

# New Generation Burnout Furnaces

## Refined Industrial Design

Manufactured by Pacific Kiln & Insulations Co. Inc., New Generation Burnout Furnaces have a refined industrial design and are rated to 2100°F (1148°C) continuous firing temperature.

## Framework

The New Generation Burnout Furnace system begins with a precision structural framework that will stand up to heavy refractories and high temperatures. Structural angle, channel, as well as precision formed shapes are fabricated into a heavy duty framework. The frame is then lined with ¼" plate inside with an outside cover of 14 ga. sheet. All seams are sealed with a high temperature silicone and the inside surface is coated with a high temperature galvanizing compound.

## Refractories

The floor is 7" thick insulating fire brick covered with Thermo-Flo™ floor tiles. There is a 12-½" high hard brick base to the walls, which protects the wall from damage and acts as a heat sink for fast temperature recovery. The walls, ceiling and door are lined with a 2400°F (1316°C) Super Module ceramic fiber lining, 8" thick. It is fastened to the steel plate with ¼" 304 stainless steel anchors and yields a virtual joint free construction which eliminates shrinkage gaps and subsequent heat leaks. The door jambs and arch are constructed of pre-cured 3000°F (1649°C) castable blocks, 9" thick for a smooth door seal and years of durable service. The chimney base is a combination of dense firebrick, 3000°F (1649°C) castable refractory and insulating fire brick, coated to withstand high velocity and temperature. This insulation system is designed for 2100°F (1149°C) continuous operation and intermittent operation up to 2200°F (1204°C). Custom higher temperature ratings are available.

## Door System

The door system is constructed of precision formed ¼" steel angles and channel shapes fabricated into a rigid heavy duty framework. The door is lifted by dual #60 chains through heavy duty sprockets to a large bore air cylinder with cushion stops on both ends for smooth operation. The door rolls in the track on 1-¾" cam followers and has adjustable cam sets in all four corners for precise setting. The door speed is fully adjustable and you have your choice of hand or foot operated valve.

## Burner System

The burner system is comprised of two PKI medium velocity burners, designed for high output, excess air operation. The burners produce an intense flame due to the specially designed burner block, and the increased velocity provides greater heat circulation and, ultimately, better temperature uniformity. The excess air capability of the burners assures a higher O<sub>2</sub> level (up to 10%), which is essential for complete, clean wax burnout, especially in complex shells. The burners are direct spark ignited and include a complete flame safety package as standard equipment. The combustion air is supplied by a common, high pressure blower and is evenly distributed by a specially designed air manifold. The air is controlled and modulated at the inlet to the manifold and can be further balanced by adjustment of the control valves at each burner. The fuel to the burners is modulated along with the air by a motorized control valve. The air linkage can be disconnected and fixed if fuel modulation only is desired. A gas pressure regulator is standard.



**RANSOM & RANDOLPH**  
Maumee, OH 43537 USA  
Toll Free: 800.800.7496  
Phone: 419.865.9497  
Fax: 419.865.9997  
[www.ransom-randolph.com](http://www.ransom-randolph.com)

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## Afterburner

A Category II afterburner is standard on all New Generation Burnout Furnaces. The afterburner chamber and the burner have been engineered for each size furnace to provide increased capacity, as well as maximum efficiency. The afterburner has its own combustion blower and is also equipped with flame safety. A thermocouple assembly is mounted in the stack for continuous afterburner chamber temperature monitoring. The afterburner is independently controlled by its own microprocessor temperature controller. Afterburner documentation is provided to allow simple air quality permit application. The Category II afterburner will handle wax loads of up to 14.2 pounds. A Category III afterburner is available as an option and has a capacity of 28.4 pounds of wax per load.

## Control System

Temperature control is provided by a microprocessor-controller which can be used as either a program or setpoint controller. It can be programmed for up to 6 ramps and 6 soaks in a single program. The controller produces a 4-20MA signal which drives the motor to automatically adjust burner output to achieve set-point temperature. It features digital LED readout, thermocouple break protection and overtemperature protection. It is housed in the main control panel and tied into the flame safety system for the ultimate in control and safety.

## Safety System

Many safety features are standard equipment on the New Generation Burnout Furnaces. The burner systems are 100% flame safe and feature ultraviolet flame sensing, automatic spark ignition and air safety. There is a door limit switch, which puts the main burners into low fire when the door is opened, and a manual pin latch assures door safety when entering the furnace for maintenance.

## Specifications

A complete installation, operation and maintenance instruction manual is included and also contains burner system electrical schematics, a control valve diagram and an afterburner data report. Constructed to comply with OSHA, NEC and NFPA.

