BOTO GROUP

Xenon Arc Chamber

Technical Solution

BOTO Group Ltd.

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BOTO GROUP
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Introduction

Name：BT-G-150 Xenon lamp weather-resistant testing machine

（Air-cooled style 150L）

Equipment summary:

Xenon lamp aging test is a comprehensive weather test device. In addition to weather aging test, it can also test the light resistance of high-quality materials, that is, polymer materials are exposed to artificial light sources that simulate the sunlight spectrum through glass to evaluate the light resistance of materials. performance. Carry out simulation and intensified tests from the main climatic factors of light energy, temperature, rainfall or condensation, and humidity; use xenon arc lamps that can simulate the full sunlight spectrum to reproduce the destructive light waves existing in different environments; xenon lamp weather resistance tests The chamber can provide corresponding environmental simulation and accelerated tests for scientific research, product development and quality control. It can be used for tests such as the selection of new materials, the improvement of existing materials or the evaluation of changes in durability after changes in material composition; suitable for plastics, rubber, paints , Paint, ink, paper, medicine, food, cosmetics, textiles, auto parts, packaging materials, construction materials, electrical and electrical products, etc.

BOTO xenon lamp test chamber uses a xenon arc lamp that can simulate the full sunlight spectrum to reproduce the destructive light waves existing in different environments, and can provide corresponding environmental simulation and accelerated tests for scientific research, product development and quality control.
BOTO xenon lamp test chamber can be used for tests such as the selection of new materials, the improvement of existing materials, or the evaluation of changes in durability after changes in material composition. It can well simulate the changes in materials exposed to sunlight under different environmental conditions.

Feature:

1. Simulate full sunlight spectrum:

BOTO measures the light resistance of the material by exposing the material to ultraviolet (UV), visible light and infrared light. It uses filtered xenon arc lamps to produce a full sunlight spectrum with the greatest consistency with sunlight. The xenon arc lamp with reasonable filtering treatment is the best way to test the product's sensitivity to long-wavelength ultraviolet and visible light in direct light or sunlight through glass.

2. Light resistance test of indoor materials:

Due to long-term exposure to fluorescent lamps, halogen lamps or other light-emitting lamps, products placed in retail outlets, warehouses or other environments will also experience significant photo degradation. The BOTO xenon lamp test chamber can simulate and reproduce the destructive light in such commercial lighting environments, and can accelerate the test process with higher intensity.

3. Simulated climate environment:

In addition to the photo degradation test, the BOTO xenon lamp test chamber can also become a weathering test chamber by adding a water spray option to simulate the influence of outdoor moisture on the material.

4. Relative humidity control:

Some types of BOTO Xenon lamp test chambers can provide relative humidity control. For many humidity-sensitive materials, this function is also very important, and many test protocols also require humidity control.

Application:

The BOTO xenon lamp test chamber uses a xenon arc lamp that can simulate the full sunlight spectrum to reproduce the destructive light waves existing in different environments, and can provide corresponding environmental simulation and accelerated tests for scientific research, product development and quality control.

The BOTO xenon lamp test chamber can be used to select new materials, improve existing materials, or evaluate changes in durability after changes in the composition of materials. It can well simulate changes in materials exposed to sunlight under different environmental conditions.

Function:

◆ Full spectrum xenon lamp.
◆ A variety of filter systems to choose from.
◆ Water spray function.
◆ Relative humidity control.
◆ The air temperature control system of the test chamber.
◆ Irregularly shaped sample holder.
◆ Cheap and good quality xenon arc tube.
◆ It is easy to install and use and basically does not require routine maintenance.
◆ The service life of the xenon arc lamp tube depends on the level of irradiance used, and the life of the general lamp tube is 1600 hours. The lamp can be replaced quickly and easily, and the long-lasting filter provides a guarantee for maintaining the required spectrum.

