

BERNEX

CHEMICAL VAPOR INFILTRATION EQUIPMENT

Bernex™ CVI systems are designed to coat the internal surfaces of porous materials such as carbon fiber bundles or 3D bodies that are used to make fiber-reinforced composites (FRC). The equipment is designed to deposit protective, high temperature coatings such as SiC, BN and pyrolytic C. Typical applications include components for aerospace, automotive, medical and industry.



The resulting coating improves the mechanical properties of fiber-reinforced composite materials, protecting the fibers from the matrix (whether ceramic, metal or carbon) while improving the adhesion. The coating is infiltrated in a bundle of fibers or a complex body to homogeneously coat each single fiber or surface area. Bernex was able to develop this state-of-the-art CVI process with its extended know-how of designing high temperature, very low pressure CVD coating machines. The equipment is designed to

allow infiltration to take place between 1 to 200 mbar. Deposition on the surface can take place at pressures up to 900 mbar, in the temperature range of 900 °C to 1600 °C.

The equipment is flexible in design and allows coatings to be deposited on large single objects or many small objects. Several types of holding jigs are available to permit coating on all surfaces. Customer-specific solutions may be available upon consultation.

TECHNICAL DATA BERNEX™ CVI

Modular Design

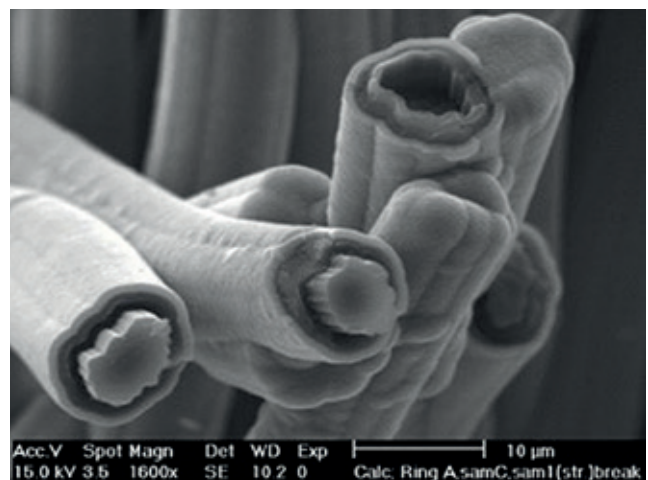
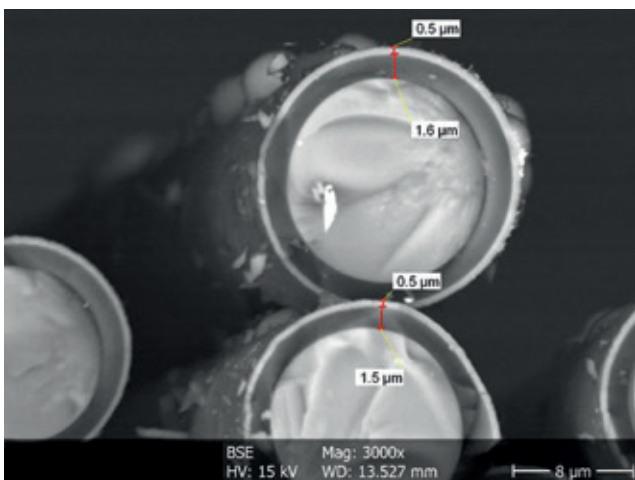
The CVI equipment has a modular design to satisfy user-specific demands. The available modules can be added to new equipment and retrofitted onto existing systems.

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| ■ $TiCl_4$ modules to deposit TiN and TiCN coatings | ■ Re, W, and Ir modules |
| ■ BCl_3 modules for BN or TiB_2 coatings | ■ Exhaust neutralization system |
| ■ NH_3 modules for BN | ■ Special fixtures for particular applications |
| ■ MTS or $SiCl_4$ liquid supply modules for SiC coatings | ■ Low pressure systems for pressures down to 1 mbar |

The turn-key Bernex™ CVI systems are delivered with the most advanced process know-how and recipes ready for your application.

BERNEX™ CVI

Models	CVI 1300	CVI 800	CVI 600
Dimensions Ø (mm)	1300 x 1500	800 x 1000	600 x 650
Max. load weight (kg)	400	300	250
Temperature	900 - 1600 °C		
Coatings	BN, SiC, C, TiN, TiB_2		
Applications	Coating of carbon fiber composites, graphite, porous 3-dimensional components		



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CVI-coated fibers