ENVIROMENTAL & RELIABILITY TEST SYSTEMS

Products & Services
Environmental & Reliability Testing Solutions

Simulated natural and induced environmental tests for evaluating the reliability of products have evolved over time. Extreme operating environments, improper packaging, handling, transportation, and storage can result in extensive damage to a product or its components. HIACC now offers a complete range of environmental and reliability test systems to conduct all types of environmental & mechanical testing.
Climatic Test Chamber

Material properties change with varying temperatures, for instance, gaskets and other synthetic rubber parts in a pneumatic system are severely aggravated by temperature above 65°C. Frost formation, fogging, material degradation, and mechanical failures occur due to fluctuating temperature and relative humidity.

HIACC climatic chambers are ideal for conducting high & low temperature, high & low humidity, and thermal cycling tests. The test chamber can be customised to suit different test standards. It comes with a larger viewing window, ports for live specimen testing, a visual alarm system, improved mobility, and a smaller footprint.

Technical Specification

<table>
<thead>
<tr>
<th>Specifications</th>
<th>Klima-40T/C</th>
<th>Klima-70T/C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temperature</td>
<td>Range -40°C to +180°C</td>
<td>-70°C to +180°C</td>
</tr>
<tr>
<td>Temperature Range</td>
<td>-40°C to +180°C</td>
<td>-70°C to +180°C</td>
</tr>
<tr>
<td>Rate of Temperature Change (options)</td>
<td>1°C/Min to 3°C/Min, Upto 20°C/Min</td>
<td>1°C/Min to 3°C/Min, Upto 20°C/Min</td>
</tr>
<tr>
<td>Humidity Range</td>
<td>10%RH to 98%RH</td>
<td>10%RH to 98%RH</td>
</tr>
<tr>
<td>Customisability</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Refrigeration System</td>
<td>Single</td>
<td>Cascade</td>
</tr>
<tr>
<td>Low GWP Refrigerant (optional)</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Optional Accessories

- Water Chillers
- Heavy Duty Specimen Shelf
- Cable Port & Rubber Plug
- Low GWP Refrigerant
- Communication Ports & Cables

- Water chillers for water-cooled condenser
- For specimen weight above 40kg, heavy duty shelf must be used.
- Cable ports available from 50mm, 100mm, and 150mm
- Alternate refrigerants for R404A, R23.
- Rs. 485, Rs. 232

Benchtop Chamber

Compact thermal chambers are known as “Benchtop/Tabletop Chambers” which have smaller footprint areas making it easily fit into small lab space and can be moved across effortlessly. The chamber simulates temperature and humidity (optional) and are available in the standard volume range of 96L.

HIACC tabletop chambers are compact & quiet yet adhere to multiple test standards & ideal for long term tests. Built with corrosion-resistant stainless steel, the test space can hold specimens up to 15kg. The refrigeration system uses eco-friendly low GWP refrigerant (optional) and meets all statutory standards.

Technical Specification

<table>
<thead>
<tr>
<th>Specifications</th>
<th>Klima-BT</th>
<th>Klima-BT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temperature</td>
<td>-30°C to +120°C</td>
<td>-60°C to +120°C</td>
</tr>
<tr>
<td>Standard Volume Range</td>
<td>30L</td>
<td>36L</td>
</tr>
<tr>
<td>Inner Dimension</td>
<td>400x300x300mm</td>
<td>400x300x300mm</td>
</tr>
<tr>
<td>Temperature Range</td>
<td>-30°C to 120°C</td>
<td>-60°C to 120°C</td>
</tr>
<tr>
<td>Rate of Temperature Change</td>
<td>1°C/Min</td>
<td>1°C/Min</td>
</tr>
<tr>
<td>Customisability</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Refrigeration System</td>
<td>Single</td>
<td>Cascade</td>
</tr>
<tr>
<td>Low GWP Refrigerant (optional)</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Optional Accessories

- Stand
- Heavy Duty Specimen Shelf
- Cable Port & Rubber Plug
- Low GWP Refrigerant
- Communication Ports & Cables

