

## SALT SPRAY TEST CHAMBER



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We have a world-class manufacturing unit specializing in **Salt Spray Test Chambers** and **Corrosion Test Chambers**. Our cutting-edge test chambers are meticulously designed and engineered to meet the stringent demands of corrosion testing across various industries. Whether you're in Automotive, Aerospace, Electronics, or Coatings, our chambers are specialized to test the performance of the products for its surfaces of various materials after treatment of corrosive protection by means of painting, coating, galvanizing, anodizing and lubricant.

Our **Salt Spray Test Chambers** simulate harsh environmental conditions to assess the corrosion resistance of materials and coatings. With precise control over temperature, humidity, and salt concentration, these chambers replicate real-world corrosion challenges, allowing you to evaluate product durability and performance accurately. Our **Corrosion Test Chambers** go beyond standard salt spray testing, offering versatility for conducting a wide range of corrosion tests, including cyclic corrosion, humidity testing, and more. These chambers feature advanced control systems, seamless integration with monitoring devices, and customizable options to suit your specific testing requirements.

What sets us apart is our commitment to quality, innovation, and customer satisfaction. Each **Salt Spray Test Chamber** and **Corrosion Test Chamber** undergoes rigorous testing and calibration to ensure consistent and reliable results. These Test Chambers comply with the requirements of relevant national and international standards such as DIN, ISO, ASTM, DEF, MIL-STD, etc. Our experienced team provides comprehensive support, from installation and training to ongoing maintenance and technical assistance.

## SALIENT FEATURES:

- Choice of capacities – 108Lt, 270Lt, 480Lt, 800Lt and as per requirement.
- Easy to clean, smooth, non-corrosive surfaces
- It has the function to refill water automatically when water level is insufficient.
- With accurate glass made nozzle (Pyrex) no sediment or crystallization blocked in 4000hours.
- The control instruments are mounted in one panel so it easy to operate and clear at a glance.
- Equipped with dual protection for over temperature and an alarming device for insufficient water level so as to ensure the safe operation.
- The test tank is heated directly by vapor so that the temperature rises fast and the stand by time shortened.

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- The water spraying column equipped with the disperser has the functions to lead and adjust the reek and also has the function to make the falling reek even (the control instrument and the nozzles adopt the systems of Europe, America and Japan. The relevant materials adopt Taiwan system to assemble).
- Colour touch panel.



- HMI+PLC in one unit
- Door open and Door close alarm system.
- Inbuilt calibration system.
- **Less use of Electrical and Mechanical Components on the Top and Bottom of Chamber** - Provides easy maintenance of chamber, increases durability because of proper air circulation; cooling systems kept at bottom of the chamber to provide proper environment for compressor.
- **Circulation Fan with Variable Speed**
- **Electrical efficiency** : Variable speed motor saves money by reducing energy bills, as it consumes less electricity than conventional motor.
- **Cooling Efficiency** : Variable speed enables gaining air conditioning efficiency or SEER.
- **Air Quality** ; Variable speed motor helps clean the air efficiently. When the fan is in constant operation (indicated by the "Fan" setting on thermostat), the motor continues to slowly circulate air, allowing filters to capture more contaminants.
- **Humidity Control** : Variable speed motor combined with a Thermostat allows controlling the amount of humidity.

