EXHIBIT E

GLENRO INC.
Integrated Energy Delivery® Systems

Designers and Manufacturers of:

Custom Designed Ovens	Heaters and Controls
Web Processing Ovens	Emissions Control Systems
Conveyorized Ovens	
Electric Infrared	Radio Frequency
Gas Infrared	Vapor Cure
Convection	Incineration
Conduction	Adsorption
Ultraviolet	Solvent Recovery
	Combination Systems

September 17, 1991

Winkfield Engineering
139 Village Street
Medway, MA 02053

Attention: Mr. Winkfield and
Mr. Bill Laird

SUBJECT: Our Proposal No. B9102381

Gentlemen:

We are pleased to submit our quotation for RADPLANE IR Heaters and controls described in the attached specifications for your consideration.

Should you require additional information please do not hesitate to contact me or our sales engineer, Eric Hummel, 201-279-5900.

Thank you for this opportunity to bid on your equipment needs.

Sincerely,
GLENRO, INC.

Sterling Pitt
V.P. Sales

SP:dh

cc: Eric Hummel

MICRO 2177

HEATERS:

Four(4) GLENRO RADPLANE Heaters, Series 80 rated at 19.6 KW each at 575 volts, 1 phase.

Size: 12.25" wide x 70" long x 5" high, with stainless steel grill.

These heaters each have a total of 8 foils, Foil Specification 32132C x 66 HL with a heated length of 66". The foils are spaced on 1.25" centers running across machine direction.

One(1) GLENRO RADPLANE Heater, Series 80 rated at 41.2 KW at 575 volts, 1 phase.

Size: 72.25" wide x 22" long x 5" high, with stainless steel grill.

Heater Circuits 1 and 3 are connected in series for 575 volts operation.

This Heater Has 3 Circuts:

Circuit 1 has 14 foils rated at 10.3 KW at 287.5 volts.
Circuit 2 has 28 foils rated at 20.6 KW at 575 volts.
Circuit 3 has 14 foils rated at 287.5 volts.

The heater has a total of 56 foils, Foil Specification 32132C x 18 HL with a heated length of 18". The foils are spaced on 1.25" centers running in machine direction.

AIR KNIFE:

One(1) Air knife, 5.8' wide will be provided. Air knife turns on automatically when heaters are shut off to cool product and reduce product damage from residual heat.

One(1) Air knife blower, 575 volts 3 phase, rated at 1070 cfm at 3" S.P. to be supplied by the customer. Blower will be mounted remote by customer. Interconnections between air knife and blower to be made by the customer.

SCR CONTROL:

The SCR Control System is designed to operate at 575 volts, 3 phase. It will control 5 Series 80 Heaters in 3 zones with a total of 119.6 KW and a maximum input line current of 121 amps 3 phase.

The control is designed to regulate the voltage to the heaters, by an optical feedback control loop, maintaining a constant product temperature. This temperature is adjustable and once set requires no further attention. A phase shifting trigger circuit regulates the current flow through the SCR as needed. An option is provided to permit either feedback or manual control. With feedback control a push-to-read temperature set-point button is provided.

The 3 zones will permit setting different temperature levels for each zone.

Zone Descriptions:

Zone 1 - Entrance, 4 Series 80 Heaters; 78.4 KW
Zone 2 - Exit, center, 35" wide; 20.6 KW
Zone 3 - Exit, edges, 35" to 70" wide; 20.6 KW

THE CONTROL WILL INCLUDE:

*Three(3) Ammeters with current transformer for manual control.

*One(1) Optical pyrometer with air purge assembly for non-contact product temperature measurement and control with digital meter. Clean compressed air, 75 cfh at 3-5" S.P. required.

*One(1) 10W-HP-040-1/FM/OP/PS/MS Wat-troller.

*One(1) 10W-HP-070-3/EB/SW Slave Wat-troller.

*One(1) 10W-HP-040-1/EB/SW Slave Wat-troller.

*One(1) 10W-HP-040-1/SW Slave Wat-troller.

*Three(3) Manual potentiometers for heater control.

*One(1) Ten-turn potentiometer for heater control.

THE CONTROL WILL INCLUDE (CONT'D.):

One(1) Control transformer.

*Two(2) 2-position selector switches.

