Simplewell昇微

Introduction to high and low temperature airbag ignition test chamber

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Part

Product description

1.1 Scope of application

Scope of application of high and low temperature airbag explosion test chamber: Mainly used for ceiling high temperature and high humidity tests and seat/ceiling/dashboard side airbag explosion experiments. Suitable for electronics, electrical appliances, communications, instruments, vehicles, plastic products, metal, and food , quality testing and material screening of chemical, building materials, medical, aerospace and other products; suitable for suitability testing of electrical and electronic products, automotive components, parts and materials when they are stored, transported and used in high and low temperatures and environments.

Extravehicular detonation (sinking type)

Extravehicular detonation (ground type)

Explosion in the cabin

Small extravehicular detonation

1.2 System-box structural characteristics

Structural features of the box: It can be detonated inside and outside the cabin. The floor or sliding platform is flush with the ground. There are multiple large windows on the side and door (1.2*1.4 specific size according to the design). Background curtain can be provided.

舱内点爆

舱外点爆

1.3 Box door

Box door: 1. Electric double-open sliding door. The door opening time and the slide in and out time are controlled within 10 seconds. There is an unlocking handle on the inside of the door to ensure that testers can open the door and leave from the box. The front is a large window glass with electric heating (automatic adjustment) anti-frost and anti-condensation device.
2. Manual double doors with switch handles inside the door to ensure that testers can open the door and leave from the box. The front is made of 3 layers of large viewing window glass, with electric heating (automatic adjustment) anti-frost and anti-condensation devices.

Electric double-opening sliding door
(outside the cabin)

Double doors
(inside the cabin)

Insulated
tempered glass

1.4 mobile platform:

Features of the mobile test platform (for extravehicular detonation):
When conducting extravehicular detonation tests, the electric slide is used to move forward and backward. The test piece is placed on the electric slide. When the test chamber receives the start signal, the door moves up and down. (or left and right) opens smoothly. The special stainless steel spiral screw mechanism outside the box drives the slide table. The slide table moves to a given position outside the box and gives an in-position signal. The slide table position is accurate and does not jump.

Electric slide (ground type)

Electric slide (sunken type in pit)

1.5 Heating and humidification system

Test chamber heating system: The nickel-chromium alloy heating wire of the heater is made of stainless steel tube armored molded fin-type heating tubes; the heater is anti-corrosion, anti-oxidation, and explosion-proof with air-burn protection functions, and adopts PLC+PWM pulse intelligent width adjustment control technology。

Test chamber humidification system: The humidifier is made of nickel-chromium alloy heating wire and armored with 316 seamless stainless steel tubes. It humidifies quickly, saves water, saves electricity, is safe and prevents leakage, and has water shortage alarm and anti-dry boil protection functions.

Heating pipe

Humidification tube

Stainless steel humidification water tank

1.6 Smoke exhaust system (for in-cabin detonation)

Smoke exhaust system (for in-cabin detonation) rapid ventilation device: There is an exhaust fan in the center of the top of the working room, with a maximum exhaust capacity of 1000 m3/h, to quickly discharge the air bag explosion smoke, and an automatic switch is installed on the inside of the air duct of the test chamber. The air inlet hole is automatically opened when the exhaust fan is working. When ventilation is not needed, the exhaust hole is automatically closed to prevent a large amount of external humid air from entering the test chamber when it is not needed, causing a large amount of frost to form in the box, thus Affect normal testing or affect the cooling of the test chamber. The exhaust fan is directly controlled through a switch on the control panel, or other equipment provides a control signal to control the opening and closing of the exhaust fan.