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- **Quieter Operation** :Variable speed blower motor are significantly quieter than its single-speed counterpart.
- **Digital Output** – Target and Performance Output of the chamber operations are in digital format(digits) giving precise reading.
- **Pre - Attached Data Logger with Data Analysis Software** - Primary benefits of using data loggers is to automatically collect data 24-hour basis. Graph and table format of results can be produced automatically by the data logging software.
- **Self - Calibration System** - our incorporate a self-calibration system, in each chamber, that is completely automatic to prevent errors that could result from failure to calibrate. The system continuously monitors the environment, sensing changes that could affect analysis, and re-calibrates accordingly using a built-in long-life calibrator The process takes just a few seconds, without operator intervention or additional supplies, quickly optimizing system parameters for the current conditions.
- **Open and Close Updates Through Mobile Network** - Mobile technology has the potential to make services more flexible and keep informed, information anywhere at any time from mobile device, and can set alert system to know whether or not the chamber is being used.
- **Reliable** – Construction, performance mechanism, controls and information system integration makes the equipment reliable.
- **Precise Control of Environmental Parameters** - The set/ programmable parameters of the chamber are precise or have less deviation from original value, thus ensuring correct measurement.
- **Micro - Processor Based Controller** – Microprocessor based controller enables precise control of temperature, humidity, pressure and other values. Benefits:
  - ❖ Processing speed is high
  - ❖ Provides flexibility to alter the system by changing software.
  - ❖ Compact in size.
  - ❖ Operation and maintenance easier.
  - ❖ Maintain precise values

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- **Aesthetically designed** - Designed according to the standards and principles underlining industry's aesthetic values.
- **Corrosion Resistant interior and exteriors** - Corrosion resistant coatings like epoxy coatings are applied inside and outside the chamber to prevent against degradation due to moisture, salt spray, oxidation or exposure to a variety of environmental or industrial chemicals/ corrosive agents.
- **Energy Efficient** – Our chamber uses less energy to provide the same level of performance, comfort and convenience, thus making it energy conserving chamber.
- **Sturdy Construction** - Our Salt Spray Chambers are built with robustness to withstand stress and strain, giving the chamber long life and ability to perform in extreme stress environments.
- **Low Maintenance** - Hapten systems benefit in retaining proper functionality over long period of time.
- **Light Weight:** Compact and superior materials ensure the chamber be light weight

## OPERATING PRINCIPLE:

- The test condition are controlled by microprocessor based control system. Control is governed by the 32 Bit I/O system with integrated soft PLC. A web server can place test and diagnosis information in the intranet via Ethernet if desired. The temperature to be provided according to the test are:
  - The test method of salt water:
  - The lab: 35°C ±1°C
  - The saturated air barrel: 47°C±1°C

The test method of corrosive resistant:

- The lab: 50°C±1°C
- The saturated air barrel: 63°C±1°C
- A salt solution is sprayed into the test chamber using the venture principle through a nozzle located at the top of the test space. The compressed air required is heated in a pressurized humidifier and saturated with moisture before it enters the test space.

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- The brine solution in the venture nozzle feeder vessel is kept at a constant level by recirculating supply. The heating in the test chamber ensures uniform temperature conditioning to the required set temperature.
- Condensation generated is drained away through a floor drain, and the corrosive test chamber atmosphere is vented through an exhaust vent.

## CONSTRUCTION DETAILS :

### HMI+ PLC IN ONE UNIT:



We provides better automatic controls for the chamber by integrating HMI and PLC together. This special feature is compelling alternative to traditional methods and provides a simplified, reduced cost control system architecture. It works by following operating steps:

- Sensors measure the physical quantity like temperature and convert them to electrical signal
- The actuation device acts upon that electrical signal
- At HMI interface between operator and chamber occurs.
- The machine operates with the logic design controls controlled by software.
- This signal is sent to the chamber by logic control devices and the chamber operates.

### Basic features of HMI+PLC:

- **Processor of 1.6 GHz:** High clock speed processing PLC that enables speed up processing to the functions. With 1.6GHz processing speed, the PLC system is capable of multitasking, processing of large data volume, and high performance.

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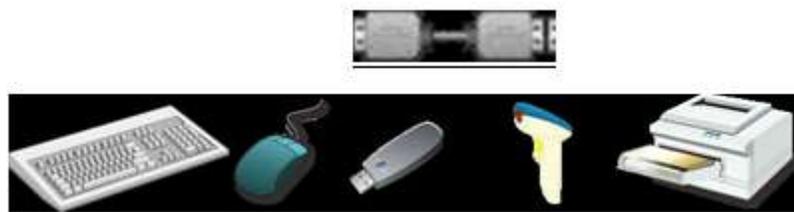
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- **Audio Output Alarm:** Audio alarm alert in case of failures in any of the component controlling functions.
- **256 MB of RAM:** PLC of 256Mega Byte memory for running programs offers high memory space for installing of more programs
- **COM Port:** Com port provided for attaching RS 235/RS 485 cable.



