SONACME

Technical Specification

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SONACME

Temperature Humidity Salt Spray Corrosion Test Chamber

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Advantages of compound salt spray test chamber

◆Can be specially designed according to customer needs

◆PT100 temperature sensor, high precision and low maintenance

◆The water can be added manually or automatically according to the installation location of the customer, which is easy to use.

◆The conditioning room and the laboratory are independent and connected through the damper control. The structure is perfect and the maintenance is easier.

◆Energy-saving design, individually controlled according to different tests

◆Can do salt spray neutrality test, corrosion resistance test, drying test, humidity test, standing test separately, and can also do salt spray, dry and wet, standing mixed test, automatic control (spray function, linear change function optional))

◆Can automatically cycle spray, continuous spray, timed spray

◆It can realize automatic cycle tests of salt spray, damp heat and drying without moving the product, which is easy to use.

◆Long-term stable operation

Equipment introduction and specifications:

1、The corrosion of protected and unprotected metal materials is affected by many environmental factors, which mainly depends on the type of metal material and the type of environment. It is impossible to design a laboratory accelerated corrosion test chamber that includes all environmental factors that affect corrosion resistance. Therefore, laboratory tests are designed to simulate the factors that play a major role in the corrosion of metallic materials. This equipment is designed to simulate and increase the environmental effects on metal materials exposed to outdoor atmospheres that contain salt contamination and can accelerate corrosion. The equipment includes test methods for cyclic exposure of specimens to salt spray, dryness, and hot and humid environments. This equipment test is a comparative test, and the test results cannot predict the long-term results of the corrosion resistance of the same

metal material used under this environmental condition. However, this method can still provide valuable information on the performance of materials exposed to salt contamination similar to the test conditions. Compared with traditional accelerated corrosion tests, such as neutral salt spray test (NSS), acetic acid salt spray test (AASS), and copper accelerated acetic acid salt spray test (CASS), the biggest advantage

of this equipment test is that it can perform better Reproduce corrosion that occurs in outdoor salt-contaminated environments.

2、This equipment is suitable for accelerated corrosion tests: metals and their alloys, metal coatings (anodic and cathodic), conversion coatings, anodized coatings, organic coatings on metal materials, etc.

3、Specification

Model	SCC-60-TH	SCC-90-TH	SCC-120-TH	SCC-160-TH	SCC-200-TH
Working dimension (W×D×H)mm	600*500*500	900*600*500	1200*850*500	1600*1000*550	2000*1200*600
External dimension (W×D×H)mm	1800*1090*1430	2180*1230*1410	2200*1200*1450	2600*1450*1550	3000*1650*1600
Volume（L)	108	270	480	800	1440
Salt water tank capacity	20L	20L	40L	40L	40L
Temperature range	10℃~80℃				
Humidity range	20%~100% R.H (refer to below picture）				
PH Value（PH）	PH=6.5～7.2（NSS）/PH=3.0～3.1（AASS、CASS）before collection PH=6.5～7.2（NSS）/PH=3.1～3.3（AASS、CASS）after collection				

brine concentration	Sodium chloride solution concentration 5% (neutral salt spray) Sodium chloride solution concentration 5% + glacial acetic acid (acetic acid salt spray) Sodium chloride solution concentration 5% + glacial acetic acid + 0.26g copper chloride/L (copper accelerates salt spray)
temperature uniformity	±1℃
temperature fluctuation	±0.5℃
Temperature resolution	0.01℃
Salt spray deposition	1～2ml/h.80cm² （Collect for at least 16 hours and take the average）
Spray pressure	0.7~1.2±0.01kgf/cm²

