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V3CC
THE TAILOR MADE

ANALYTICAL
INSTRUMENTS



About Us

With over two decades of expertise, VBCC High Temperature Instruments Pvt. Ltd., previously known as VB Ceramic Consultants, is India's leading manufacturer of Furnaces, Analytical Instruments, Laboratory Equipment, and Material Processing Equipment. Established in 2002, our unwavering commitment to excellence has earned the trust of diverse clientele, including prestigious universities, research organizations, and thriving industries.

At VBCC, our dedicated team delivers comprehensive solutions across the industry spectrum, offering superior products and essential technical expertise through tailored turnkey solutions. With over 22 years of experience, we have installed more than 15,000 products and serve over 500 esteemed clients.

Mission

- Deliver innovative and High-Quality Furnaces, Analytical Instruments, Laboratory Equipment, and Material Processing Equipment.
- Exceed customer expectations through excellence in engineering and unparalleled technical expertise.
- Provide dedicated customer service and tailored turnkey solutions.
- Support the diverse needs of clients, fostering advancements in research, industry, and education

Vision

- Be the global leader in high-temperature instrument manufacturing.
- Maintain an unwavering commitment to quality, innovation, and customer satisfaction.
- Continuously expand technological capabilities and product offerings, setting new industry standards.
- Contribute to the success of clients and the advancement of science and industry worldwide through sustainable practices and continuous improvement.



Our Team

Welcome to VBCC High Temperature Instruments!

Our leadership, CEO Naveen and Dr. V. Viswabaskaran, brings over 32 years of combined expertise in the field, expertly blending experience with cutting-edge innovation. Our skilled team, including specialists in Ceramic, Mechanical, and Electrical Engineering, creatively tackles challenges, ensuring excellence in high-temperature equipment. We are committed to innovation, strong client relationships, and customer satisfaction. Join us as we advance the technology of high-temperature instruments and innovate to make a significant impact.



NAVEEN VISWABASKARAN
CEO & Managing Director



DR.V.VISWABASKARAN
CTO & Director

The "Tailor Made" Promise

At VBCC, we understand that each client has unique requirements that may extend beyond our standardized product offerings. Our "Tailor-Made" promise ensures that we customize our designs to meet your specific needs. Whether it involves modifying existing products or creating entirely new solutions, our team of experts works closely with you to understand your challenges and deliver equipment that perfectly aligns with your operational goals. With a focus on flexibility and innovation, we provide bespoke solutions that enhance efficiency, precision, and performance, ensuring your complete satisfaction and success.

Analytical Instruments

At VBCC, we offer high-precision instruments for thermal and electrical material analysis, trusted by research labs and industries alike.

Our product range includes:

- Dilatometer systems for precise thermal expansion measurements
- Reverse thermal expansion analyzers for cooling behavior analysis
- Thermal conductivity apparatus to evaluate heat transfer in solids
- Four-probe and gas sensor platforms for resistivity and sensing studies

Built with the same innovation and quality as our Denkiro furnaces, these instruments combine accuracy, ease of use, and long-term reliability. Ideal for advanced materials research, quality control, and product development.

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Dilatometer

Precision Thermal Expansion Measurement Systems

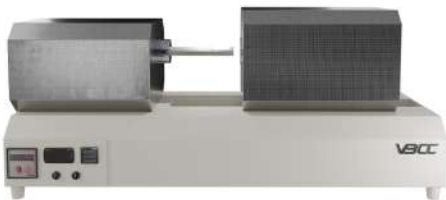


Models Available:

- Dilatometer 1200 (Max 1200°C, Quartz tube)
- Dilatometer 1400 (Max 1400°C, Recrystallized Alumina tube)
- Dilatometer 1600 (Max 1600°C, Recrystallized Alumina tube)

Key Features:

- High Temperature Range - up to 1600°C
- Precision Measurement - 1 micron accuracy (German LVDT – Massetron)
- Robust Construction - Double-walled MS body with powder coat finish
- Smooth Furnace Movement - Linear bearings & stainless steel rails
- Superior Insulation - Low thermal mass zirconia fibre board
- Advanced Control - TAIE PID controller + B-Type thermocouple
- Smart Interface - LabVIEW-based software, PC & inkjet printer included
- Safety Assured - Phase angle thyristor control with input/output fuses



Options Available:

- Extended measuring range
- Customized tube sizes and materials
- Software upgrades for advanced analysis
- API/CSV data export integration

Parameter	Dilatometer 1200	Dilatometer 1400	Dilatometer 1600
Max Temperature	1200°C	1400°C	1600°C
Tube Material	Quartz	Recrystallized Alumina	Recrystallized Alumina
Heating Element	MOSi ₂	MOSi ₂	MOSi ₂
Temp Control	TAIE PID Controller	TAIE PID Controller	TAIE PID Controller
Expansion Measurement	LVDT, 1 Micron Accuracy	LVDT, 1 Micron Accuracy	LVDT, 1 Micron Accuracy
Measuring Range	0–2000 Microns	0–2000 Microns	0–2000 Microns
Sample Size	10 × 10 × 40 mm ±2 mm	10 × 10 × 40 mm ±2 mm	10 × 10 × 40 mm ±2 mm
Software	LabVIEW Interface	LabVIEW Interface	LabVIEW Interface

Reverse Thermal Expansion System

Reverse Thermal Expansion System

Models Available:

- RTE 1200 (Max 1200°C, Quartz tube)
- RTE 1400 (Max 1400°C, Recrystallized Alumina tube)
- RTE 1600 (Max 1600°C, Recrystallized Alumina tube)

Key Features:

