Simplewell昇微

Walk-in (vehicle, battery) high and low temperature hot and humid environment warehouse introduction

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Part

Product description

1.1 Scope of application

Walk-in high and low temperature test chamber:

Mainly used in electronics, electrical appliances, batteries, communication, instrumentation, vehicles, plastic products, metals, food, chemicals, building materials, medical, aerospace and other products quality testing and materials screening; applicable to electrical and electronic products, automotive components, parts and their materials in the high and low temperatures, the environment of the suitability of the storage, transportation and use of the test.

1.2 Products

Walk-In Profile:

1、According to the different sizes of the storage body, the walk-in box door is divided into double door and single door structure, the door is equipped with observation windows.
2、The color of the library board is the standard color of ascending micro.
3、Specialized door hinges are used, and the inner and outer double door locks are used.
4、The left and right sides of the storage body can be customized with observation windows or small doors (optional).
5、The size and number of test lead holes can be selected, and the specific position distribution can be customized.
6、Top break heat-treated high and low temperature resistant floodlights, quantity and power defined according to the size of the storage body.
7、(Battery box) with fire protection system with built-in water and carbon dioxide sprinklers
8、(Battery box) with pressure relief device on top, smoke evacuation system
9、(Battery box) Transportation battery rail trolley (optional).
10、(Whole car) The whole body of the garage is large enough for the whole car to enter and exit the experiment.
11、Civil foundations (optional).

1.3 Products

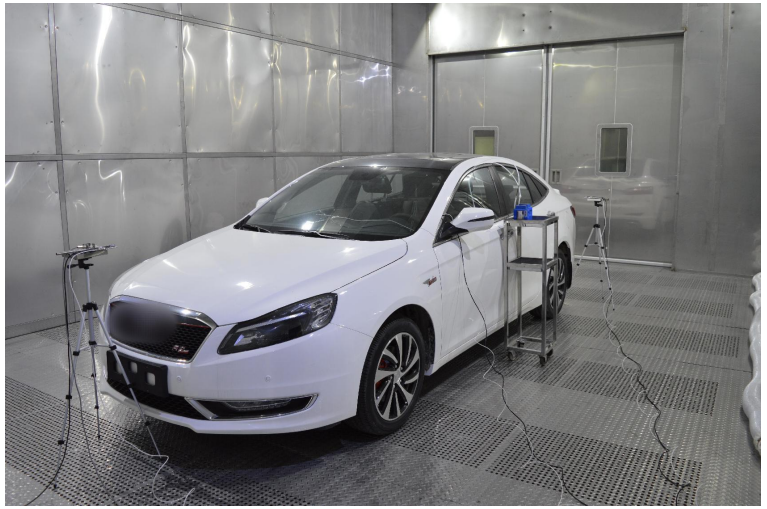
Walk-in

1.3Products

Battery box walk-in

1.3 Products

Whole Vehicle Walk-In



1.4 Components - Heating and humidification systems

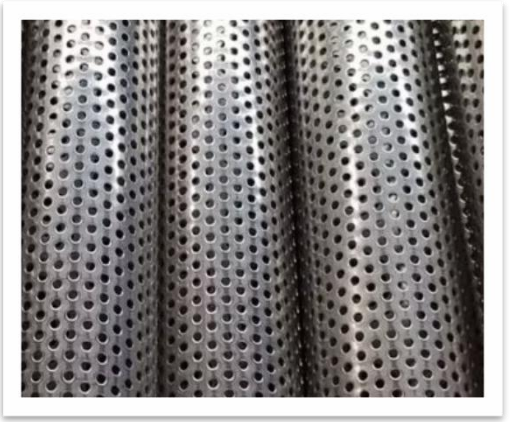
Test chamber heating system:
Heater nickel-chromium alloy heating wire using stainless steel tube armored molding finned heat pipe; heater corrosion, oxidation, explosion-proof with empty incineration protection, using PLC + PWM pulse intelligent widening control technology.

Heaters

Stainless steel humidification tank

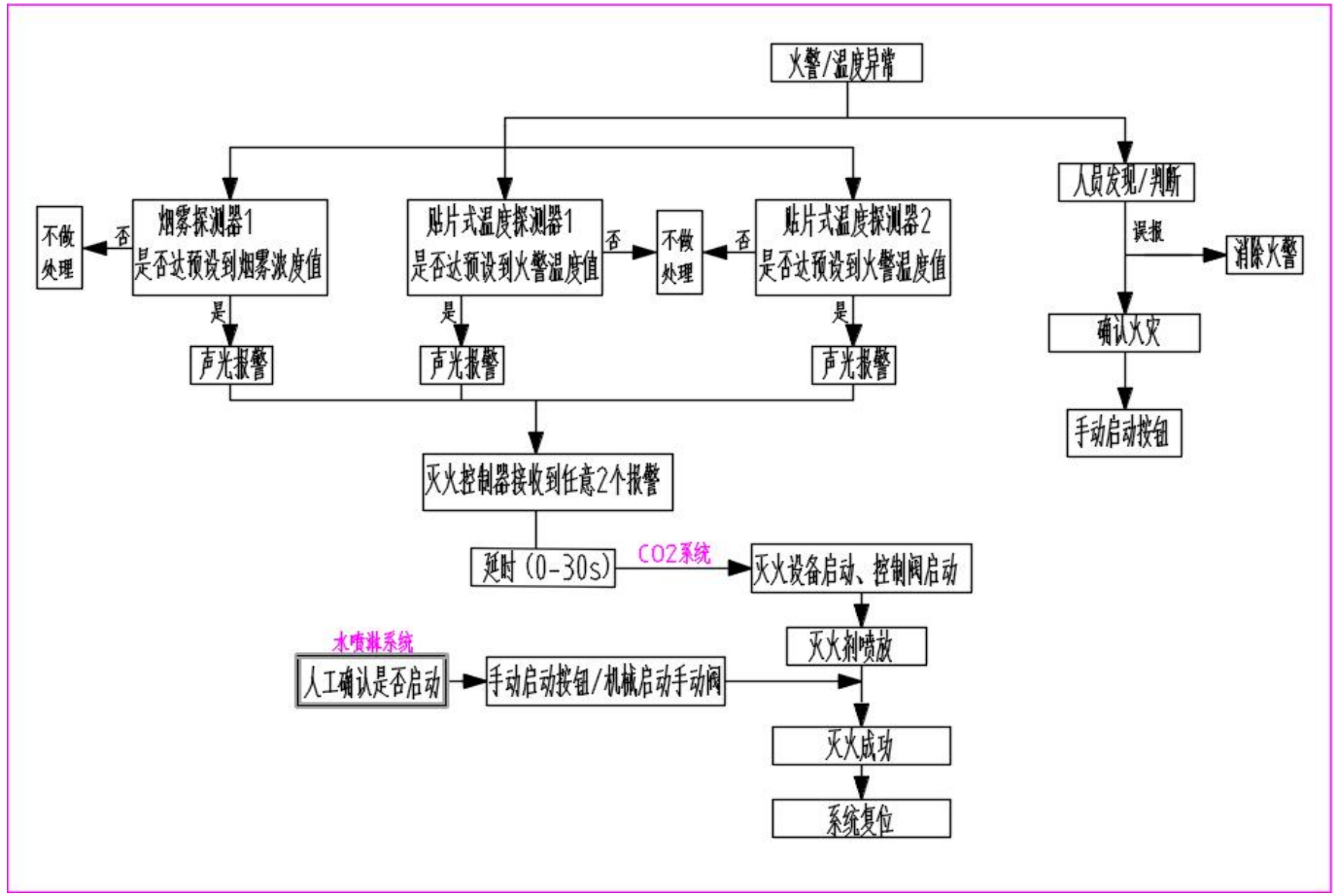
Test chamber humidification system:
Humidifier using nickel-chromium alloy heating wire and 316 seamless stainless steel tube armored molding, humidification quickly, water, electricity, safety and leakage prevention, there is a lack of water alarm and anti-dry burning protection.

Humidifiers



humidifying tube

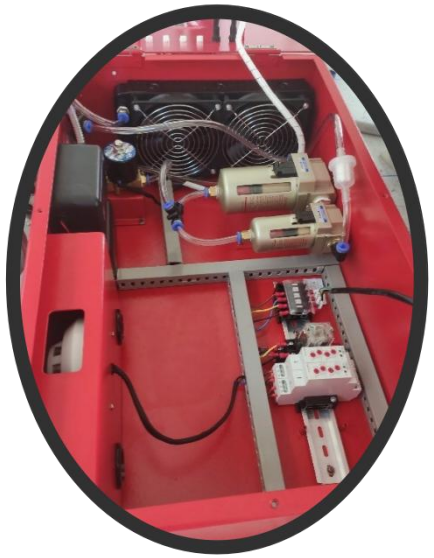
1.5 Principles of fire protection systems (for battery boxes)



1、 Carbon dioxide cooling system to choose a 70L bottle group, nozzle installed in the box, the environmental test chamber installed 1 nozzle, after receiving the start signal to open the valve to the box spraying CO2.

2、 Water extinguishing system, manual valves, electric valves, open-type water nozzle, Y filter, piping and other components, water system water supply needs to be provided by the user, the water extinguishing start for manual start, CO2 spraying after the discovery of the fire continues to burn manually start the water extinguishing system, the water extinguishing system to stop for the manual stop, stop button extinguishing system to stop spraying water.

1.6 Introduction to fire-fighting components (for battery boxes)



Battery box supporting fire fighting system:
1, fire extinguishing controller (built-in independent power supply);
2, detection system (suction sampling device, smoke detection, patch temperature detector, 8-way temperature controller)
3, water spray manual ball valve switch, solenoid valve;
4, carbon dioxide fire extinguisher bottle.

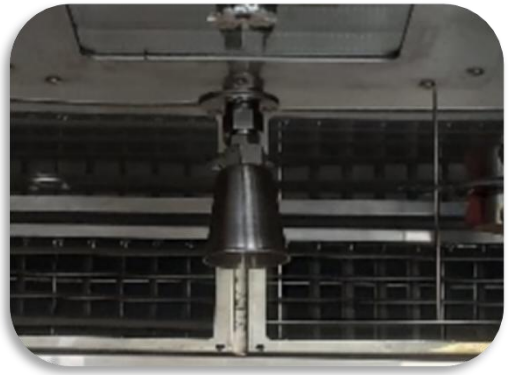
1.6Introduction to fire-fighting components (for battery boxes)

Water spray nozzles

Audible and visual alarm

Y-filter

SMT Temperature Sensors



Carbon dioxide nozzle

Motorized Pushbuttons

Round head valve main unit

1.7 Smoke evacuation system (for battery box)

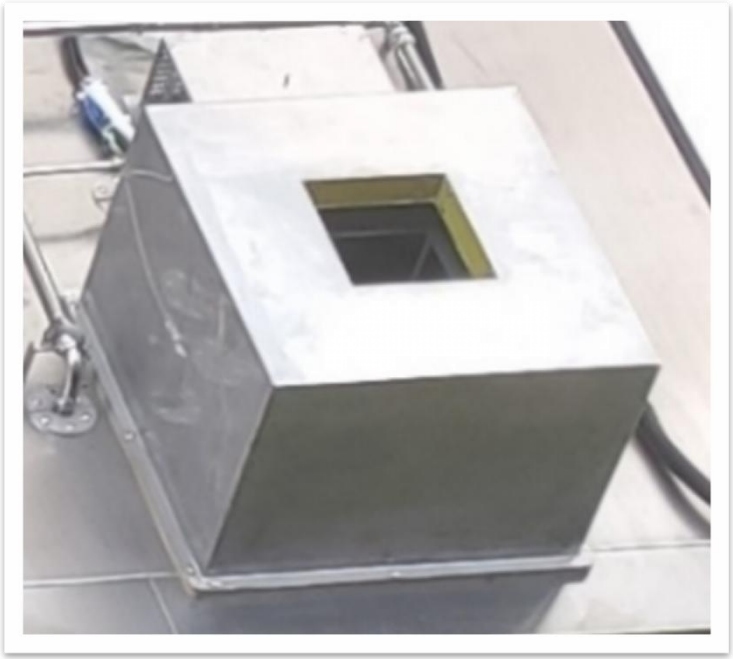
The top center of the studio is equipped with an exhaust fan, which is used to discharge the smoke quickly. When the exhaust fan is working, the air inlet holes are opened automatically, and when there is no need to change the air, the exhaust holes are closed automatically. The exhaust fan is directly controlled by the switch on the control panel, or other equipment gives a control signal to control the opening and closing of the exhaust fan. An air collection hood, centrifugal fan and aluminum exhaust duct are installed on the top of the cabin to connect to the exhaust duct to quickly remove the smoke generated.