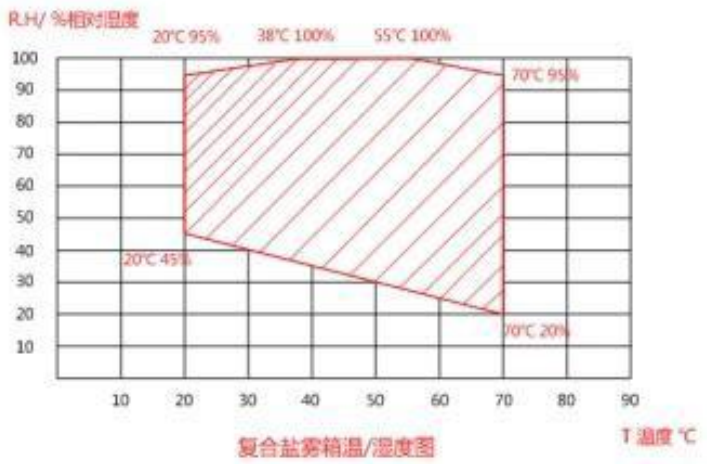
Spray method	Continuous spray + intermittent spray				
Running method	Salt spray, humidification, drying, condensation, circulation modes can be combined at will, or can be operated individually Spray (optional) linear change requirements (optional)				
Controller	7-inch LCD touch screen controller				
Communication method	RS232/USB/Ethernet port any two of communication				
Power	7KW	9KW	11KW	13KW	15KW
Supply	AC380V/50HZ	AC380V/50HZ	AC380V/50HZ	AC380V/50HZ	AC380V/50HZ
Open cover system	automatic	automatic	automatic	automatic	automatic

Performance indicators and structural systems:

Performance	
functional requirements	1. (Air) Indoor space heating, humidification, dehumidification, spraying, and defogging; 2. According to the temperature, humidity, and salt spray settings, the indoor space reaches the set temperature, humidity, and spray volume. 3. Each function can be operated independently

Meet test standards	1. GB/T20854-2007/ISO14993-2001 Dry and wet salt spray test 2. GB-T5170.8-2008_Inspection methods for environmental test equipment for electrical and electronic products___Salt spray test equipment 3. GJB150.11A-2009 Military Equipment Laboratory Environmental Test Methods Salt Spray Test 4. MIL-STD-810 Method 509.5 Salt spray test standards 5. GBT2424.17-2008 Salt spray test method 6. GB-T2423.18-2021 Sodium chloride alternating salt spray test method 7. GB-T2423.3-2006（IEC6008-2-78-2001） Test cab: constant damp heat test method 8. GBT2423_4-2008 Humidity and heat alternating test method 9. GMW-14872 Automotive cyclic corrosion test 10. IEC60068-2-52-2017 Environmental testing part 2-25 test test Kb circulating salt spray (sodium chloride solution) 11. IEC 60068-2-11-1982 Electrical technology. Basic environmental test procedures.

	Part 2: Test. Section 11: Test Ka: Salt Spray 12.ASTM B117-2016 Salt spray test standards 13.ISO 9227-2006 Artificial atmosphere corrosion salt spray test 14.SAE J2334 Salt spray corrosion test standards for coatings 15. GB/T24195 Corrosion of Metals and Alloys Cyclic Accelerated Corrosion Testing in Acidic Salt Spray, "Dry" and "Wet" Conditions 16. GBT 10125-2021 Artificial atmosphere corrosion test Salt spray test

Temperature/humidity range	Temperature range：10℃～80℃ Humidity range：20～100%R.H（as below） 

Control accuracy	Temperature resolution: 0.01℃ Humidity resolution: 0.1%R.H Temperature deviation: ±1.0℃ Humidity deviation: ±2%R.H Temperature uniformity: ±2℃ Humidity uniformity ±3%R.H Temperature fluctuation: ±0.5℃ Humidity fluctuation: ±2%R.H
Heating rate	RT→+70℃≤60 min RT→+0℃≤30 min

