

## HOT & COLD CHAMBER



## APPLICATIONS

- **Electronics & Electrical Components Testing:**  
To evaluate circuit boards, sensors, and devices under rapid temperature changes.
- **Automotive Industry:**  
Tests vehicle components like rubber parts, dashboards, and connectors for thermal durability.
- **Aerospace & Defense:**  
For simulating high-altitude and temperature variations experienced by aircraft components.
- **Material Research:**  
Assessing the **thermal expansion, contraction, and fatigue resistance** of metals, plastics, and composites.
- **Pharmaceutical & Packaging Industry:**  
Stability testing and shelf-life evaluation of products under varying temperature conditions.
- **Battery Testing:**  
Evaluating lithium-ion or other batteries for performance and safety under temperature stress.

## KEY FEATURES

- **Durable Construction:**  
Inner chamber made of stainless steel (SS 304/316) and exterior of powder-coated mild steel.
- **Temperature Range:**  
Typically from  $-70^{\circ}\text{C}$  to  $+180^{\circ}\text{C}$  with rapid heating and cooling capabilities.
- **Programmable Controller:**  
Advanced microprocessor or PLC-based controllers with multi-step temperature cycling programs.
- **Uniform Air Circulation:**  
High-performance fans ensure uniform temperature distribution throughout the chamber.
- **Insulated Construction:**  
High-grade insulation minimizes heat loss and improves energy efficiency.
- **Safety Features:**  
Equipped with over-temperature protection, sensor fault alarms, and automatic power cutoff.
- **Data Logging & Interface: (Optional):**  
USB or Ethernet connectivity for real-time monitoring, data recording, and remote operation.
- **Observation Window**  
Double-glazed window with heater film for clear internal visibility during operation.
- **Interior Lighting:**  
Energy-efficient LED illumination inside the test chamber.

## TECHNICAL MATRIX

| Model                  | PTE HC-616 A  | PTE HC-616 A | PTE HC-616 A | PTE HC-616 A | PTE HC-616 A |
|------------------------|---|--------------|--------------|--------------|--------------|
| Volume                 | 170 L   | 240 L        | 350 L        | 500 L        | 1000 L       |
| MOC                    | Inner Chamber Stainless Steel 304 grade & Outer MS Duly Powder Coated |              |              |              |              |
| Temperature Range      | -70°C to +180°C   |              |              |              |              |
| Temperature Accuracy   | ±1 or better 0.5°C  |              |              |              |              |
| Temperature Uniformity | ±2.0°C  |              |              |              |              |
| Door                   | Glass Viewing Window  |              |              |              |              |
| Display                | PLC HMI Display   |              |              |              |              |
| Air Circulation        | By Forced Air System  |              |              |              |              |
| Heating Rate           | 3°C to 5°C per minute   |              |              |              |              |
| Cooling Rate           | 2°C to 4°C per minute   |              |              |              |              |
| Cooling                | R404 A With CFC Free Copeland Condensor Motor and Relay               |              |              |              |              |
| Compressor             | Embraco / Emersion  |              |              |              |              |
| Humidity Range         | 50 % to 90 %  |              |              |              |              |
| Humidity Accuracy      | ±3 to 5 %RH   |              |              |              |              |
| Heating                | U Shaped Nichrome Wire Heater   |              |              |              |              |
| Control System         | PID / PLC-based programmable controller                               |              |              |              |              |
| Insulation             | High-density polyurethane foam or glass wool                          |              |              |              |              |
| Illumination           | Fluorescent Light with Door Switch                                    |              |              |              |              |
| Safety Protection      | Over-temperature, compressor overload, sensor fault alarm             |              |              |              |              |
| Data Interface         | USB / RS-485 / Ethernet   |              |              |              |              |
| Power Supply           | 230V / 415V AC, 50 Hz   |              |              |              |              |

## OPTIONAL ADD ONS

- **Humidity Control System** (for combined temperature & humidity testing)
- **Touchscreen HMI Display**
- **Data Logger / Chart Recorder**
- **Customized Chamber Volume** (from 50L to 2000L or more)
- **Remote Monitoring via Wi-Fi or Ethernet**
- **Software for Data Analysis & Report Generation**
- **Multi-zone temperature testing capability**