RESONANCE AUTOMATION AND MACHINES
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RESOTECH- HOT AND COLD TEST CHAMBER PROPOSAL

Professional Manufacturer of Test Equipment

MAKE : RESOTECH
MODEL NO.: RESOTECH-ENV260706

MANUFACTURERS & SUPPLERS

SPECIAL PURPOSE MACHINE, MATERIAL TESTING MACHINE, LEAKAGE TESTING MACHINE, PACKIGING TESTING MACHINE, ENVIRONMENTAL TEST CHAMBER, ASSY. LINE EQUIPMENT, SOLUTION FOR ELECTRONIC AUTOMATION AND PRODUCT DEVELOPMENT, COMPUTERIZED CONTROL MACHINE , PLC HMI SCADA VISUAL BASIC SOFTWARE DEVELOPMENT SOLUTION AND OTHER SERVICES.

We are manufacturers and suppliers cold rooms. We make cold rooms as per customer requirements. We make cold rooms such as cold rooms for industry. Industry cold rooms are also designed for definite temperature and humidity levels that maintain freshness of the product. High humidity evaporators play an important role in most of these cold rooms. These cold rooms are designed the airflow away from the product and are low and also avoid turbulence.

HOT AND COLD CHAMBER

DESCRIPTION

HOT AND COLD TEST CHAMBER

RESOTECH Make Hot and Cold Test Chambers are designed for testing ,treating and storage of product and material where controlling of climate is necessary. Hot and Cold chambers find applications in Pharmaceutical, Chemical, Automobile, Biotechnology, Telecommunication, Electronics, Defense Medical Equipment, Universities, Military Applications, Consumer Goods.

Hot and Cold Test Chamber offered find use in labs for controlling of temperatures and provide optimum support for storing of samples. Based on advanced technology support, hot and cold chamber is suitable for use in areas requiring rapid changes in temperature. Some of its features include use of quality corrosion-resistant and easily maintainable stainless steel working chamber and housing support, allows maintenance of precise and homogeneous temperatures, temperature values of storage chambers measured as per defined industry standards among others.

Features:-

• Rapid air circulation

• Durability

• Longer service life

• Heavy insulation

• Motorized forced air circulation

Hot and Cold Chamber

Hot and Cold Chamber offered provides dedicated support in testing of specimens in cooled or heated environment. Making use of computer controlled chamber support, the system allows for setting of static temperatures or for performing of temperature sweeps. Some of its features include software controlled temperature control system, capable of controlling static and dynamic temperatures, comes with integral heater support, allowing removal of chambers from test instrument for other testing needs among others

RESOTECH- BY HOT AND COLD TEST CHAMBER

CONSTRUCTION & DESIGN FEATURES

- Hot & Cold Test Chambers are Precisely Constructed and fabricated thereby giving consistency in performance-operation and an professional look.
- Unique air circulation system, refrigeration system, humidity system, full view observation glass door and trays.
- Foamed - in - place PUF insulation ensures temperature stability and reduced energy consumption

CONTROL PANEL FEATURES

- Microprocessor-based PID controller / Profile Controller with auto tuning option for accurate control of temperature and humidity conditions with printer interface module to store data with on line and off line printer option as per print time interval.
- Resistive type temperature sensor .
- A multipoint (4+4) temperature and humidity scanner with printer interface and PC interface facility for online mapping purpose.
- GSM mobile alert module to give malfunction SMS on three cell phones simultaneously.
- A PLC system for an auto changeover of standby systems and other event logging and monitoring purpose.
- Alternatively a Advance PLC system with touch screen display with all the above features incorporated. Network.

SAFETY INTERLOCK FEATURES

- Thermostatic safety system is provided as an additional safety feature.
- Dedicated Safety cut off system and chamber shut down in case of overshoot or undershoot of temperature with audio visual alarm.
- Hot & Cold Test Chambers are provided with safety cut offs and alarms at centralised alert &security gate area.
- Electrical Safety fuses for short circuit protection.
- Software logging for all the alarms and events

SOFTWARE FEATURES

- 21 CFR part 11 USFDA compliant software with validation documents.
- GSM alarm system (mobile alert).
- All the events, utility, working status, all the alarms are logged in the software.
- Records in graphical and in tabular form. Complete documentation with extensive DQ, IQ, OQ and PQ protocols as per the International guidelines .

Tabbed interface

High resolution 7-inch LCD/LED/TFT. Tabs at the bot tom make for quick and easy flipping between screens. Touching an icon displays the menu label which, touched, makes flipping between screens easier.

Multilingual display

Use the language icon at the top of the display to change the display language from English, Hindi on any screen.

QUICK ACCESS BUTTON

For added convenience, the star (★) icon can have quick access functionality assigned, such as for jumping to a certain screen or directly launching a saved test pattern.