	Salt spray (35℃)→drying (60℃.20~30%RH)≤30 min Dry (60℃, 20~30%RH)→humidified (50℃, 95%+/-5%RH)≤15 min Humidity (50℃, 95%+/-5%RH)→salt spray (35℃)≤30 min (spray is required immediately after switching)
Testing conditions	This machine complies with the salt dry and wet composite test method: salt spray test → hot air forced drying test → humidity test (A) Salt water spray test: NSS, ACSS, CASS (1) Neutral and acidic salt spray test: Laboratory temperature: 35℃ ±1℃ Saturated barrel temperature: 47℃±1℃ (2) Copper accelerated salt spray test: Laboratory temperature: 47℃±1℃ Saturated barrel temperature: 63℃±1℃ (3) Sedimentation volume: 1～3ml (ml/ 80cm2/h) (average volume over 16 hours) (4) Spray pressure: 1.0 kg/cm 2 ± 0.5 kg/cm 2 (5) Salt water concentration: 5% or 5% concentration plus 0.26 grams of copper chloride (CuCl2 2H2O) (6) pH value: neutral test 6.5~7.2 acid test 3.0~3.3 (7) Sample plate installation angle: 15°～30° （B） Hot air drying test(DRY)： (1) Temperature: 60℃ ±2℃ (2) Humidity: RH≦30% (1) Temperature: 15℃~35℃ ±2℃ (2) Humidity: RH≦50% (C) Humidity test(SOAK)： (1) Temperature: 23℃±2℃, Humidity: 50%±5% (2) Temperature: 40℃±2℃, humidity: 93%±3% (3) Humidity: 50℃±2℃, humidity: RH≧98%
Structure	

Chamber structure	Test chamber: Made of PP polypropylene board, thickness 10mm, temperature resistant about 100 degrees Test outdoor : Made of PP polypropylene board, thickness 10mm, temperature resistance about 100 degrees Test chamber sealing cover: Made of PP polypropylene plate, thickness 10mm, one-touch automatic opening, equipped with a transparent observation window, combined with a defogging device to facilitate clear observation of the test during the test, with a temperature resistance of about 100 degrees Test drug refill bottle: Made of PP polypropylene board, with a hidden water level meter. After the salt water required for the test is prepared, it is filled from the reagent inlet. The solution is transported to the internal brine tank of the laboratory through a pipeline without opening the lid.Humidification water tank: Made of PP polypropylene board, external humidification water tank, hidden water level meter, water purifier installed at the water inlet, which can effectively filter impurities in the water. Saturated barrel: PP pipe is used, which has the best insulation effect and corrosion resistance. The compressed air passes through the air saturation generator and is fully exchanged and filtered with air and distilled water to make the air reach a saturated steam state and obtain moist and clean compressed air. By adjusting the air Saturated generator temperature to ensure temperature balance, with manual and automatic water replenishment functions Tempering chamber: The inner and outer boxes are made of titanium metal tempering chamber, which is anti-corrosion, temperature-resistant and has a long service life. Blending room insulation material: polyurethane hard foam insulation layer Base: Made of channel steel, painted and covered with plastic PP grooves and mobile casters Air duct: Specially designed sealed damper device can automatically switch between salt spray or temperature and humidity tests
air circulation system	The built-in air room and stainless steel circulation fan blow out the uniform air duct through the damper and diffuser, distributing the adjusted temperature and humidity in the mixing chamber to the test space, thereby achieving the purpose of uniform temperature and humidity control.