Centrifugal Ventilator

Motorized Butterfly Valve

Exhaust hose

1.8 Pressure relief systems (for battery boxes)



Battery box pressure relief system::

1、When the battery explodes, due to the abnormal working condition of the box, resulting in excessive pressure inside and outside the box, the pressure relief port is automatically opened to relieve the destructive pressure inside the box, and the high-pressure gas is quickly discharged;

2、After the pressure is equalized, the pressure relief device automatically returns to its original position, creating an airtight seal in the chamber;

3、The pressure relief ports are located at the top, safe and reliable, and there are one in number; the figure shows the external view of the pressure relief device, and the top opening is connected to the exhaust gas filtration system.

1.9 Main structural parts (for battery box)

Battery box explosion-proof chain:
1、Fixed installation on the left and right side of the door and outer box interface;
2、The main role in preventing the explosion of the battery experimental samples in the box led to the door detachment.

Window glass:
1、It consists of hollow triple tempered glass with its own heating wire to prevent condensation.
2、Additional explosion-proof mesh structure inside the battery compartment window.

1.10 Main structural parts

Suncom Compact Door Handle

Shangkun Door Hinges

Special treatment of floodlights to resist high and low

Multi-wing wind turbine

Customized motors with high and low temperature resistance

Pressure equalization device mechanically passive, maintenance-free

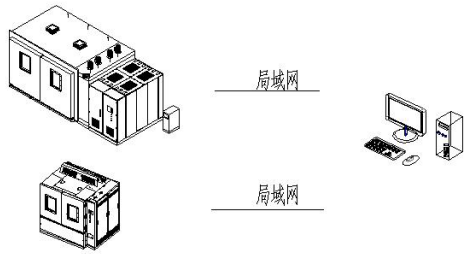
1.11 Electrical cabinets and refrigeration units

Distribution cabinet (located on the side of the freezer)

Refrigeration unit (located at the rear of the box)

1.12 Electrical control systems

1、Controller: "Japan Mitsubishi" a new generation of high-performance FX3U series PLC, 7.0-inch 600 × 480 dot TFT color LCD display, Chinese menu, touch man-machine dialogue, control unit using Japan Mitsubishi PLC module for the control of the system, temperature control is accurate, the equipment is stable and quality of operation. Excellent quality.



2、Connecting to PC (optional): through the centralized monitoring software, the test data can be recorded, automatically displayed as a curve in the PC, and can be directly printed, with unlimited recording time. The file size depends on the capacity of the hard disk, and the PC can also be used as the operation terminal to realize remote monitoring.

1.13 Control panel

Control box and panel： electrolytic plate spraying, the color of the standard color, the panel installed touch man-machine dialogue interface, power switch, over-temperature protector, USB data exchange interface, fault indicators and other operating instructions.

Box control panel (emergency stop switch, over-temperature protection, RS-232 communication interface)

Main power switch with earth leakage protection (Schneider))

Faulty tri-color light

1.14 Product Main Circuit Components

Electronic humidity sensor (imported from Switzerland/Finland)

Electronic temperature sensor (imported from Switzerland/Finland)

Overload protectors (Schneider)

PLC controller (Mitsubishi)

Fuseless Switch (Schneider)

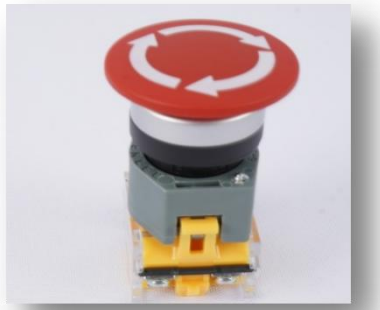
Flame Retardant Wire

Main power switch (Schneider) leakage protection

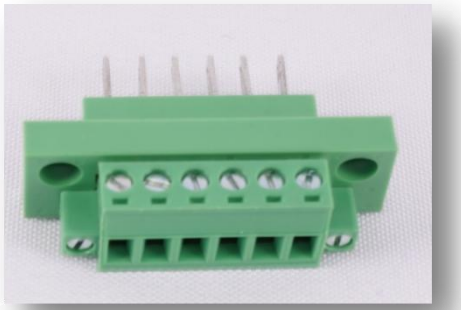
Solid State Relay (Jiale)

Contactor (Schneider)

1.15 产品主要电路部件



Emergency Stop Switch
Emergency stop



Specimen Terminal

USB port

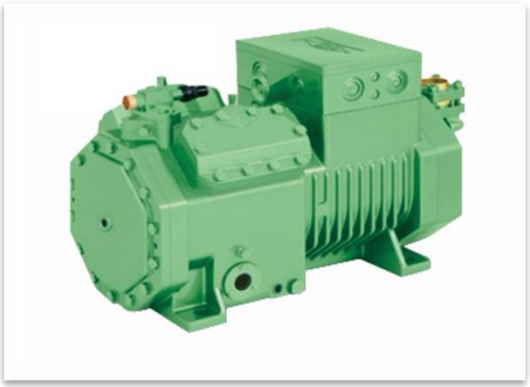
Independent over-temperature protection
Control of upper temperature limit

Three-color light
Alarm indication

PVC waterproof flame retardant junction box

1.16Main frozen parts of the product

2、Emerson's high-efficiency oil separator is used to separate the lubricating oil from the high-pressure vapor discharged from the refrigeration compressor to ensure safe and efficient operation of the refrigeration system.



1、France Tycon/Germany BITZER, Blog" fully/semi-hermetic low noise piston compressor, reliable and stable performance.

3、Combined shell and tube condenser.

4、Danish Danfoss solenoid valve/thermal expansion valve is adopted to effectively prevent refrigerant migration of the refrigeration system during shutdown.

1.16 Main frozen parts of the product

Customized oil-free finned evaporator
High heat transfer coefficient and low pressure loss

Plate heat exchanger
High heat exchange efficiency, small heat loss, compact structure, easy to clean

Liquid storage tank
Storage of refrigerant to regulate evaporator load change demand

1.17Circulating water circuit (optional)

water tower

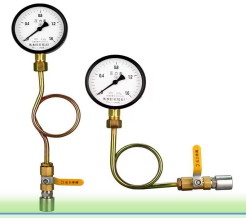
water storage

ball valves

Y-filter

ball valves

check valve



pressure gauge

coolant temperature gauge

Water filter (optional)

Flow meter (optional)

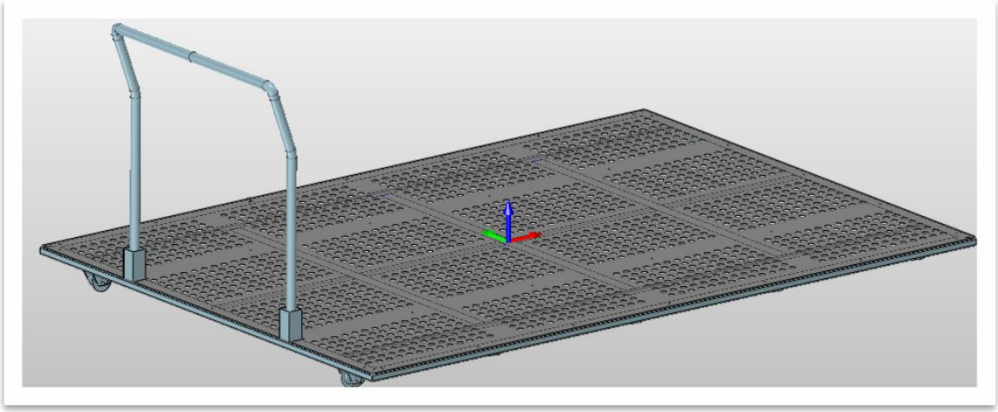
Job Description:

GLR series is square cross-flow cooling tower, according to customer requirements can be used glass fiber reinforced plastic, imported galvanized steel, stainless steel material structure. Cooling tower adopts cross-flow air heat exchange technology, the filler adopts high-quality PVC heat dissipation film, large drenching area, through the basin-type water distribution, water distribution are spoon efficient, with good cooling effect, reliable operation, durability, low energy consumption, beautiful appearance, low noise, construction and installation of a short period of time, low-cost and so on. Widely used in air conditioning and refrigeration systems, can also be used in industrial areas with good water quality, especially suitable for high-rise buildings and strict requirements on the noise of the regional installation and use.

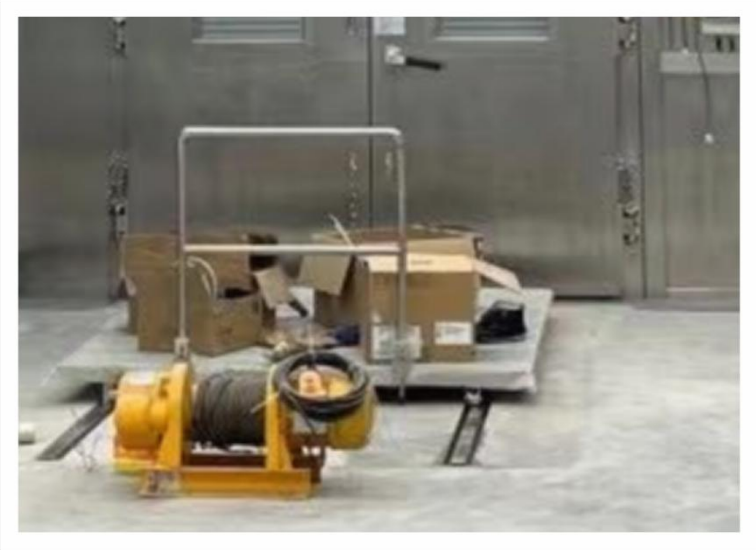
1.18 Walk-in inclined table (optional)

Walk-in inclined table: the height can be adjusted by manually controlling the operating lever, flush with the base of the library board, suitable for various thicknesses of base plate walk-in.

1.19Sliding trolley (for battery box) (optional)



Walk-in battery box:
1, sliding trolley (optional), the battery pack is placed on the trolley, through the civil trolley rail, pushed by the staff into the library body, to be done after the experiment open the door, by the winch through the wire rope connected to the trolley to drag it out.



1.20 Other optional parts of the product

HD camera (optional)
Remote monitoring operation

Lead test hole
Φ50, φ100, φ150 (optional)

Lead Hole Plugs

Combustible gas detector (optional)

Air dryer (optional)

Ultrasonic humidifier (optional)
Auxiliary humidification

Pure water system (optional)
Softening, filtration, waste water discharge

Pressure sensor (optional)

1.21 Equipment manufacturing process and requirements

1、Tube welding process: the use of high-quality copper tube nitrogen protection welding method, to avoid the traditional welding method caused by the inner wall of the copper tube produces oxide impurities into the refrigeration system damage to the compressor.

2、Vibration damping measures: compressor and pipeline bottom installation of vibration damping spring and anti-vibration soft rubber mat combination of vibration damping.

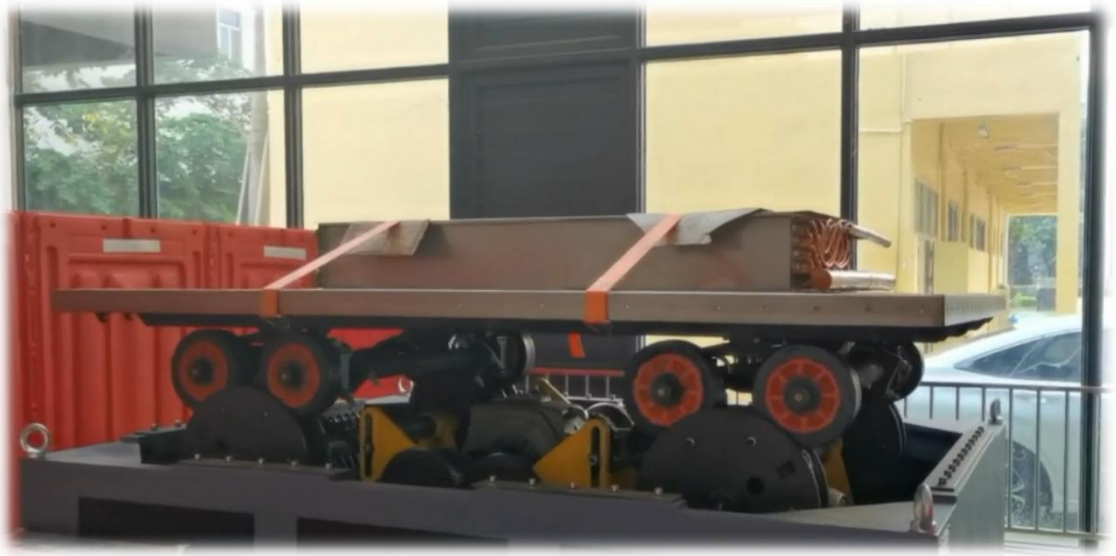
3、Piping protection measures: refrigeration system piping by adding vibration-proof hoses and C-type elbows to avoid vibration and temperature changes caused by the copper pipe and rupture.

5、Detect the temperature of the distribution cabinet nodes while the equipment is running.

4、Noise control: The condenser adopts German Mal low-speed, high-volume condensing fan, and wave-type sound-absorbing sponge is installed around the refrigeration unit to achieve a lower noise effect.

