

Silicon Carbide Single Crystal (PVT) Grower Technical Specification





Introduction

Silicon carbide single crystal (PVT) growth furnace of STi Co., Ltd. is growth equipment by using PVT (Physical Vapor Transport) method, which is a vapor phase transfer growth method and uses an induction heating method in the intermediate frequency range. This equipment is a SiC single crystal growth equipment that can grow 6-8 inch(150-200mm) ingot (STi has now completed development of 8-inch grower equipment and is ready to supply it to customers' needs at any time).

The standard configuration of the equipment consists of a reaction chamber/induction heating control device/gas supply control panel/vacuum exhaust line/cooling water supply and recovery/temperature and system automatic control/alarm and HMI system.



The manufacturing and assembly process of equipment components undergo strict process control and quality inspection to ensure equipment quality and production safety.

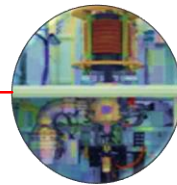
Equipped with a self-developed fully automatic computer control system, the whole process of single crystal growth is automatically controlled through temperature, pressure, gas flow, and cooling water.



1. Equipment Appearance

1) Growth furnace main body

	<p>STi - SiC System</p> <p>The STi - SiC system was specially developed for the production of silicon carbide (SiC) crystals through physical vapor transport (PVT). In this process, the powdered starting material is heated and sublimated at high temperatures and finally deposited on a specially prepared substrate. This is done by inductive heating in the KHz range using an induction coil. The design of this coil is optimized for low energy consumption.</p>
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2) Supporting equipment for SiC growth process

Pre treatment		Post treatment
Wafer Seed Press	Wafer Seed Junction	Annealing Furnace



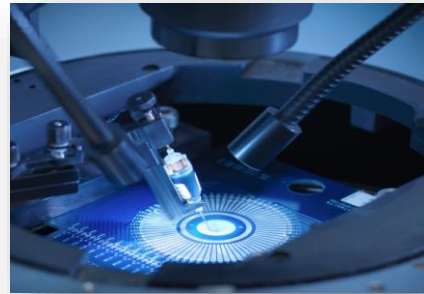
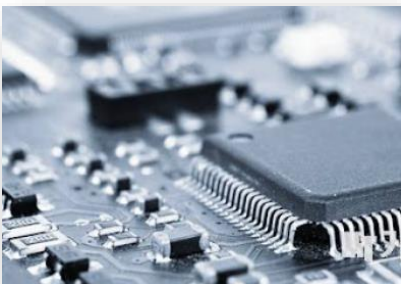
2. Principle of equipment operation and characteristics

They are characterized by:
The effective temperature gradient for crystal growth and the uniformity in the reactor was increased through the ideal matching between the MF coil and the resonant crucible.

Reduced process variation and fine process reproducibility.

The equipment structure is designed to fully consider the convenience of operation and maintenance and is equipped with many safety protection devices.

The self-developed high-precision pressure control algorithm precisely controls the pressure in the furnace with the control characteristics of the exhaust valve.



Accurate control of temperature and current was materialized by optimizing the control algorithm according to the heating characteristics of silicon carbide.

The entire crystal growth process is controlled by a reliable programmable computer controller, and the significant data is recorded and stored in real time and periodically, which is useful for the analysis of the results.



3. Environmental Conditions

4. Equipment Components

- **Equipment overview**
- **Heating Control**
- **Vacuum system**
- **Process Gas**

5. Utility Requirements

- **Power Supply**
- **Vacuum exhaust**
- **Cooling water supply and required water quality**
- **Gas Supply**

6. Etc.

7. Equipment Features

8. SiC 6 inch - 200 Layout

9. Wafer Seed Press & Junction Equipment



10. Electric Furnaces for Ceramics and Semiconductor



Baking



GPS



Bauxite
Sintering



Vacuum Sintering



Vertical Tube Furnace

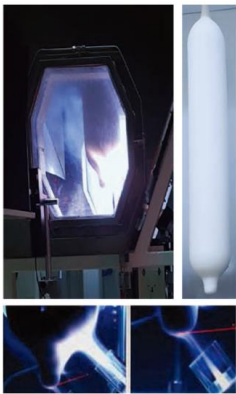


Horizontal Tube Furnace

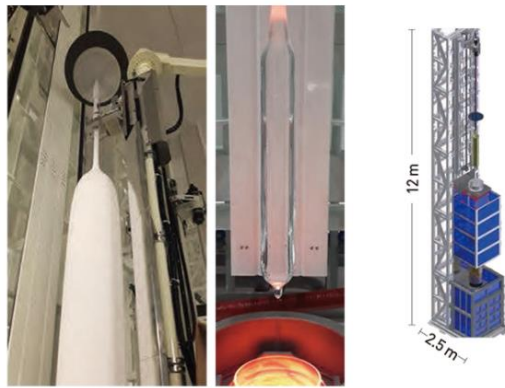


• Capability of STI

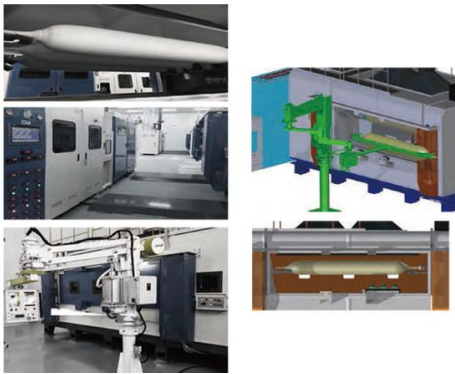
- Optical Preform Production Equipment :
Core/Clad Deposition and Sintering



Core deposition



Core & Clad Sintering



Clad deposition



Manufacturing



CONTACT US

Please contact us if you want to know more about our detailed equipment Spec.

* Including **SiC PVT 4-8 inch (100-200mm)** equipment.



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