General standard:

IEC 68-2-9, Basic Environmental Testing Procedures-Part 2:Guidance for Solar Radiation Testing
ISO 4892-1, Plastics-Methods of exposure to laboratory light sources-Part 1: General Guidance
ASTM G151, General Guidelines for Exposure of Nonmetallic Materials
ASTM G155, Xenon-Arc Test Apparatus for Exposure of Nonmetallic Materials
ISO 105-B02, Textiles - Color fastness test - Color fastness to light: Daylight
ISO 3865, Rubber, Vulcanized or Thermoplastic - Methods of test for staining on contact with organic

materials
ISO 4665, Rubber, Vulcanized or Thermoplastic - Resistance to weathering

ISO 4892-2, Plastics-Methods of exposure to laboratory light sources-Part 2: Xenon-arc sources
JIS K 7350-2, Plastics-Methods of exposure to laboratory light sources-Part 2: Xenon-arc sources
DIN EN 513, Unplasticized polyvinylchloride (PVC-U)profiles for fabrication of windows & doors
ASTM D1248 , Polyethylene Plastic Extrusion Materials for Wire a nd Cable
ASTM D2565 , Xenon-Arc - Plastics for Outdoor Applications
ASTM D4101, Polypropylene Plastic Injection a nd ExtrusionMaterials
ASTM D4459 , Xenon-Arc - Plastics for Indoor Applications
ASTM D5071, Xenon-Arc Exposure of Photodegradable Plastics
ASTM D6662, Plastic Lumber Decking BoardsUL 1581, Reference Standard for Electrical Wires, Cables & Flexible Cords

SAE J2412, Accelerated Exposure of Automotive Interior TrimComponents Using a Controlled Irradiance Xenon-ArcApparatus
SAE J2527, Accelerated Exposure of Automotive ExteriorMaterials Using a Controlled Irradiance Xenon-Arc ApparatusQB/T 2727
ASTM D7356, Standard Test Method for Accelerated Acid EtchWeathering of Automotive Clearcoats Using a Xenon-ArcExposure Device

ISO 11341, Paints a nd varnishes - Artificial weathering a nd exposure to artificial radiation-Exposure to filtered xenon-arc radiation
ASTM D3451, Testing Coating Powders a nd Powder Coatings
ASTM D3794, Testing Coil Coatings
ASTM D6577, Standard Guide for Testing Industrial Protective Coatings
ASTM D6695, Xenon-Arc Exposures of Paints a nd Related Coatings
UL 2556 , ASTM G155, CSA C22.2
GB12831-86 vulcanized rubber artificial climate (xenon lamp) aging test method
GB/T1644.2-1999 Plastic Laboratory Light Source Exposure Test Method (Part 2: Arc Xenon Lamp)
GB/T8427-89 Textile color fastness test, color fastness to artificial light xenon arc
GB/T8430-98 Textile color fastness test, color fastness to artificial light xenon arc
GB/T1865-97 Paints, varnishes, artificial weathering and artificial radiation exposure (filtered xenon arc radiation)
GB/T16991-97 Textile Color Fastness Test Color Fastness to High Temperature Light: Xenon Lamp
GB/T5137.3-96 Test Method for Resistance to Radiation, High Temperature, Humidity, Combustion and Weather Simulation of Automobile Safety Glass
GB/T16259-96 Colored building materials, artificial climate acceleration, color aging test method.

GB/T2423.24-95 Environmental Test of Electronic and Electrical Products Part 2: Test Method, Test SQ: Simulate solar radiation on the ground.

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Technical specifications and parameters:

Inner size W×H×D	500×600×500 mm
External size W×H×D	750×1670×1050mm
Temperature range	RT.～80℃
Temperature deviation	±2℃ (without lighting)
Humidity range	50%～98％R.H
Humidity deviation	±2.5%R.H(humidity≥75%R.H) ±3%R.H(humidity≤75%R.H) (without light)
Type of light source	Imported air-cooled full solar spectrum long arc xenon lamp (average service life is about 1500 hours)
Rain time	1～9999 minutes, adjustable
Rain cycle	1～240 minutes, interval (break) adjustable
Spectral wavelength	290nm～800nm
Xenon lamp power	1KW, 2.5KW (lifetime: 1500 hours)
Irradiance range	550W～1200W/㎡ adjustable
Heating power	about 4.6KW
Humidification power	about 3KW
Light source irradiance	Full spectrum 550W～1200W/㎡ (continuously adjustable); The energy compensation of the xenon lamp is realized by adjusting the voltage and current.
The stage rotation speed is adjustable	0-5 rpm (stepless speed regulation)
Distance from arc center to sample holder	350～380mm
Rotating speed of sample rotating basket	None
Water spray time	0～99h59min, continuously adjustable
Stop spraying time	0～99h59min, continuously adjustable.
Illumination time	Can be programmed continuously
Blackboard temperature	65±3℃ (not within the measurement range)
Cooling method	Mechanical cooling and air cooling
Total power and power supply	about 8.5KW; 380V±10% 50HZ
The main technical parameters of the above products are measured at room temperature below 26℃, relative humidity ≤85%R.H, and no-load working room, after two hours of constant temperature and humidity.	

Temperature and humidity operation control system:

Time controller	Imported programmable time computer integrated controller
Accuracy range	Setting accuracy: temperature ±0.1℃, humidity ±2%R.H, indication accuracy: temperature ±0.1℃, humidity ±1%R.H
Temperature and humidity sensor	Platinum resistance. PT100Ω/MV
Blackboard temperature	Bimetallic blackboard thermometer
Water supply system	Humidification and water supply adopt automatic control
Temperature controller	Microcomputer touch screen temperature and humidity integrated controller
Circulation system	Temperature-resistant and low-noise air-conditioning motor. Multi-blade centrifugal wind wheel
Control system	It is mainly composed of an operation panel, a central controller, various key switches, status indicators, and executive appliances.

The structural part of the chamber:

The xenon lamp climate test chamber is composed of the following parts: test chamber body, control system, refrigeration/dehumidification system, heating system, humidification system, air duct system, rain system, lighting system, etc.

Test chamber:

◆This test chamber adopts an integrated structure. The upper left part of the chamber is the working room, the upper right part is the electrical control room, and the lower part is the compressor refrigeration unit. The sample rack mechanical speed device, the xenon lamp condensate tank, the water pump and other various implementing devices, electrical control The cabinet is placed on the right side of the test chamber for easy operation.
◆The inner wall of the test chamber is made of SUS304# stainless steel plate.
◆The insulation material of the chamber body is made of polyurethane foam and ultra-fine glass fiber, which has a good insulation effect. The outer surface of the test chamber is free from frost and condensation.
◆There is a condensate drain at the bottom of the chamber
◆The door frame adopts environmentally friendly silicone rubber sealing strip that can withstand high and low temperatures for a long time.
◆There is a glass observation window on the front of the chamber, and there is a protective film on the window to prevent the eyes from being damaged by the xenon lamp.

Outer Chamber:

◆The outer chamber body is processed and formed by CNC machine tools, and the outer chamber body is processed and formed by high-quality cold-rolled steel plate, and the surface is electrostatically sprayed after pickling and phosphate treatment;

Door and door buckle:

◆The door is sealed with double-layer refined silicone rubber, so that there is no aging and hardening phenomenon under high and low temperature conditions, and the sealing is more reliable;
◆The test chamber is a single door (embedded door handle), with a non-reactional handle;
◆The chamber door is equipped with an observation window, an anti-frost device and a switchable lighting lamp;

Observation window:

◆Size: 30 cm W × 40 cm H;
◆Radiation-proof hollow glass observation window;

The electric control part of the test chamber:

◆This part is the core part of the test chamber;
◆The main switch of the power supply is an air pressure switch, which controls the overall circuit part;
◆All line parts have strict line markings for easy maintenance;
◆Safety protection measures for the electronic control part: When the control system detects the action of the following protection devices (single row), it should be able to automatically cut off the whole system and give an alarm;

►Over-temperature protection of the studio;
►The power supply lacks phase and leakage protection;
►Over current protection of blower motor;
►Refrigerator over pressure/overload protection;
► Short circuit/overload protection of heaters and humidifiers;
► Fuse protection;

The working part of the test chamber:

Compressor condensing part:

◆Refrigeration system: The core of the refrigeration system is the compressor. In this plan, we use a French Taikang fully enclosed compressor to ensure the cooling requirements of the studio.
◆The design of the refrigeration system applies energy adjustment technology. An effective treatment method can ensure that the energy consumption and cooling capacity of the refrigeration system can be adjusted under the normal operation of the refrigeration unit, so

that the operating cost of the refrigeration system is reduced. The failure rate drops to a more economical state.

