



THERMAL
Technologies

THERMO-VACUUM SYSTEM

HHV TT Thermo-vacuum System is meticulously engineered to deliver exceptional performance for a diverse array of scientific and industrial applications. Our chambers are designed to replicate the extreme conditions of space and other demanding environments, our state-of-the-art chambers provide unmatched accuracy and versatility. They are used to evaluate satellite components, aerospace equipment, and advanced materials.



FEATURES

- Versatile Vacuum Range: Suitable for both high and ultra-high vacuum applications
- Superior Temperature Control: Ensures consistent and accurate thermal management
- Completely automated process control
- Customizable Features: Tailor the system to meet your specific needs
- Broad Temperature Range: Adaptable to extreme thermal conditions

THERMO-VACUUM SYSTEM

SPECIFICATIONS

Parameters	Specification
Size (mm)	Custom sizes available on request
Vacuum Range (mbar)	Up to 1×10^{-6}
Temperature Range (°C)	-80 To 250
Temperature Uniformity (°C)	± 2 Across the entire job platform
Heating /Cooling Method	High precision thermal circulations
Cooling\Heating pull up and down(°C per minute)	± 1
Data Logging	Integrated data logger with capabilities for real-time monitoring, historical data storage, and remote access
Safety Features	Over-temperature protection, vacuum interlock, emergency shutoff, real-time alarms for fault detection
Compliance	Iso 9000, CE marked (optional)

APPLICATION

- Aerospace and Space Exploration
- Electronics and Semiconductor Industry
- Materials Science
- Automotive
- Industry Military and Defense

HHV has over 60 years of vacuum science and technology expertise. We are an international supplier of high quality vacuum furnaces and systems. Our systems are designed with NADCAP standards and are certified for CE. HHV is ISO 9000, 14000 and ISO 45001 certified, and has an advanced research and manufacturing program for metallurgy and special purpose vacuum equipment.

HHV THERMAL TECHNOLOGIES PVT. LTD.

Site No. 17, Phase 1, Peenya Industrial Area, Bengaluru 560058, Karnataka, India. | Phone: +91-80-41931000
Fax : +91-80-41931100 | Email: info@hhvthermaltech.com | Website: www.hhvthermaltech.com



THERMAL
Technologies

SILICONIZATION FURNACE

HHV TT siliconization furnace provides Carbon-Carbon composites with a Silicon Carbide protective layer. These materials are used in space, aeronautics, nuclear, defence and automobile industries.

HHV TT designs and manufactures standard and customised furnace that are fully automated with minute to minute data of the process.



FEATURES

- Capable of achieving very high temperature (upto 2300 °C)
- Partial pressure and differential pressure operating modes
- Customised design and standard models available
- Vertical and Horizontal configurations available
- Excellent temperature uniformity $\pm 5^{\circ}\text{C}$ or better
- State of the art process cycle control system
- Superior level of built in safety interlocks



SILICONIZATION FURNACE



Top Loading Furnace



Bottom Loading Furnace

Parameters	Top Loading	Bottom Loading
Chamber size (mm)	1600 Diameter x 1700 height	1200 Diameter x 1775 height
Hot zone (mm)	1100 Diameter x 1400 height	800 Diameter x 1600 height
Charge weight (Kgs.)	120 including jigs and fixtures	200 with crucibles, performs & raw materials
Operating temperature (°C)	1750	1700
Vacuum (m bar)	5×10^{-2}	10^{-3}

APPLICATION

- Densification of carbon carbon composites and SiC coatings
- Siliconization of Carbon - Carbon composites
- Densification of Carbon - Carbon composites
- Infiltration of ceramic Composites
- Production of silicon carbide products

HHV has over 60 years of vacuum science and technology expertise. We are an international supplier of high quality vacuum furnaces and systems. Our systems are designed with NADCAP standards and are certified for CE. HHV is ISO 9000, 14000 and ISO 45001 certified, and has an advanced research and manufacturing program for metallurgy and special purpose vacuum equipment.

HHV THERMAL TECHNOLOGIES PVT. LTD.