*One(1) 3-position selector switch.

Four(4) Contactors to interrupt power lines on web stop.

Six(6) Pairs fuses.

*Six(6) Load indicators show heater circuits are operating normally.

One(1) Circuit breaker.

One(1) Motor starter for air knife blower.

One(1) Set of relays and timer for air knife blower.

CONTROL IS TO BE HOUSED IN A:

Free standing NEMA 12 Enclosure - 60" high x 36" wide x 10" deep for use with 175 amp 600 volt circuit breaker. NEMA 12 Enclosure will include ventilation blower. Construction to include panel channels as wire ways: Number coding of leads.

ALTERNATE NO. 1:

Control components only, items with an asterisk to be supplied for customer to assemble into a working control system.

WORK TO BE DONE BY CUSTOMER:

RADPLANE Heaters and air knife to be mounted on customer's structure.

Free-standing control panel to be set in place by customer.

All wiring to be brought from plant source to control panel and from control panel to RADPLANE Heater junction boxes and blower.

Customer to mount optical pyrometer head. Interconnection between optical pyrometer head and control to be made by the customer. Fifty feet of cable are provided for this purpose. If greater length is required, consult with GLENRO engineering.

Customer to supply compressed air to optical head and air purge collar.

Optical pyrometer head is designed to operate in ambient temperatures up to 120 degrees F. In ambient conditions above 120 degrees F a water-cooled housing is required.

Air input distribution, including purchase of blower, to be done by customer.

GLENRO controls are painted with a high quality machine enamel. Typically, control cabinets are safety blue. Other paint and colors can be provided at additional cost. Consult your sales engineer.

External signals, normally open contact type, for automatic de-energization of RADPLANE Heaters on a web stop or slow-down, to be provided and installed by customer. Terminals in control cabinet are provided by GLENRO for this purpose. De-energization by opening of power line contactors.

INSTALLATION AND OPERATION:

Customer to assume full responsibility for set up and operation of heaters and controls except for items covered in Standard Warranty.

Installation supervision time, if required, will be billed at the rate of $750.00 per day, plus reasonable travel expenses from Paterson, New Jersey.

PRICE.....$23,450.00 - Heaters, Air Knife & Complete Control System
ALT. NO. 1..$18,537.00 - Heaters, Air Knife & Control Parts

TERMS: 1/2 Down, 1/2 Net 30 - F.O.B. Paterson, New Jersey
Customer must be prepared to receive and unload.

DELIVERY: 6 to 8 Weeks after receipt of down payment.

This quotation based on National Electric Code.

If other regulations apply, customer is responsible for obtaining approval from the "Authority Having Jurisdiction" and identifying in writing such "Authority" and the installing contractor. GLENRO will supply equipment drawings, design data and full cooperation to assist the customer in obtaining approval from the above "Authority". Cost of additional equipment suggested by the said "Authority" will be borne by customer.

In the event that levies apply to this transaction such as state, local or any other taxes, they are the full responsibility of the purchaser and are not included in the price above.

Price of this quotation is firm for 60 days from September 17, 1991. It is subject to review and reconfirmation after November 17, 1991. Production schedules change from week to week and will be firmed up at time of order placement.

GLENRO

PRODUCT PROFILE

RADPLANE® SERIES 80
Rapid Response Electric Infrared Heater

The **RADPLANE®** Series 80 is a low residual infrared heater that reaches processing temperature in 5 to 10 seconds when turned on and loses heat rapidly when turned off. This rapid response prevents burning or scorching when the web stops (no shutters or retractors needed). It also minimizes delay on web startup, and minimizes energy waste.

The **RADPLANE®** Series 80 is used to **Preheat, Dry** and **Cure** coatings, adhesives and inks on paper, film, foil and fabric substrates.