Centrifugal Fan

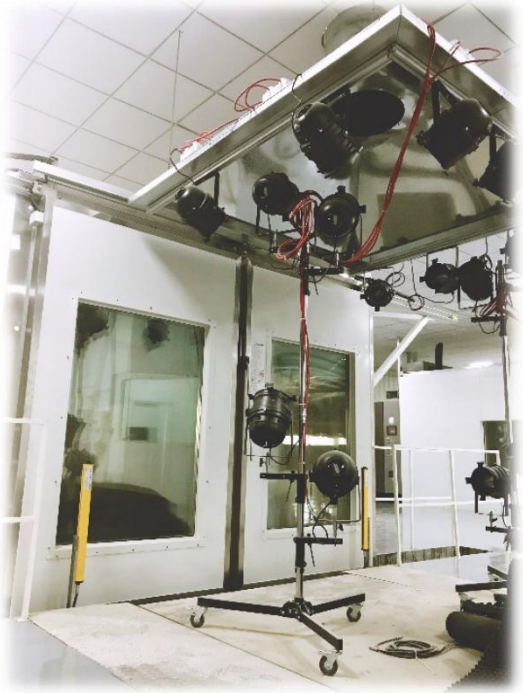
Centrifugal Fan

Exhaust hose

1.6 Exhaust system (for extravehicular detonation)

Outside smoke exhaust (optional)

Rapid smoke exhaust device: A wind collecting hood, a centrifugal fan and an aluminum exhaust pipe are installed on the top of the cabin and are connected to the exhaust pipe to quickly discharge the smoke generated by the explosion of the airbag to ensure the stability of the experimental test.



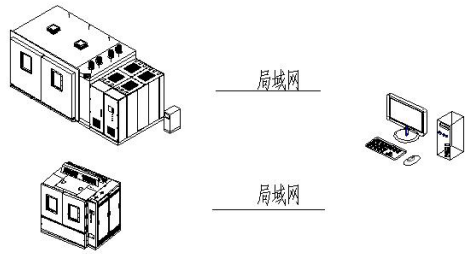
1.7 Electrical cabinets and refrigeration units

Power distribution cabinet
(located on the side of the freezer)

Refrigeration unit (located at the rear of the box)

1.8电气控制系统

1. Controller: adopts "Japan Mitsubishi" new generation high-performance FX3U series PLC, 7.0-inch 600×480 dot matrix TFT color LCD display, Chinese menu, touch-controlled human-machine dialogue mode, and the control unit adopts Japan Mitsubishi PLC module for various functions. System control, precise temperature control, stable equipment operation, and excellent quality.



2. Connect to PC (optional): Through the centralized monitoring software, test data can be recorded, automatically displayed as a curve in the PC, and can be printed directly, with no limit on the recording time. File size depends on hard drive capacity. PC can also be used To operate the terminal, realize remote monitoring.

3. Mobile APP function (optional):----You can operate the device through the mobile APP, set parameters, and monitor the device status in real time.

4. Fault SMS function (optional):----When the equipment fails, it will send a message to the designated mobile phone with the fault content and the time when the fault occurred.

1.9Control Panel

Control box and panel: The electrolytic plate is sprayed with plastic and the color is standard color. The panel is equipped with touch-type human-machine dialogue interface, power switch, over-temperature protector, USB data exchange interface, fault indicator light and other operating instructions.

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

Main power switch with leakage protection (Schneider)

Faulty three-color light

1.10 Circuit accessories

电路配件

Electronic humidity sensor (Imported from Switzerland/Finland)

Solid state relay (Jiale)

Electronic temperature sensor (Imported from Switzerland/Finland)

Contactor (Schneider)

Overload protector (Schneider)

Flame retardant wire

PLC controller (Mitsubishi)

Fuseless switch (Schneider)

1.11 Refrigeration system design

Main refrigeration parts configuration

1. French Taikang/Germany Bitzer, Blog" fully/semi-hermetic low-noise piston compressor, reliable and stable performance

2. Emerson high-efficiency oil separator is used t separate the lubricating oil in the high-pressure steam discharged from the refrigeration compressor to ensure the safe and efficient operation of the refrigeration system.

3. Combined shell and tube condenser

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

1.12Circulating waterway (optional)

Circulating waterway accessories

water tower

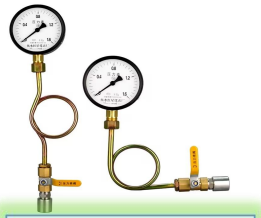
water pump

ball valve

Y type filter

ball valve

One-way valve



pressure gauge

water temperature gauge

Water filter (optional)

Flowmeter (optional)

Job description:

The GLT series circular counterflow cooling tower is a fiberglass cooling tower that adopts counterflow air heat exchange technology. The filler uses high-quality PVC oblique wave film and has a large water spraying area. Through the rotating water distribution method, the water distribution is uniform and efficient, and the cooling effect is enhanced. Reliable operation, durability and easy assembly. It is widely used in various cooling and heat dissipation places, especially in cooling water circulation systems such as air conditioning and refrigeration, air compressor stations, heating furnaces and condensation processes.

