

CVI System for Ceramic Matrix Composites

CVI 3500™

High-Volume Production System
for the Infiltration of Preforms



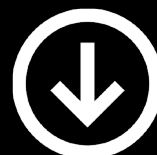
Work Zone: 36" ID &
36" H (additional
sizes available)



Thermal Processing
up to 1600 °C
Heating Rate >10 °C per min



Optional Substrate
Rotation for Improved
Deposition Uniformity



Low Pressure
Operation



Five Zone
Temperature Control



CVI 3500™ for the infiltration of fiber preforms and
production of ceramic matrix composites (CMCs).

CVI 3500™
Chemical Vapor
Infiltration System

CVI 3500™ - Chemical Vapor Infiltration System

CVI is a type of a chemical vapor deposition process that is performed at low pressure to allow for infiltration into the internal surfaces of a porous material. Using high temperature and low pressure, precursor vapors penetrate the pores of the fibers/substrate and deposit to form a conformal coating on the interior surfaces.

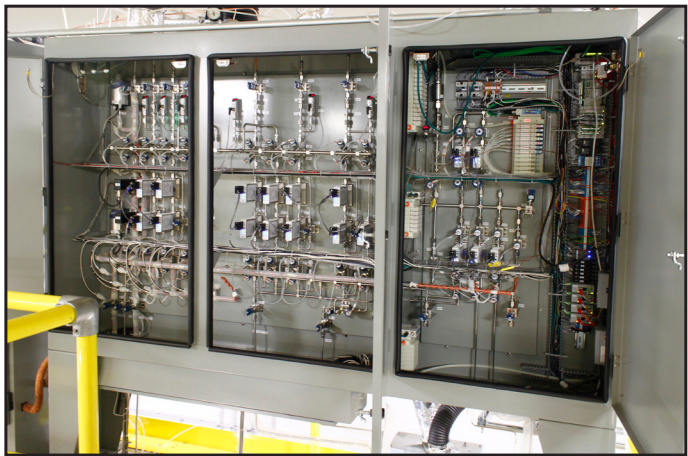
CVD Equipment’s CVI platform is used to coat fiber preforms with silicon carbide (SiC), boron nitride (BN), silicon nitride (Si₃N₄) and carbon. CVI processes are used to modify fiber matrix bonding by depositing thin interfacial layers on the fiber surface in the production of ceramic matrix composites. These advanced coatings are used in the aerospace industry to manufacture SiC/SiC composites used in gas turbine engines and other applications requiring advanced CMCs.

Features and Options

- Five Zone Resistance Furnace with independent zone temperature control
- Temperature uniformity better than +/- 6 °C
- Graphite retort & heating elements
- Heating ramp rate >10 °C per min
- Furnace cooldown in less than 12 hrs
- Stainless steel double wall, water cooled vacuum chamber
- Coaxial gas injection
- Gas preheat & mixing zone
- Internal pyrolyzer
- Heated exhaust line
- Cold trap for ammonium chloride byproduct
- Gantry crane to assist in part loading

Technical Data

Work Zone	36" ID & 36" H (additional sizes available)
Power Supply	up to 500 kW
Operating Temperature	up to 1600 °C
Operating Pressure	7 to 10 Torr



Hydronics & GMS Cabinets

- Thermally controlled gas delivery system
- VCR stainless steel welded lines



Work Zone
43" ID & 75" H



Internal Graphite Retort



LAN300™

Liquid Abatement Neutralization Systems

- Integrated effluent gas neutralization
- Liquid spray packed tower with closed loop recirculation system
- Closed loop pH control
- 300 Gallon Tank



CVD Equipment Corporation
355 South Technology Drive, Central Islip, NY 11722
Tel: +1 631-981-7081 | **Fax:** +1 631-981-7095
E-mail: sales@cvdequipment.com



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