TEST DATA RECORDS

Temperature settings and measurements can be stored in the internal memory and exported with the use of USB f lash drives. This enables them to be displayedas graphs on web browsers and stored forback-up purposes.
Test data can also be recorded in real time to a USB flash drive.
* USB flash drives not included.

OPTIONAL EXTRAS / ACCESSORIES

a) PLC based system: PLC with HMI touch screen grey monitor with 21 CFR Part 11 features
b) Magnetic door lock feature
c) GSM system: alarms sent to predefined mobile numbers
d) HMI: touch screen grey
e) Digital PID controller / Profile controller with printer interface to connect EPSON Dot matrix line printer. Print interval programmable, can print date, time, temperature
f) PC interface for above controller with software on CD & hardware or software with 21 CFR part 11 features
h) PC interface for above controller with software on CD & hardware

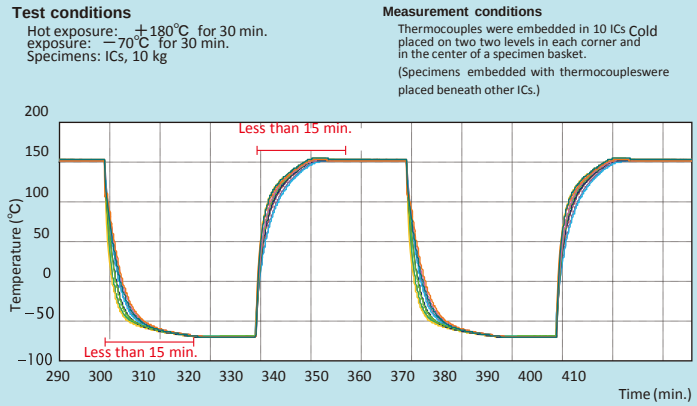
SPECIFICATIONS

Construction and design shall be as per IS 9002 Part I and Part II and IS 9000 part II and III
- 70°C to 180 °C
Temp: ± 1°C
Test space volume : 200 Liters
± 1°C maximum over the entire volume of the chamber
Average temperature cooling : 5.0^{0}C Average temperature Heating : 8.0^{0}C
Test space dimensions (WXDXH) : 560mm X 570mm X 630mm External dimensions (WXDXH) : 850mm X 1250mm X 1640mm
Noise level : 65 dB
Rated power : 5 KW
Temperature deviation in time : ±0.3 K to ±1.0 K
Compressed air dryer for Condensation protection : -30°C condensation forming on test specimen during heating cycles.
Entry port : 1 No. Access port Dia. 80mm
Maximum load on test space floor : 45 kg
Chamber door : Door with observation window
Shelf : stainless steel shelf
Total weight : <400 kg
Mobile Design : Test Chamber should be of Mobile Design to be provided with Heavy Duty Wheels
Inner: Double walled ,Non Magnetic Stainless Steel ANSI 304 grade of 20SWG thick.The surface shall be stain finished and vapor tight.
Air circulation in test space : The Test Chamber with Axial flow fan at rear wall
Outer: Mils steel with powder coated / stainless steel 304 Inner : stainless steel 304
Glass wool of high density and low k factor and shall act as a permanent vapor barrier
Unit shall have 4 No's of durable lockable wheel revolving type(Rotating 360 degree)
Lockable door with robust hinges on right hand side. Inner shall be made of stainless steel 304 grade of at least thickness with leak proof gasket.
Leak proof locking arrangement for door.
Leak proof Glass door inside the chamber.
Total reflecting light and switch to illuminate the test space during test
Air cooled condenser with cascade refrigeration .
The heating of the chamber heaters of suitable capacity. There shall not be direct radiation of the heat on the test specimen.
Microprocessor Programmable