◆Refrigeration evaporator: The evaporator is located in the air duct interlayer at one end of the test chamber, and it is forced to ventilate by a blower motor for rapid heat exchange.

◆Cooling method of refrigeration system: forced air cooling;

◆Refrigerant: R404a; (environmental friendly refrigerant).

Heating part:

◆Heating party: Direct heating in the test chamber;

◆Using military-grade stainless steel finned heating tube, the heating rate is stable, and the temperature inside the chamber can be kept from sharp changes. It has the advantages of corrosion resistance, high and low temperature resistance, no leakage, and easy installation;

◆Using SSR (Solid State Relay) output control, it has the advantages of no noise, reliable work, long life, strong anti-interference ability, fast switching speed, small external interference, convenient use, etc.;

Rain system:

◆The rain shower system is mainly composed of nozzles, solenoid valves, water supply sources and connecting hoses, etc.

Lighting system:

◆Illumination system is mainly composed of xenon lamp tube, lampshade, xenon lamp trigger and various control devices. The energy compensation of the xenon lamp is achieved by adjusting the distance of the sample frame and adjusting the voltage and current.

Air duct system:

◆The air duct system is located in the mezzanine at the back of the test chamber, and there are heaters, wind blades, evaporators, PT100 temperature sampling sensors and other devices distributed in it. When the fan rotates at a high speed, the air in the working room is sucked into the air duct from the upper part, and the heat generated by the heater and the cold generated by the evaporator are fully mixed in the air duct and blown out from below, and heat exchange with the sample in the working room The latter air is then sucked into the air duct for mixing; it is circulated repeatedly to achieve the target temperature requirement, and at the same time to ensure that the test chamber obtains a higher temperature and humidity index.

Refrigeration/dehumidification system:

◆The world-famous French "Tecumseh" fully enclosed industrial refrigeration compressor is selected. Mainly used to cool the xenon lamp tube and keep the temperature in the working room and reduce the humidity in the working room.

Humidification part:

◆Steam generator: vaporize water to produce steam required by the equipment.

◆Water level control: The solenoid valve controls the water intake, and the liquid level switch controls the water level, providing signals for controlling the humidifier's water addition and alarm.

Gas circulation part:

◆Built-in circulating air ducts and ventilators, using high-efficiency refrigerators and energy adjustment systems, through efficient ventilators for effective heat exchange, to achieve the purpose of temperature changes, by improving the air flow, increasing the air flow and heating The heat exchange capacity of the humidifier and the air surface cooler is adjusted by the adjustable air vent at the air outlet, thereby greatly improving the temperature and humidity uniformity of the test chamber.

(TEMI880) Color touch screen temperature and humidity control instrument

►High-resolution color touch screen interface.
►Interactive parameter input method
►Support Korean, English, Chinese
►Provide I/O RELAY BOARD with built-in SMPS-wiring simplification and cost saving
►Simultaneously support wet and dry bulb method and electronic humidity sensor
►PC-based convenient monitoring
►Conveniently set up to 37 kinds of output (built-in timer) mode
►Supports USB storage using UDC100 (option)-can replace recorder
►Built-in automatic tuning function based on advanced PID algorithm
►Provide a strong communication environment and support 99 sets of multi-branch structure
►Excellent Fuzzy function and ARW start-inhibition of over travel

►Display PV curve (0~8 days)

Product more detail:

Name	Detail	Specification				
Screen	LCD	5.7 inch color touch screen				
Program	Group/segment	120 Group / 1200 segment				
	Repeat / additional function	All repetitions: up to 999 times (unlimited repetition is possible), partial repetitions: up to 99 times / Image link and edit series				
PID control	PID group	PID group : 3 zones, Deviation PID : 1 zone				
Input	Input specifications	Universal input 1 point, 0.1% of FS				
	Type of input	T/C	K, J, E, T, R, B, S, L, N, U, W, Platinel			
		RTD	Pt 100 , JPt 100			
		DCV	0.4~2V, 1~5V, 0~10V, -10~20mV, 0~100mV, 4~20mA, 0~20mA			
Output	Control output	2 points (heating, cooling)				
	Output specifications	Voltage output (SSR)	Voltage: 15VDC or more, minimum Pulse width: 5ms			
		Current output (SCR)	4 ~ 20mADC, load impedance: 600 max			
	Output specifications		Heating	cooling	Heating	cooling
		Normal control	SSR	NONE	SCR	NONE
		Control heating/cool down	SSR	SSR	SSR	SCR
			SCR	SSR	SCR	SCR
Auxiliary output	Output specifications	1 point, 4 ~ 20mADC / maximum 600				
Transfer	Transfer output	1 point, output format: PV, SP, MV, HMV, CMV				
	Output signal / load impedance	4 ~ 20mADC / Max 600				
Contact input	Type of input	DI1: RUN/STOP, DI2 ~ DI8: The name of each error message can be changed (DI SEL: ERR) DI1: RUN/STOP, DI2: Hold, DI3: Step,				

			DI4~8: Mode 1~16 options (DI SEL: PTN)
	Contact capacity		Max 12VDC, 10mA
Contact output	Contact specifications		Up to 20 points (basic: 10 points, option: 10 points)
	connection point		Normal Open(MAX 30VDC/5A, 250VAC/5A), Normal Close(MAX 30VDC/1A, 250VAC/2A)
	Contact type (Total 24 points)		Inner Signal: 8 points, Time Signal: 4 points, Alarm Signal: 4 points, Up/Soak/Down Signal: 3 points, Error Signal: 1 point, PT End Signal: 1 point, 1st Ref Signal: 1 point, 2nd Ref Signal: 1 point
Power	Power		Rated voltage : 100 ~ 240VAC(10%), 50/60Hz, Consumption power: maximum 15W
	Absolute green impedance		500VDC 20M
	lithium battery		Setting data storage (minimum 10 years)
	Internal voltage		2000VAC per minute
Communication	protocol		PC-Link, MODBUS(ASCII, RTU), SYNC Master
	Communication type		RS232C/RS485-The maximum communication distance is 1.2Km, and the maximum connection is 99 units, Communication speed: up to 9600bps
Data backup	Storage medium		UDC100 (option): You can use all USB memory sticks (support FAT16)
	Storage function		Backup repair program information and set value, store temperature indication value
Model	Option		Detailed description
TEMP880-	10		Basic I/O RELAY BOARD(10points) & RS232C
	11		Basic I/O RELAY BOARD(10points) & RS485
	20		Basic (10 points) + Add I/O RELAY BOARD(10 points) & RS232C
	21		Basic (10 points) + Add I/O RELAY BOARD (10 points) & RS485
		/UDC	USB record storage

Use environment:

Temperature: 5℃～+35℃
Humidity: ≤85%RH
(please strictly request environmental conditions for long-term storage)

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Factory real pictures display

