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Xenon Test Chamber

Test Principle

Artificial weathering of coatings or exposure of coatings to filtered xenon-arc radiation is carried out in order to obtain the degree of change in a selected property after a certain radiant exposure H, and/or the radiant exposure which is required to produce a certain degree of ageing. The properties selected for monitoring should preferably be those which are important for the practical use of the coatings. The properties of the coatings exposed are compared which those of unexposed coating prepared from the same coating materials at the same time and in the same way (control specimens)or with those of coatings exposed at the same time whose behavior during testing in exposure apparatus is already known (reference specimens).

Xenon lamp is full of xenon, and would send out light because of xenon discharge. The energy distribution of spectrum through this way is very close to sunshine, and its color temperature is near 6,000K . Furthermore, xenon lamp has a stable character, its spectrum energy distribution wouldn't change at all within the limited lifetime, this is because its spectrum distribution among continuous spectrum part don't have any relation to input power of lamp. As a special light source, xenon lamp has a good consistency for electric parameters , and it is easy to light, once light on, it can output a steady light energy at once. Furthermore, during working, the electric parameter won't be influenced by any external conditions.

Xenon Lamp light can emulate the effect of sunshine, while water spray system can emulate the effects of rain and dew. During the test, radiation energy and temperature are controllable. A typical test cycle generally carries out under strong irradiation of Xenon light and periodic precipitation. These tests generally applied in the fields of paint and coatings, automotive industry, plastic, wood, glue, etc.

BGD series Xenon Light Accelerated Aging Test Chambers（hereinafter referred as B-SUN）use Xenon lamps as artificial light source, and can modify the full spectrum sun light. Controlling the temperature, humidity .Its inner temperature and humidity can be properly controlled to obtain the periodic precipitation on the sample for fully evaluating the damaged factor caused by sunlight, moisture and temperature (materials aging phenomenon includes fading, disluster, intensity reduction, cracking, flaking, chalking, and oxidation).

Based on sample holder type, B-SUNS are divided into flatbed type and rotating drum type.

Test Standards

ISO 11341 *Paints and varnishes-Artificial weathering and exposure to artificial radiation--Exposure to filtered xenon-arc radiation*

ISO 12040 *Graphic Technology - Prints and Printing Inks - Assessment of Light Fastness Using Filtered Xenon Arc Light*

ISO 16474-1 *Paints and varnishes -- Methods of exposure to laboratory light sources -- Part 1: General guidance*

ISO 16474-2 *Paints and varnishes -- Methods of exposure to laboratory light sources -- Part 2: Xenon-arc lamps*

ASTM D3451 *Standard Guide for Testing Coating Powders and Powder Coatings*

ASTM D3794 *Standard Guide for Testing Coil Coatings*

ASTM D4303 *Standard Test Methods for Lightfastness of Pigments Used in Artists' Paints*

ASTM D5010 *Standard Guide for Testing Printing Inks and Related Materials*

ASTM D6577 *Standard Guide for Testing Industrial Protective Coatings*

ASTM D6695 *Standard Practice for Xenon-Arc Exposures of Paint and Related Coatings*

ASTM G151 *Standard Practice for Exposing Nonmetallic Materials in Accelerated Test Devices that Use Laboratory Light Sources*

ASTM G155 *Practice for Operating Xenon Arc Light Apparatus for Exposure of Non-Metallic Materials*

ISO 4892-1 *Plastics Methods of Exposure to Laboratory Light Sources Part 1: General guidance*

ISO 4892-2 *Plastics - Methods of Exposure to Laboratory Light Sources - Part 2: Xenon-arc lamps*

SAE J2412 *Accelerated Exposure of Automotive Interior Trim Components Using a Controlled Irradiance Xenon-Arc Apparatus*

SAE J2527 *Accelerated Exposure of Automotive Exterior Materials Using a Controlled Irradiance Xenon-Arc Apparatus*

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Big Xenon Test Chamber

BGD 862 or BGD 862 Plus are multi-function big xenon light accelerated weathering testers which is equipped with one piece high power（6.5KW）water-cooling xenon lamp, its exposure area arrive 6,500cm^2

Powerful functions and reliable test results

◆ Meet with all international standards of xenon test.

◆ Equipped with ATLAS xenon arc lamp, filter and components, ensure to get high and same running parameters. Test results have a good reliability and repeatability comparing with import machines.

◆ Automatic rotating drum-type sample rack with three floors structure maximizes exposure uniformity over all specimens

◆ 6,500cm exposure area , can hold different shapes and sizes samples.