1.13 Electric slide accessories

Electric slide accessories

YASKAWA SERVO MOTOR

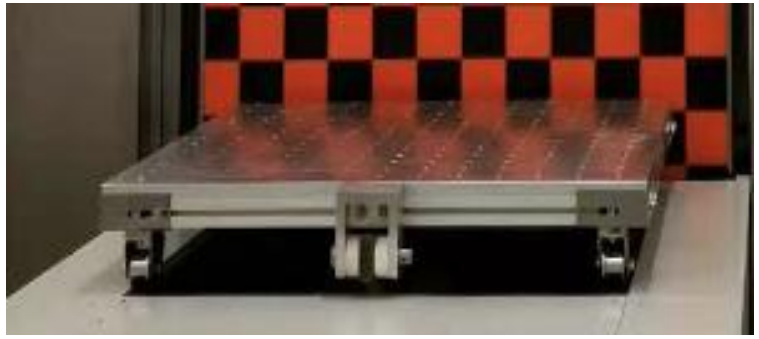
Ball screw

Slide guide rail

Reducer

Dust proof organ cover

Engineering drag chain



Aluminum platform

1.14 Structural accessories

Other accessories.

PVC waterproof and flame-retardant junction box

LED lighting (resistant to high and low temperatures)

Lead test hole
ϕ 100 ϕ 150 (optional)

Customized long axis motor

1.15Equipment manufacturing process and requirements

1、 Pipeline welding process: High quality copper pipe nitrogen protection welding method is adopted to avoid the damage to the compressor caused by oxide impurities on the inner wall of the copper pipe entering the refrigeration system caused by traditional welding methods.

2、 Shock absorption measures: Install a combination of shock absorption springs and anti vibration soft rubber pads at the bottom of the compressor and pipeline to reduce vibration.

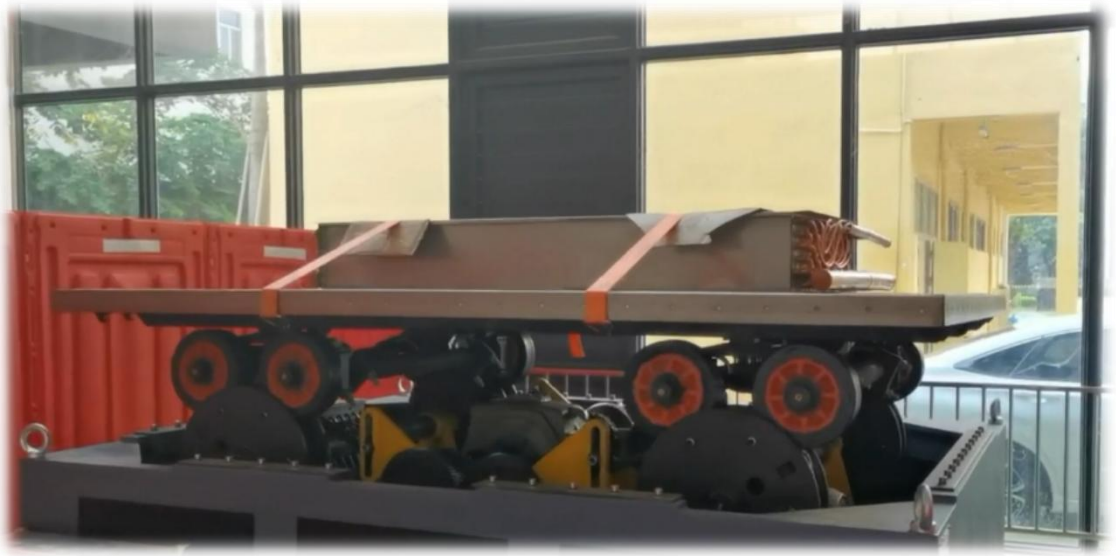
3、 Pipeline protection measures: The refrigeration system pipeline adopts the method of adding anti vibration hoses and C-shaped elbows to avoid copper pipes and fractures caused by vibration and temperature changes.

5、 When the equipment is running, detect the temperature of the distribution cabinet nodes.