- **USB Ports:** A USB port provided for transferring data through communication between HMI and PLC. Various peripherals can be connected via USB hub.



- **Colour Touch Panel:** We provide colour touch panel screen available in 2 sizes -7 inches and 10inches, displaying all the control features, digital clock, sensor layouts, data and values, graphics and pictures, navigations etc.
- **RS232 or RS485 Interface:** Serial interface provided to get connectivity with internet, mobile and other data transmission. Single device to device interface and a communication bus that is used to form simple networks of multiple devices are available through RS485 interface. RS485 interface supports transmission speed of 2400, 4800, 9600, 19200, 38400 bits per second.

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Through Ethernet communication module, AC Drives, temperature controller and other industrial automation products can be connected quickly.



(AC Servo Drive)

(Temperature Controller) (VFD- Vehicle Force Drive)

- **Touch Screen Size of 7 Inches and 10 Inches:** HMI screen available in 2 sizes- 7inches and 10inches, as per user's requirement. Screen displays the control features, images, data values and other programs.
- **Expandable Memory with a SD Card:** SD card plugged in appropriate slot for more memory requirement that will be read and used as part of device; for long storage requirements SD card may be added and store data with expanded memory.



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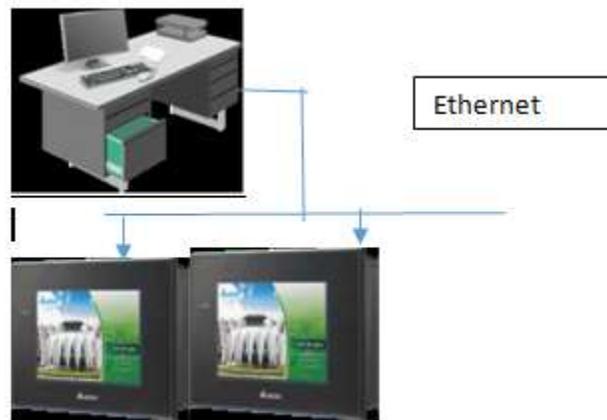
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- **High Resolution Brilliant TFT Displays, 64k Colours:** HMI screen displays 64000 different colours with good resolution, allowing large number of distinguished colours, easy to establish and work with. It shows entire new 2D drawing technique, the screen resolution enhanced for more realistic images and more colourful and vivid displays.



- **Software Supports All Six IEC 61131 Programming Languages:** Software supports all the six programming languages under international standard IEC 61131: Function Block Diagram, Ladder Diagram, Structured Text, Sequential Function Chart, Instruction List, and Continuous Function Chart.
- **E-remote Control Software:** E-remote enables viewing the monitor and same screen shown on HMI at the production site, and control the manufacturing process via Ethernet.



- **A set of Trouble Shooting Tools:** 3 troubleshooting tools provided with in the software

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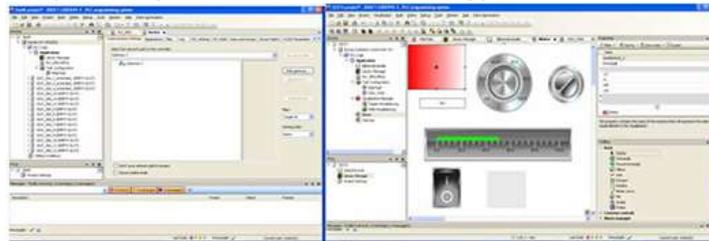