- Durable bottom stand is available in multiple dimensions and has levelling casters for mobility.
- For specimen weight above 10kg, heavy duty shelf must be used.
- Cable ports available from 50mm, 100mm, and 150mm
- Alternate refrigerants for R404A, R23.
- Rs. 485, Rs. 232
Walk-In and Customised Test Chamber

Walk-in/Drive-in test chambers simulate multiple environmental exposures on a whole vehicle or its assemblies. Walk-in Chambers are designed and assembled using pre-fabricated modular panels or through welded floor construction. Appropriate construction type is selected based on the specimen type and test profile.

a) The welded floor construction is opt for heavy-duty testing with high ramp rate / humidity cycle and is ideal for high soak period testing.

b) While the modular panel is the most commonly used design as they can be assembled in a short period and provide floor loading up to 5 tonnes. The chamber is equipped with urethane insulations, moisture seals, dry & frost-free test space, lightings and touchscreen controller.

Features

Uniform Climate Simulation
Uniform temperature and humidity is maintained inside the test space through the efficient control system which ensures synchronous & optimized performance of heat exchangers, fan and humidity system.

Frost-Free Operation
The advanced refrigeration and dehumidification system ensures frost-free operations and achieves low humidity range.

Viewing Window
The automatic heating system is turned on to avoid fogging on the viewing window. This provides an uninterrupted view of the specimen under test.

Energy Saving & Low GWP Refrigerant
Efficient refrigeration system with intelligent controller optimizes the energy distribution as per test cycle resulting substantial decrease in power consumption. HIACC also helps customers achieve environment compliance by using low GWP refrigerants (on demand).

Touch Screen Controller
The 7-inch touchscreen controller provides effortless test experience. The controller is equipped with USB access, ethernet, process mimic, alarm status and chamber diagnostics.

Laboratory and Industrial Ovens

Temperature Chambers or Ovens are extensively used for high-temperature tests as well as for drying, curing, heat treatment & softening applications.

Through convection heat transfer, a uniform temperature is maintained, and the controller plays a vital role in the programme operation. The single moulded structure made with stainless steel is corrosion & rust-free. Convenient door design, ample test space and enhanced heating performance add more values to HIACC ovens.

Features

Excellent Heating Performance
Temperature uniformity, consistency, heating rate & recovery time are programmed precisely to provide best in class performance. At ambient temperature even if the ventilation damper is opened the chamber temperature remains constant.

PID Controllers
Micro processor based PID controllers (with trimmer function) offer great flexibility in setting test profile and managing chamber operations.

Benchtop & Floor Base Design
Ovens are available in two designs which are benchtop and floor-based. Benchtop design comes with movable floor stand while floor-based ovens are mostly used for heavy-duty testing applications.

Safety
Thermal fuse, door switch, leakage breaker, heater wiring breaker, upper & lower temperature limit alarm, reverse prevention relay & overheat protector are provided for safety.

Technical Specification

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Celsius 100</th>
<th>Celsius 250</th>
<th>Celsius 400</th>
<th>Celsius 600</th>
<th>Celsius 1000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inner Dimensions (mm)</td>
<td>500x400x600</td>
<td>500x500x700</td>
<td>700x700x900</td>
<td>800x800x900</td>
<td>1000x1000x1000</td>
</tr>
<tr>
<td>Chamber Volume (L)</td>
<td>100L</td>
<td>250L</td>
<td>300L</td>
<td>576L</td>
<td>1000L</td>
</tr>
<tr>
<td>Temperature Range</td>
<td>RT+10°C - 200°C</td>
<td>300°C (Optional)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Temperature Accuracy</td>
<td>1°C</td>
<td>1°C</td>
<td>1°C</td>
<td>1°C</td>
<td>1°C</td>
</tr>
<tr>
<td>Stainless Steel Shelves</td>
<td>2Nos</td>
<td>2Nos</td>
<td>2Nos</td>
<td>2Nos</td>
<td>2Nos</td>
</tr>
<tr>
<td>Power Supply</td>
<td>230V 1PH 50Hz</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Viewing Window</td>
<td>300 x 300mm or 400 x 400mm (Optional)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Port Hole with plug</td>
<td>Diameter 50mm and 125mm (Optional)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Floor Stand</td>
<td>Movable on wheel with lockable system (Optional)</td>
<td></td>
<td></td>
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</tbody>
</table>
**Touchscreen Controller**