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

1.15 Equipment manufacturing process and requirements

Simulated road vibration testing



6.Perform vibration testing on components such as refrigeration evaporators before installation

7.Conduct vibration testing on small equipment before shipment

Equipment manufacturing process and requirements

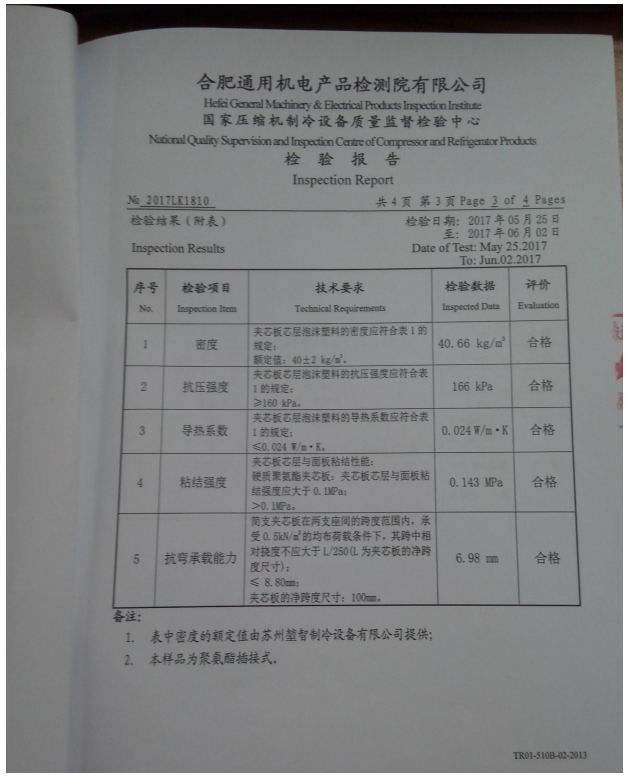






8, the production process confirmation: after the equipment begins production, each link by the person in charge to fill in the confirmation form, timely correct the problems in the production process, while tracing to the source, optimize the production process, improve production efficiency, to ensure the quality of each piece of equipment production.

1.15 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
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National Quality Supervision and Inspection Centre of Compressor and Refrigerator Products
检 验 报 告
Inspection Report

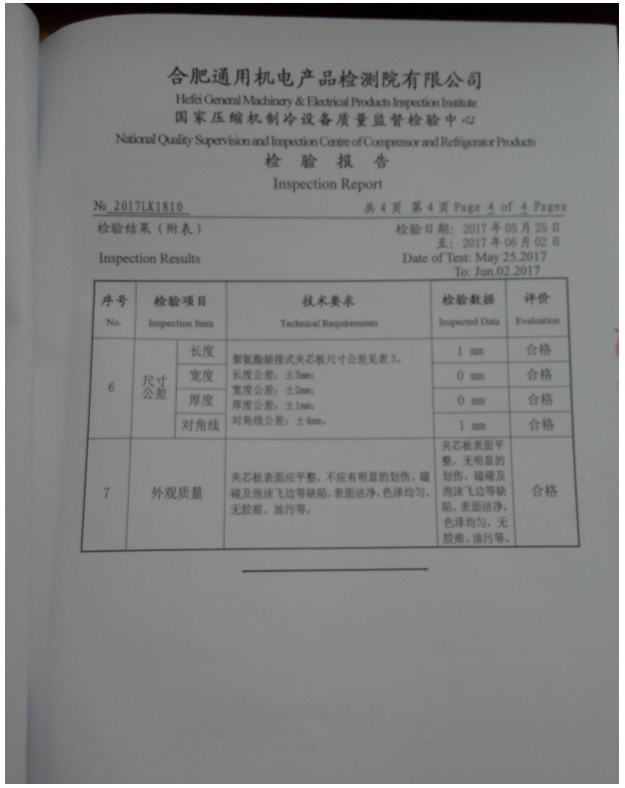
No. 2017LK1810　　共 4 页 第 3 页 Page 3 of 4 Pages