1.Certificate

ISO certificate


注册号：00921Q11072R0S

长城（天津）质量保证中心有限公司

质量管理体系认证证书

兹证明 上海柏毅试验设备有限公司

（统一社会信用代码：91310114561809045X）

位于 注册地址：上海市嘉定区安亭镇杨木桥支路8号6幢A区

邮编 201804

办公/服务地址：上海市嘉定区曹安公路5616号财富广场2304室

邮编 201805

其质量管理体系符合 GB/T19001-2016/ISO9001:2015 标准

该质量管理体系认证范围

温度试验设备、检测试验设备的销售。

颁证日期 2021年6月18日 有效期至 2024年6月17日

长城（天津）质量保证中心有限公司 总经理

IAF CNAS 中国认可 国际互认 管理体系 MANAGEMENT SYSTEM CNAS C009-M


Registration No.: 00921Q11072R0S

CHINA GREAT WALL (TIANJIN)
QUALITY ASSURANCE CENTRE CO., LTD
QUALITY MANAGEMENT SYSTEM CERTIFICATE

We hereby certify that
Shanghai BoYi Test Equipment Co. Ltd.
(Unified social credit code:91310114561809045X)
Registered address is located at: **Area A, Building 6, No. 8, Yangmuqiao Branch Road, Anting Town, Jiading District, Shanghai.** Post Code: **201804**
Office/Service address is located at: **Room 2304, Fortune Plaza, No.5616 Caoan Highway, Jiading District, Shanghai.** Post Code: **201805**
Its quality management system meets the requirements of the **GB/T19001-2016/ISO9001:2015 Standard.**
The quality management system applies in the following areas:
Sales Of Temperature Test Equipment, Testing Test Equipment.
Date of Issuance: **Jun. 18th, 2021** Date of Expiry: **Jun. 17th, 2024**

General Manager

IAF CNAS 中国认可 国际互认 管理体系 MANAGEMENT SYSTEM CNAS C009-M

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Some patents (nearly 100) and certificates

Hot & Cold test chamber

- 2017 Annual News Stone Hero List Quality Award

China Printed Circuit Industry Association

Some patents (nearly 100) and certificates

Joint Laboratory of Power Battery Safety Testing

Shanghai BOYI & Beijing Jiaotong University

China quality club enterprise member

2.Shanghai Office :

3.Factory environment area

Work shop

Our team

4.Spot exhibition hall area\finished product area

5.BOTO GORUP Factory located in Hunan Yueyang Industrial Park.

The industrial park is constructed by Shanghai Boyi Test Equipment Co., LTD with a total investment of RMB 400 million. Mainly engaged in the research and development and manufacturing of the whole chain of laboratory equipment; It is located next to yueyang section of Wuhan-Guangzhou high-speed railway, adjacent to Lotus Airport, and has very convenient transportation. The industrial park covers an area of 40 mu, consisting of a comprehensive office building and two standard factories, with a total construction area of nearly 20,000 square meters

Showroom 1

Showroom 2

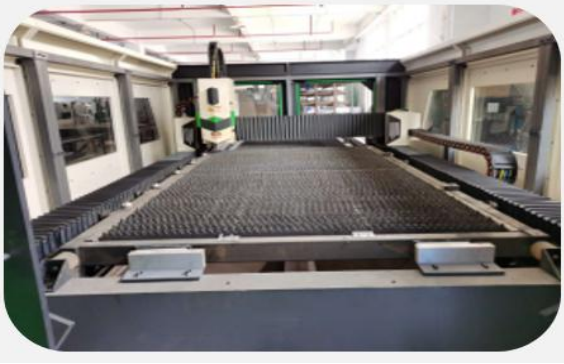
6.On December 23, 2021, Li Aiwu, deputy Secretary of CPC Committee and Mayor of Yueyang city, Hunan Province, led the participants of yueyang City industrial project construction mobile site meeting to inspect our company and observe the construction of industrial projects.

7.After the industrial park is fully put into operation, it can meet the annual output of new energy 3C semiconductor electronic circuit optical communication industry laboratory testing room environment simulation chamber 1200 sets; Another company has an independent sheet metal production and processing center, can independently undertake manufacturing business







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8.Standard size machine

225L High and Low Temperature Humidity and Heat Alternating Test Chamber

20 L constant temperature and humidity test chamber

Overlapping Temperature and humidity chamber

Thermalshock test chamber

Double layer constant temperature test chamber

Salt spray test chamber

150LVertical high and low temperature test chamber

Ventilation type aging test chamber

Leaning tower ultraviolet aging test chamber

9 .Large non-standard real pictures display area

3.6 m3 constant temperature and humidity laboratory

9 cubic meters low temperature room, 13 cubic meters high temperature room

Three comprehensive test chamber

10.Shipment




Self-produced and sold **No dealer link** **Save you 30%** **Quality and after-sales are recognized by customers**