control Panel	LCD touch programmable controller, power switch, spray indicator light, operation indicator light, fault indicator light, RS-232 communication interface, USB, Ethernet
blending room	Humidifier, dehumidification device, heater, circulating fan, drainage device, water supply device, water level controller, over-temperature protector, humidification pipe anti-dry device, circulating air duct, damper
Circuit part	Main power circuit breaker, controller, distribution board, cooling fan, over-temperature protector
Heating system	Blending room: Use titanium alloy heater, circulating fan to supply strong air circulation, P.I.D controls the heating amount to achieve temperature balance Test room: Using titanium alloy heating tube, direct air heating, P.I.D controls the amount of heating to achieve temperature balance Pressure barrel: Using titanium alloy heating tube, water heating method, compressed air enters the hot water and overflows in the form of bubbles. P.I.D controls the heating amount to achieve a constant temperature and pure gas for spraying.
Humidification and dehumidification system	Using water vapor humidification method, the compressor starts dehumidification, and P.I.D controls the humidification amount to achieve the required humidity.
Water supply system	
Water supply quality requirements	It is required to meet the second-level water quality of the National Analytical Laboratory, and the solid impurity content of the water is less than 1mg/L
Water supply method	Automatic/manual dual water supply mode, automatic water inlet comes standard with a set of water purifiers
Compressed air supply system	
Air supply control	Air compressor → primary oil-water separator → pressure reducing valve → main solenoid valve → secondary oil-water separator → saturator → pressure regulating valve → spray solenoid valve → nozzle Note: The air compressor is an optional item and is not configured on our company's standard machines.
Spray pressure adjustment	The spray pressure is 0.07~0.17Mpa. It is adjusted in two stages. The first time is to adjust the compressed air to 0.2~0.3MPa; the second time is to adjust the spray pressure to 0.07~0.17Mpa

	so that the spray pressure sprayed through the nozzle is within the specified range
Spray and defogging system	
spray control	Programmed automatic spray
spray collector	The spray volume collector is installed indoors. There are two conical funnels with a diameter of 100mm. One is installed close to the spray tower and the other is far away from the spray tower to ensure that the spray volume in the remaining areas meets the salt spray test requirements. Install a silicone hose at the bottom of the funnel and connect it to the outdoor measuring cylinder. The spray volume can be checked in real time to ensure the test accuracy of the test sample.
spray device	Set up a salt water spray device in the center of the test chamber, set up a spray water supply tank at the bottom of the spray device, and set up a corrosion-resistant automatic water level float inside the water tank to automatically control the water level in the water tank; the spray nozzle is installed within 100mm above the water tank to ensure spraying Within the required siphon height range, a CPVC round pipe extension is set above the nozzle to ensure that all mist ions received by the sample placement space are to prevent incomplete atomization of some salt water from directly spraying onto the sample surface and affecting the test results. A cone-shaped spray tower is installed on the top of the round tube, and the spray volume can be adjusted by adjusting the height of the spray tower.
Defog control	Automatic defogging according to program settings
Spray principle	The Benoit principle is used to absorb salt water and then atomize it. The degree of atomization is uniform and there is no blocking of crystallization. It can ensure the standard of continuous testing.
Nozzle	Made of special glass nozzle, the spray volume and spray angle can be adjusted.
Defogging method	Use compressed air to fill the room and then discharge the indoor fog to quickly defogging.
Cycle working mode	The working mode adopts separate control modes of dry, wet and salt spray. When the machine performs salt spray test, the dry and wet control box will automatically close. When dry and wet experiments are required, switch to the dry and wet control box through the damper and automatically stop the salt spray test. Intelligent TS time signal control can control periodic spraying or continuous spraying to achieve automatic operation of drying, moist heat, and salt spray cycles.

Test material rack	1. An indexing frame is placed on the inner wall of the PVC polyethylene triangular groove box. The angle of the test piece can be adjusted arbitrarily. The fogging and fogging on all sides are completely consistent. The number of test pieces placed is large. 2. The bottom of the test chamber is equipped with a PP plate punched sample placement platform. The uniform openings on the surface of the platform can quickly discharge the spray liquid, and large samples can be placed on the table for testing.
Electrical control system	

laboratory controller	LCD touch screen controller Separately control temperature and humidity, salt spray, and drying
screen display function	Temperature and humidity setting (SV) actual (PV) value is directly displayed Can display execution program number, segment, remaining time and number of cycles, as well as running time display Program editing and graphic curve display, execution program curve display Equipped with a separate program editing screen, each page can input 4 segments of temperature, humidity and time. Fixed point or program action status display The backlight of the screen can be adjusted and the backlight time can be set The screen display protection function can be set to be turned off at a scheduled time or manually. Language conversion can switch Chinese/English 7-inch true color display screen
Program capacity	Number of programs that can be used: Maximum 120 groups A program can be composed of 1~99 segments Usable memory capacity: 1400 segments Repeatable command execution: each command can be executed up to 999 times Programs can be linked together for use Three sets of time signals TS1~TS3 Program time can be set from 1 minute to 999 hours per section
Control function	With editing, clearing, inserting and other functions Equipped with 2 sets of time signal output control (can control the ON/OFF action of the object under test) Has 9 sets of PID parameter settings