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



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
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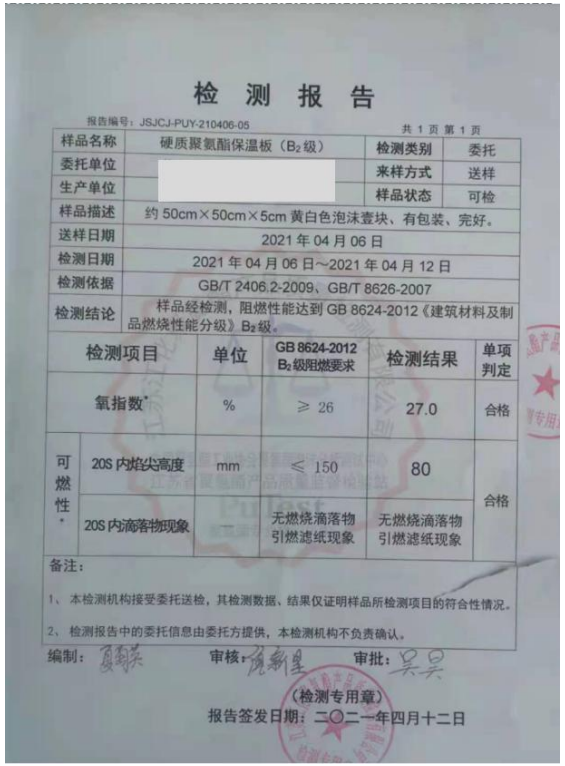
6	尺寸公差	长度	聚氨酯插接式夹芯板尺寸公差见表 3。 长度公差：±3mm； 宽度公差：±2mm； 厚度公差：±1mm； 对角线公差：±4mm。	1 mm	合格
		宽度		0 mm	合格
		厚度		0 mm	合格
		对角线		1 mm	合格
7	外观质量		夹芯板表面应平整，不应有明显的划伤、磕碰及泡沫飞边等缺陷，表面洁净，色泽均匀，无胶痕、油污等。	夹芯板表面平整，无明显的划伤、磕碰及泡沫飞边等缺陷，表面洁净，色泽均匀，无胶痕、油污等。	合格



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、the use of flame retardant library board and materials, the picture shows the library board flame retardant, compressive strength, bending bearing capacity and other performance test report (time supplier name P off)