Site No. 17, Phase 1, Peenya Industrial Area, Bengaluru 560058, Karnataka, India. | Phone: +91-80-41931000
Fax : +91-80-41931100 | Email: info@hhvthermaltech.com | Website: www.hhvthermaltech.com





THERMAL
Technologies

VACUUM FURNACE

INDUCTION MELTING AND CASTING

HHV TT Vacuum Induction Melting (VIM) and Casting furnace is specially designed to meet laboratory and production requirement.

These furnace is very useful to prepare high purity ferrous nickel and cobalt based for melting and casting.

High cost material purification and special alloys can be economically produced on this compact vacuum induction melting and casting furnace.



FEATURES

- Water cooled Rotatable co-axial feed-through for tilting and pouring
- Specially designed induction heater for effective heating with optimum power
- Rotatable shutter to minimize the heat loss from melt Water cooled copper moulds
- Special exchangeable crucible for melting different metals
- High vacuum pumping system to achieve base pressure in the range of 10^{-5} mbar and to handle gas load during melting

SPECIFICATIONS

Parameters	Horizontal	Vertical
Chamber size (mm)	500 X 500 X 600 600 X 800 x 600 Custom sizes	700 X 700 1800 X 1900 1500 X 1100 2500 X 3000 Custom sizes
Material	Non-Magnetic stainless steel	Non-Magnetic stainless steel
Melt Capacity(Kg)	1 / 2 / 5 / 15 / 25 / 50 / 250	1 / 2 / 5 / 15 / 25 / 50 / 250
Temperature (°C)	Upto 2000	Upto 2000
Vacuum (mbar)	10 ⁻⁵	10 ⁻⁵
Cooling	By inert gas	By inert gas



APPLICATION

- Aero engine turbine blades
- Turbo chargers
- To produce designer alloys

HHV has over 60 years of vacuum science and technology expertise. We are an international supplier of high quality vacuum furnaces and systems. Our systems are designed with NADCAP standards and are certified for CE. HHV is ISO 9000, 14000 and ISO 45001 certified, and has an advanced research and manufacturing program for metallurgy and special purpose vacuum equipment.

HHV THERMAL TECHNOLOGIES PVT. LTD.