	It has segment skip and hold functions during program execution. It has power-off program memory and can automatically start and resume program execution after power is restored. Program copying, COPY, connection function, editing experiment title and other program editing functions Data collection, export, and graphic viewing functions PID automatic calculation and FUZZY control With date and time adjustment function

RS-232 Communication Interface	Can display curves and collect data Can be used as a monitoring and remote control system
Storage function	2G internal memory card, no need to connect to a computer recorder, can record test data directly, and print test data and curves through the computer, easy to use
standby function	With standby power saving function, you can watch pictures in standby mode
Predetermined area	Adjust according to the temperature working range of the equipment (upper limit +5℃, lower limit -5℃)
display resolution	0.01℃; time: 0.1min; humidity 0.1%R.H
enter	Platinum resistance
control method	Anti-integral windup PID BTC balance temperature control method (temperature test equipment) BTHC balanced temperature and humidity control method (temperature and humidity test equipment)

Curve recording function	It has battery-protected RAM that can save the device's setting values, sampling values and sampling time; the maximum recording time is 60 days (when the sampling period is 1.5min)
Troubleshooting Tips	When a fault occurs on the machine, the controller automatically detects the cause of the fault and displays a picture of the fault and how to deal with it.
Auxiliary functions	Fault alarm and cause, processing prompt function Power failure protection function Upper and lower limit temperature protection function

(Standard configuration)	Calendar timing function Appointment start function Self-diagnostic function. Auto stop function Button and screen lock (LOCK) function
Software usage environment	IBM PC compatible computer, PII or above CPU, 128M or above memory, Simplified Chinese Windows2000 or Simplified Chinese WindowsXP operating system
temperature measurement	PT100 platinum resistor
Refrigeration and dehumidification system	

Refrigeration and dehumidification method	In order to ensure the cooling rate and minimum temperature requirements of the laboratory, this laboratory uses a specially designed refrigeration system. Heat exchange is realized through an evaporator. Dehumidification uses water vapor to condense when it encounters cold to ensure the humidity of the laboratory.
Condenser	Air-cooled condenser
Evaporator	Fin tube heat exchanger
Throttling device	Thermal expansion valve, capillary tube
refrigerant	Use environmentally friendly refrigerant R404a with an ozone depletion index of 0
filter drier	Imported drying filter dries refrigerant and impurities
oil separator	Imported oil separator protects refrigeration compressor lubrication system
other	Compressor overpressure, low pressure and overload protection
Safety protection device	
Cooling system	Compressor overheating Compressor overflow

	Compressor over-pressure Condensing fan overheated
Test chamber	Adjustable over-temperature protection Air conditioning channel extreme over-temperature Fan and motor overheating relay
Heating system	Heating tube dry burning Abnormal water supply Abnormal drainage
Others	Leakage Protection Overload and short circuit protection Power supply lack of phase protection function
Environmental conditions and site requirements for use	

