

ONE STEP DEBIND & SINTER FURNACE

Series GraphMIM 2000G

For metal Injection Molded Parts



***Complete MIM
Processing Flexibility**

*** Fully Automatic
Operation**

*** User Friendly
Computer Control**



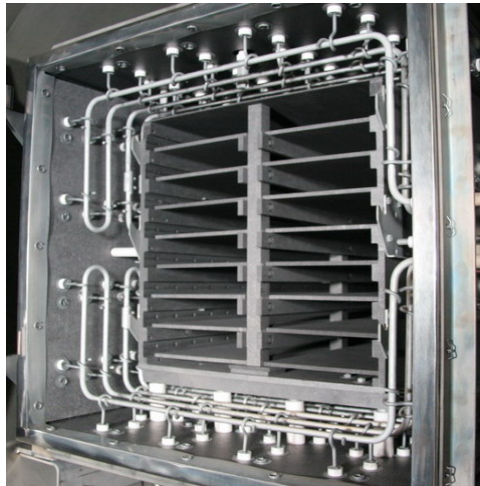
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Highlights of Elnik Systems GraphMIM 2000G Furnaces

Elnik's GraphMIM 2000G furnaces process any iron based metal with any binder in a one step second stage debinding and sintering cycle without having to move the parts. This is accomplished through the use of a Graphite retort with calibrated gas distribution across the parts.

The gas management system consists of a mass flow controller for the work zone and a partial pressure valve at the specially designed and modified dry vacuum pump. Different flow of gases into the work zone and a partial pressure inside the retort minimize binder materials sticking to the cold walls of the furnace chamber.

The retort has a gas distribution system via a calibrated hole pattern to ensure that the heated gas flows evenly across each shelf inside the retort.



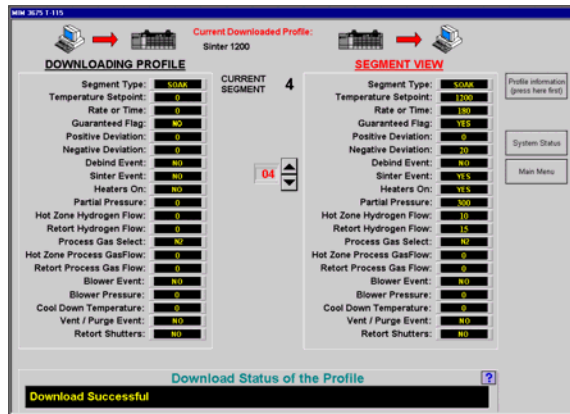
Additionally, 6 zone temperature control front, middle, and rear, for the top and bottom around the retort.

The even gas flow across the shelves guarantees very close temperature control resulting in excellent temperature uniformity throughout the usable work zone of the furnace.

The construction of the Elnik Systems retort ensures, that the parts are fully debound through the even gas flow during the second stage debind cycle and sintered to full density through the close temperature uniformity during the sinter cycle.



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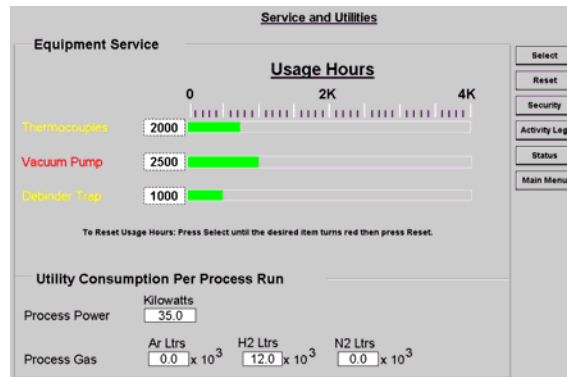


The GraphMIM 2000G utilizes a PLC system with a computer as the interface and includes a data acquisition system. The user programs each individual segment freely on a spreadsheet.

The furnace is programmed with all safety systems so that different gases such as, nitrogen, forming gas and argon can be used during debinding and sintering.

All controls for flow, temperature, and partial pressure are fully computerized and automatic.

A leak check mode for the furnace can be set manually before each run, and all operating data such as temperature, gas flow, pressure, gas consumption and total power, is logged for each run.



A maintenance screen reminds the user to service the pumps, change the thermocouples, etc. All of this is installed in a unitized frame keeping floor space at a minimum.



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Furnace Models:

Furnace	Usable retort size [mm] inches	Usable volume [liter]	Number of shelves	Total load area [m ²] sqin	Pump speed [m ³ /h] CFM
GraphMIM 2002 G-50	(292 x 305 x 610)	54	10 size b	(0.93)	(85)
	11.5 x 12 x 24			1,440	50
GraphMIM 2045 G-50	(395 x 460 x 610)	110	40 size a	(2.40)	(85)
	15.5 x 18 x 24			3720	50
GraphMIM 2009 G-115	(394 x 460 x 1,220)	220	80 size a	(4.80)	(195)
	15.5 x 18 x 48			3720	115

Options:

- ✦ Heat exchanger with (3000 CFM) 5097 m³/h blower, magnetically sealed rotary feedthrough, external motor and internal shutters, with computer adjustable pressure and temperature set point to activate blower.
- ✦ Set of twelve (12) plug in flexible survey thermocouples, Type K, with Inconel Sheath, computer integration, readout and data acquisition. Usable to 1,250 °C (2,282°F.)
- ✦ Additional Graphite shelves
 - a) Size: 7.75" Wx12"Dx1/4"H 197 x 305 x 6.35 mm
 Max load capacity: 7 lbs (3.2kg)
 Max load area: 93 sqin. (0.06m²)
 - b) Size: 10" Wx12"Dx1/4"H 254 x 305 x 6.35mm
 Max load capacity: 7 lbs (3.2kg)
 Max load area: 120 sqin (0.0774m²)

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