



## Take Control

A lot has been said about the zoning capability of ceramic heaters. In fact, zone control is one of the biggest advantages to using ceramic elements over other forms of infrared heaters. When “selling a system”, (*Salamander News*, July 2000), salespeople should give information on the type of control options available for each application. Control products are available, and many stocked, at Mor Electric and Infrared Internationale Engineering, and can be purchased along with the ceramic elements as well as other accessory products needed to create a “system”.

The control of ceramic emitters can be one of two types: **non-feedback** or **feedback**. It is important to be able to differentiate between these two control systems in order to best advise your customers on the products available to them.

**Non-feedback** can control the temperature by two different methods. The first controls by time using a percentage-on/percentage-off duty cycle. When the timer is set for the on/off time cycle, the overall temperature of the emitter will stabilize. This can be done with either a mechanical timer or with a computer control.

The second method of non-feedback is through voltage control. In this application, a manual potentiometer control, or computerized control regulates the amount of voltage the emitters are receiving, thus controlling the temperature.

**With Feedback** control, a thermocouple is used to either measure the temperature of the element’s coil or, more accurately, the surface temperature of the element. A type K thermocouple is most universally used because of its 0-2000° F. temperature range and because it is able to be cast into the emitter where it measures the actual internal element temperature. If a Type J thermocouple is desired, in the case of low temperature applications, it must be potted into the element after firing, resulting in the measurement of the center of the emitter which is not as accurate. Infrared Internationale is also the only manufacturer to provide an interchangeable thermocouple in Type J or K. When inserted into a requested thermocouple well, it too will accurately measure surface temperature.

A feedback signal can also be created with a non contact infrared sensor that can sense the emitters or product temperature.

As the temperature of the element changes, the thermocouple creates a millivoltage which is sent back to a temperature controller. The controller then converts the millivoltage into a temperature reading. There are varying ranges of temperature controllers available from a simple on/off, non-indicating controller to a sophisticated digital PID control with ramp soak programming, smart tuning, etc.

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### Contact either of our sales locations:

[www.InfraredHeaters.com](http://www.InfraredHeaters.com)

#### **Infrared Internationale of North America, Ltd.**

Sales Office: Mor Electric Heating Assoc., Inc.  
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#### **Infrared Internationale Engineering**

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Crickhowell, Powys, Wales, U.K. NP8 1HW, Great Britain  
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Both the Non-Feedback and Feedback processes can either directly control the temperature or indirectly control if a switching device is needed. Switching devices such as Mercury Contactors, SCRs or Solid State Relays are often needed for power control when the amperage load is too large for the controlling device to handle.

The following is a list of types of Non-Feedback and Feedback controls and switching devices that are available through Mor Electric Heating and Infrared Internationale Engineering.

### **Power Switching**

MSI - Mercury Contactors

Featuring highly reliable, long lasting, hermetically sealed, self-renewing contacts.

120-240-480Volt

20 Amp, 35 Amp, 50 Amp, 60 Amp, 100 Amp

1 Pole, 2 Pole, 3 Pole

HBC - Solid State Relays

DIN Mount. Custom Assemblies

120-240-480Volt

20 Amp, 50 Amp, 90 Amp

Payne Engineering - SCR Controls

"2 ms" fuses protect power

semiconductors against short circuits

120-240-480Volt

Phase Angle or Zero Cross Firing

10 Amps to 1200 Amps

### **Non-Contact Infrared Sensors**

Chromalox 4-20MA or 0-5VAC Feedback

Exergen Type J or K Feedback

### **Non Feedback Control**

Percentage Timers

Chromalox VCF & VCS Series Motor Driven Cycling  
120 Volt or 240 Volt

15 second or 30 second time base

Energizes a heater for a chosen percentage (4-100%) of time base

20 Amps

Voltage Control

Infrared TYJ-6219

240 Volt, 13.5 Amps

### **Feedback Control**

Chromalox 1600 Series High/Low Limit Controller

1/16 DIN Electronic, Digital Display

120 Volt or 240 Volt

3 Amp Relay Output or SSR Drive Output

Chromalox 2104 Series Temp. and Process Controller

1/4 DIN Electronic, PID, Digital Display

Smart Tuning / Fuzzy Logic, Ramp Soak

120 Volt or 240 Volt

8 Amp Relay, SSR Drive or 4-20 MA Output



## **Let's Not Forget Our NPE Show Leads**

The enthusiasm for Trade Shows usually peaks about the third day into the exhibition. After that, the effort seems to be all "up hill". Ideally, the peak should be after the show is over. Exhibitors should be looking at their large pile of leads saying, "Wow! This is going to be fun!" Unfortunately, lead follow-up is not as exciting as the face-to-face contact enjoyed in a festive atmosphere and interesting city several miles from home. It takes a lot of effort to re-energize the importance of the product to the show attendee that is now back at his desk focusing on other projects. Like it or not, that large pile of leads is the reason why so much time, effort, and expense is spent on participating in a trade show, but like any other party, no one likes to clean up afterward.

This article is a reminder to all distributors who received leads from the NPE Show. We will try to make it as painless as possible, but we need to know the results of those leads. A form will be e-mailed to you for each lead you have received. Please give us an honest appraisal of that lead and e-mail it back to us. It has now been over 4 months since the NPE show and the perfect time to make a phone call reminding attendees of the interest they showed in *Salamander* heaters.