (2.5 cm) are available.
- WEIGHT:** Average 11 Lbs. per square foot (5.4 gr. per square cm).
- WAVELENGTH EMISSION:** 2.25-6.0 microns, peak adjustable by emitter temperature
- TEMPERATURE RANGE:** Up to 1750°F. (960°C)
- ZONING:** Single modules or multiple modules can be zoned and wired to achieve specific profiles. Different width materials can be processed by turning off modules.
- COMPENSATION:** Outer edges of modules can have gradual increasing wattage density to compensate for production edge losses.
- HEATER DISTANCE TO WORK:** Nominal 2" (5.0 cm) for maximum efficiency and uniformity

11/15/11