1.21 Equipment manufacturing process and requirements

Simulated road vibration testing of key components



6、Vibration testing of components such as refrigeration evaporators prior to installation

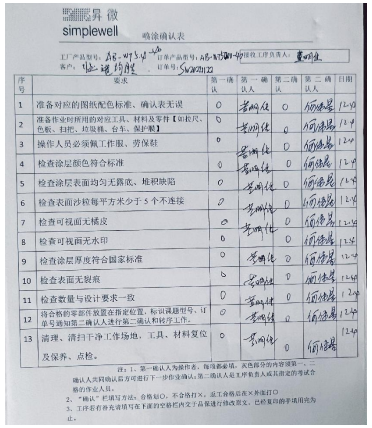
Simulated road vibration test of the whole machine

7、Vibration testing of small and medium-sized equipment prior to shipment

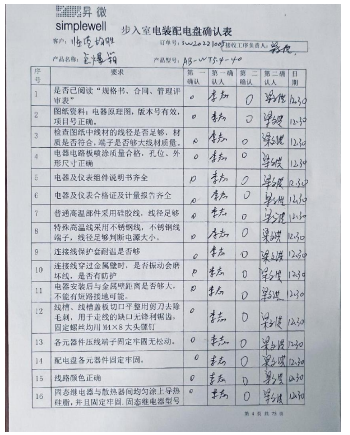
1.21 Equipment manufacturing process and requirements


东莞市升微机电设备科技有限公司
simplewell 临港均胜AB-WT5000-40折弯确认表 REV:00

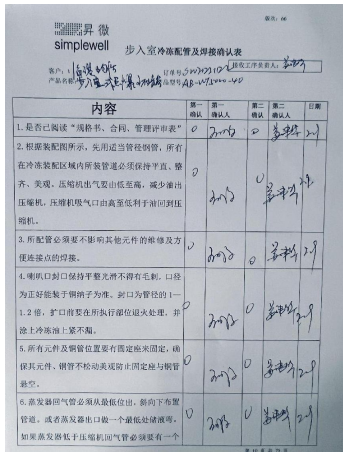
序号	品名	图号	数量	是否折弯	切割确认	确认人	日期	折弯确认	确认人	日期	钣金确认	确认人	日期
1	照明灯内框	302	1	不折	✓			✓		11.25	✓		11.27
2	照明灯罩	303	各1	折	✓			✓		11.25	✓		11.27
3	泄压口外壳	304	1	折	✓			✓		11.25	✓		11.27
4	泄压口内板	305	1	不折	✓			✓		11.25	✓		11.27
5	泄压口导风条	306-1	12	折	✓			✓		11.25	✓		11.27
6		306-2	10	折	✓			✓		11.25	✓		11.27
7	玻璃外框	307-1	1	折	✓			✓		11.25	✓		11.27
8		307-2	4	折	✓			✓		11.25	✓		11.27
9	玻璃内框	308	1	不折	✓			✓		11.25	✓		11.27
10	屏幕盒子	309	1	折	✓			✓		11.25	✓		11.27
11	屏幕盒子固定板	310	2	折	✓			✓		11.25	✓		11.27
12	地槽封板	312-1	4	不折	✓			✓		11.25	✓		11.27
13		312-2	4	折	✓			✓		11.25	✓		11.27
14	传感器罩子	315	1	折	✓			✓		11.25	✓		11.27
15	回风挡板	401	3	折	✓			✓		11.25	✓		11.27
16	回风挡板2	402	3	折	✓			✓		11.25	✓		11.27
17	回风挡板骨架横1	403	1	折	✓			✓		11.25	✓		11.27
18	回风挡板骨架横2	404	1	折	✓			✓		11.25	✓		11.27
19	回风挡板骨架横3	405	1	折	✓			✓		11.25	✓		11.27
20	回风挡板骨架竖1	406	2	折	✓			✓		11.25	✓		11.27
21	回风挡板骨架竖2	407	2	折	✓			✓		11.25	✓		11.27


昇微 simplewell 喷涂确认表

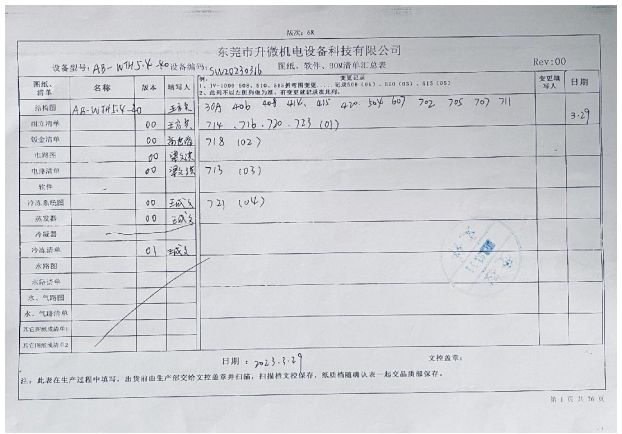
序号	要求	第一确认	第一确认人	第二确认	第二确认人	日期
1	准备对应的图纸配色标准、确认表无误	○		○		
2	准备作业时所用的对应工具、材料及零件【如治具、色板、扫把、垃圾桶、台车、保护膜】	○		○		
3	操作人员必须戴工作服、劳保鞋	○		○		
4	检查涂层颜色符合标准	○		○		
5	检查涂层表面均匀无露底、堆积缺陷	○		○		
6	检查表面沙粒每平方米少于5个不连接	○		○		
7	检查可视面无桶皮	○		○		
8	检查可视面无水印	○		○		
9	检查涂层厚度符合国家标准	○		○		
10	检查表面无裂痕	○		○		
11	检查数量与设计要求一致	○		○		
12	将合格的零部件放置在指定位置，标识挑选号，订单号通知第二确认人进行第二确认程序上作。	○		○		
13	清理、清扫干净工作场地，工具、材料复位及保养、点检。	○		○		


昇微 simplewell 步入室电装配电盘确认表

序号	要求	第一确认	第一确认人	第二确认	第二确认人	日期
1	是否已阅读"规格书、合同、管理评审表"	o		o		
2	图纸资料：电器原理图，版本号有效，项目号正确。	o		o		
3	检查图纸中线材的线径是否足够，材质是否符合，端子是否够大线材质量。	o		o		
4	电器电路板螺丝质量合格，孔位、外形尺寸正确	o		o		
5	电器及仪表组件说明书齐全	o		o		
6	电器及仪表合格证及计量报告齐全	o		o		
7	普通高温部件采用铁胶线，线径足够	o		o		
8	特殊高温线采用不锈钢线，不锈钢线端子，线径足够判断电源大小。	o		o		
9	连接线保护套耐温是否够	o		o		
10	连接线穿过金属壁时，是有振动会磨坏线，是否有防护	o		o		
11	电器安装后与金属壁距离是否够大。不能有短路接通可能。	o		o		
12	线槽、线槽盖板切口平整用剪刀去除毛刺，用于走线的缺口去除利锐角，固定螺丝为用M3.5大头螺钉	o		o		
13	各元器件压线端子固定牢固无松动。	o		o		
14	配电盘各元器件固定牢固。	o		o		
15	线路颜色正确	o		o		
16	同态组电器与散热器间均匀涂上导热硅脂，并且固定牢固 固态继电器型号	o		o		

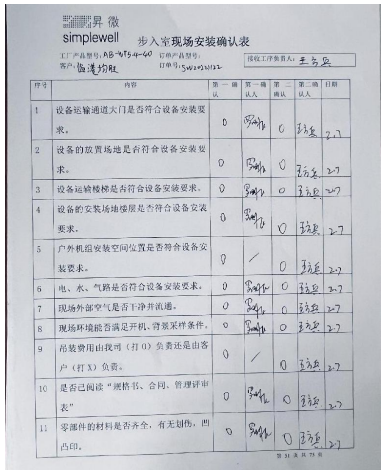

昇微 simplewell 步入室冷冻配管及焊接确认表

内容	第一确认	第一确认人	第二确认	第二确认人	日期
1. 是否已阅读"规格书、合同、管理评审表"	o		o		
2. 根据装配图所示，先用适当管径倒管，所有在冷冻装配区域内所装管道必须保持平直、整齐、美观。压缩机出气管出低压端，减少漏出压缩机。压缩机吸气口由高至低利于油回到压缩机。	o		o		
3. 所配管必须避不能响其他元件的维修及方便维修点的焊接。	o		o		
4. 喇叭口封口保持平整无滑不得有毛刺。口经为正好能装下铜焊子为准。封口为管径的1—1.2倍，扩口前要在所执行部位退火处理，并涂上冷冻油上紧不漏。	o		o		
5. 所有元件及铜管位置要有固定座来固定，确保其元件、铜管不松动类或防止固定座与铜管磨空。	o		o		
6. 蒸发器回气管必须从最低位出，斜向下布置管道。或者蒸发器出口做一个最低处储液弯。如果蒸发器低于压缩机回气管必须要有一个	o		o		

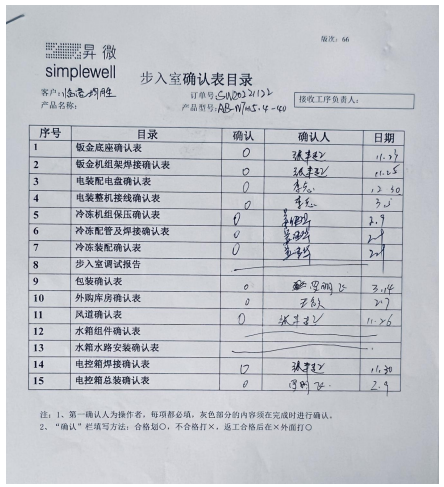

东莞市升微机电设备科技有限公司
设备型号：AB-WTH5-40 设备编号：SW20230316 压纸、软件、BOM清单汇总表 Rev:00

图纸、前事	名称	版本	编写人	变更接收人	日期
总装图	AB-WTH5-40				
组立清单		00			
钣金清单		00			
电路图		00			
电清清单		00			
软件					
冷冻系统图		00			
蒸发器		00			
冷凝器					
冷冻清单		01			
水路图					
水路清单					
水、气路图					
水、气路清单					
其它图纸或清单1					
其它图纸或清单2					

日期：2023.3.29


昇微 simplewell 步入室现场安装确认表

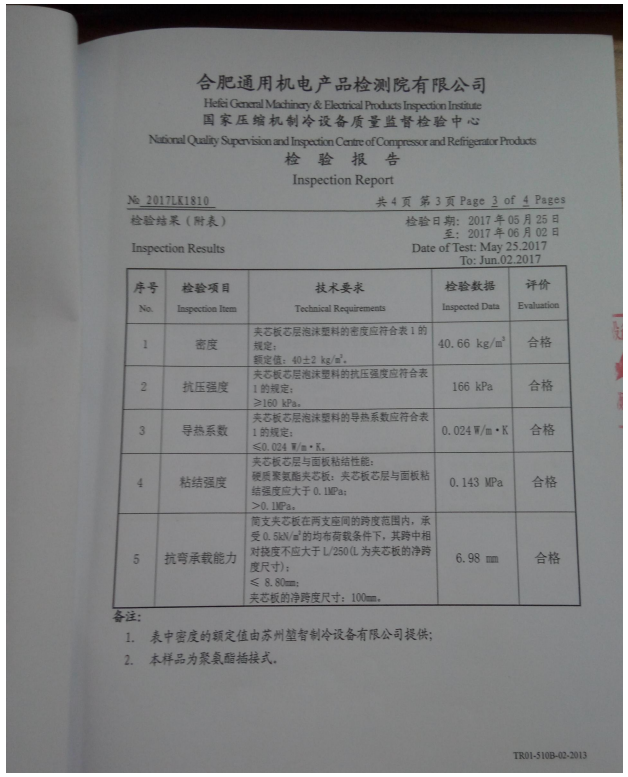
序号	内容	第一确认	第一确认人	第二确认	第二确认人	日期
1	设备运输通道大门是否符合设备安装要求。	○		○		
2	设备的放置场地是否符合设备安装要求。	○		○		
3	设备运输楼梯是否符合设备安装要求。	○		○		
4	设备的安装场地楼层是否符合设备安装要求。	○		○		
5	户外机组安装空间位置是否符合设备安装要求。	○	/	○		
6	电、水、气路是否符合设备安装要求。	○		○		
7	现场外部空气是否干净并流通。	○		○		
8	现场环境能否满足开机、背景采样条件。	○		○		
9	吊装费用由我司（打○）负责还是由客户（打X）负责。	○	/	○		
10	是否已阅读"规格书、合同、管理评审表"	○		○		
11	零部件的材料是否齐全，有无划伤、凹凸印。	○		○		


昇微 simplewell 步入室确认表目录

序号	目录	确认	确认人	日期
1	钣金底座确认表	○		
2	钣金机组架焊接确认表	○		
3	电装配电盘确认表	○		
4	电装整机接线确认表	○		
5	冷冻机组保压确认表	○		
6	冷冻配管及焊接确认表	○		
7	冷冻装配确认表	○		
8	步入室调试报告			
9	包装确认表	○		
10	外购库房确认表	○		
11	风道确认表	○		
12	水箱组件确认表			
13	水箱水路安装确认表			
14	电控箱焊接确认表	○		
15	电控箱总装确认表	○		

8、Confirmation of the production process: after the start of production of equipment, each link by the person in charge of carefully filling out the confirmation form, timely correction of problems in the production process, and at the same time trace the root cause, optimize the production process, improve production efficiency, to ensure that the production of the quality of each piece of equipment.

