

BCE APPLICATION NOTE

ELECTRIC HEATING
ELEMENTS

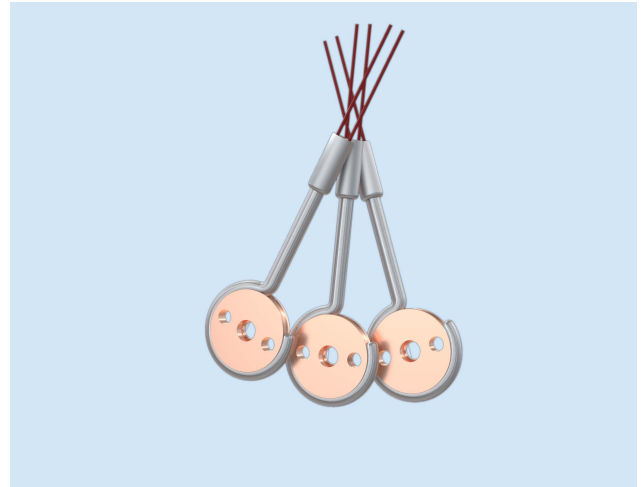
VACUUM
FEEDTHROUGHS

CUSTOM THERMAL
SYSTEMS

Copper Flange Heater

BACKGROUND

A gas chromatography application was brought to BCE involving a custom heater to ramp a cell end plate to 105° C. The customer had issues finding a solution due to the small surface area that needed to be heated (~ 0.75" diameter). The requirement was a 25-Watt 120-Volt source, which resulted in a high resistance value (576 ohms) eliminating many heater options for this size and surface area.

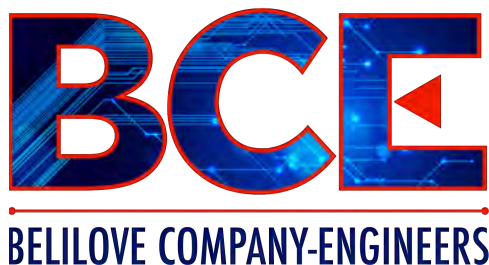


SCOPE:

- Heater plate to be 105°C
- Good temperature uniformity (+/- 1.5% C)
- 25 W 120 V
- 1/8" Plate thickness max
- Geometry to allow for three tubes to exit
- 0.75" Diameter

OUTCOME

Since etched foil polyimide heaters were not an option for this application, BCE engineers designed a 110 copper plate with a rod heater welded within the groove. The rod style heater allowed for a higher resistance value and was more robust compared to other types of heaters. Additionally, the cold section and lead orientation can be easily modified by the customer to accommodate their assembly. BCE's Copper Flange Heater was able to efficiently heat the small surface and save the customer from an expensive assembly redesign



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