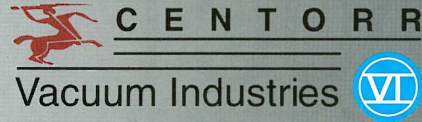
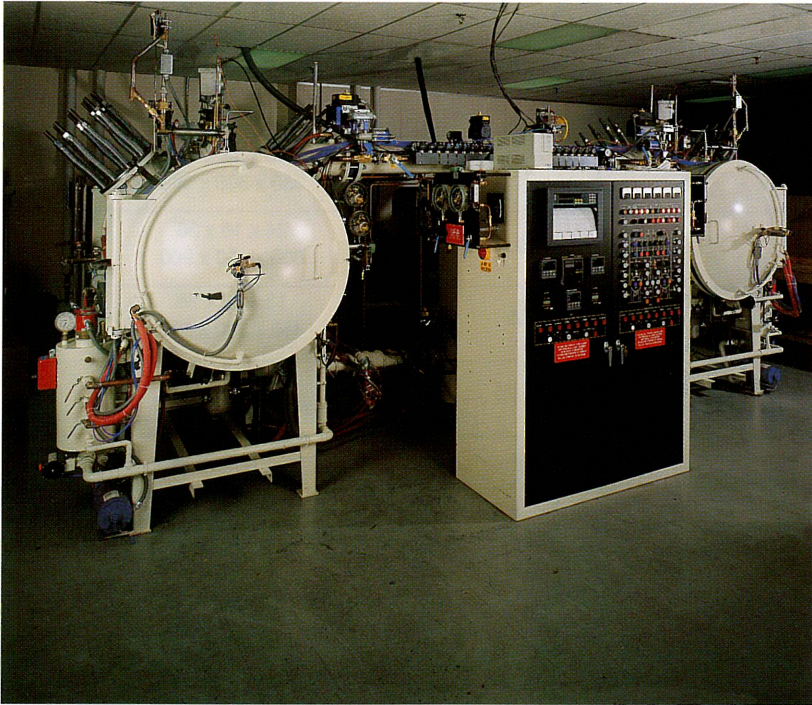


PRODUCT INFORMATION



The ABC's of Sintering



Centorr Vacuum Industries (CVI) is a mid-sized firm that combines the best attributes of both large and small firms; small enough for entrepreneurial developments for new process work; large enough to maintain the financial strengths and resource investments to successfully execute extensive thermal equipment requirements.

Our unique engineering skills combined with niche manufacturing talents, excellent vendor partnerships and turnkey project management make CVI the first choice for process sensitive equipment engineering efforts.

The Sintervac® product line services a variety of robust manufacturing requirements with delicate process control needs. Tungsten and Cemented carbides, performance and structural ceramics, cermets and high alloy steels represent a few. There are over 600 Sintervacs® in field service throughout the world today. CVI is the world leader for carbide and structural ceramic applications.

Key Features

Cold Wall Vacuum Furnace design with integrated cooling jackets on the vessels and doors.

Stainless steel interior for internal contact points.

Rigid copper busswork for improved maintenance and the best electrical efficiency.

Durable Heater designs with hot zones available in both graphite and metal hot zone configurations.

Optional Features

All stainless steel construction.

CE/DE/TuV and other non US. standards for compliance.

Reactive Gas management systems.

Flowing gas management systems.

Integrated Mass flow controllers.

Sweepgas™ capability for flow and pressure management during delube/dewax.

Custom retort designs for repeatable process/carbon control.

Integrated cooling fans with internal heat exchangers.

Pressure Sintering

CVI pressure furnaces are used for a variety of processes associated with powdered metal production of hard metals and ceramics: Full densification, Zero A porosity for hard metals; better ceramic properties without additives; control of TRS, toughness and grain growth trade offs; Isostatic pressures between 60 and 100 bar are available. The furnaces operate for combination cycles including delube, vacuum sinter and pressure sinter. Partial pressure control, flowing atmosphere control and reactive gas management are typical features.