## Fuel Requirements

Natural gas (1,050 BTU/cu ft) 1-1/2" supply line at 1 psi. LPG may be used but must be specified at the time of order.

## Electrical

Standard supply to the control panel is 230VAC, 1 ph. A 30 amp circuit should be dedicated for this service. Alternate electrical systems are available upon request.

## Air Requirements

Minimum 1/2" line at 90 psi.



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## Multiple Program Temperature Control

If you have different temperature profiles for different jobs, this is the controller for you. It holds up to 8 different programs of 16 segments each, as well as setpoint control. It has all of the features of the above controllers and much more.

## FM Safety Fuel Train

This fuel train would be in addition to the standard fuel train included on any burner and control system combination. It is not a required option, but is recommended for customers who must have their equipment meet Factory Mutual specifications. It includes a manual reset safety shutoff valve, high/low gas pressure switch and an additional FM approved gas cock. This option comes fully installed and tested.

## IRI Safety Fuel Train

This option is similar to the FM Safety Fuel Train except that it includes an additional safety valve (motorized) for Industrial Risk Insurers specifications. This option comes fully installed and tested.

## Oxygen Analyzer/Readout

This is a control panel installed O<sub>2</sub> analyzer that gives a continuous digital readout of the percentage of oxygen in the load area. It operates from the compressed air of the door system and can be linked to the temperature recorder option for a permanent record. This instrument is essential in evaluating combustion efficiency, burnout problems and rapid prototype processing.

## Cabinet Cooler

Control panels located on, or near, furnaces and other hot foundry equipment can experience internal temperatures above the recommended operating temperatures of sensitive electronic equipment. This simple to operate, compressed-air powered cabinet cooler will automatically maintain a temperature of 90°F-100°F (32°C-38°C) in the control panel.

## Independent High Limit Control

This is a separate high limit controller operating off a second thermocouple, providing an additional safety feature which shuts down the burner system in the event of a runaway condition.

## Custom Options

PKI is able to provide virtually any type of additional options for Standard Burnout Furnaces. These options can be simple or complex mechanical systems or elaborate control systems. We would be pleased to discuss your ideas and/or requirements with you and how to integrate them into the furnace.



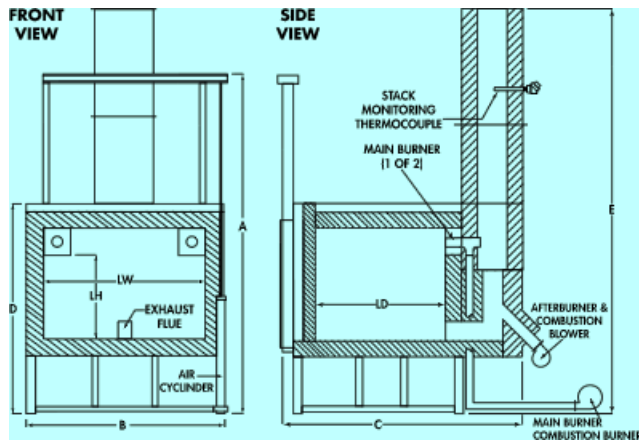
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## New Generation Burnout Furnace Specifications\*

Model	Load Area Dimensions			Overall Furnace Dimensions					Main Burner Typical Input	Main Burner Max. Input	Afterburner Max. Input	Min. Gas Press. Req.
	LW	LD	LH	A	B	C	D	E	BTU/HR**	BTU/HR	BTU/HR***	PSIG
PBF-36NG	48"	36"	36"	129"	65"	90"	84"	156"	570,000	1,000,000	1,050,000	1
PBF-48NG	48"	48"	36"	129"	65"	103"	84"	156"	585,000	1,000,000	1,050,000	1
PBF-60NG	60"	48"	36"	129"	77"	103"	84"	156"	600,000	1,000,000	1,050,000	1
PBF-80NG	60"	48"	48"	135"	77"	103"	90"	162"	620,000	1,000,000	1,050,000	1
PBF-100NG	60"	60"	48"	135"	77"	115"	90"	162"	650,000	1,000,000	1,050,000	1

\*Product specifications subject to change without notice. Check with manufacturer for critical specification requirements.

\*\*Actual fuel consumption will vary with operating conditions.

\*\*\*Based on Category II afterburner. Category III will be higher.

## New Generation Burnout Furnace Options

- Temperature Recorders.
- Oxygen Analyzer.
- Multiple Program Controller.
- FM or IRI Safety Fuel Train.
- High Limit Temperature Protection.
- Control Panel Cooler.



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