- Remote monitoring and control
- Test program creation and management
- Easy to and from data transfer from server and test chamber
- Web browser access
- Compatible with latest Android & iOS devices for web access
- Quick test data download
- The integrated system diagnostics with efficient fault analysis and fast troubleshooting
- Safety integrated

**Vibration Test Systems**

**Electro-dynamic Vibration Test System (Air Cooled/Water Cooled Series)**

Dongling is one of the largest and most innovative manufacturers of air cooled and water cooled vibration test systems. Its random sine force ratings from 0N to 20000N payloads from 7Kg to 150Kg. Typical applications of Dongling's vibration shaker include automotive component testing, electronic product testing, avionics testing and medical research etc. Dongling also provides turn-key solutions with environmental test chambers from HIACC for multi-environment combined vibration tests.

**Tri-Axis Electrodynamic Vibration Test System**

Our range of vibration test equipment included the most advanced 3 axis electrodynamic test system in the industry. This shaker system can more radically simulate the dynamic environment of the real world by simultaneously exciting 3 different axes. Additional benefit of simultaneous 3 axis testing are shortened test time improvements in complex test analysis and a reduction in under and over testing of product in single axis.

**Head Expander**

Our head expanders are designed to optimise performance on your vibration test system. Head expanders are made of Magnesium with various sizes from 300mm to 3800mm in Square or Round shape. Customised shapes and sizes are also available. All head expanders are passed finite element analysis.

**Slip Table**

Slip table can be integrated with Electro-Dynamic Vibration Shakers to achieve three-dimensional vibration test. The slip table can be classified as per integration type, split type and connection way. V-shaped guide rail slip table includes the horizontal table, V-shaped rail, connectors, granite slab, slip table base, and built-in oil source. Fuel supply pump is built-in with a compact structure and easy operation. Based on the slip table size, the number of V-shaped guide rail is different. This V-shaped guide rail has a high resistance to overturning moment.

**Power Amplifier**

The smart and energy saving power amplifier from Dongling is composed of the logical unit, power unit and control unit has the intelligent manipulation, stability, flexible configuration, efficient structure and easy maintenance. The amplifier can be retrofitted with any brand vibration shaker for better performance and reliability.

**Vibration Controller**

Vibration controller used high performance processor with low-noise analog technology, achieves high performance and high reliability. It comes with an all-in-one input interface and adapts to a variety of sensor input. The safety output protection circuit is present to protect the safety of the test piece and the test system. With excellent control performance and control accuracy, 3200 lines and lowest swept sine of Hz makes it an ideal controller. It also comes with a network communication interface and convenient remote monitoring.

**Vertical Shock/Bump Tester**

The hydraulic vertical test system converts high-pressure liquid energy into kinetic energy to create a reciprocating movement of the element through an electro-hydraulic servovalve. The energy conversion and amplification is used to simulate the vibration or shock encountered in the actual usage environment. The intent of the testing is to optimise the product structure to withstand the actual shock environment it is expected to encounter.

Other Options Available: Vertical Shock/Bump Tester (Pneumatic), Horizontal Shock/Bump Tester (Hydraulic)
Service Portfolio & Support

- Refurbish your old test chamber and increase life span by more than 5 yrs.
- Reduce the lifetime cost by 60%
- Retrofit old HCFC (R404a, R23) based refrigeration system to comply with low GWP refrigerant
- Upgrade to latest control technology at lowest cost
- Improve energy efficiency

Rentals & Retrofitting Services

Service Portfolio

Refurbishment Breakdown

Support

- Call our support hotline number: + 019869 06149
- E-Mail Us support@hiaccengineering.com
- Register on Website: www.hiaccengineering.com

Rental Range

Multi-Brand Support

HIACC provide both scheduled & unscheduled maintenance for Non-HIACC test chambers:
- More than 150 OEM test chambers are serviced annually
- 200+ localised spare parts inventory
- Maintains response time of <24 hr for even OEM test chambers

We raise a ticket for your issue in less than 24 hrs. You’ll receive an e-mail confirming receipt of the issue raised.

Our support engineers will respond, usually resolving your issue remotely.

If not, a visit to your premises will be arranged (based on your service plan).