



# Circuit Design

**Birk Manufacturing** designs thousands of wire and etched foil circuits each year to meet the specific needs of the customer. Birk can offer the customer many features such as:

## **Accommodate Holes and Cutouts:**

Many times heaters need to fit around holes and cutouts. This can be designed in either etched foil or wire circuits to provide heating of the entire surface area.

## **Multi-layer Circuits:**

Many times we need to maximize surface area to spread the watt density. Multi-layer circuits can be used to fit a high resistance in a small area by putting two circuits in series. The multi-layer circuit also allows Birk to put a sensor flex circuit on top of the heater circuit to maximize the heated area.

## **Sensors and Fuses within a circuit:**

To control heat and temperature limits properly, thermostats, RTDs, thermocouples, thermistors, solid state sensors and fuses are strategically placed within a circuit to achieve the best operating thermal system.

## **Various Terminations:**

Birk can offer many different terminations such as: leads from 36 gauge to 10 gauge, soldered terminals, connectors, pins and zero insertion force connections.

## **Shaded Watt Density:**

Offering different heat intensities in the same circuit to compensate for cool edges, heat sinks and provide a very even heat across the entire heated area.

## **Dual Voltage Circuits:**

A single heater can be designed to operate on more than one voltage by including dual circuits with three leads.

## **Resistance Taps:**

Since the heater circuit is a resistor, taps can be taken anywhere along that circuit to provide a given voltage to an LED or other component that requires other than line voltage.

## **Flex Circuits for Sensors**

Sensors are generally located within a heated area. Non-heated flex circuits can be built into the circuit design to carry the signal to the instruments.

*When Birk is included in the early circuit design we can offer many features that will improve the performance of the thermal system and often reduce cost.*

*Feel free to contact one of Birk's application engineers for assistance in the design of your next thermal system.*