1.21 Equipment manufacturing process and requirements



合肥通用机电产品检测院有限公司
Hefei General Machinery & Electrical Products Inspection Institute
国家压缩机制冷设备质量监督检验中心
National Quality Supervision and Inspection Centre of Compressor and Refrigerator Products
检 验 报 告
Inspection Report

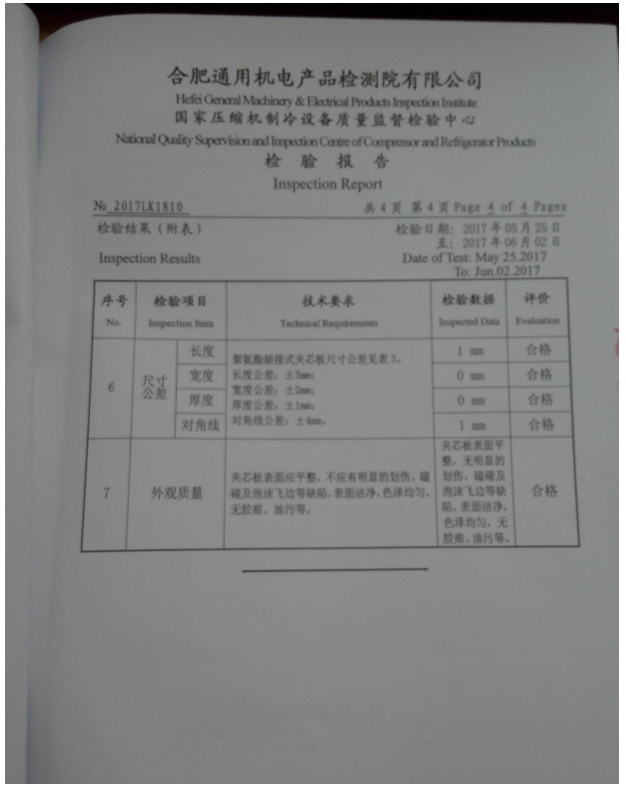
No. 2017LK1810　　共 4 页 第 3 页 Page 3 of 4 Pages

检验结果（附表）　　检验日期：2017 年 05 月 25 日 至：2017 年 06 月 02 日
Inspection Results　　Date of Test: May 25.2017 To: Jun.02.2017

序号 No.	检验项目 Inspection Item	技术要求 Technical Requirements	检验数据 Inspected Data	评价 Evaluation
1	密度	夹芯板芯层泡沫塑料的密度应符合表 1 的规定；额定值：40±2 kg/m³。	40.66 kg/m³	合格
2	抗压强度	夹芯板芯层泡沫塑料的抗压强度应符合表 1 的规定：≥160 kPa。	166 kPa	合格
3	导热系数	夹芯板芯层泡沫塑料的导热系数应符合表 1 的规定：≤0.024 W/m·K。	0.024 W/m·K	合格
4	粘结强度	夹芯板芯层与面板粘结性能：硬质聚氨酯夹芯板：夹芯板芯层与面板粘结强度应大于 0.1MPa；>0.1MPa。	0.143 MPa	合格
5	抗弯承载能力	简支夹芯板在两支座间的跨度范围内，承受 0.5kN/m² 的均布荷载条件下，其跨中相对挠度不应大于 L/250(L 为夹芯板的净跨度尺寸)；≤ 8.80mm；夹芯板的净跨度尺寸：100mm。	6.98 mm	合格

备注：
1. 表中密度的额定值由苏州塑有制冷设备有限公司提供；
2. 本样品为聚氨酯插接式。

TR01-510B-02-2013



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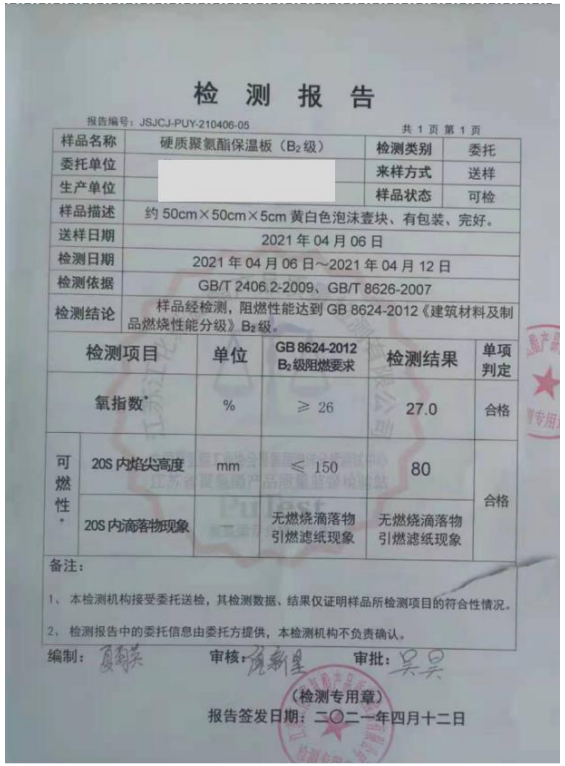
Inspection Results　　Date of Test: May 25.2017 To: Jun.02.2017

序号 No.	检验项目 Inspection Item		技术要求 Technical Requirements	检验数据 Inspected Data	评价 Evaluation
6	尺寸公差	长度	聚氨酯插接式夹芯板尺寸公差见表 3。长度公差：±3mm；宽度公差：±2mm；厚度公差：±1mm；对角线公差：±4mm。	1 mm	合格
		宽度		0 mm	合格
		厚度		0 mm	合格
		对角线		1 mm	合格
7	外观质量		夹芯板表面应平整，不应有明显的划伤、磕碰及泡沫飞边等缺陷，表面洁净，色泽均匀，无胶痕、油污等。	夹芯板表面平整，无明显的划伤、磕碰及泡沫飞边等缺陷，表面洁净，色泽均匀，无胶痕、油污等。	合格



检 测 报 告

报告编号：JSJCJ-PUY-210406-05　　共 1 页 第 1 页

样品名称	硬质聚氨酯保温板（B_2级）	检测类别	委托
委托单位		来样方式	送样
生产单位		样品状态	可检
样品描述	约 50cm×50cm×5cm 黄白色泡沫壹块、有包装、完好。		
送样日期	2021 年 04 月 06 日		
检测日期	2021 年 04 月 06 日~2021 年 04 月 12 日		
检测依据	GB/T 2406.2-2009、GB/T 8626-2007		
检测结论	样品经检测，阻燃性能达到 GB 8624-2012《建筑材料及制品燃烧性能分级》B_2级。		

检测项目		单位	GB 8624-2012 B_2级阻燃要求	检测结果	单项判定
氧指数*		%	≥ 26	27.0	合格
可燃性*	20S 内焰尖高度	mm	≤ 150	80	合格
	20S 内滴落物现象	—	无燃烧滴落物引燃滤纸现象	无燃烧滴落物引燃滤纸现象	

备注：
1、本检测机构接受委托送检，其检测数据、结果仅证明样品所检测项目的符合性情况。
2、检测报告中的委托信息由委托方提供，本检测机构不负责确认。

编制：　　审核：　　审批：

（检测专用章）
报告签发日期：二〇二一年四月十二日

9、Adoption of fire-retardant library boards, the figure shows the performance test report of fire-retardant library boards, compressive strength, bending load capacity, etc. (time Supplier's name P off)

1.21Equipment manufacturing process and requirements

10、Flame-retardant wires are used, and the picture shows the certificate of flame-retardant certification of the wires.

1.22 Fulfillment criteria

Walk-in

1.GB/T2423.1-2008 Environmental test for electrical electronic products Part 2: Test A: Low temperature test method
2.GB/T2423.2-2008 Environmental test for electrical electronic products Part 2: Test B: High temperature test method
3.GB/T2423.3-2008 Environmental test for electrical electronic products Part 2: Test Cab: Constant humidity and heat test method
4.GB/T2423.4-2008 Environmental test for electrical electronic products Part 2: Test Db: Alternating humidity and heat test method
5.GJB150.3A-2009 Military Equipment Laboratory Environmental Test Methods Part 3: High Temperature Tests
6.GJB150.4A-2009 Military Equipment Laboratory Environmental Test Methods Part 4: Low Temperature Tests
7.GJB150.9A-2009 Military equipment laboratory environmental test methods Part 9: Damp heat test
8.GB-T2423.34-2005 Environmental test for electrical and electronic products Part 2: Test methods Test Z-AD: Combined temperature-humidity cycle test
9.GB_T2423.50-2012 environmental test part 2: test method test Cy constant damp heat is mainly used for accelerated testing of components
10.GJB360-106 Humidity resistance test
11.GJB360-108 High temperature life test
12.GJB360-103 steady state damp heat test

1.22 Fulfillment criteria

Battery box walk-in

1.GB/T2423.1-2008 Environmental test for electrical electronic products Part 2: Test A: Low temperature test method
2.GB/T2423.2-2008 Environmental test for electrical electronic products Part 2: Test B: High temperature test method
3.GB/T2423.3-2008 Environmental test for electrical electronic products Part 2: Test Cab: Constant humidity and heat test method
4.GB/T2423.4-2008 Environmental test for electrical electronic products Part 2: Test Db: Alternating humidity and heat test method
5.GJB150.3A-2009 Military Equipment Laboratory Environmental Test Methods Part 3: High Temperature Tests
6.GJB150.4A-2009 Military Equipment Laboratory Environmental Test Methods Part 4: Low Temperature Tests
7.GJB150.9A-2009 Military equipment laboratory environmental test methods Part 9: Damp heat test
8.GB-T2423.34-2005 Environmental test for electrical and electronic products Part 2: Test methods Test Z-AD: Combined temperature-humidity cycle test
9.GJB360B-103 Steady state damp heat test
10.GJB360B-106 Humidity resistance test
11. GJB360B-108 High temperature life test
12.GB_T2423.50-2012 environmental test part 2: test method test Cy constant damp heat is mainly used for accelerated testing of components
13.GB38031-2020 Safety Requirements for Power Storage Batteries for Electric Vehicles 8.1.3 Heating. 8.1.6 Temperature Cycling, 8.2.5 Damp Heat Cycling

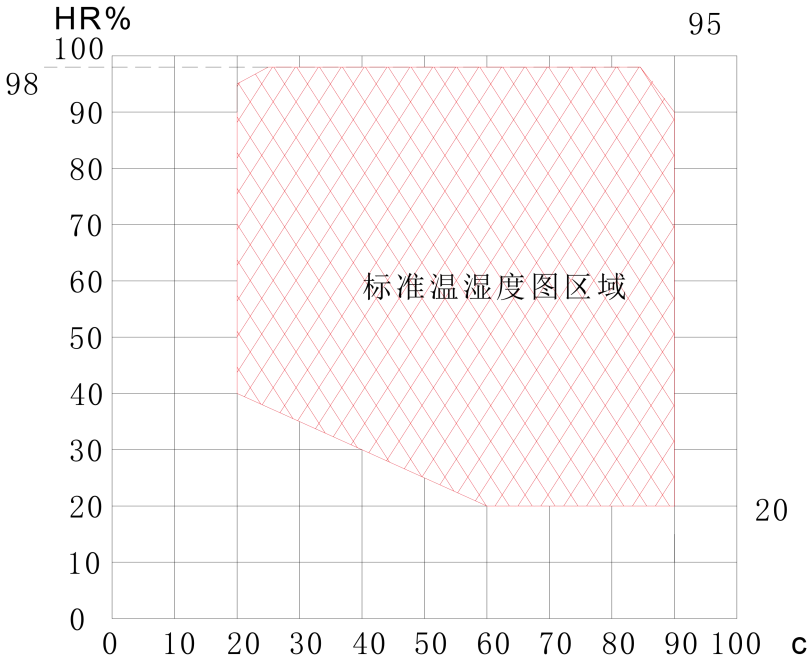
1.22 Fulfillment criteria

Whole Vehicle Walk-In

1.GB/T2423.1-2008 Environmental test for electrical electronic products Part 2: Test A: Low temperature test method
2. GB/T2423.2-2008 Environmental test for electrical electronic products Part 2: Test B: High temperature test method
3.GB/T2423.3-2008 Environmental test for electrical electronic products Part 2: Test Cab: Constant humidity and heat test method
4.GB/T2423.4-2008 Environmental test for electrical electronic products Part 2: Test Db: Alternating humidity and heat test method
5. GJB150.3A-2009 Military Equipment Laboratory Environmental Test Methods Part 3: High Temperature Tests
6.GJB150.4A-2009 Military Equipment Laboratory Environmental Test Methods Part 4: Low Temperature Tests
7.GJB150.9A-2009 Military equipment laboratory environmental test methods Part 9: Damp heat test
8. GB-T2423.34-2005 Environmental test for electrical and electronic products Part 2: Test methods Test Z-AD: Combined temperature-humidity cycle test
9. GJB360-103 steady state damp heat test
10.GJB360-106 Humidity resistance test
11. GJB360-108 High temperature life test
12.GB_T2423.50-2012 environmental test part 2: test method test Cy constant damp heat is mainly used for accelerated testing of components
13.GB 11555 Performance Requirements and Test Methods for Automotive Windshield Defogging Systems
14. GB 11556 Performance Requirements and Test Methods for Automotive Windshield Defogging Systems
15.GB11085 Performance requirements and test methods for automotive windshield wipers
16.GB/T12535 Test Method for Automobile Starting Performance
17.GB/12782 Test Method for Automotive Heating Performance
18.QC/T449 Test Methods for Performance of Thermal Insulated Vehicles, Refrigerated Vehicles
19.ES92101-00 Technical requirements for headlamps of passenger cars headlamp moisture test