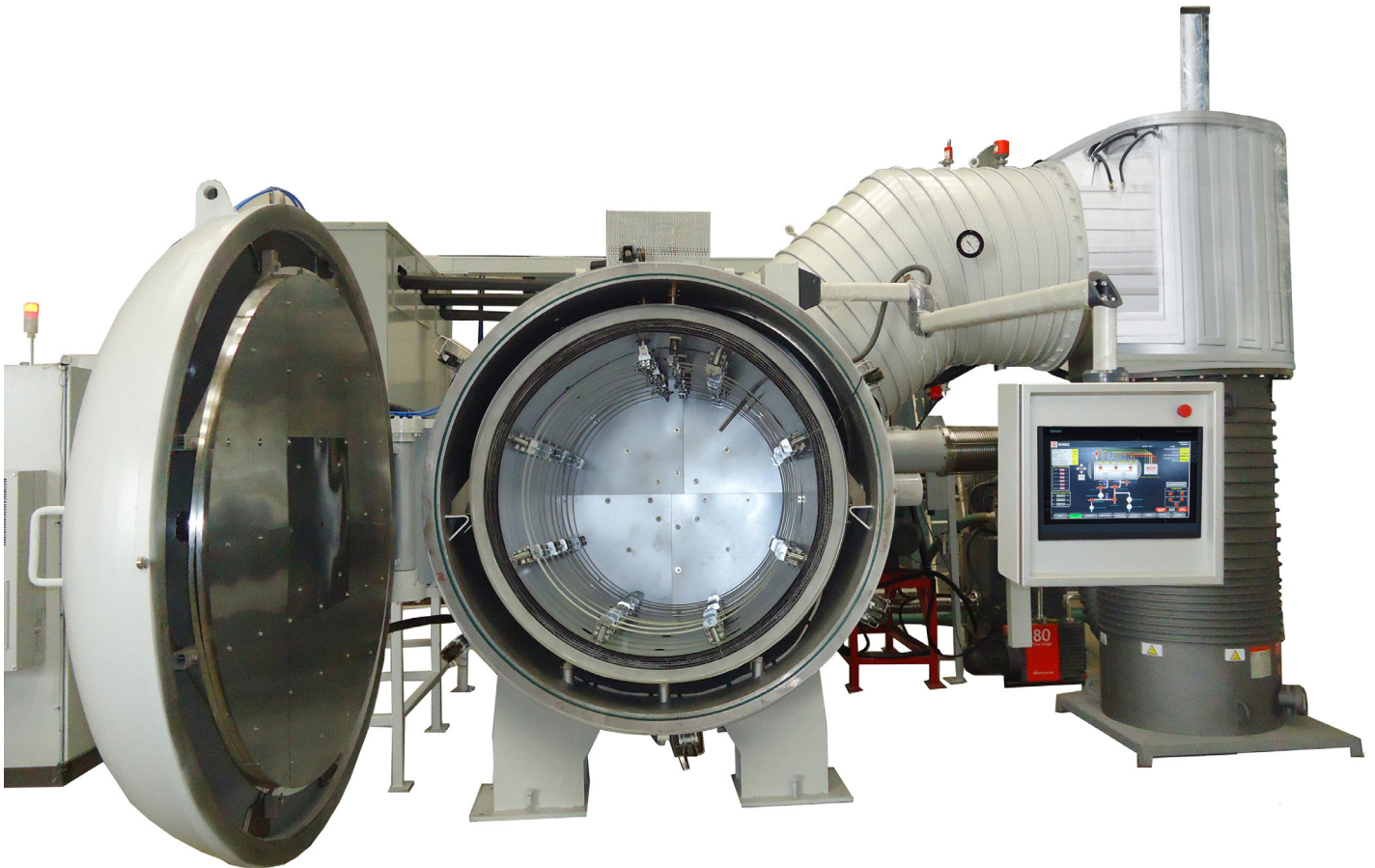
Site No. 17, Phase 1, Peenya Industrial Area, Bengaluru 560058, Karnataka, India. | Phone: +91-80-41931000
 Fax : +91-80-41931100 | Email: info@hhvthermaltech.com | Website: www.hhvthermaltech.com



THERMAL
Technologies

VACUUM FURNACE BRAZING

HHV TT Vacuum Brazing Furnace is specially designed for optimal brazing performance. Totally automated, computer controlled, recipe driven, horizontal and vertical vacuum brazing furnace. The furnace is operated in manual and auto mode. Cycles are coordinated using temperature programme controller, PLC, and measuring instrumentations.



FEATURES

- Wide range of standard size vertical and horizontal vacuum furnaces and choice of pumping systems.
- Wide range of hot zones
- Choice of hot zone as simple as selecting the design and construction materials applicable to the process requirement
- Furnace built with all safety to protect the system failure and also operating person
- Excellent temperature uniformity $\pm 5^{\circ}\text{C}$ or better
- Superior pumping performance
- State of the art process cycle control system

VACUUM FURNACE BRAZING

SPECIFICATIONS

Parameters	Horizontal	Vertical
Hot zone size (mm)	400 (Dia) x 400 (Ht) x 600 (Dia) 600 (Dia) x 600(Ht) x 900 (Dia) 900 (Dia) x 900 (Ht) x 1200 (Dia) Custom sizes	500 (Dia) x 500 (Ht) 1200 (Dia) x 1700(Ht) 1500 (Dia) x 1500 (Ht) Custom sizes
Hot zone option	Graphite / Molybdenum	Graphite / Molybdenum
Charge weight (Kg)	250 / 500 / 1000	600/1500
Temperature (Deg. C)	1000 - 1350	1000 - 1350
Vacuum (mbar)	10^{-2} to 10^{-3} 10^{-4} to 10^{-5} (Optional)	10^{-2} to 10^{-3} 10^{-4} to 10^{-5} (Optional)



HHV has over 60 years of vacuum science and technology expertise. We are an international supplier of high quality vacuum furnaces and systems. Our systems are designed with NADCAP standards and are certified for CE. HHV is ISO 9000, 14000 and ISO 45001 certified, and has an advanced research and manufacturing program for metallurgy and special purpose vacuum equipment.

