

APPLIED TECHNOLOGY CENTER - Laboratories

Description

Centorr Vacuum Industries Applied Technology Center is equipped with state-of-the-art furnace equipment that you can use for high temperature processing of advanced materials. Our experienced staff can offer you a unique "try before you buy" opportunity to evaluate your advanced materials processing method and better define your equipment needs.

We are pleased to offer this service to you. Use of one or more of our laboratory furnaces has been found helpful by several corporations in the Metals, PM/MIM, Hardmetals, Ceramics, Refractory Metals, Powders, and Advanced Materials Industries. We hope the same may apply to your group.

EQUIPMENT AND STAFF

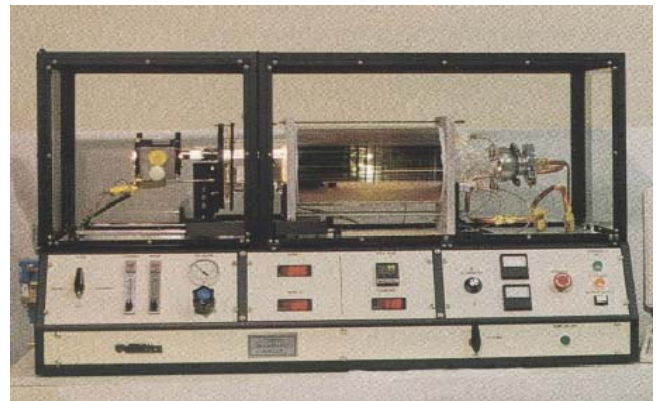
- Process materials on an as-needed basis
- Test new materials
- Fine-tune processing parameters
- Help narrow down furnace selection criteria.
- Confirm feasibility of new projects

ANALYTICAL EQUIPMENT

- System VII Graphite-lined sintering furnace 2800°C
- System VII Tungsten-lined sintering furnace 2200°C
- Air-fired debind furnace
- Inert Gas Purifier / Oxygen Monitor

PROCESSES INCLUDE:

- Brazing Physical Testing
- Diffusion Bonding and Metallization
- Annealing, heat treating, and brazing
- Continuous Processing
- Sintering (vacuum and positive pressures)
- 3D/AM parts



Applied Technology Center answers these questions . .

- How fast can you cool your load without affecting physical properties?
- Can you fire your product in a less expensive Graphite hot zone furnace?
- What is the minimum soak time required to achieve theoretical density?
- Is positive pressure, or partial pressure processing environment best?
- Do I need Hydrogen process gas for carbon control?
- How fast can I ramp up my product without thermal shocking it?

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LABORATORY CAPABILITIES

Furnace / Equip	System 7 Batch Furnace Graphite	System 7 Batch Furnace Metal	Super 7 Batch Furnace Graphite	Super 7 Batch Furnace Metal	Induction Melt	Continuous Belt Furnace
Hot Zone Size:	6"w x 6"h x 15"d (9" inside elements)	6"w x 6"h x 15"d (9" inside elements)	8"w x 8"h x 20"d (10" inside elements)	8"w x 8"h x 20"d (10" inside elements)	60mm Ø x 140mmH 2.3kgs (5lbs)	6"w x 1"h x 36"l
Hot Zone Element:	Graphite	Tungsten	Graphite	Tungsten	Induction	Tungsten
Hot Zone Shields:	Graphite Board t	W / Mo Shields	Graphite Board	W/Mo Shields	Al ₂ O ₃ , MgO, ZrO ₂ , Graphite Clay Crucibles	W / Mo
Max. Temperature:	2200°C in Vacum 2800°C in Inert Gas	1900°C in Vac/Inert Gas 1800°C in H ₂	2300°C in Vac/Inert Gas 900°C H ₂	2000°C in Vac / Inert Gas 2000°C in H ₂ , He	<2400°C in Inert Gas	2000°C in 1 atm Inert Gas 1800°C in H ₂
Max. Vacuum:	1x10 ⁻² torr	1x10 ⁻⁶ torr	1x10 ⁻⁵ torr	1x10 ⁻⁶ torr	1x10 ⁻⁶	N/A
Max Pressure:	0.5-2 psig	0.5-2 psig	0.5-2 psig	0.5-2 psig	Slight Pos.Pres	1 atm
Partial Pressure Atmos.	N ₂ , Ar, Forming Gas (1-300 torr)	H ₂ , N ₂ , Ar, Forming Gas (1-300 torr)	N ₂ , Ar, Forming Gas (10 ⁻³ -1 torr) H ₂ (0-10 torr)	N ₂ , Ar, Forming Gas (10 ⁻³ -1 torr) H ₂ (0-10 torr)	N ₂ , Ar, Forming Gas	N/A
Positive Pressure Atmos. Avail:	N ₂ , Ar, Forming Gas (0.5-2 psig)	H ₂ , N ₂ , Ar, Forming Gas (0.5-2 psig)	N ₂ , Ar, Forming Gas (0.5-2 psig)	N ₂ , Ar, Forming Gas (0.5-2 psig)	H ₂ , N ₂ , Ar, Forming Gas (0.5-2 psig)	N ₂ , Ar, Forming Gas, H ₂
Vacuum System:	Binder Removal Pump / Rotary Piston Pump	Rotary Vane Pump / Diffusion Pump w/ Baffle	Rotary Vane Pump / Diffusion Pump w/Baffle Hold Pump	Rotary Vane Pump / Diffusion Pump w/Baffle Hold Pump	Rotary Vane Pump / Diffusion Pump w/ Baffle	N/A
Binder Removal:	Minor	None	None	None	N/A	Minor
Fan Cooling	No	No	Yes	Yes	N/A	N/A
Belt Speed:	N/A	N/A	N/A	N/A	N/A	0.1"-5"/min
Rotovac Usage:	5" dia x 13" tube	N/A	N/A	N/A	N/A	N/A
Retort Usage:	I/I 5"w x 5"h x 11"d	N/A	I/I 7"w x 7"h x 20"d	N/A	N/A	N/A