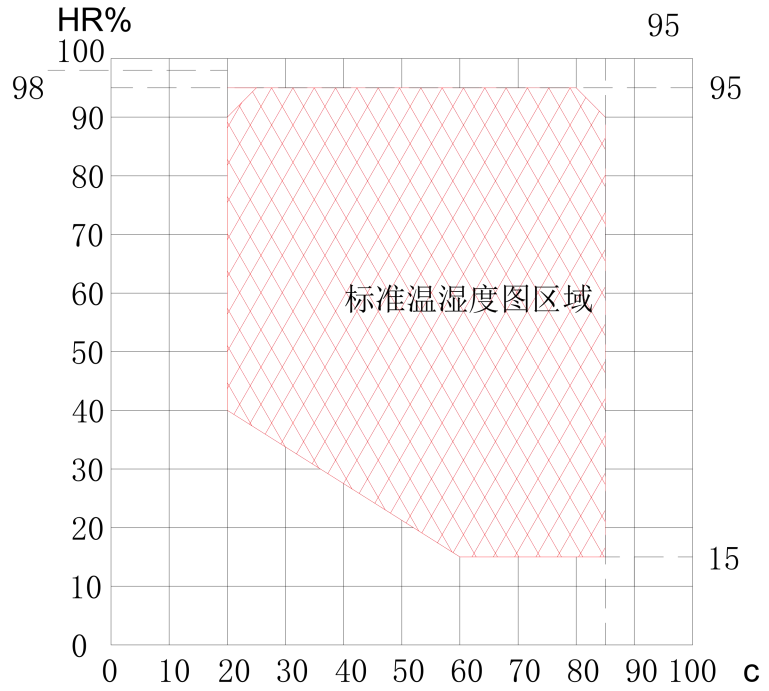
1.23 Temperature and humidity indicators (walk-in)

1、Temperature range: -40℃ ~ +150℃;
2、Temperature deviation ±2.0°C ;
3、Temperature gradient 2.0°C ;
4、Temperature fluctuation ±0.5℃ ;
5、Maximum temperature increase rate: load, from -40 ℃ to +150 ℃ that is, this interval within the nonlinear temperature increase rate ⩾ 1 ℃ / min (according to demand);
6、Maximum temperature increase rate: load, from +150 ℃ to -40 ℃ that is, the temperature interval within the nonlinear cooling rate ⩾ 1 ℃ / MIN (on demand);
7、Load: (on demand);
8、Humidity range: 20%Rh to 98%Rh ;
9、Humidity fluctuation: ⩽±3%Rh ;
10、Humidity deviation: ⩽±5%Rh ;
11、Support non-standard customized curves.



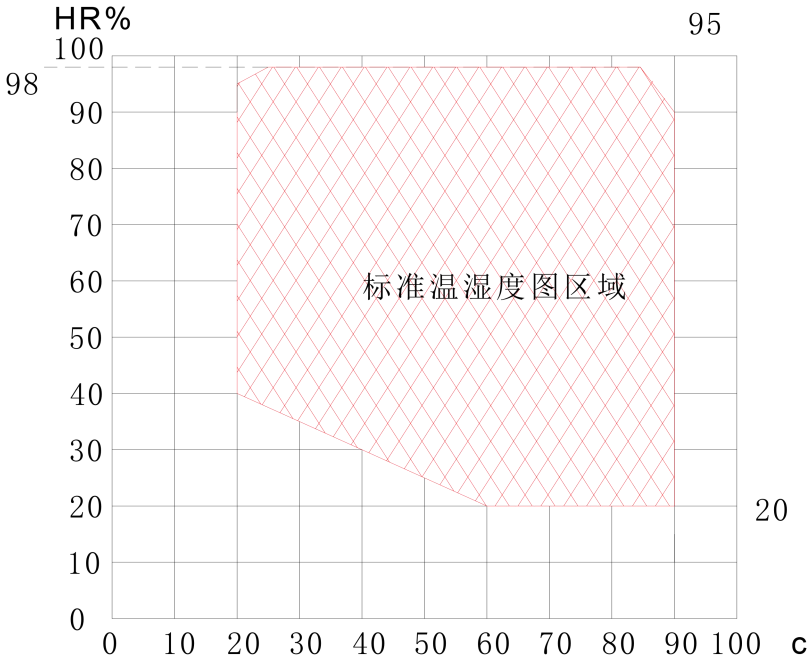
1.23 Temperature and humidity index (battery box)

1、Temperature range: -40℃ ~ +85 ;
2、Temperature deviation: ±2.0℃ ;
3、Temperature gradient (uniformity) ≤ 2°C ;
4、Temperature fluctuation ≤±0.5℃ ;
5、Maximum temperature increase rate: from -40 ℃ to +85 ℃, with load, the temperature interval within the nonlinear temperature increase rate ≥ 1 ℃ / min (according to demand);
6、Maximum cooling rate: from +85 ℃ to -40 ℃, with the load, the temperature interval within the nonlinear heating rate ≥ 0.4 ℃ / min (specific according to demand);
7、Humidity range: 20%Rh to 95%Rh;
8、Humidity fluctuation: ≤±2.0%RH ;
9、Humidity deviation: >75%RH:≤+2,-3%RH; ≤75%RH:≤±5%RH;
10、Option to do low humidity.



1.23Temperature and humidity indicators (whole vehicle)

1、Temperature range: -50 ~ 90℃ ;
2、Temperature stability: ≤±0.5℃;
3、(Temperature uniformity: ≤±2℃) ;
4、Temperature deviation:≤±2℃;
5、Humidity range: 20% ~ 98%RH ;
6、Humidity uniformity: ≤ 2%~3%RH;
7、 Humidity fluctuation: ≤ ±3%RH;
8、Humidity deviation: >75%Rh:≤+2,-3%Rh; <75%RH:≤±5%Rh ;
9、Temperature rise rate: from -50 ℃ to +120 ℃ ≥ 3 ℃ / min, the whole average (depending on demand);
10、Cooling rate: from +120 ℃ to -50 ℃ ≥ 0.7 ℃ / min, the whole average (specific according to demand);
11、(Display accuracy: temperature 0.01℃, humidity 0.1%RH);
12、Optional low humidity profiles are available.

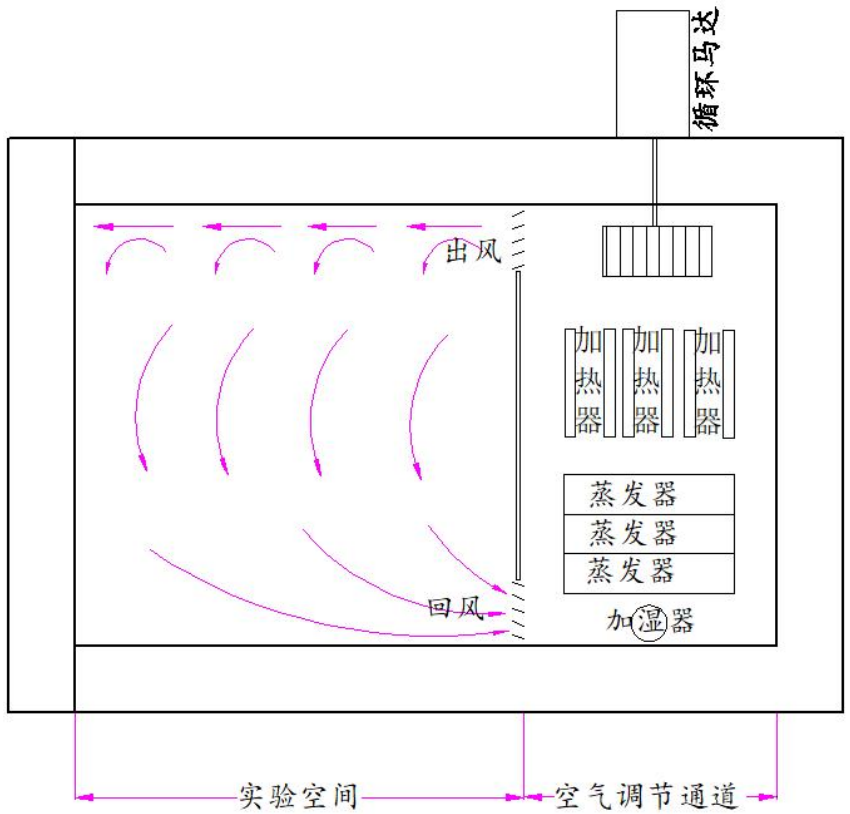


02

Part

Product Innovation Features

2.1 Simplewell Product Working Principle



Working Principle:

1、Heat transfer is carried out using the method illustrated in the figure to ensure temperature uniformity in the test space. A centrifugal fan placed at the top of the air conditioning channel is the power source for the air circulation flow. The air enters the channel from the bottom of the conditioning channel, passes through the humidifier, standard evaporator and heater for heat exchange, and then is stirred and dispersed by the centrifugal fan wheel and blown out into the inner box.

2、The air conditioning channel of the air circulation system is located at the rear side of the main box. It consists of centrifugal fan, air conditioning channel bracket and cover plate. The humidifier and the humidifier's humidity pipe as well as the refrigeration system's evaporator are all located inside the adjustment channel.

2.2 Simplewell Walk-in features

Walk-in features:

1、Self-developed controller;

2、Good temperature uniformity;

3、Electronic expansion valves save energy;

4、The electronic humidity sensor eliminates the need to replace gauze;

5、 Stable curve following with electronic expansion valve, no fluctuation in the process.

2.3 Simplewell Battery box walk-in features

Battery box walk-in features:

1、Self-developed controller is perfectly compatible with all charging and discharging systems;

2、Linkage control with charging and discharging system, fire-fighting system;

3、Explosion-proof pressure detection automatically relieves pressure, placing excessive pressure in the chamber;

4、Equipped with flammable gas H2/HC detection sensors, the control system implements monitoring and protection;

5、Electronic expansion valve to automatically balance the heat of battery charging and discharging .

2.4 Simplewell Whole vehicle walk-in features

Whole vehicle walk-in features：

1、Self-developed controllers (fresh air, exhaust gas integrated control);

2、Large volume, whole vehicle in and out inspection;

3、Good temperature uniformity ;

4、Electronic expansion valves save energy ;

5、The electronic humidity sensor eliminates the need to replace gauze ;

6、Stable curve following with electronic expansion valve, no fluctuation in the process;

7、Fresh air system;

8、Configuration of exhaust emission system.

2.5 Simplewell Product Innovation Features

Freezer cabinet:
1、The freezer is equipped with cooling holes at the rear, top and sides of the freezer, through which the internal heat will be discharged.
2、The inside of the cover is lined with sound-insulating and noise-reducing acoustic cotton, which effectively attenuates the noise generated by the compressor.

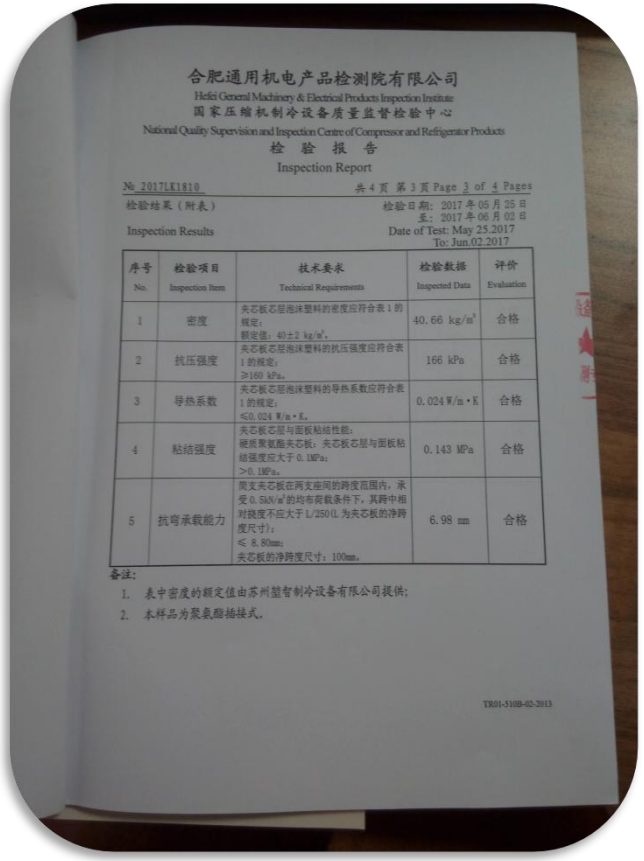
2.6 Simplewell Product refrigeration system process

1、Tube welding process: the use of high-quality copper pipe nitrogen protection welding method, so that the copper pipe smooth internal oxidation, avoiding the traditional welding method caused by the inner wall of the copper pipe to produce oxides impurities into the refrigeration system damage to the compressor.

