

# SiC Process Equipment for High Power Electronics

**CVD**  
Equipment  
Corporation

## PVT200™ Physical Vapor Transport Systems

*200 mm SiC Crystal Growth Solution*



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## PVT200™ - Physical Vapor Transport Systems

CVD Equipment Corporation's PVT200™ Physical Vapor Transport systems have been specifically developed using our proprietary equipment technology with the goal of increasing performance and controls for large-scale manufacturing.

The PVT200™ provides exceptional process parameter control, repeatability and system to system matching for growing 200 mm diameter SiC boules. For physical vapor transport, temperatures up to 2,500 °C at  $\pm 0.5$  °C are achieved for the sublimation of polycrystalline SiC source material and SiC crystal growth. CVD Equipment's PVT systems offer this exceptional temperature control in both steady state and ramp conditions. It is our reactor design and control system architecture that allows for this precise control of thermal gradients for optimal SiC boule growth. Our systems demonstrate run-to-run repeatability and system matching when operated in different process conditions with over 200 I/O parameters monitored every second. With systems in the field for over a decade demonstrating high yield crystal growth, CVD Equipment's high-performance PVT systems support global production targets and demand for SiC boules.

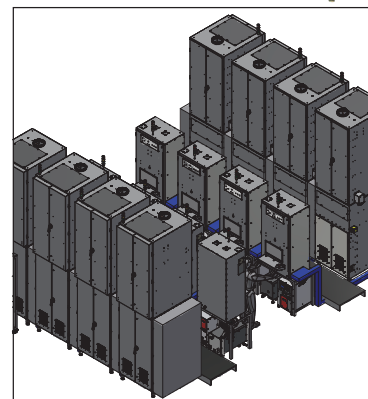
Innovated and engineered with a high degree of automation, compact footprint, and MES compatibility for factory automation, the PVT200™ is optimized for high-volume manufacturing facilities. Some of the many system features that drive efficiencies are our automatic process chamber loading handler, recipe start, crucible stage rotation, and selectable temperature PID control on top or bottom control pyrometer. The motorized pyrometers can be aligned with the ease of a remote-control box for real-time monitoring of the crucible during crystal growth. Ramp up and ramp down rates are achieved by real time PID precision control. Our control system maintains the temperature within half a degree as well as the pressure within  $\pm 0.5\%$  of set point. Automated positionable coil with axial vertical travel allows for the control of thermal gradients and to optimize SiC growth. Robust process controls achieve temperature and pressure stability throughout long deposition runs help facilitate the reliable production of SiC boules.

### Features and Options

- Exceptional Process Parameter Controls for Steady State & Ramp Conditions
  - Temperature Control  $\pm 0.5^\circ\text{C}$
  - Pressure Control  $\pm 0.5\%$
- Run-to-Run Repeatability
- System-to-System Matching
- Standard & Custom Coil Designs
- Custom Quartzware Designs
- Hot Zone Automatic Loading Handler
- Crucible Centering
- Turbo Pump
- MES Compatible
- Compact Footprint
- 6 Months from ARO Typical

### Technical Data

Boule Diameter	200 mm
Quartz Basket Height	Contact CVD Equipment
Inner Quartz Tube Diameter	Contact CVD Equipment
RF Induction Heating Coil Height	Contact CVD Equipment
Frequency	9.5-10.5 kHz
Working Pressure	0.5-700 Torr
Working Temperature	max 2500 °C
Temperature Control	800 to 2500 °C



Compact footprint e.g. 8 systems

### High-Touch Customer Service

With over 40+ years of global manufacturing expertise delivering leading edge process equipment, CVDE has a customized approach to client support. We offer on site presence, site survey, installation coordination and field acceptance. NRTL/CE Certification is available. Initial start-up support and on-site training, warranty response and remote capability through help desk support are all available through our customized service plans. Support contracts can be customized for spares and consumables, preventative maintenance and site personnel. Typical delivery lead times of six months ARO are achieved with our vertical manufacturing facility in Central Islip NY. CVD Equipment Corporation is committed to provide customer satisfaction and high performance process equipment to meet your company's production needs.

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