HHV THERMAL TECHNOLOGIES PVT. LTD.

Site No. 17, Phase 1, Peenya Industrial Area, Bengaluru 560058, Karnataka, India. | Phone: +91-80-41931000
Fax : +91-80-41931100 | Email: info@hhvthermaltech.com | Website: www.hhvthermaltech.com



THERMAL
Technologies

VACUUM FURNACE HEAT TREATMENT

HHV TT totally automated, computer controlled, recipe driven, vacuum heat treatment furnace. Cycles are coordinated using temperature programme controller, PLC, instruments and thermocouples to achieve programmed heat treatment cycle.



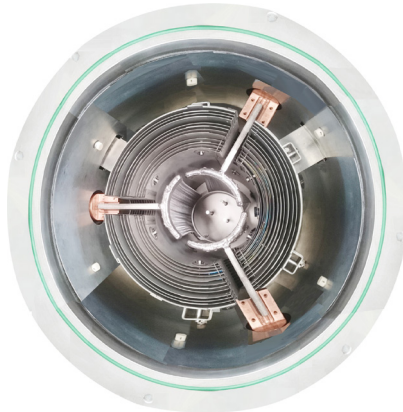
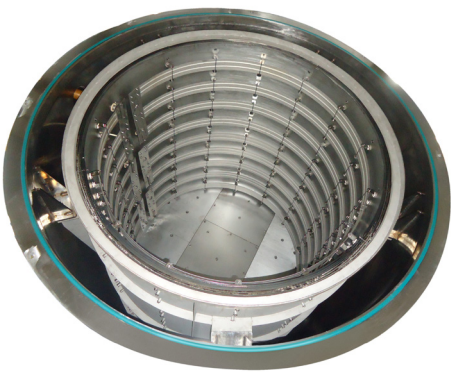
FEATURES

- Wide range of standard size vertical and horizontal vacuum furnaces and choice of pumping systems and gas cooling options
- Wide range of hot zones
- Choice of hot zone as simple as selecting the design and construction materials applicable to the process requirement
- Optimized cooling system and design
- Gas quenching system has been engineered to optimize for more efficient cooling
- Excellent temperature uniformity $\pm 5^{\circ}\text{C}$ or better
- Superior pumping performance
- State of the art process cycle control system

VACUUM FURNACE HEAT TREATMENT

SPECIFICATIONS

Parameters	Horizontal	Vertical
Hot zone size (mm) (vertical)	400 (D) x 400 (H) x 600 (D) 600 (D) x 600(H) x 900 (D) 900 (D) x 900 (H) x 1200 (D) Custom sizes	500 (D) x 500 (H) 1200 (D) x 1700(H) 1500 (D) x 1500 (H) Custom sizes
Hot zone option	Graphite/Molybdenum	Graphite/Molybdenum
Charge weight (Kg)	300/600/1200	600 – 1500
Temperature (Deg. C)	1000 -1350	1000 -1350
Vacuum (mbar)	10 ⁻² to 10 ⁻³ 10 ⁻⁴ to 10 ⁻⁵ (Optional)	10 ⁻² to 10 ⁻³ 10 ⁻⁴ to 10 ⁻⁵ (Optional)
High pressure gas quenching (bar(A))	2-10 bar (N ₂ , Ar)	2 & 4 (N ₂ , Ar)



APPLICATIONS

- Annealing
- Hardening
- Solution ageing
- Stress relieving
- Tempering

HHV has over 60 years of vacuum science and technology expertise. We are an international supplier of high quality vacuum furnaces and systems. Our systems are designed with NADCAP standards and are certified for CE. HHV is ISO 9000, 14000 and ISO 45001 certified, and has an advanced research and manufacturing program for metallurgy and special purpose vacuum equipment.

HHV THERMAL TECHNOLOGIES PVT. LTD.

Site No. 17, Phase 1, Peenya Industrial Area, Bengaluru 560058, Karnataka, India. | Phone: +91-80-41931000
Fax : +91-80-41931100 | Email: info@hhvthermaltech.com | Website: www.hhvthermaltech.com



Hind High Vacuum Company



HindHighVacuum



HindHighVacuum