2、Vibration damping measures: compressor and pipeline bottom installation of vibration damping spring and anti-vibration soft rubber mat combination of vibration damping.

3、Piping protection measures: The piping of the refrigeration system adopts the method of adding vibration-proof hoses and C-type elbows to avoid copper pipe and rupture caused by vibration and temperature change, resulting in refrigerant leakage and thus affecting the overall performance of the system.

2.7Equipment manufacturing process and requirements



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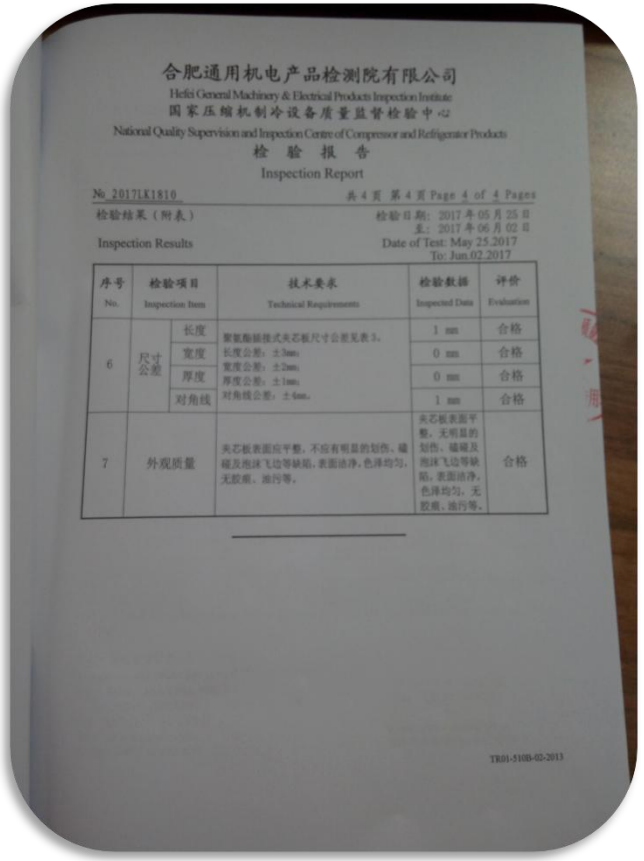
3	导热系数	夹芯板芯层泡沫塑料的导热系数应符合表 1 的规定：≤0.024 W/m·K。	0.024 W/m·K	合格
4	粘结强度	夹芯板芯层与面板粘结性能：硬质聚氨酯夹芯板：夹芯板芯层与面板粘结强度应大于 0.1MPa；>0.1MPa。	0.143 MPa	合格
5	抗弯承载能力	简支夹芯板在两支座间的跨度范围内，承受 0.5kN/m² 的均布荷载条件下，其跨中相对挠度不应大于 L/250(L 为夹芯板的净跨度尺寸)：≤ 8.80mm；夹芯板的净跨度尺寸：100mm。	6.98 mm	合格

备注：
1. 表中密度的额定值由苏州楚智制冷设备有限公司提供；
2. 本样品为聚氨酯插接式。

TR01-510B-02-2013



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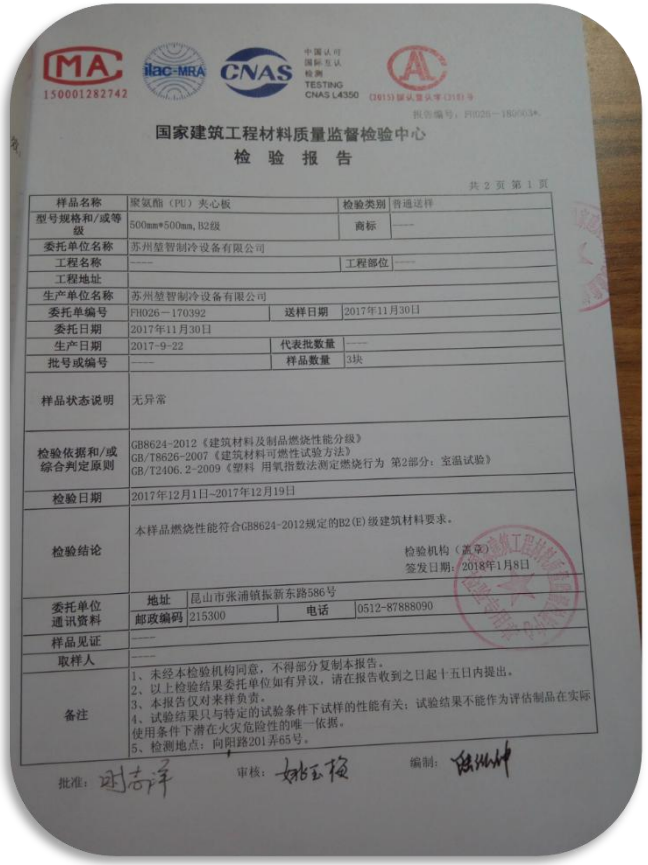
Hefei General Machinery & Electrical Products Inspection Institute
国家压缩机制冷设备质量监督检验中心
National Quality Supervision and Inspection Centre of Compressor and Refrigerator Products
检 验 报 告
Inspection Report

No. 2017LK1810 共 4 页 第 4 页 Page 4 of 4 Pages

检验结果（附表） 检验日期：2017 年 05 月 25 日 至：2017 年 06 月 02 日
Inspection Results Date of Test: May 25.2017 To: Jun.02.2017

序号 No.	检验项目 Inspection Item		技术要求 Technical Requirements	检验数据 Inspected Data	评价 Evaluation
6	尺寸公差	长度	聚氨酯插接式夹芯板尺寸公差见表 3。长度公差：±3mm；宽度公差：±2mm；厚度公差：±1mm；对角线公差：±4mm。	1 mm	合格
		宽度		0 mm	合格
		厚度		0 mm	合格
		对角线		1 mm	合格
7	外观质量		夹芯板表面应平整，不应有明显的划伤、磕碰及泡沫飞边等缺陷，表面洁净，色泽均匀，无胶痕、油污等。	夹芯板表面平整，无明显的划伤、磕碰及泡沫飞边等缺陷，表面洁净，色泽均匀，无胶痕、油污等。	合格

TR01-510B-02-2013



CMA 150001282742 ilac-MRA CNAS 中国认可 国际互认 检测 TESTING CNAS L4350

国家建筑工程材料质量监督检验中心
检 验 报 告

共 2 页 第 1 页

样品名称	聚氨酯（PU）夹心板	检验类别	普通送样
型号规格和/或等级	500mm*500mm, B2级	商标	----
委托单位名称	苏州楚智制冷设备有限公司		
工程名称	----	工程部位	----
工程地址			
生产单位名称	苏州楚智制冷设备有限公司		
委托单编号	FH026－170392	送样日期	2017年11月30日
委托日期	2017年11月30日		
生产日期	2017-9-22	代表批数量	----
批号或编号	----	样品数量	3块
样品状态说明	无异常		
检验依据和/或综合判定原则	GB8624-2012《建筑材料及制品燃烧性能分级》GB/T8626-2007《建筑材料可燃性试验方法》GB/T2406.2-2009《塑料 用氧指数法测定燃烧行为 第2部分：室温试验》		
检验日期	2017年12月1日–2017年12月19日		
检验结论	本样品燃烧性能符合GB8624-2012规定的B2(E)级建筑材料要求。 检验机构（盖章） 签发日期：2018年1月8日		
委托单位通讯资料	地址 昆山市张浦镇振新东路586号		
	邮政编码 215300	电话	0512-87888090
样品见证	----		
取样人	----		
备注	1、未经本检验机构同意，不得部分复制本报告。2、以上检验结果委托单位如有异议，请在报告收到之日起十五日内提出。3、本报告仅对来样负责。4、试验结果只与特定的试验条件下试样的性能有关；试验结果不能作为评估制品在实际使用条件下潜在火灾危险性的唯一依据。5、检测地点：向阳路201弄65号。		

批准：谢洁泽 审核：姚玉梅 编制：

Adoption of fire-retardant library boards, the picture shows the performance test report of fire-retardant, compressive strength and bending load capacity of library boards.

2.8 Measurement reports (I)

中国认可 国际互认 校准 CALIBRATION CNAS L0128

上海市质量监督检验技术研究院

Shanghai Institute of Quality Inspection and Technical Research

校准证书

CALIBRATION CERTIFICATE

证书编号：J22330S00350

Certificate No.

客户名称 Customer

联络信息 Contact information

器具名称 Name of instrument

型号/规格 Type/Specification：WTH-18

出厂编号 Serial No.：SW20220203

制造单位 Manufacturer：东莞市升微机电设备科技有限公司

批准人 Approved by：朱佳奇 副所长

核验员 Checked by：庞永敏

校准员 Calibrated by：曾宪钰

发布日期 Issue date：2022 年 4 月 1 日

地址(Address)：上海市闵行区江月路900号(计量检测)　传真(Fax)：021-62892960
电话(Telephone)：021-54336149;64372125　电子邮件(Email)：jls@sqi.org.cn
邮编(Post Code)：201114　网址(Web site)：www.sqi.org.cn

上海市质量监督检验技术研究院

Shanghai Institute of Quality Inspection and Technical Research

证书编号：J22330S00350

Certificate No.

本次校准所依据的技术文件（代号、名称）：

Reference documents for the calibration (code、name)

JJF 1101-2019 环境试验设备温度、湿度参数校准规范

校准地点及环境条件：

Location and environmental condition for the calibration

地点：委托方现场1楼实验室　其他：

Location　Others

环境温度：21 ℃　相对湿度：57 %RH

Ambient temperature　Relative humidity

收样日期：2022 年 3 月 24 日　校准日期：2022 年 3 月 24 日

Received date　Date for calibration

本次校准所使用的主要计量器具：

Measuring instrument used in this calibration

名称 Name	型号 Model	编号 Number	测量范围 Measurement range	不确定度或准确度等级或最大允许误差 Uncertainty/Accuracy Class/Maximum Permissible Error	证书编号/有效期至 Certificate No./Date of expiry	溯源机构名称 Name of traceability institution
手持式温湿度记录仪	HL-NT3-0	JL-A-A1-3651/61207208	（10～90）℃/（0～100）%RH	（10～90）℃ U=0.3 ℃（k=2）/（0～100）% RH U=1.0%RH(k=2)	J21327S02348 / 2022-11-04	SQI
数显式温度巡回检测仪	GL-840	JL-A-A1-84318/C50610392	(-80～1100)℃	(-80～300)℃ 配T型热电偶：±0.2℃；(>300～600)℃配K型热电偶：±0.5℃；(>600～1100)℃配K型热电偶：±2.0℃	J21330S02142 / 2022-06-23	SQI

以上计量标准器具的量值溯源至国家基准/测量标准。

Quantity values of above measurement standards used in this calibration are traced to the national primary standards of P.R. China/national measurement standards.

备注：/

Note

本证书提供的结果仅对本次被检（校）样品有效，未经本院许可，不得部分采用本证书的内容。

The data are valid only for the Sample(s).Partly using this certificate will not be admitted unless allowed.

证书首页专用 Certificate homepage

SQI/JL-JLJZ-01/1

上海市质量监督检验技术研究院

Shanghai Institute of Quality Inspection and Technical Research

证书编号：J22330S00350

Certificate No.