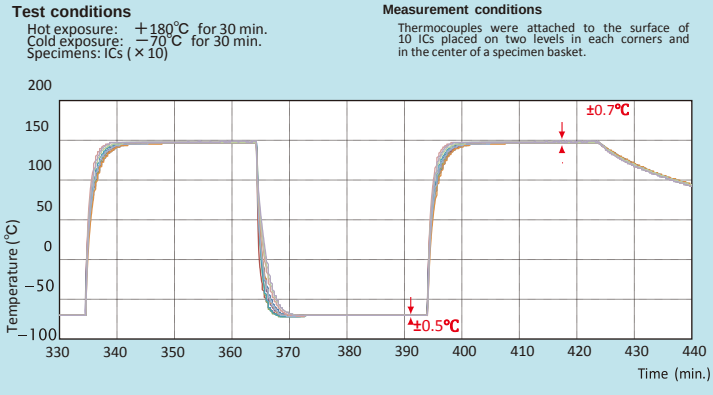
Touch screen PLC based controller with user friendly menu for programming set values, cycles. Set temp, humidity, time cycle, segment/step.
TFT screen display with 120X 160 pixels. The following parameters shall be displayed-Elapsed time, set time, Dry temp, Wet temp, Set temp, Current Program, Current Cycle Display shall be accessible remotely via internet for monitoring.
No of Programme:20 Minimum No of Cycle:10 Minimum No of Segment/Steps:100 minimum
Dry Heater, Compressor, etc,
RS232/485 serial interfaces for bi-directional communication with external computer. It Shall be possible to create and execute test program , Print and store of test program in tabular and graphic , data logging with temp, RH and time. Remote monitoring of reading through internet shall be possible.
Full proof protection for over temp and under temp(minimum two level protection) Over load for compressor and Fan All power lines shall be protected with MCB and HRC fuses. ALARM and TRIP of AC power on exceeding a set HIGH temperature
2 Nos of stainless steel shelves shall be provided for placing the samples during testing.
400V± 10% three phase supply ,50Hz ± 5%
Calibration certificate of complete chamber from NABL Accredited Laboratory
Two Year form the date of Installation and Commissioning. The supplier has to give undertaking regarding post warranty technical support, service and supply of spare parts for successful operation of the equipment's for ten year.
Two sets of instruction cum maintence manual. Complete drawings including refrigeration and electrical circuit.

Reduce test time with a two-zone elevator type

Temperature recovery example



Temperature uniformity example



Short temperature recoverytime

Less than 15 minutes for specimen temperature to recover in test between +180℃ and −70℃, plastic molded ICs 10kg as specimen.
Less than 5 minutes for upstreamtemperature to recover in test between +180℃ and −70℃.

Meets international standards

Designed to comply with major environmental test standards like MIL, IEC, JASO. (p.13〜14)

Improved temperatureuniformity

Uniform airflow in the test area allows outstanding temperature uniformity. Uniform thermal stress is applied to each specimen, minimizing variation in test results.

Smooth specimen transfer

"Soft move mode" is automatically activated when specimens move between the hot and cold chambers to reduce vibration and shock

Test area anti-drop mechanismto protect specimens

The test area's drive unit is equipped with a braking device to prevent specimens from falling from the test area under any abnormal situations.

Comprehensive safety system

A double safety system ensures that any transfer between test areas stops automatically when the door is open, and that the door locks while transfer is in progress.

Specimen Temperature Trigger (STT)

With up to two sensors attached to specimen(s), the STT function begins counting the exposure time once the specimen reaches a set temperature, or promptly activates moving of the specimen for the next exposure. This reduces overall testing time and ensures accurate specimen temperate u res. Temperature readings can be recorded for each specimen and test area by connecting a temperature recorder.

Easy wiring access

A cable port on right side allows for easy wiring for specimen measurement.

Safe specimen handling thanks to ambient temperature recovery

The ambient temperature recovery feature intakes external air to return the test area to an ambient temperature after testing has finished or been paused.

Double-lock door handle guarantees tight seal

Viewing window (option)

Optional viewing window with interior lighting allows checking on specimens and wiring during testing.

Operation lamp

The standard operation lamp indicates the chamber's status (in operation, on pause, or alert

SAFETY DEVICES

- Leakage breaker (200, 220V AC)
- Circuit breaker (208, 380, 400/415V AC)
- Electrical compartment door switch
- Hot chamber overheat protection switch
- Cold chamber overheat protection switch
- Hot chamber overheat protector
  (Built into temperature controller)
- Cold chamber overheat/ overcool protectors
  (Built into temperature controller)
- Test area overheat/ overcool protectors
  (Built into temperature controller)
- Test area overheat/ overcool protectors
- Circuit breaker
- Refrigerator high/ low pressure switch
- Compressor built-in protector
- Temperature switch for compressor
- Water suspension relay
- Temperature switch for air circulator
- Air circulator thermal relay
- Motor inverter
- Motor reverse prevention relay
- Hot chamber door switch
- Cold chamber door switch
- Door lock mechanisms
- Cartridge fuse
- Specimen power supply control terminal
- Cooling tower interlock terminal

ACCESSORIES

- Specimen basket
  (

- Shelf brackets ..... 2 sets
  Cartridge fuse 4
- Cable port rubber plug 2
- Perforated cable port cap 1
- Wire fisher (specimen wiring tool) 1
- Thermocouple 2
- Specimen temperature input connector 2
- 3-pole socket 3
- Nipple 1
- Strainer 1
- Strainer element 1
- Breaker handle cover 1
- Operation manual 1

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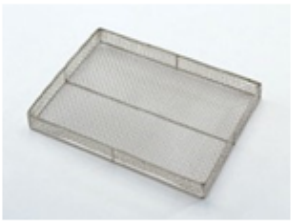
- Test area overheat and overcool protectors
  (Built into temperature controller)
- Test area overheat / overcool protectors
- Refrigerator high pressure switch
- Thermal relay for compressor

- switch for compressor
- Temperature switch for air circulator
- Thermal relay for air circulator
- Motor inverter
- Motor reverse prevention relay
- Hot chamber door switch
  Temperature
- Cold chamber door switch
- Test area hold
- Door lock mechanisms
- Fuse
- Specimen power supply control terminal

ACCESSORIES

- Specimen basket stainless steel



OPTIONS

Power cable

・5 m
・10 m

* Not applicable for optional 208, 380 and 400/415V AC power supply specification.