The **RADPLANE®** Series 80 is perhaps the most efficient infrared heater on the market today. It conforms very closely to the ultimate black body radiator expressed in the Stefan-Boltzmann Law because:

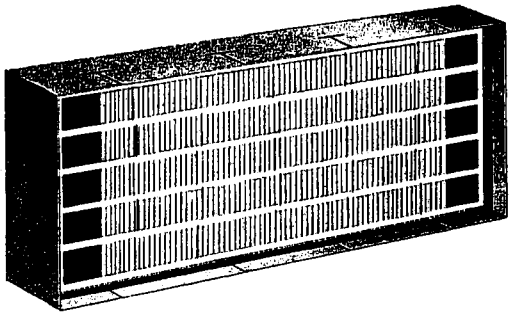
1. The radiating surface operates at approximately 1500°F, higher than other area infrared sources.
2. It "looks" directly at the work, unlike sources that "look" through ceramic or quartz faces.
3. The corrugated design of the element gives greater heating surface per unit area of heater face.
4. The emissivity of the radiating surface is approximately .92.

Because the **RADPLANE®** Series 80 needs no shutters or retractors it will fit into a smaller space than heaters that require these accessories. Also, action is fool proof. Installation cost is less...the money you spend is going into the heating device, not the mechanical accessories, and the higher heating efficiency means lower energy cost.

In addition, **RADPLANE®** Series 80 can be supplied to span webs up to 250" CMD with no breaks in continuity. Watt densities range from 1500 to 4000 watts per sq. ft. in the heated area.

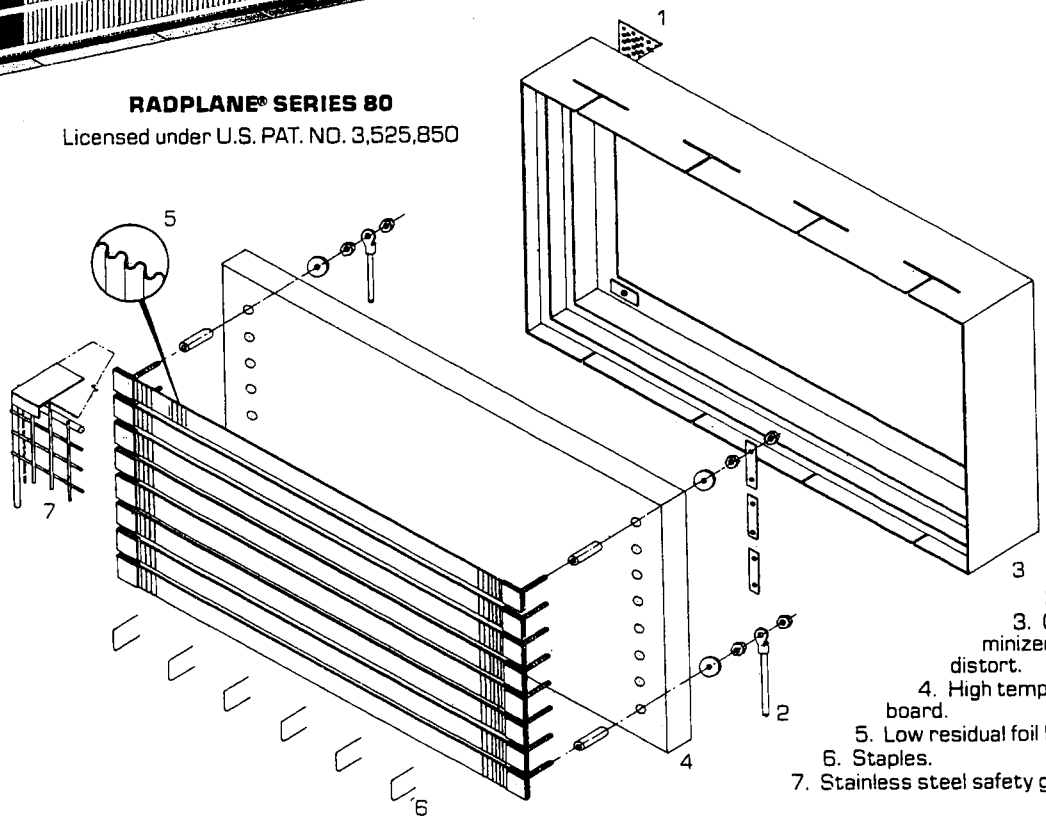
SUPERIOR DESIGN & MATERIALS

...EVERY RADPLANE® HAS THEM



RADPLANE® SERIES 80

Licensed under U.S. PAT. NO. 3,525,850



1. Perforated protective shield.
2. Connection leads.
3. Case — Rugged aluminized steel: can't rust or distort.
4. High temperature insulation board.
5. Low residual foil heating element.
6. Staples.
7. Stainless steel safety grill.