◆ Can set the cumulative energy（total irradiance energy）obtained by sample to finish a test procedure.

◆ Advanced cooling system for xenon lamp and intelligent air system.

◆ Chinese or English operation window

Can set and control automatically many test parameters

◆Irradiance energy can be set and accurately controlled（340nm, 420nm, 300nm~400nm, 300nm~800nm）. The "**Solar Eye**" control system can monitor and automatically compensate the change of light intensity caused by ageing or other factors

◆ Working room temperature, BPT（ black panel temperature） and BST（ black standard temperature） can be set and controlled automatically. With high precision Pt 100 temperature sensor, all these temperatures could be monitored accurately

◆Working room relative humidity can be set and controlled automatically. With ultrasonic wave humidifying system, the working room can obtain more stable and uniform humidity distribution.

◆ Can set spray way to sample（front spray or back spray）, spray time and spray interval time.

Simple, easy to use

◆ Industrial control touch screen (For BGD 862) or industrial control all-in-one computer touch screen (For BGD 862 Plus), menu operation control

◆ Users can also customize test programs according to their needs and save them.

The BGD 862 Plus supports up to 9,999 editable programs, with each program allowing 30 different working condition segments (including sub-cycles).With massive storage for user programs, operation becomes flexible and convenient.

The BGD 862 allows 10 editable programs, each with 10 segments (sub-cycles not supported).

◆ With USB interface, operator can export any test parameters with Excel format at any time, convenient to check B-SUN's running status at any time.

◆ Come with costant pressure pump which offer constant water pressure to chamber, also ensure a stable spray amount.

◆ Pure（deionized）water machine is optional. With high purity water, operator can get a more reliable testing result, Chamber has alarm function for monitoring water.

Safe and reliable

◆ Many alarm protections: Big irradiance difference, pure water conductivity is over limits, too high temperature of cooling water, too low flow rate of cooling water, over-temperature, heating problem, abnormal lamp power, B-SUN will stop running automatically and show the alarm information in the operation window.

◆ Can select TCP/IP Ethernet interface, the user can tele-control the achine through TCP/IP internet. Convenient to help customers to slove all problems and do some necessary after service.

Unique Features of the BGD 862 Plus Upgraded Version

◆ Latest resonant circuit technology for faster and more reliable lamp ignition;

◆ Real-time monitoring of cooling water flow for the lamp, ensuring stable and reliable cooling;

◆The lamp control circuit now includes both voltage and current loops in addition to the original closed-loop irradiance control system, delivering more stable irradiance regulation.