Delube/Dewax

CVI has specialized in process development for a variety of delube/dewax processes for carbides and ceramics. CVI process development encompasses a large effort for wax/polymer removal typical of injection molded hard metals and ceramics. Tight pressure and gas flow control in tandem with effective event based programming and sound retort design allows the entire load to view the same series of conditions as a function of time. This results in consistent downstream microstructures and repeatable carbon control. Depending upon the process requirements, a variety of wax and polymer condensation strategies have been utilized including vacuum delube condensation, Sweepgas™ condensation and CVI's proprietary BRS™ technology.

PRODUCT INFORMATION

- Competency
- Versatility
- Innovation



SINTERVAC® FURNACE SERIES	MAXIMUM OPERATING TEMP., °C	MATERIALS PROCESSED AND MAIN FEATURES
A	1600	Hard Metals Cemented Carbides
B	1400	Tool Steels High Speed Steels
C	2300	Refractory Alloys Cermets Performance Ceramics
P (Sinterbar)	1600-2300°C 60 - 100 Bar	Cemented Carbides Hard Metals Cermets Performance Ceramics

STANDARD MODEL NUMBER	USABLE CUBIC FEET (HOT)	STANDARD USABLE HOT ZONE Width x Height x Length (inches - mm)
40	.37	8 x 8 x 20 200 x 200 x 500
100	2	12 x 12 x 24 300 x 300 x 600
150	3	12 x 12 x 36 300 x 300 x 900
300	4.5	18 x 12 x 36 450 x 300 x 900
500	9	24 x 18 x 36 600 x 450 x 900
300 (Sinterbar)	4.5	18 x 12 x 36 450 x 300 x 900
800 (Sinterbar)	11.25	18 x 18 x 60 450 x 450 x 1500

Control Strategy

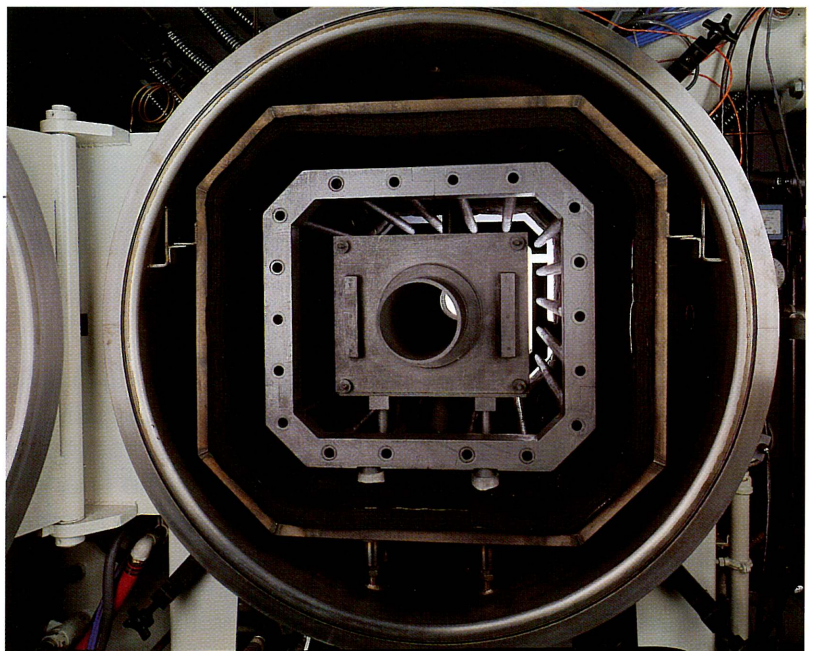
CVI works with two basic control strategies: A more conventional PLC based control system with Programmable, event based controls or a more capable, fully integrated PC based control system:

PC Based Control

- Pentium Based PC workstation
- Intellution based architecture for DDE
- Full Data Acquisition Capability
- Custom Reporting
- Remote System operation/ System Multitasking
- Turnkey electrical integration

PLC Based Control

- Programmable, event based control
- PLC for trouble free system interlocking logic
- Discrete controls for individual sensors with communication
- Turnkey electrical integration
- Optional remote interface



C E N T O R R

Vacuum Industries



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Contact Centorr/Vacuum Industries today for a complete data package.