MICRO 2183

Glenro Inc. 39 McBride Ave. Ext. • Paterson, NJ 07501 • (201)279-5900(in NJ) • FAX (201)279-9103 • 1-800-922-0106

TYPICAL APPLICATIONS

Use the **RADPLANE®** Series 80 electric infrared heater to:

PREHEAT, DRY and CURE Coatings, Adhesives and Inks On Paper, Film, Foil and Fabric Substrates

- Evaporate water or solvents from any fibrous material, woven or nonwoven such as textiles, paper, board or leather.
- Dry, cure, or heatset coatings, sizings, saturants, adhesives, varnishes, lacquers, paints, and other finishes on virtually any web or sheet substrate.
- Dry and cure flexographic, lithographic, or screen process inks.
- Dry overprint lacquers, waterborne barrier coatings and primer coatings. Dry protective coatings on metallized film.
- Dry laminating adhesives, pressure sensitive adhesives and heatseal adhesives.
- Heatset and Predry broad woven blends. Cure resin on broad wovens.
- Preheat prior to embossing or laminating.
- Dry and Sinter Teflon®, B-stage polyester or epoxy.
- Heat or soften all thermo-plastic polymers, speed up the foaming of vinyls and urethanes, sinter fluorocarbon resins, cure epoxies and silicone rubber.
- Cook or broil meats, chicken, bacon, baked goods and specialty foods.
- Preheat and thereby boost existing oven or dryer capacity.
- Give precise control of drying, final temperature curing, or heatsetting by adding at the end of an existing oven or dryer.

RADPLANE® SERIES 80 OFFERS YOU THESE OUTSTANDING FEATURES AND BENEFITS

- **Efficient Heat:** Low mass heating element offers a high ratio of usable radiant energy to electric power input saving energy costs. Emissivity is approximately .92. Drying and curing applications are accomplished in relatively short ovens saving floor space.
- **Quick Off/On:** Loses heat rapidly when turned off—**Prevents scorching of product when line stops.** Reaches processing temperature quickly —minimizes delay and energy waste on start-up. Heaters can be mounted safely just inches from the product for efficient heat transfer.
- **Controlled Heat:** SCR power controls constantly proportion power input to the heaters to maintain temperature closely.
- **Uniform Heat:** Individually controlled temperature zones provide uniformity across a web and desired temperature changes in the direction of travel.
- **Modular Design:** Heaters are designed in several standard sizes or they can be custom engineered to meet special application requirements. Several heaters can be placed side by side or end to end to span wide webs or to accomplish different applications in line sequence at fast speeds.

OTHER RADPLANE® SERIES 80 FEATURES GIVE YOU ADDED VALUE

- **RADPLANE®** heaters are unaffected by the color of your product no matter what it might be. Heats products of a wide color range equally well. Exception — pigments containing lamp black or furnace black heat faster due to higher absorbtivity.
- Clean heat...no sooting or smudging.
- Easy to install...four bolts will do it.
- Elements are self-cleaning.
- Elements have long life. (An accelerated on/off life cycle test at GLENRO has passed well beyond expected usage.) When elements burn out, you can order replacement elements from GLENRO, install them easily, and restore your RADPLANE® to top operating condition.
- APPLICATION EXPERIENCE — GLENRO, inc, formerly Irex Heaters and Controls, has designed and manufactured industrial heat processing equipment for over 25 years. We are able to help you develop products and processes and to select equipment for your application. Testing services provided by our lab.
- SYSTEM DESIGN — if you want a complete industrial heat processing system, we can design and build it for you. We manufacture the heaters, controls and supporting assemblies that go into a system.

OPTIONS AT EXTRA COST EXPAND RADPLANE'S USEFULNESS

- Automatic temperature feedback control monitored:
  1. from the web or
  2. from the heater
- Precision temperature regulation using phase-shifting SCR control.
- Air exhaust modules to dissipate heavy vapors, to increase evaporation rates, and to meet safety requirements.
- Air knife to accelerate drying and to cool heat-sensitive substrates such as polypropylene.