1.15 Equipment manufacturing process and requirements

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

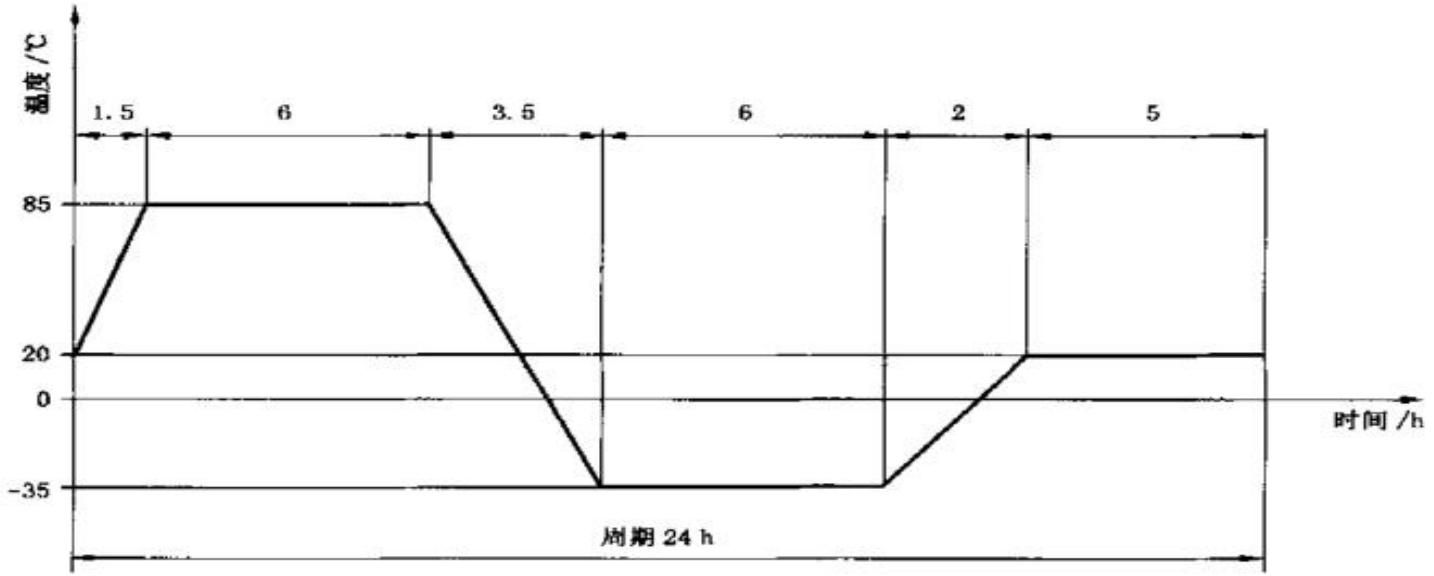
1.16 Products meet standards

产品满足标准

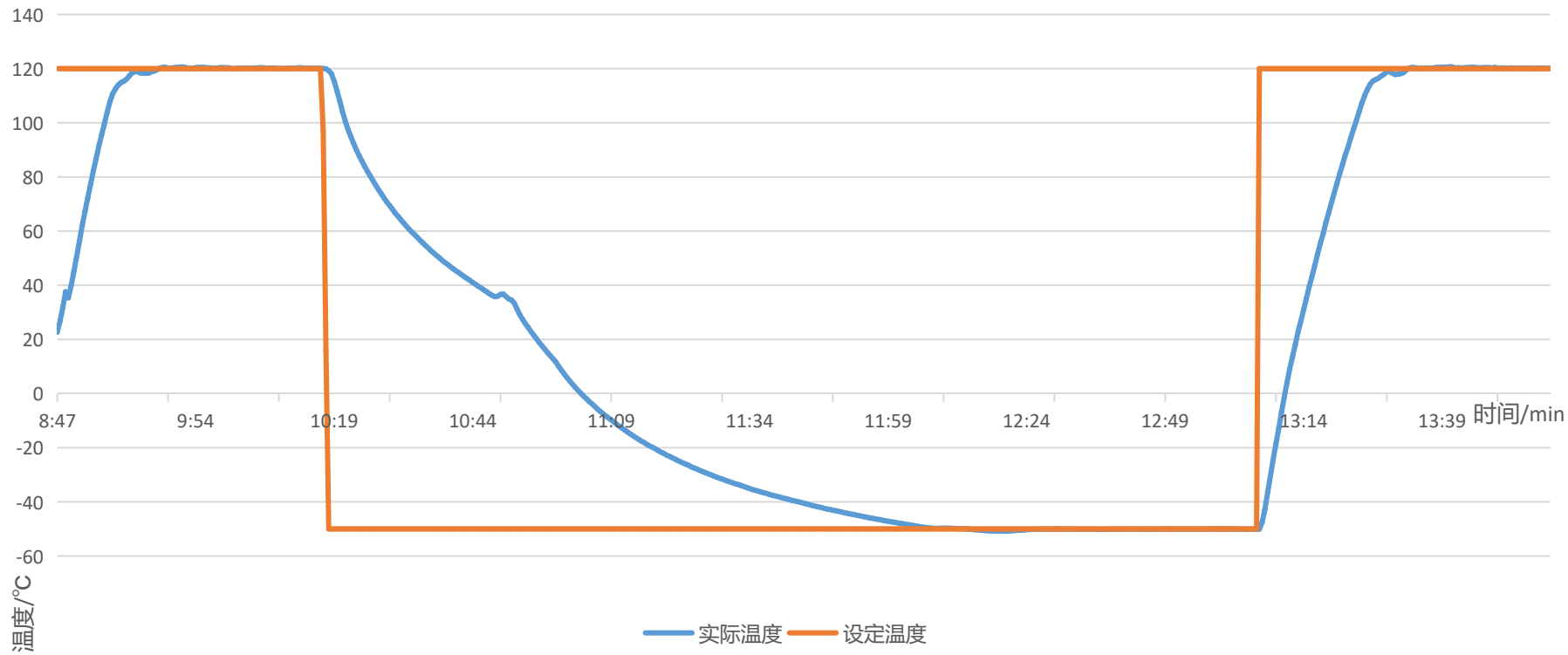
1. GB/T2423.1-2008电式电子产品环境试验第2部分：试验A：低温试验方法
2. GB/T2423.2-2008电式电子产品环境试验第2部分：试验B：高温试验方法
3. GB/T2423.3-2008电式电子产品环境试验第2部分：试验Cab：恒定湿热试验方法
4. GB/T2423.4-2008电式电子产品环境试验第2部分：试验Db：交变湿热试验方法
5. GJB150.3A-2009军用装备实验室环境试验方法第3部分：高温试验
6. GJB150.4A-2009军用装备实验室环境试验方法第4部分：低温试验
7. GJB150.9A-2009军用装备实验室环境试验方法第9部分：湿热试验
8. GB-T2423.34-2005电工电子产品环境试验第2部分：试验方法试验Z-AD：温度-湿度组合循环试验
9. GJB360B-103稳态湿热试验
10. GJB360B-106耐湿试验
11. GJB360B-108高温寿命试验
12. GB_T2423.50-2012环境试验第2部分：试验方法试验Cy恒定湿热主要用于元件的加速试验
13. GB/T19949安全气囊模块试验
14. ISO12097.2-1996，GMW 3112、GMW 3118、AK LV 01、AK LV 07、AK LV 13、QJLY J7110368A-2011《侧面安全气囊技术条件》
15. QCT 740-2005 &4.2.9《侧面气囊系统及其附属的座椅面套试验》