结果/说明：

Results and additional explanation

一、测试点分布图：

有效区域离内壁距离（mm）					
前	后	左	右	上	下
300	300	300	300	300	300

二、校准/检测结果：

设定值		上偏差		下偏差		扩展不确定度 U（k=2）		均匀度		波动度	
温度(℃)	湿度(%RH)	温度(℃)	湿度(%RH)	温度(℃)	湿度(%RH)	温度(℃)	湿度(%RH)	温度(℃)	湿度(%RH)	温度(℃)	湿度(%RH)
28.0	25.0	0.3	0.1	0.0	-0.5	0.4	1.5	0.3	0.6	±0.1	±0.3
28.0	50.0	0.3	-0.2	-0.1	-0.7	0.4	1.5	0.4	0.5	±0.1	±0.3
28.0	60.0	0.4	0.1	0.0	-0.4	0.4	1.5	0.4	0.5	±0.1	±0.3
28.0	75.0	0.3	-0.1	0.0	-0.7	0.4	1.5	0.3	0.6	±0.1	±0.4
28.0	85.0	0.2	0.2	-0.2	-0.5	0.4	1.5	0.4	0.6	±0.1	±0.5
35.0	25.0	0.1	-0.2	-0.3	-0.7	0.4	1.5	0.4	0.5	±0.1	±0.3
35.0	50.0	0.1	-0.1	-0.2	-0.7	0.4	1.5	0.3	0.6	±0.1	±0.3
35.0	60.0	0.2	0.2	-0.2	-0.4	0.4	1.5	0.4	0.6	±0.1	±0.3
35.0	75.0	0.1	0.1	-0.3	-0.6	0.4	1.5	0.4	0.7	±0.1	±0.5
35.0	85.0	0.2	0.4	-0.3	-0.4	0.4	1.5	0.4	0.7	±0.1	±0.5

备注：测试点分布图中字母所在位置为温度测试点位置：甲、乙、丙、丁为湿度测试点位置。

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证书续页专用 Continued page of certificate

SQI/JL-JLJZ-02/1

2.8 Measurement reports (II)

GRGTEST 广电计量 广州广电计量检测股份有限公司 GUANG ZHOU GRG METROLOGY & TEST CO.,LTD.

校 准 证 书
CALIBRATION CERTIFICATE

证书编号: [redacted] 第 1 页 共 9 页
Certificate No. Page of

委 托 方 Client

联络信息 Contact Inf.

仪器名称 Description: 步入式环境箱

型号/规格 Model/Type: WTH-12.8-40S0 制 造 厂 Manufacturer: 东莞市升微机电设备科技有限公司

出厂编号 Serial No.: SW20220710 管 理 号 Asset No.: ----

接收日期 Receipt Date: 2022年08月25日 Y M D 校准日期 Cal. Date: 2022年08月25日 Y M D

发布日期 Issued Date: 2022年08月25日 Y M D

批 准 Approved by: 林春江

审 核 Inspected by: 刘艳

校 准 Calibrated by: 吴伟星

(Stamp) 证书专用章

总部地址(Headquarters Add.): 广东省广州市黄埔大道西平云路163号 No.163,Pingyun Rd, West of HuangPu Ave,Guangzhou Guangdong China
实验室地址(Add.of the Lab): 广东省广州市黄埔大道西平云路163号 No.163,Pingyun Rd,West of HuangPu Ave,Guangzhou,Guangdong,China
联系电话(Tel.):400-602-0999 邮政编码(Postcode):510656
网站(Website):http:// www.grgtest.com 电子邮件(E-mail):grgtest@grgtest.com
扫一扫验真伪

GRGTEST 广电计量 广州广电计量检测股份有限公司 GUANG ZHOU GRG METROLOGY & TEST CO.,LTD.

校 准 结 果
RESULTS OF CALIBRATION

证书编号: J202208182645A-0001 第 3 页 共 9 页
Certificate No. Page of

(一): 温度测量

1 测量点布置图 (Measurement point graph):

2 温度测量 (Temp. measurement):

设定值 (Setting): -40.00 ℃
指示值 (Indicated): -40.00 ℃

测量点 (Measuring point) 温度(Temp.)	最大值 (Max) (℃)	最小值 (Min) (℃)
1	-40.13	-40.35
2	-41.13	-41.44
3	-40.25	-40.40
4	-39.55	-39.90
5	-39.72	-39.94
6	-39.73	-40.05
7	-39.93	-40.10
8	-39.66	-39.91
9	-39.68	-39.90
10	-40.30	-40.43
11	-39.66	-39.98
12	-39.47	-39.76
13	-39.76	-39.92
14	-39.23	-39.65
15	-39.50	-39.80

			允许误差 (MPE)	结论(P/F)
温度偏差(Temp deviation)	上偏差	+0.77 ℃	±2.00 ℃	P
	下偏差	-1.44 ℃	±2.00 ℃	P
温度波动度 (Temp fluctuation):		±0.21 ℃	±0.50 ℃	P
温度均匀度 (Temp uniformity):		1.80 ℃	2.00 ℃	P

GRGTEST 广电计量 广州广电计量检测股份有限公司 GUANG ZHOU GRG METROLOGY & TEST CO.,LTD.

校 准 结 果
RESULTS OF CALIBRATION

证书编号: J202208182645A-0001 第 6 页 共 9 页
Certificate No. Page of

(四): 温度测量

1 测量点布置图 (Measurement point graph):

2 温度测量 (Temp. measurement):

设定值 (Setting): 150.00 ℃
指示值 (Indicated): 150.00 ℃

测量点 (Measuring point) 温度(Temp.)	最大值 (Max) (℃)	最小值 (Min) (℃)
1	150.08	149.83
2	150.48	150.19
3	150.46	150.20
4	150.51	150.31
5	150.03	149.88
6	150.89	150.66
7	150.32	150.16
8	150.40	150.24
9	150.58	150.43
10	150.23	150.14
11	150.36	150.29
12	150.47	150.40
13	150.45	150.37
14	149.90	149.73
15	150.22	150.05

			允许误差 (MPE)	结论(P/F)
温度偏差(Temp deviation)	上偏差	+0.89 ℃	±2.00 ℃	P
	下偏差	-0.27 ℃	±2.00 ℃	P
温度波动度 (Temp fluctuation):		±0.14 ℃	±0.50 ℃	P
温度均匀度 (Temp uniformity):		0.95 ℃	2.00 ℃	P

2.8 Measurement reports (III)

GRGTEST 广电计量 广州广电计量检测股份有限公司 GUANG ZHOU GRG METROLOGY & TEST CO.,LTD.

校 准 证 书
CALIBRATION CERTIFICATE

证书编号: [redacted] 第 1 页 共 8 页
Certificate No. Page of

委 托 方
Client

联络信息
Contact Inf. [redacted]

仪器名称
Description 索特温控试验设备

型号/规格
Model/Type WT-60-60

制 造 厂
Manufacturer 东莞市升微机电设备科技有限公司

出厂编号
Serial No. SW20210709

管 理 号
Asset No. -----

接收日期
Receipt Date 2021年11月12日 Y M D

校准日期
Cal. Date 2021年11月12日 Y M D

发布日期
Issued Date 2021年11月12日 Y M D

批 准
Approved by 周焰华 (副主任)

审 核
Inspected by 刘艳

校 准
Calibrated by 林琼

(Stamp) 证书专用章

总部地址(Headquarters Add): 广东省广州市黄埔大道西平云路163号
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No.163,Pingyun Rd,West of HuangPu Ave,Guangzhou,Guangdong,China
联系电话(Tel.):400-602-0999 邮政编码(Postcode):510656
网站(Website):http://www.grgtest.com 电子邮件(E-mail):grgtest@grgtest.com

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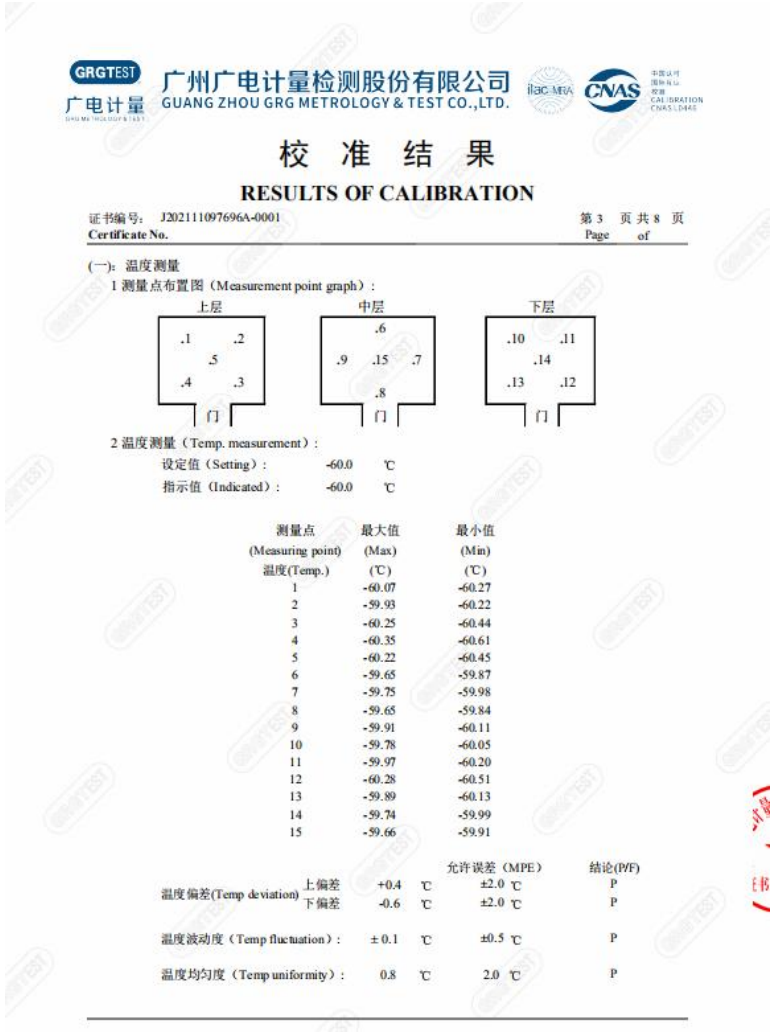


GRGTEST 广电计量 广州广电计量检测股份有限公司 GUANG ZHOU GRG METROLOGY & TEST CO.,LTD.

校 准 结 果
RESULTS OF CALIBRATION

证书编号: J202111097696A-0001 第 3 页 共 8 页
Certificate No. Page of

(一): 温度测量

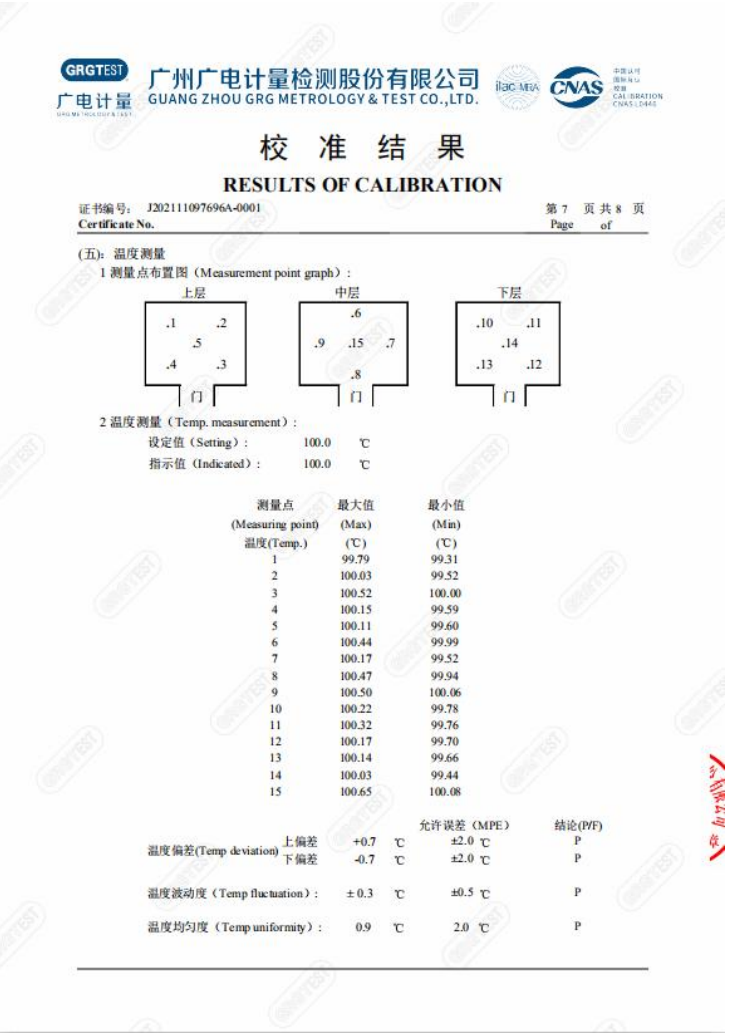
1 测量点布置图 (Measurement point graph):

2 温度测量 (Temp. measurement):

设定值 (Setting): -60.0 ℃
指示值 (Indicated): -60.0 ℃

测量点 (Measuring point)	最大值 (Max)	最小值 (Min)
温度(Temp.)	(℃)	(℃)
1	-60.07	-60.27
2	-59.93	-60.22
3	-60.25	-60.44
4	-60.35	-60.61
5	-60.22	-60.45
6	-59.65	-59.87
7	-59.75	-59.98
8	-59.65	-59.84
9	-59.91	-60.11
10	-59.78	-60.05
11	-59.97	-60.20
12	-60.28	-60.51
13	-59.89	-60.13
14	-59.74	-59.99
15	-59.66	-59.91

				允许误差 (MPE)		结论(P/F)
温度偏差(Temp deviation)	上偏差	+0.4	℃	±2.0	℃	P
	下偏差	-0.6	℃	±2.0	℃	P
温度波动度 (Temp fluctuation):		± 0.1	℃	±0.5	℃	P
温度均匀度 (Temp uniformity):		0.8	℃	2.0	℃	P



GRGTEST 广电计量 广州广电计量检测股份有限公司 GUANG ZHOU GRG METROLOGY & TEST CO.,LTD.