RADPLANE® SERIES 80 SPECIFICATIONS

- Sizes — Modular widths, and up to 250" long; special lengths to order.
- Wattages — Up to 4000 watts/sq. ft. heated area.
- Temperature Range — Up to 1500°F on the element surface.
- Voltage — 115, 208, 230, 460, 575 — single or 3-phase.
- Typical Wavelength — 2.6μ - 7μ (Wavelength is a function of temperature; the lower the temperature of the radiating surface, the longer the wavelength.)

Note: Special size configurations, watt densities, voltage can be designed to order.

For full application information and prices on RADPLANE® Series 80, phone or write GLENRO at the phone number or address below. All jobs quoted per process requirements and/or specifications.

MICRO 2184

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GLENRO INC.
Integrated Energy Delivery® Systems

Precise Temperature Control Maintains Optimum Processing Temperatures And Uniform Product Quality

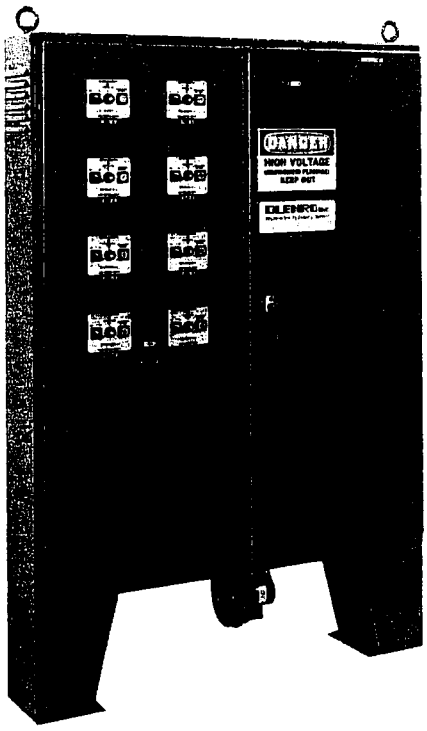
Temperature Control Systems For Electric Infrared Ovens And Heaters

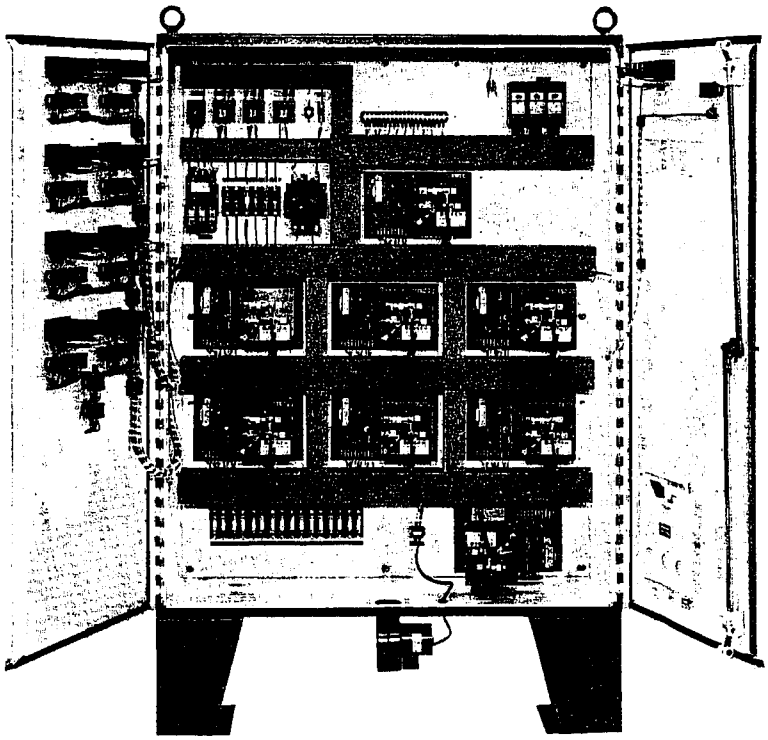
Glenro ovens give you precise temperature control for maintaining optimum processing temperatures and uniform product quality.

In most cases we closely control the temperature of our electric infrared ovens and heaters with closed loop, automatic feedback, temperature control systems. Thermocouples or optical pyrometers supply heater or product temperature input signals to SCR power controllers. The controllers compare input signals to set-point signals and regulate the voltage to the heaters to maintain the preset temperature. Usually the control is housed in a separate NEMA 12 enclosure.