Use environmental conditions	1、The ambient temperature is 5~30℃ and the relative humidity is ≤85%R.H; 2、The installation site must be a flat, vibration-free ground; 3 、 The equipment needs to be kept away from heat sources and flammable and explosive substances; 4 、 The installation location must not be exposed to direct sunlight and maintain indoor air circulation; 5 、 The equipment installation site needs to be clean and cannot be installed in dusty places or dust exhaust outlets.
Requirements for storage environment	The ambient temperature of the equipment should be kept within 0℃~+45℃ When the ambient temperature is below 0°C (the equipment is stopped for a long time), the water retained in the equipment should be drained cleanly to prevent the water in the pipes from freezing and damaging the pipes.
Power supply conditions and	AC380V three-phase four-wire + protective grounding Allowable voltage fluctuation range: ±10%V Allowable frequency fluctuation range: (50±0.5) HZ TN-S mode power supply or TT mode power supply

power	The grounding resistance of the protective ground wire is less than 4Ω The user is required to configure an air or power switch of corresponding capacity for the equipment at the installation site, and this switch must independently control the use of the equipment.
Work noise	≤75db Measured in the air 1 meter away from the front of the machine and 1.2 meters above the ground
Specimen limits	This testing equipment prohibits the testing of flammable, explosive, and volatile substance samples; the testing of corrosive substance samples, the storage of biological samples, and the testing and storage of samples with strong electromagnetic emission sources.
Installation site requirements	The ground is flat, well ventilated, and does not contain flammable, explosive, corrosive gases and dust; there are no strong electromagnetic radiation sources nearby; Site ground load-bearing capacity: not less than 600kg/m2; Leave adequate maintenance space around the equipment。 A：not less than 400mm B：not less than 400mm C：not less than 400mm

Configuration technical data and accessories：
1. Technical data: product certificate, instruction manual, warranty card, etc.;
2. Delivery of a pack of wet ball gauze
3. Deliver two bottles of sodium chloride
4. Delivery of a pack of pH test strips
5. Deliver an air supply pipe
6. One exhaust pipe joint is delivered
7. Delivered with two sealing plugs
8. Deliver a spare nozzle
9. One measuring cup is delivered
10. Place the delivered materials in V-shaped grooves and material rods

Main list

No#	Name	Brand	Qty	Remark
1.	Temperature and humidity controller	TEMI2700	1set	
2.	compressor	Tecumseh	1pcs	
3.	filter drier	Emerson, USA	1pcs	
4.	oil separator	Emerson, USA	1pcs	
5.	nozzle	Customized	1pcs	
6.	Box shell	Homemade PP plate welding, thickness 10mm	1pcs	
7.	Inside body	Homemade PP plate welding, thickness 10mm	1pcs	
8.	blending room	Titanium alloy homemade	1pcs	
9.	Evaporator	Yongqiang	1pcs	
10.	condenser	Yongqiang	1pcs	
11.	copper pipe	Sonacme	1batch	
12.	exhaust fan	Sonacme	3pcs	
13.	thermostat	Rainbow	2pcs	
14.	Mixing room motor	Yutian	1pcs	
15.	Mixing chamber wind wheel	Yutian	1pcs	
16.	Laboratory heating tube	Sonacme	1pcs	
17.	Mixing chamber heating tube	Sonacme	1group	
18.	Humidification heating tube	Sonacme	1group	
19.	solid state relay	Yangming	3sets	
20.	refrigerant	Honeywell, USA	5kg	
21.	Refrigerant solenoid valve	Japanese	2pcs	
22.	Spray solenoid valve	German	1pcs	
23.	Defog solenoid valve	German	1pcs	
24.	Water replenishment solenoid valve	German	1pcs	
25.	Drainage solenoid valve	German	1pcs	

26.	AC contactor	Schneider	4pcs	
27.	Thermal overload relay	Schneider	2pcs	
28.	Intermediate relay	Schneider	4pcs	
29.	Phase sequence protection	Italy	1pcs	
30.	temperature measuring body	HK	2pcs	
31.	water tank	Sonacme	1pcs	
32.	Upper and lower water boxes	Sonacme	2pcs	
33.	Fuse	Sonacme	1pcs	
34.	end of line	Sonacme	1batch	
35.	trunking	Sonacme	6pcs	
36.	PP card slot	Sonacme	4pcs	
37.	universal runner	Sonacme	4pcs	
38.	pressure regulating valve	Taiwan	1pcs	