

Q-SUN Xe-2 Tester Training

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Q-SUN Principles of Operation

Lightstability vs. Weathering 耐光色牢度vs.老化

- Lightfastness (lightstability) 日晒色牢度 (耐光稳定性)
 - Less durable materials, limited outdoor exposure
较不耐晒的材料一般不用于户外
 - Many tests look only for rapid color degradation
关注材料快速的褪色/变色
- Weathering 老化
 - outdoor, durable materials 户外曝晒 · 耐用材料
 - Long term fading and fiber degradation 长时间褪色 · 纤维降解

Products and Test Standards 产品与测试标准

Product 产品	Test type 类型	Major test standards 主要测试标准
General Non-metallic Material 一般非金属材料	Weathering 老化	<ul style="list-style-type: none"> • ISO 4892-2 • ASTM G155 • GB/T 16422.2
Apparel and Design Fabrics 一般织物	Lightfastness 耐光性/日晒色牢度	<ul style="list-style-type: none"> • ISO 105-B02 • GB/T 8427 • AATCC TM 16.3 • Other derivatives like Marks & Spencer
Automotive and high-temp 汽车内饰测试	Lightfastness 耐光性/日晒色牢度	<ul style="list-style-type: none"> • ISO 105-B06 • SAE J2412 • GB/T 32088
Outdoor and Industrial Textiles 户外用和产业用纺织品	Weathering 老化	<ul style="list-style-type: none"> • ISO 105 B04 • AATCC TM 169
Shoes 鞋材	Lightfastness 耐光性/日晒色牢度	<ul style="list-style-type: none"> • Adidas FT-11 (xenon)

Q-SUN Xe-2 Overview

- 1) User interface 用户界面
- 2) USB port for data transfer 数据传输USB接口
- 3) Xenon lamps with irradiance control 氙弧灯管
- 4) Optical filters 滤光片
- 5) Water spray 水喷淋
- 6) Onboard irradiance sensors 辐照度探头
- 7) Black Panel Temp sensor 黑板温度计
- 8) Specimen holders 样品架
- 9) Relative Humidity/CAT sensor 温湿度传感器



Q-SUN Xe-2 model configurations


Model Number	Humidity Control (H)	Enhanced Performance (E)	Front Spray (S)	Back Spray (B)
Xe-2-HE	●	●		
Xe-2-HSE	●	●	●	
Xe-2-HBSE	●	●	●	●



Xe-2 rear view showing nameplate location.

Model : Q-SUN XE-2-HBSE
Serial #: 23-30001-83-X2HBSE
230 V 50/60 Hz 1 ϕ 23 A

[1] [2] [3] [4]