Maintain Tight Temperature Tolerances

A key factor in offering you a custom engineered oven is designing it with a temperature control system that gives you the temperature tolerances you need at a cost you can afford. The source of the temperature input signal in a closed loop system determines the size of the temperature window in which a system can operate.





Left: Exterior view of a control cabinet for an infrared oven shows push-to-read set-point switches, which make it easy for you to set the temperature for your process. Digital temperature read-outs for each zone help you monitor your production.
Right: Interior view shows SCR power controllers mounted in a NEMA 12 cabinet for close temperature regulation. We prewire the control system for easy installation.

GLENRO INC.
Integrated Energy Delivery® Systems
39 McBride Ave. • Paterson, New Jersey 07501-1715
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MICRO 2185

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Closed Loop, Automatic Feedback Control

Temperature Sensed From The Product

For applications that demand tight temperature tolerances and a constant product temperature, the temperature input signal should be from an optical radiation pyrometer focused on the product at the exit end of the oven. You will be able to maintain the product set-point temperature at 1% of the range.

The SCR power controllers we use with our optical systems have PID (Proportional, Integral, Differential) action. Furthermore, we calibrate the optical system to your process. These features give you fast response to process changes while reducing overshoot and undershoot.

The best responding control system cannot help you maintain tight temperature tolerances without fast responding heaters. We offer you a well integrated system of rapid response heaters with optical feedback control. The low mass infrared heating elements we use with our optical feedback control systems respond rapidly to changes in power input to maintain the desired product temperature.

Temperature Sensed At The Heater

In this operating mode the SCR power controller gets its temperature input signal from a thermocouple, which senses the heater temperature. In both our rapid response, open face, infrared heaters and in our closed face, infrared heaters you get a fixed and repeatable feedback signal for close temperature control.

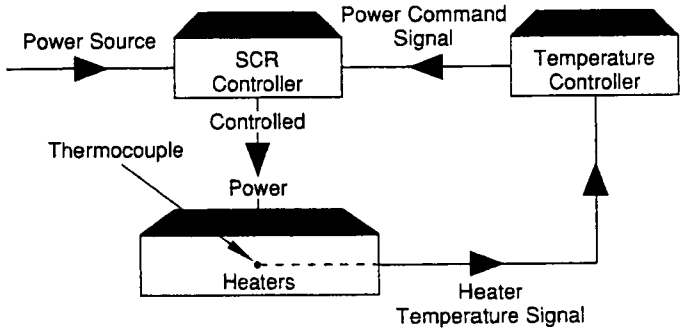
Thermocouple feedback provides adequate temperature control for most processes at less cost than optical feedback control. You will be able to maintain the heater element set-point temperature at 0.5% of the range.

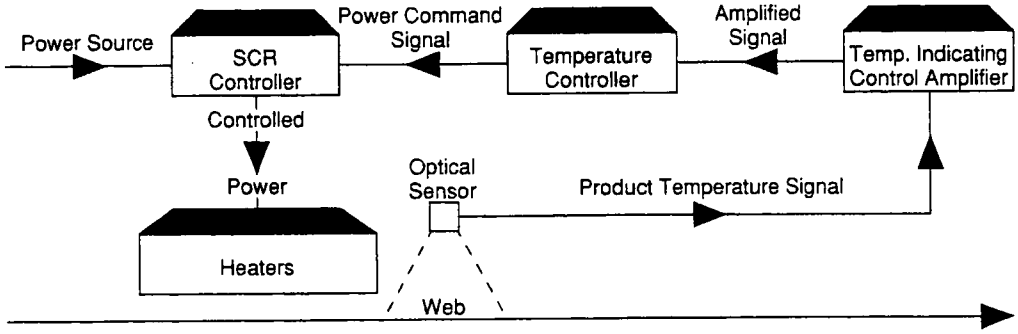
Manual Control Option And Backup

We offer a manual control option with the feedback control loop. You get the benefits of automatic feedback, but can still run if your temperature sensing device fails or if you want to run in the manual mode. You're not dependent on one thermocouple or optical head to run your system. You control the oven; the oven doesn't control you.