* If this option is not specified, the chamber does not come with a power cable.

Viewing window TSD

Used for observation of the specimens inside the chamber.
Dimensions: W190 × H340 mm
Chamber lamp: Halogen lamp (× 1)

Specimen basket/ shelf brackets

Equivalent to standard accessory.Material: Stainless steel (5 mesh)

〈TSD〉
・Basket
・Shelf brackets
〈TSE〉
・Basket

Heavy-duty shelf TSD

Used to hold heavy specimen exceed- ing the load capacity of the standard specimen basket.
Load capacity: 15 kg

* Equally distributed load, not included shelf brackets and specimen baskets.

Additional cable port TSD

Provided in addition to the standardcable port. (right side)
Location: Left side of the main unitInternal diameter: 100 mm

Cable port rubber plug

Prevents air leakage from the cableport.

Communication cables

・RS-485C 5m/10m/30m
・GPIB 2m/4m

Temperature recorder (digital)

−100 to ＋220℃ /100 mm
・RK-61: 1 pen
・RK-63: 3 pens
・RK-64: 6 dots

Paperless recorder

Records temperature of each section suchas the temperature inside the chamber.

Display: 5.7inch color touch panel
Number of inputs (Initial setting):
・1 (5 more channels can be turned ON) Data saving cycle: 1 sec
・3 (3 more channels can be turned ON) Data saving cycle: 1 sec
・3 (3 more channels can be turned ON) Data saving cycle: 5 sec
・5 (1 more channels can be turned ON) Data saving cycle: 1 sec
・5 (1 more channels can be turned ON) Data saving cycle: 5 sec
・6 Data saving cycle: 1 sec
・6 Data saving cycle: 5 sec
Temperature range: −100 to ＋220℃ Internal memory: 8MB
External memory media:
CF memory card (256 MB)
External memory function: USB portLanguage support: ENG/ JPN

* Select either built-in or portable type. (TSD)

Recorder wiring

Preparation of a power cable, temperature sensor, and a grounding wire for additional installation in the future.

Recorder terminal

Used to output the temperature within test area, hot chamber, cold chamber.

OPTIONS

Thermocouple

Attached to specimens to measurespecimen temperature.

〈TSD〉
Thermocouple type T without ball (Copper/ Copper-Nickel)

〈TSE〉
T JIS C1602 with ball attached
- 2 m
- 4 m
- 6 m

STT 3-point expansion TSD

Additional 3 points of measuring the specimens' temperatures used for Specimen Temperature Trigge rfunction.
(2 points are equipped as standard.)

Exposure signal output TSD

A signal is output via a contact switch when test area temperature is within the user-selected range. This signal can be used to control peripheral instruments, like applying a voltage to specimens only during hot exposure, or monitoring test operation from a remote point.

Total cycle counter

Indicates cycle counts.
Display range: 1-99999999
(with resetting function)

Additional overheat protector

Additional preventive measures can be taken for excessive temperature rise in the chamber, in addition to the standard equipped double overheat protector.

Emergency stop pushbutton

Stops the chamber immediately.

With cover

With guard

Casters: 6
levelling-feet: 4

Operation manual

- Booklet

Reports & certificates

- Testing and inspection report
- Test data
- Calibration report
- Calibration certificate
- Traceability system chart

Anchoring fixtures

Used to bolt the chamber to the floor.

Chamber dew tray

Prevents water leakage from the chamber onto the floor.

* The use of casters is recommended to facilitate operation.
*To prevent damage in the event of water leakage, other preventive measures are also available.

Casters TSD

Installed for mobility.

Auxiliary cooling injector (LCO_2)

Used to reduce the temperature recovery time of low temperature exposure by injecting liquefied carbon dioxide at beginning of exposure.

Auxiliary cooling injector (LN_2)

Used to reduce the temperature recovery time of low temperature exposure by injecting liquefied nitrogen at beginningof exposure.

External alarm terminal

If the safety device of the chamber is activated, the external alarm terminal will notify it to a remote point.

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at your service anytime anywhere

RESOTECH®

RESONANCE AUTOMATION AND MACHINES

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