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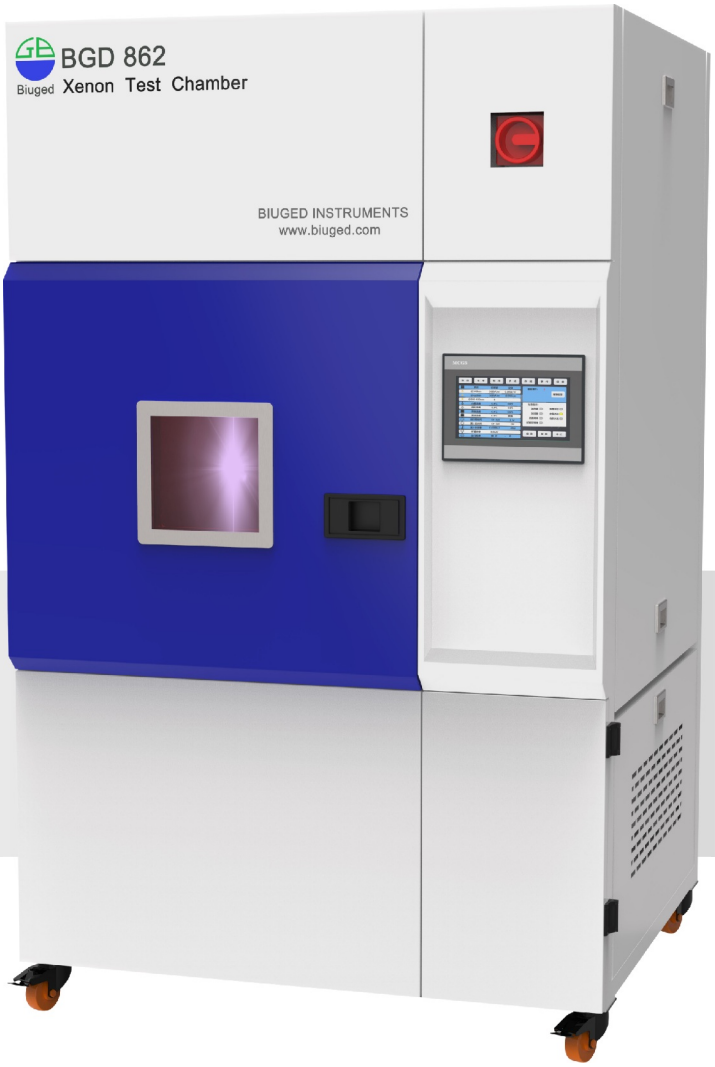
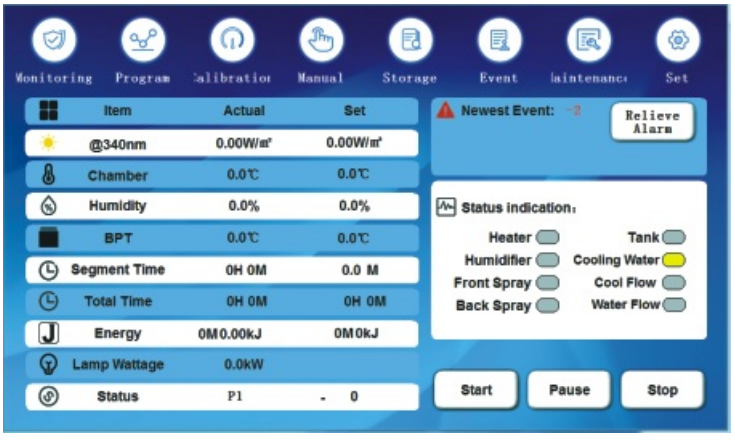
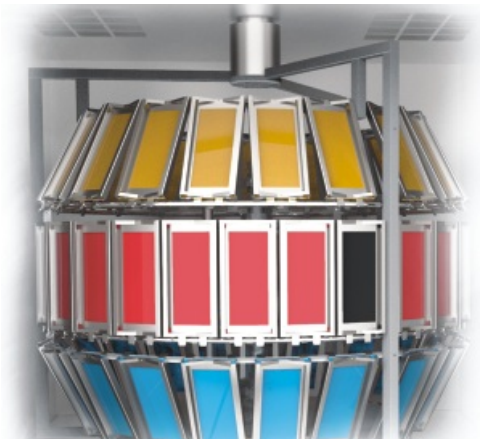


Scan for video



Operation Menu



Working room

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Irradiance Calibration Windows

Operation Menu

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Ordering Information → Technical Item ↓	BGD 862 and BGD 862 Plus Xenon Test Chamber
Xenon Lamp	6.5 kW water cooling long arc xenon lamp
Light Filter	Import originally from ATLAS, can simulate indoor or outdoor sunshine spectrum
Exposure Area	6,500 cm^2 (63–65 pcs standard samples of 15cm × 7cm size)
Monitoring Method to Irradiance	Four types: 340nm, 420nm, 300nm ~ 400nm, 300nm ~ 800nm
Adjustable Irradiance	See Table B.
Lifetime of lamps	2,000 hours
Adjustable Range of BPT	RT~110℃
Adjustable Range of BST	RT~120℃
Adjustable Range of Working room	RT~70℃ (Dark)
Temperature stability	±1℃
Temperature uniformity	≤2℃
Temperature Deviation	≤1℃
Adjustable Humidity	Light: 10%–75% Dark: 10%–95%
Rotate speed of sample	1r/min (circle as lamp centre)
Spray Function	Can set spray continuous time and spray period
Water demands	High purity deionized water (Conductivity<2us/cm)
Compressed Air	Clean, oilless compressed air with 0.5MPa pressure, Max. air supply is near 60L/min. Average air consumption is 10L/min ~ 30L/min (Depends on testing standard)
Deionized Water Consumption (24h)	300L ~ 400L (When running ISO 16474–2 Cycle No.1)
Power Supply	AC380V ± 10%, Three–phase four–wire 50Hz; Max. Current 50A, Max. Power 9.5KW
Overall Size	1,220mm × 1,200mm × 1,970mm (L × W × H)
Net Weight	500 KG
Structure	
Cabinet Material	Working room is made up of good quality stainless steel (SUS 316)
Chamber Door	Simple door to left with filter window; silicon rubber seal the door edge
Sample Holder	Stainless steel material, its position in the chamber can be adjusted (up, middle or down), Sample crack rotate around the centre of lamp
Controller	Siemens programmable controller. LCD touch–screen
Way of adding humidity	Add humidity by high pressure aerosol
Thermometer	Heat insulate type black standard thermometer and black board thermometer
Cooling System	Cooled by compressor and forced–air blast system
Security Protections And Error Protections	
Xenon Lamp Protect	Over temperature of cooling water, low flow of cooling water, abnormal of lamp power
Alarm Function	Big irradiance difference, over–temperature of BPT or BST or Working room, big error of humidity, spraying water shortage, pure water conductivity is over limits. Operator can set these values and downtime
Cooling–water System Protect	Monitor the conductivity of cooling–water at real–time
Protection to Radiation	Xenon lamp will turn off automatically when opening the chamber door, in case xenon lamp radiate operator
Installing Environment Requirements	
Site Requirement	Net area of installation site ≥12m^2; Net height ≥2.8m. Equipped with separate air condition which can ensure a 22℃ ~ 30℃ & 30% ~ 80% environment permanently. No strong electromagnetic fields, no high concentration dust, no corrosive gas or flammable materials.
Power Source	380V±10% 3–phases; 50Hz; 50A power source; Equipped with circuit, ground wire and air circuit breaker.
Air Outlet	There should be air outlet (Distance to chamber ≤1.0m, height to ground is 2.5m ~ 2.7m, diameter should be 153mm)
Water Supply	Equipped with water supply pipes and valves, Supply water pressure≥2.0kg/cm^2; conductivity≤120us/cm
Drainage	Draining pipes diameter≥50mm, height to ground≤10cm, distance to chamber≤0.5m