1.16 Products meet standards

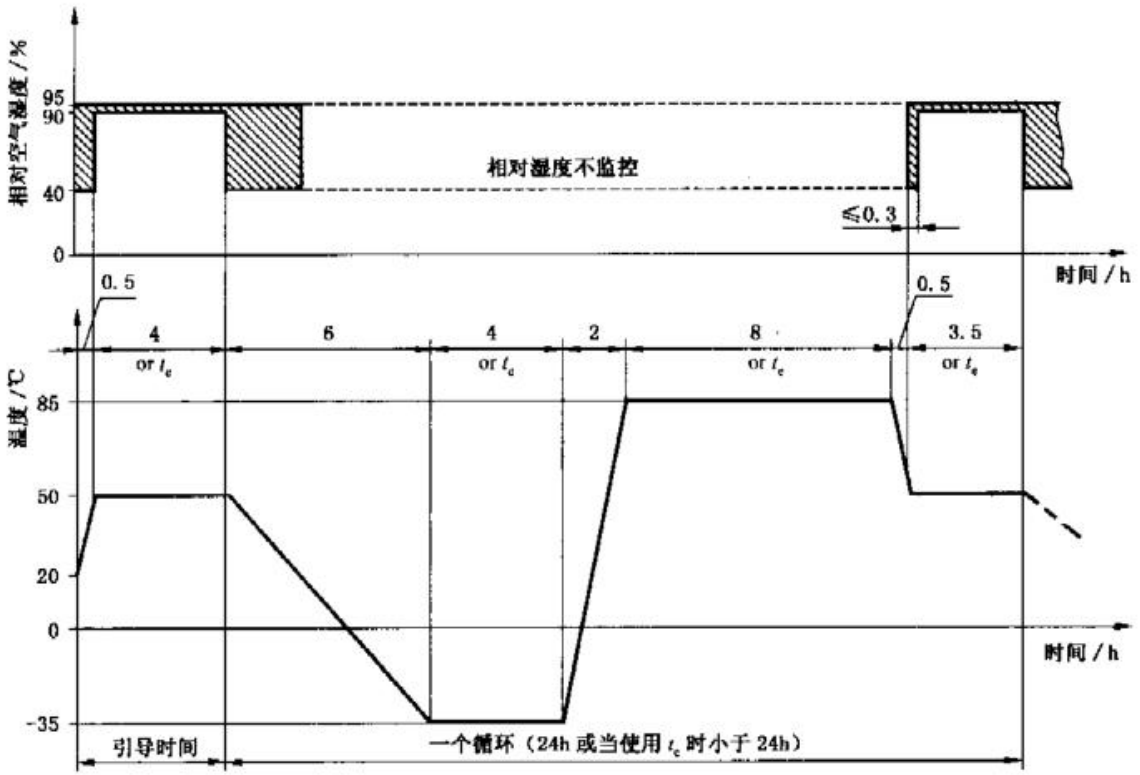
1. Temperature range: -50℃ ~ +120℃ (full controllable; analysis accuracy 0.01℃)
2. Temperature deviation ±2.0°C (no-load test) (after the temperature stabilizes, the difference between the highest temperature, the lowest temperature and the nominal temperature at any time)
3. Temperature gradient 2.0℃ (after the temperature stabilizes, within any time interval, the maximum value of the difference between the average temperatures of any two points in the box, the new standard uses temperature gradient instead of the old version of temperature uniformity)
4. Temperature fluctuation ±0.5℃ (after the temperature stabilizes, the temperature change at any point in the test chamber within the specified time)