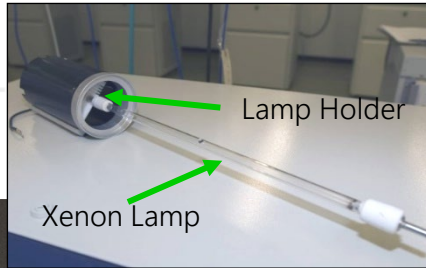
[1] Tester Year of Manufacture

[2] Tester Unique Identification Number

[3] Tester Series Number

[4] Tester Model Number

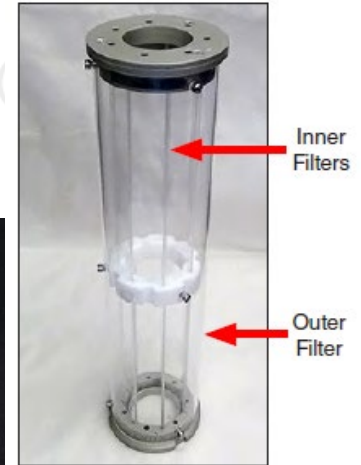
Q-SUN Light Delivery



Xenon arc lamps



Optical filters

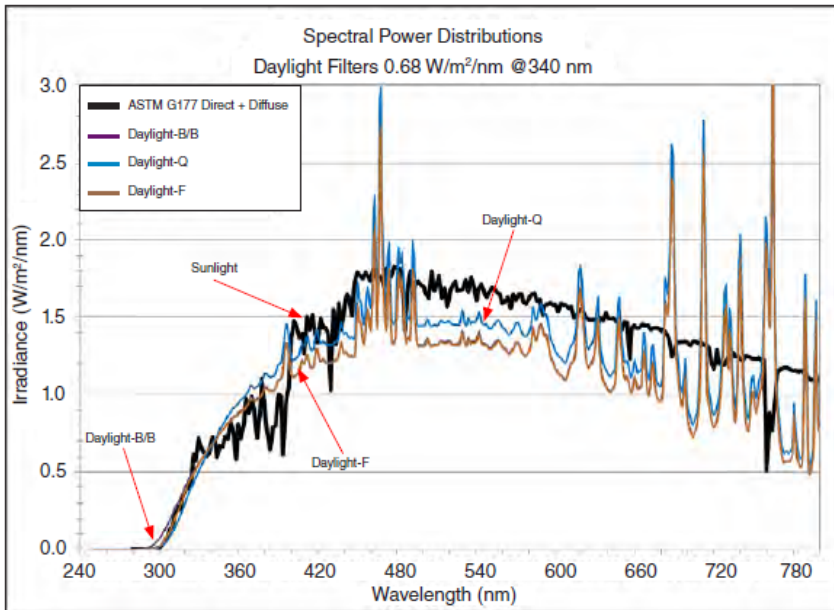


Q-SUN Irradiance Capability

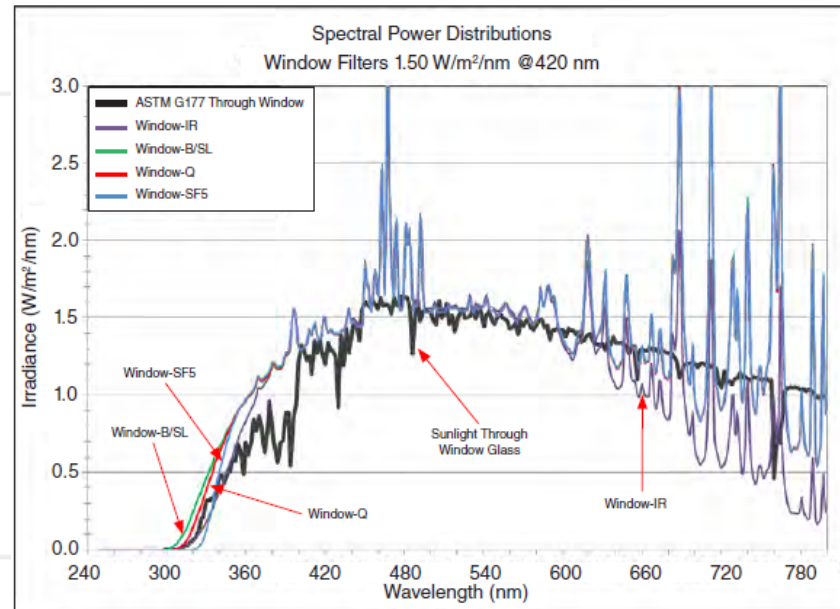
	Xe-2 Irradiance Values		
	Typical (& Maximum) ^{A,B,C}		
	W/m ² /nm @340 nm	W/m ² /nm @420 nm	W/m ² @TUV (300-400 nm)
Daylight-F	0.80 (0.95)	1.50 (1.75)	75 (85)
Daylight-Q	0.68 (0.80)		
Extended UV (-Q/B)			
Daylight-B/B	0.51 (0.61) ^D		55 (65)
Window (-Q, -B/SL)	0.55 (0.65)		70 (80)
Window (-SF5, -IR, -B04)	—		42 (62)

Achievable irradiance values vary by optical filter, tester type, and control point
 辐照度水平和光学滤片, 机器型号和控制点有关