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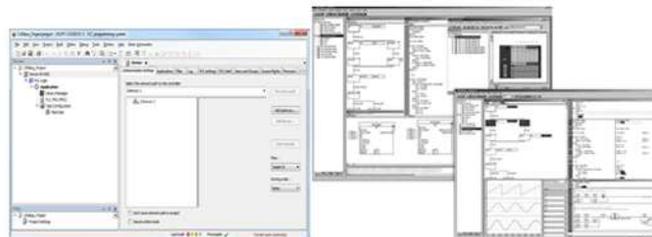


- Simulation- Imitation of a situation as real situation
- Debugging- Finding and reducing number of defects.
- Online changes- Like change of IP address can be made online. Manual to operate the programs on request.
- **Increased Numbers of On - Board I/O peripherals (10-50):** Maximum number of 50 I/O peripherals provided on request, to attach input and output devices to the HMI and PLC. Increased number of input and output peripherals allows adding of devices like printers, recorders, etc., as per the need.
- **Data Logging and Free Programming Software:** Attached data logger with input program software provided. Through data logging software, HMI and PLC collect data through sensors, analyze the data and save and output the results of the collection and analysis. Examples of the types of information a data logging system can collect include temperatures, sound frequencies, vibrations, times, light intensities, electrical currents, pressure and changes in states of matter.

**CoDeSys (Controller Development System) software technology**



Software Screen Shot



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- **Thermostat Water Tank:** the gray impact resistance plate made of PVC (from Germany), 5mm in thickness (8mm for machine oversized) and equipped with the auto water level controller to avoid the inconvenience to refill the water by manpower.
- **The upper cover of the Test Chamber:** use the transparent acrylic plate (from Germany), 5mm in thickness (10mm PVC high temperature resistant plate for oversized type) and also attach a set of glass windows, a lamp inside the chamber and asset of auto lift driven by cylinder, The base is made of Stainless Sheet grade SS 304.
- **The barrel for refilling the reagent:** equipped with the built-in water level gauge. Use the gray impact resistance plate of PVC (from Germany), 5mm in thickness, which looks as an integral whole with the machine stand.
- **The basket supporter inside the Test Chamber:** SS 304
- **The saturated air tank:** made of stainless steel plate grade SS 304, 2mm in thickness and equipped with the auto water level controller to avoid the inconvenience to refill the water by manpower.
- **The oversized base:** made of stainless steel plate SUS#304.2mm in thickness.
- **Temp. Control of Test Chamber-**The temperature inside our vibration test chamber is controlled through Nano technology based HMI & PLC controller.
- **Conical Disperser:** It can adjust the spraying and make the reek and falling reek even.
- **Spraying Modes:**
  - **Nozzles (German):** Glass nozzles. The accurate glass nozzles (brand Pyres)
  - **Quantity of spraying:** 1~2mL/80C/1h (imported from America)
- **The Standard Attachments Per set:**
  - PVC corner bracket V 1 set
  - Glass rod:  $\Phi$ 10mm 1 set
  - Salt water mixer (9.5L) 1 pc.
  - Reagent (NaCl) 4 bottles
  - Cotton fabric used for wet sensing 5 pcs
  - Inlet and outlet pipe, 5/8 (pressure resistant hose) 5m
  - Exhaust pipe (flexible pipe), 1-1/2 3m

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- **Safety Devices:**
  - Water level controller 1 set
  - Lights for state warning: 3 pcs
  - Protection switches for over temperature: 2 sets

### TECHNICAL SPECIFICATIONS:

MODEL	HB-SSTC108	HB-SSTC270	HB-SSTC480	HB-SSTC800
Volume	108L	270L	480L	800L
Temperature Range salt water test	35° C to 47° C			
Corrosion resistant test	50° C to 63° C			
Temperature Controller	HMI+PLC			
Temperature Fluctuation	±1°C			
Humidity Range	95%RH			
Humidity Deviation	±1% to ±3%			
DISPLAY	LCD			
Power Requirements	220/230V, 50/60Hz			

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