You select feedback or manual operation

Right: In our most popular temperature control system thermocouples provide the temperature input signals from the heaters. SCR power controllers regulate voltage input to maintain the desired heater element temperature for consistent processing results.
Below: An optical pyrometer at the exit end of an oven provides the temperature input signal from the product enabling you to maintain the desired product temperature.





MICRO 2186

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with a switch. Feedback control is set with a potentiometer. Load current can also be controlled by manual adjustment of a second potentiometer, by-passing the feedback loop.

We also offer exclusively manual systems, which cost less than feedback systems, for applications that do not require automatic feedback control. The SCR controller maintains the power output you select with the potentiometer.

Uniform Heat

Another key factor in custom engineering an oven is designing the zoning configuration to heat your product uniformly. Our ovens can have separately controlled edge and center zones with the edge zones operating at a higher temperature. This compensates for edge losses and provides uniform heat across the width of the oven.

Ovens can also be zoned in the direction of product travel. The temperature of each zone can be set differently so the product is heated to the desired temperature at different stages of the process.

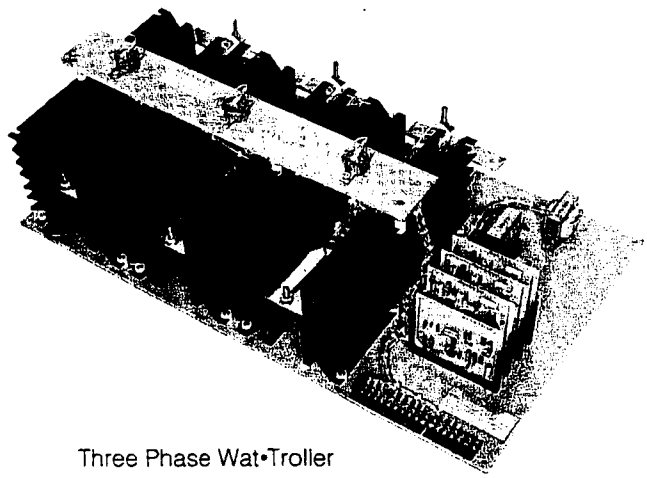
There is one temperature input signal for each zone. The temperature is adjustable and once set requires no further attention.

Integration With Microprocessor Control

Our SCR power controllers can be integrated with microprocessor controllers. The microprocessor controller provides a 0-5 volt DC, 0-10 volt DC or 4-20 MA control signal to the SCR power controller instead of the control signal coming from a manual pot.

More Features And Options

- Motor starters and interlocks for exhaust and cooling blowers, air knives and conveyor drives. For example, control systems are designed to turn heaters off automatically when the line stops protecting the product and reducing fire hazard.
- Main disconnect switch can be interlocked with the control panel cover.
- Floor mounted or wall mounted NEMA 12 cabinets.
- Controls will be engineered to meet the electrical code you specify.
- Heater Failure Controllers – Shut down heaters if they malfunction. An audible alarm or light brings the problem to the operator's attention.
- Heater On Indicators – LEDs indicate heaters are operating correctly. This is especially helpful when the heaters cannot be visually observed.
- High And Low Temperature Deviation Signal – If your process exceeds a preselected temperature deviation, a signal warns the operator or automatically shuts down the heaters and feed systems.
- Purge Or Cooling Blowers – Are used in NEMA 12 cabinets that have solid state controllers to prevent overheating.
- All heater lines are fused.
- Contactors are used to break all heater lines when heating elements are exposed so you won't get a shock if you touch a heater when it is off. This is always used with our rapid response heaters.



Three Phase Wat•Troller

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SCR Power Controllers Regulate Voltage Input To The Heaters To Maintain Preset Temperatures Closely

SCR Power Controllers

Our temperature control systems for our electric infrared ovens feature SCR power controllers made by our Enirex Division.

Pro•Troller–SCR Power Controller

Pro•Troller is a solid state, proportional power controller. It uses SCRs to regulate power input to electric heating elements. In operation Pro•Troller regulates power to the load proportional to a signal received from a controlling device such as a temperature controller or microprocessor controller. Typical controlling input signals are 0-5 volt DC, 0-10 volt DC or 4-20 MA.

Pro•Troller can also be operated from a manual potentiometer.