Xenon Arc Spectrum



Spectral power distributions of Daylight filters from 250-800 nm



Spectral power distributions of Window filters from 250-800 nm

SOLAR EYE Irradiance Control System

- SOLAR EYE Irradiance Control maintains the same light output at all times

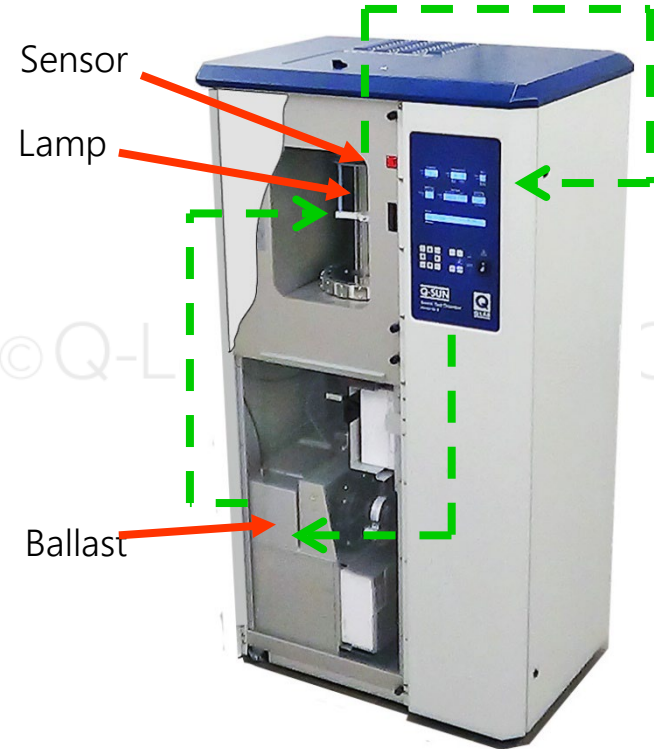
辐照度控制保证了辐照度的输出稳定

- Ballasts control lamp output


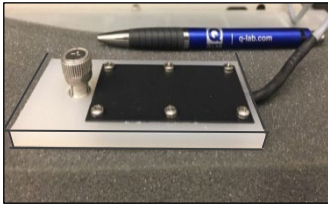
整流器控制灯管输出

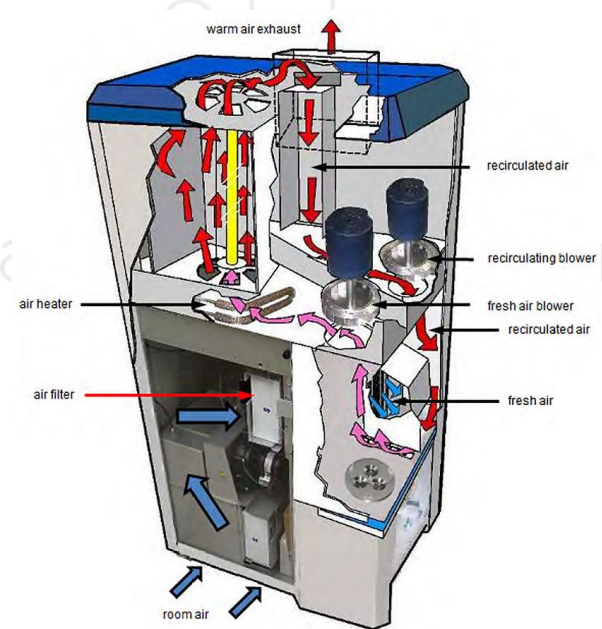
- Allows for excellent repeatability and reproducibility

实验结果保证可重复性和可再现性

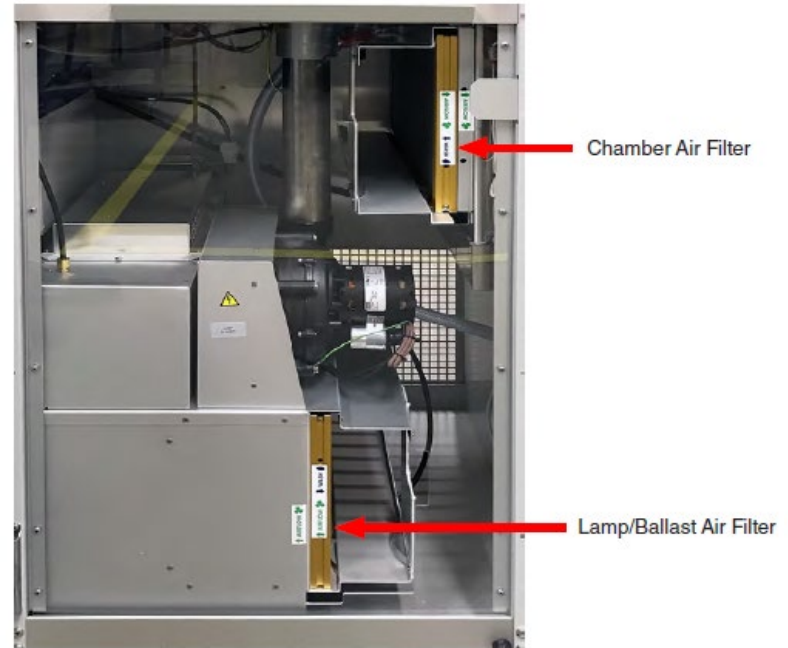


Temperature Control

Panel	Construction	ASTM Designation	ISO Designation	Temp Range (°C)
	Black painted stainless steel	Uninsulated Black Panel	Black Panel	50-100
	Black painted stainless steel mounted on 0.6 cm white PVDF	Insulated Black Panel	Black Standard	55-105