- High Temperature Capability - up to 1600°C
- TAIE PID Control - $\pm 1^{\circ}\text{C}$ accuracy with B-Type thermocouple
- Ultra-Precision - 1 micron resolution with German LVDT (Massetron)
- Smart Movement Design - Linear-guided vertical furnace lifting system
- Robust & Compact - Powder-coated MS body with double-wall insulation
- LabVIEW Interface - Seamless data acquisition and analysis
- Vertical Measurement System - Ideal for gravity-assisted expansion detection
- Safe Operation - Thyristor-based control with full fuse protection
- PC & Printer Included - Fully digital output system for reports

Options Available:

- Extended measuring range
- Customized tube sizes and materials
- Software upgrades for advanced analysis
- API/CSV data export integration



Parameter	RTE 1200	RTE 1400	RTE 1600
Max Temperature	1200°C	1400°C	1600°C
Tube Material	Quartz	Recrystallized Alumina	Recrystallized Alumina
Heating Element	MOSi ₂	MOSi ₂	MOSi ₂
Temp Control system	TAIE PID + B-type TC	TAIE PID + B-type TC	TAIE PID + B-type TC
Expansion Measurement	LVDT (1 Micron Accuracy)	LVDT (1 Micron Accuracy)	LVDT (1 Micron Accuracy)
Measuring Range	0–2000 Microns	0–2000 Microns	0–2000 Microns
Sample Size	10 × 10 × 40 mm ± 2 mm	10 × 10 × 40 mm ± 2 mm	10 × 10 × 40 mm ± 2 mm
Interface software	LabVIEW Interface	LabVIEW Interface	LabVIEW Interface
Furnace Movement	Vertical Linear Guide	Vertical Linear Guide	Vertical Linear Guide

Four-Probe Gas Sensor Testing Unit

Precision System for Gas Sensitivity Analysis Under Controlled Atmosphere



Scope:

Designed to evaluate gas sensor response under **vacuum and specific gas atmospheres** with precision temperature and electrical control. Fully automated testing platform for R&D in gas sensing technologies.

Key Features:

- **Stainless Steel Vacuum Chamber** - Designed for up to 1 mbar pressure
- **Four-Probe Clamping** - Simplified electrical and mechanical contact
- **Hotplate-based Heating** - Up to 600°C for sensor activation
- Integrated Mass Flow Controllers, Vacuum Pump & Gas Mixing System
- Keithley 7510 Source Measure Unit for precise resistance tracking
- Complete LabVIEW Software Interface and logging system
- Supplied with PC, display system & exhaust bubbler

Customization Options:

- Adjustable flow rate MFCs
- Chamber size variations
- High-temp heating plate options
- Additional gas lines or sensors
- Export formats: CSV, Excel, APIs

Graph Outputs (via LabVIEW):

- Time vs Sample Temperature
- Time vs Furnace Temperature
- Time vs Voltage / Current / Resistance



System Overview

Feature	Specification
Chamber Size	200 × 200 × 250 mm
Hot Zone Diameter	50 mm
Shell	SS 316 body with reinforced structure
Max Pressure	Vacuum up to 1 mbar
Heating System	Strip Heater, 0.25 kW, up to 600°C (working: 500°C)
Temperature Control	TAIE PID Controller (144 segment), K-type Thermocouple, ±1°C accuracy
Clamping System	Four-point silver (Ag) probes with adjustable holder
Vacuum Pump	Rotary pump, 760 mmHg, analogue gauge
Mass Flow Controllers	2 × AALBORG USA MFCs, SS body, ±0.8% accuracy, 0–100% FS, 0–5 V analog/digital I/O
Gas Mixing Chamber	SS with mixing valves + software control
Bubbler	Included for safe exhaust release
Pipeline & Valves	1/4" SS piping with automated needle valves, ferule fittings
Source Measure Unit	Keithley 7510, 7.5-digit multimeter, dual measurements, 50k rdgs/s, RS232
Data Acquisition	LabVIEW-based interface with full graphing and export options
Computer	Intel Core i5, 4 GB RAM, 1 TB HDD, 18.5" LED, software pre-installed

Thermal Conductivity Apparatus

High-Temperature Measurement System for Refractories and Ceramics

Application Scope:

Engineered for accurate measurement of thermal conductivity of refractories and ceramic materials up to **1400°C** using the **Hot Cross Wire method** in accordance with ASTM C1113-99.

Key Features:

- High-temp Silicon Carbide Heating Furnace (1400°C Continuous)
- Platinum Wire Hot Cross Assembly for precision measurement
- Integrated EUROTHERM PID Controller with safety cutoff
- Fully insulated test chamber (brick cavity: 230 × 115 × 150 mm)
- Supplied with PC, Software, and Print Outputs

Feature	Specification
Max Temperature	1400°C (Continuous Operation)
Chamber Size	200 × 200 × 250 mm
Heating Elements	6 × SiC Rods
Sample Volume	230 × 115 × 150 mm (fits 2 bricks)
Outer Dimensions	750 × 750 × 750 mm
Insulation	Alumina bricks + zirconia-blend fiber
Shell Material	Powder-coated MS, air-cooled
Temperature Sensor	Type R Thermocouple (Pt+Rh13%/Pt)
Controller	Eurotherm 2416 (PID, 16-Segment Programmable)
Hot Wire	1.0 mm Platinum
Power Input	4 kW, 1-Phase AC, 32A MCB (customer-supplied)
Safety Features	Backup controller, magnetic contactor, fuses
Instrumentation	PC Interface with custom software & inkjet printer
Data Outputs	Temperature profiles, thermal conductivity curves





Dilatometer



**Four-Probe
Gas Sensor Testing Unit**



**Reverse Thermal
Expansion System**



**Thermal Conductivity
Apparatus**

Clientele





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