Wat•Troller®–The Smart SCR

Wat•Troller combines a temperature controller and a solid state, proportional, electric power controller in one package. Wat•Troller electronically controls the temperature of a heating system by regulating power input to the heaters. It compares a feedback signal from a thermocouple or optical pyrometer to a set-point signal and adjusts the power to the load according to the deviation between the two signals. Wat•Troller constantly regulates the power input so desired operating temperatures are reached quickly and maintained closely.

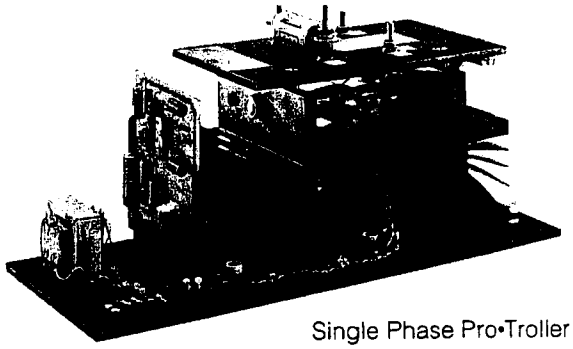
Wat•Troller is a smart SCR. It processes the feedback and firing signals all by itself. It does not need a supervisory instrument to tell it what to do.

SCR Controllers–Standard Features

- Single or three phase operation.
- Control balanced or unbalanced loads.
- Phase-angle firing and zero-cross trigger circuits.
- Plug-in Boards – Simplify maintenance and reduce downtime. Replace damaged boards in minutes. Get options easily and inexpensively.
- Solid State Circuitry – Provides long life, easy maintenance and fast system response.
- Transient Protection – Our SCR controllers are not sensitive to most transients on supply lines preventing false turn-on.
- Electrical Isolation – Trigger circuitry is electrically isolated from the power line to allow interfacing with computerized process control.
- Thermocouple Break Protection – If the thermocouple fails, the system shuts down protecting the product being processed.
- Sub Cycle Fusing (I^2T) – Protects the controller from shorts in the load.
- Safety – All low voltage circuitry is transformer isolated from the high voltage line protecting the operator.
- Independent Phase Control – Three phase units use six SCRs. Loads do not have to be balanced.

SCR Controllers–Extra Value Options

- Feedback/Manual Operation – With a switch you select manual operation from a setting potentiometer or automatic feedback from a thermocouple or radiation pyrometer.
- Voltage Limit – Maximum output voltage to a load is limited to a customer specified value.
- External Bias – Output current can be increased or decreased in reference to the set-point. This option allows variance among the individual phases of a three phase unit or variance in zone control employing several Wat•Trollers or Pro•Trollers.
- Push-To-Read Set-Point – The set-point temperature can be read directly on a temperature meter by activating a push-button switch.
- Slow Start – Increases power to the load gradually to avoid high in-rush currents. Prevents fuses from blowing on loads that have low resistance when cold.



Single Phase Pro•Troller

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G L E N R O

W A R R A N T Y

GUARANTEE OF PARTS AND WORKMANSHIP AND WARRANTY DISCLAIMER. The buyer and Glenro, Inc., the seller, agree that Glenro, Inc. will sell the equipment described by the written specifications that have been agreed to by the buyer and the seller. Glenro, Inc. will replace or repair, F.O.B. Paterson, N.J. at its option, any part of the equipment that is not in accordance with the specifications agreed to because of a defect in material or workmanship; provided the buyer gives written notice thereof to Glenro, Inc. within 2000 operating hours or one year of delivery to the buyer, whichever occurs first, and provided there has been normal and proper use and care of the equipment.

If it is necessary to make a diagnostic call to determine cause of malfunction, cost of travel, labor and per diem expense shall be borne by the customer in the event the malfunction is due to misuse, abuse, or associated equipment deficiencies. Components purchased by Glenro, Inc. shall be under warranty only to the extent of the warranty extended by the respective suppliers. Glenro, Inc., the seller, does not agree that the equipment delivered to the buyer will comply with the requirements of any Federal, State or local government law or the requirements of any Federal, State or local government agency or any other governmental or non-governmental independent agency.

THERE IS NO OTHER AFFIRMATION OF FACT OR PROMISE OR EXPRESSED OR IMPLIED WARRANTY. THERE IS NO OTHER IMPLIED WARRANTY OF MERCHANTIBILITY OR FITNESS FOR USE.

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