Lamp Cooling System



Q-SUN Water Quality

- Purified (RO/DI) water is required
使用去离子水
- Spray water requires even higher purity and also low silica
水喷淋用水要求高纯度低硅含量水质
- Q-Lab follows ASTM G151 recommendations

Water Delivery	Resistivity ($\Omega \cdot \text{cm}$)	Conductivity ($\mu\text{S}/\text{cm}$)	Silica (ppm)	Total Dissolved Solids (ppm)	pH
Spray	> 5 M	< 0.2	< 0.1	< 0.1	6-8
Humidity	> 200 k	< 5.0	No requirement	< 2.5	6-8

Xe-2 Water Spray System

- Features
 - Continuously Spray at One Direction
喷头持续往一个方向喷淋
 - Automatic Fault Detector
错误诊断
- One nozzle, used for:
 - Mist 细雾
 - Thermal Shock 热冲击
- Second Nozzle for optional Back Spray
有背喷功能选项

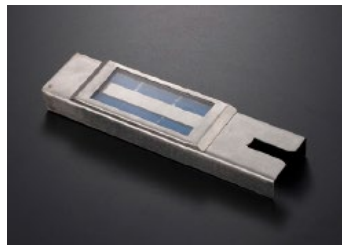
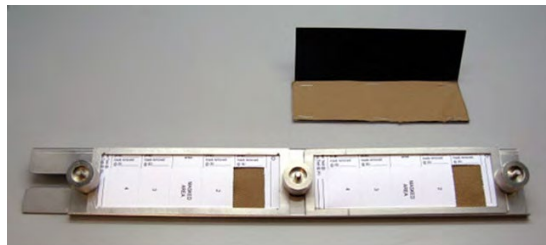
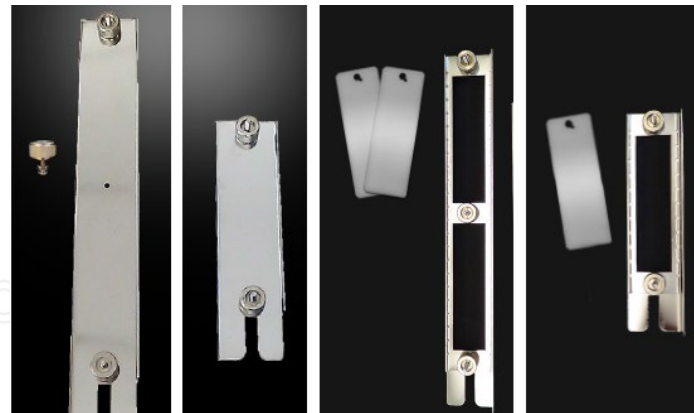
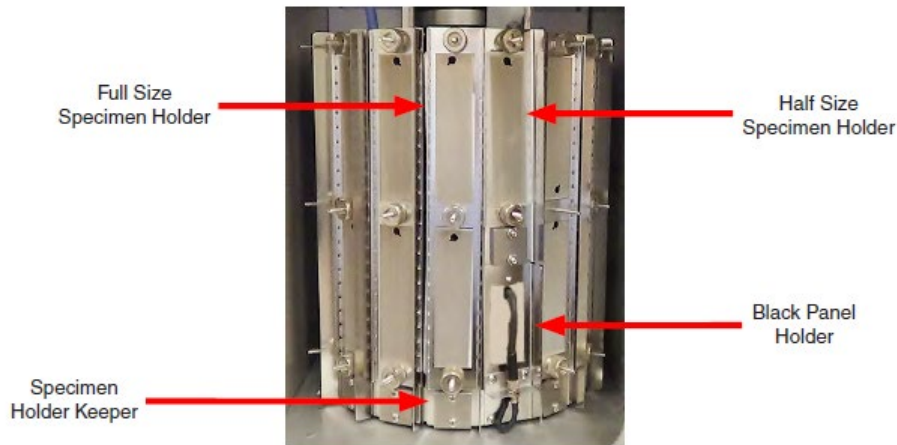


Relative Humidity Control

- Feedback Loop System
- RH/CAT Sensor
- Main Controller
- Humidity Generator 加湿器
 - Nebulizer (超声波) in Xe-2
 - Boiler (锅炉) in Xe-3



Specimen Mounting



Thank you for your attention!

Questions?

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