校 准 结 果
RESULTS OF CALIBRATION

证书编号: J202111097696A-0001 第 7 页 共 8 页
Certificate No. Page of

(五): 温度测量

1 测量点布置图 (Measurement point graph):

2 温度测量 (Temp. measurement):

设定值 (Setting): 100.0 ℃
指示值 (Indicated): 100.0 ℃

测量点 (Measuring point)	最大值 (Max)	最小值 (Min)
温度(Temp.)	(℃)	(℃)
1	99.79	99.31
2	100.03	99.52
3	100.52	100.00
4	100.15	99.59
5	100.11	99.60
6	100.44	99.99
7	100.17	99.52
8	100.47	99.94
9	100.50	100.06
10	100.22	99.78
11	100.32	99.76
12	100.17	99.70
13	100.14	99.66
14	100.03	99.44
15	100.65	100.08

				允许误差 (MPE)		结论(P/F)
温度偏差(Temp deviation)	上偏差	+0.7	℃	±2.0	℃	P
	下偏差	-0.7	℃	±2.0	℃	P
温度波动度 (Temp fluctuation):		± 0.3	℃	±0.5	℃	P
温度均匀度 (Temp uniformity):		0.9	℃	2.0	℃	P

03

Part

Advanced technical indicators

3.1 Relevant technological advances

Energy conservation

Related series of equipment refrigeration system (R404A and R23) using electronic expansion valve energy-saving control, through the software automatically adjusts the valve opening to achieve temperature stabilization, low-temperature (0 ℃ or less) stabilization process of the heater does not work, the compressor with the refrigeration flow rate becomes smaller consumption of power is reduced accordingly, to achieve the purpose of energy saving. The energy-saving control effect of the relevant equipment has passed the China CQC energy-saving product certification.

中国节能产品认证

试验报告

Product energy-saving certification report

报告编号：20210103W00644X　　第 4 页 共 5 页

试验结果及判定

序号	检验项目	技术要求	型号	实测值
1	125℃耗电量（kW·h/h）	按照委托方技术要求进行检测。	NTH（AYH,ST）-420-（20～70）	0.785
2	25℃耗电量（kW·h/h）	按照委托方技术要求进行检测。	NTH（AYH,ST）-420-（20～70）	1.818
3	-25℃耗电量（kW·h/h）	按照委托方技术要求进行检测。	NTH（AYH,ST）-420-（20～70）	1.303

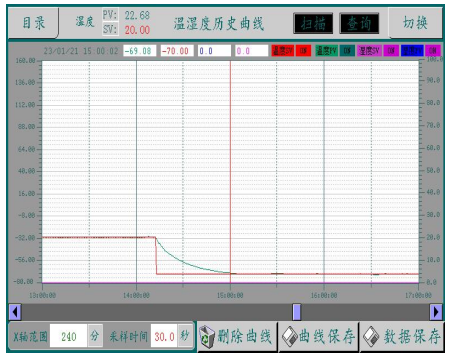
Energy saving test results and judgment

3.1 Relevant technological advances

The automatic control function allows you to set the temperature (humidity) conditions and maintain operation at the maximum power before the set value is reached and at the minimum power after the set value is reached. It responds quickly to opening and closing doors and changes in heat load during the test to maintain a stable test environment.
Related operation screen.

Screen 1

Screen 2



Screen 3

3.1 Relevant technological advances

Main menu screen

Run Screen

Program Edit Screen 1

Program Edit Screen 2

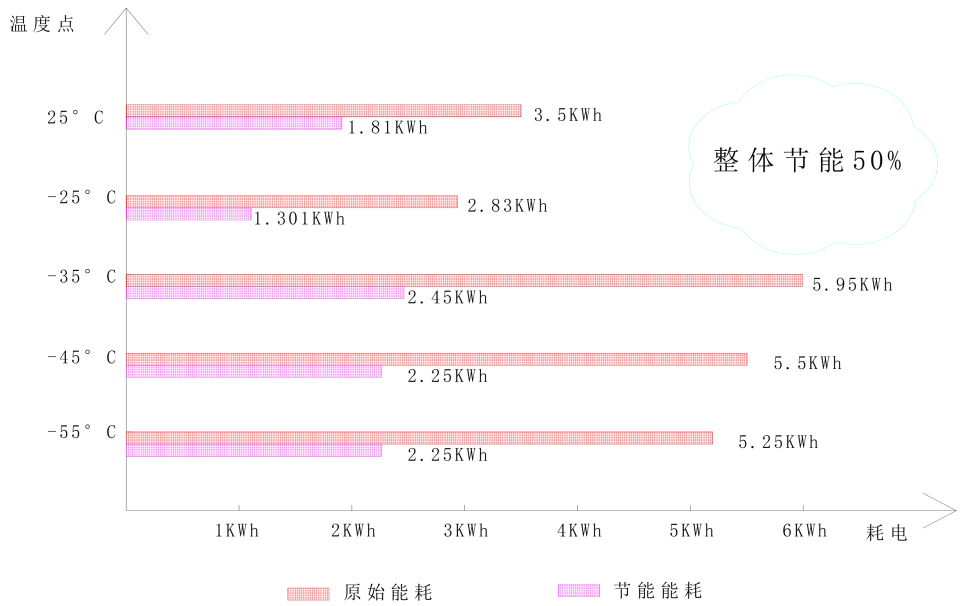
3.1 Relevant technological advances

Temperature: The refrigeration system can control the output refrigeration capacity with high precision, realizing the goal of high performance and substantial power saving; when the normal and low temperature range is stable, the energy saving can be more than 50% than the traditional mode.

STH408-70Comparison of electricity consumption of stacked refrigeration units				
serial number	temperature point	Turn on the unit	Older models consume power	New model power consumption
1	25℃	R404A	3.5kWh	1.81kWh
2	-25℃	R404A	2.83kWh	1.303kWh
3	-35℃	R404A+R23	5.95kWh	2.45kWh
4	-45℃	R404A+R23	5.5kWh	2.25kWh
5	-55℃	R404A+R23	5.25kWh	2.25kWh

3.1 Relevant technological advances

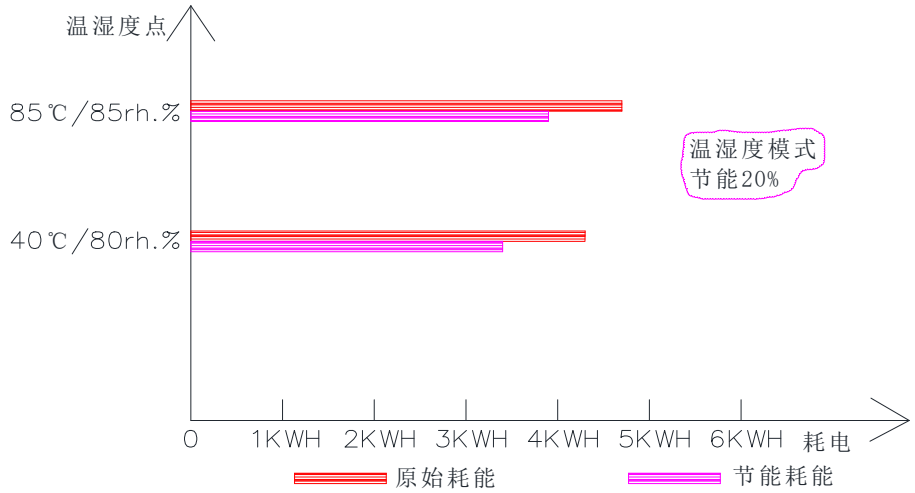
Temperature: The refrigeration system can control the output refrigeration capacity with high precision, realizing the goal of high performance and substantial power saving; when the normal and low temperature range is stable, the energy saving can be more than 50% than the traditional mode.



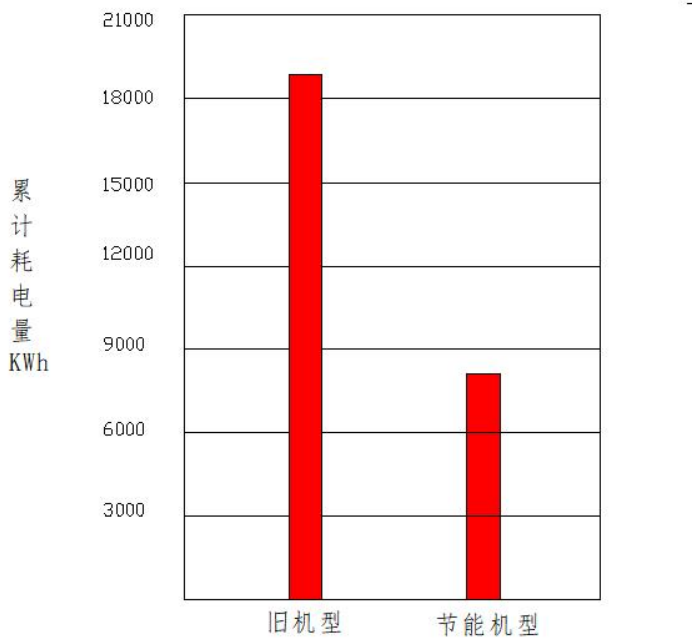
3.1 Relevant technological advances

Temperature and humidity: in the low humidity and high humidity limit using the traditional control mode (due to the low humidity limit, humidification power itself is small, high humidity limit when the heating tube power is small); temperature and humidity in other ranges according to the set value corresponding to the dew point of the evaporator evaporator pressure to control the stability of the humidity, so that the heating, humidification power becomes smaller, while the refrigeration system due to the increase in the evaporating pressure compressor displacement is reduced, the operating power is correspondingly smaller, to achieve the purpose of energy saving.

	STH408-70Comparison of temperature and humidity energy consumption			
serial number	temperature point	humidity point	Older models consume power	New model power consumption
1	85℃	85rh%	4.7kWh	3.9kWh
2	45℃	80rh%	4.3kWh	3.4kWh



3.1 Relevant technological advances



Take STH408-70 model for example
Control temperature at -55℃ without load
Ambient temperature: 25℃ 50%RH
Electricity cost is calculated according to: 300 days * 12 * electricity consumption

04
Part

Promotional Clients

4 Some customer cases

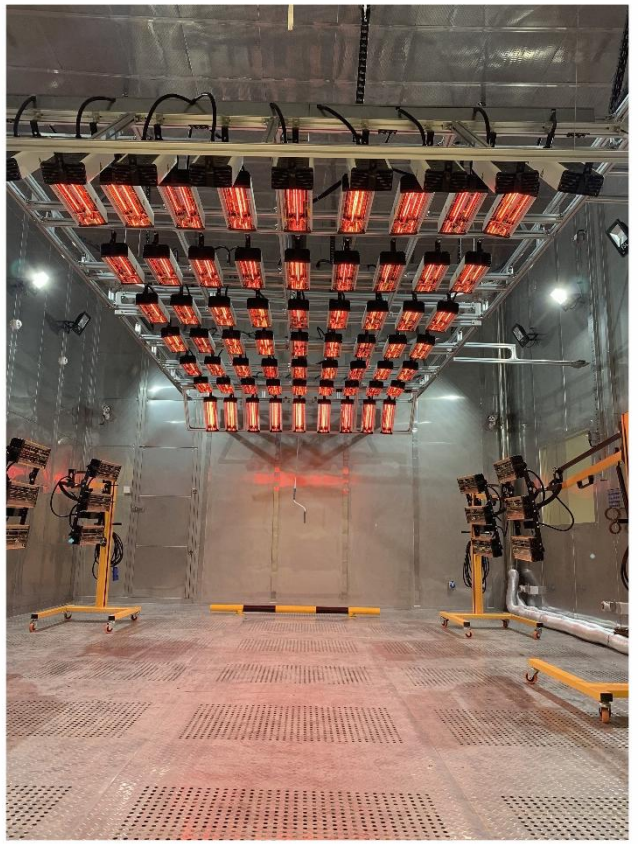
Case I (walk-in)

4 Some customer cases

Case II (walk-in)

4 Some customer cases

Case 3 CACR Automotive Inspection Center (Guangzhou) (infrared walk-in)



4 Some customer cases

Case 4 Chengdu Product Quality Inspection Institute (Battery box walk-in)

4 Some customer cases

Case V (full vehicle walk-in)

4 Some customer cases

Case VI Baoding Jinggong (Whole Vehicle Walk-in)

Simplewell昇微

Thanks for watching

Simplewell Technology Co., Ltd

teams

collaborative

perseverance

reputation

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