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Table A：Main Configuration

Products	Numbers	Manufacture	Notes
Xenon Lamp	1pc	USA brand	6.5kW
Filter	1set	USA brand	Includes two inner filters and one 4.5K/6.5K outer filter（S BORO/S BORO）
Control System	1set	SIEMENS	PLC+ Siemens analog input
Interface	1pc	Industrial control integrated computer	15" human–computer touch screen

Table B：Adjustable Range of Irradiance

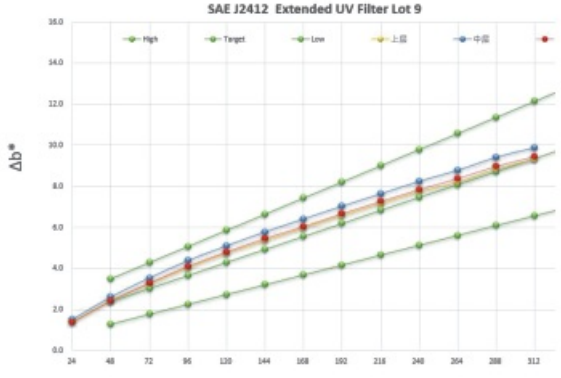
Combinating Filters			Adjustable Range of Irradiance（W/m²）			
Filters	Inner Filter	Outer Filter	Lamp Power（kW）	340nm	420nm	300–400nm
Daylight	Type S Boro	Type S Boro	2.5～7.5	0.25～1.26	0.59～2.76	29～141
Window Glass	Type S Boro	Soda Lime	2.5～7.5	0.23～1.10	0.61～2.76	28～129
Extended UV	Quartz	Type S Boro	2.5～7.5	0.29～1.50	0.59～2.79	32～161

Optional Accessories

BGD 862/W-001---ATLAS 6.5 kW Xenon Lamp（Water-cooled）
BGD 862/Z-019---USA brand 6.5 kW Xenon Lamp（Water-cooled）
BGD 862/Z-016---BGD 2,000 HRS Supply PKG（Includes one USA brand 6.5 kW water-cooled xenon lamp, 5pcs W-143 inner filters, 1 pc W-144 outer filter）
BGD 862/Z-017--- ATLAS 2,000 HRS Supply PKG（Includes one ATLAS 6.5 kW water-cooled xenon lamp, 2 pcs S65 inner filters,one pc 4.5K/6.5K outer filter）
BGD 8171---Purity Water Machine（100L/h, pure water can less than 0.1 μ S/cm （input water < 200 μ S/cm））
BGD 8176---Cooling Water Machine（For cooling and cycling pure water, can greatly reduce water consumption）
BGD 8178---Auxiliary Cooling System
BGD 8179---Air Compression System（Includes air compressor, air reservoir, freezing dryer, precise filter etc）
BGD 862/Z-010---Daylight Filter
BGD 862/W-125---Metal Frame Air Filters
BGD 862/Z-018---Sample shelf

Validation data of standard PS board

BGD 862 & An imported aging chamber of the same model



BGD 862 Xenon Test Chamber meets the requirements.

BGD 8176

BGD 8171