1.17 Temperature indicator



1.18 Humidity indicator



满足标准湿热循环曲线

1.19 Introduction to other product standards (optional)

一个周期(见图 1)持续 720 min (12 h),由下面的温度 – 空气湿度的曲线构成:

— 60 min, 升温相位, 温度为＋80℃,相对湿度为 80%.
— 240 min, 保持时间 温度为＋80℃,相对湿度为 80%
— 120 min, 降温相位, 在－40℃处, 当达到冻点附近约 30%空气湿度时, 从 T＜0℃起保持空气湿度不变, 即不再调节温度, (由于设备条件的限制, 从 T＜10℃开始, 湿度调节失效是允许的).
— 240 min, 保持时间, 在－40℃左右, 保持空气温度不变, 不调节温度.
— 60 min, 升温相位, 在＋23℃处,约在 T=0℃时, 相对湿度调到 30%.

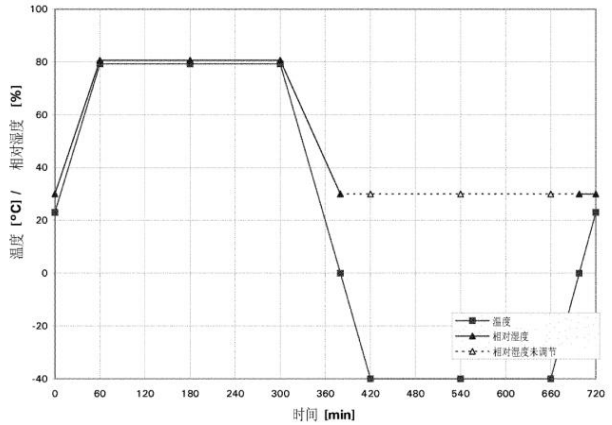


图 1. PV 1200 试验周期

PV1200 standard, at -40°C, relative humidity <30%RH. The difficulty is not to control humidity below 0°C, and the relative humidity remains <30%RH (plus comparison with 1200 2055)

The high and low temperature and humidity environment chamber for interior parts meets the environmental testing requirements for automotive parts and materials in mainstream car companies and industry standards as follows (optional):

PV2005、PV1200

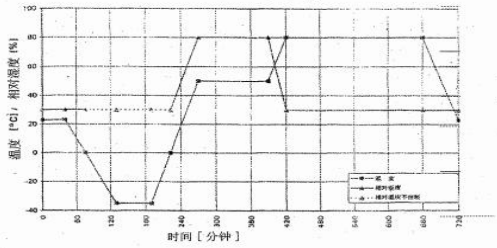
PR303、PR308

1 个循环持续 12 个小时（见过程图 1）包括以下温度和气候条件

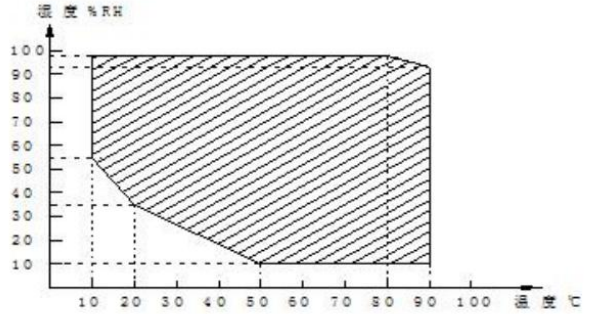
– 40 分钟	保持时间	+23℃，30％相对湿度
– 90 分钟	冷却过程	从 23 到 – 35℃，30％相对湿度
– 60 分钟	保持时间	– 35℃，最大相对湿度 30％
– 80 分钟	加热过程	升温到 + 50℃，80％相对湿度
– 120 分钟	保持时间	+ 50℃，80％相对湿度
– 30 分钟	加热过程	升至 + 80℃，30％相对湿度
– 240 分钟	保持时间	+ 80℃，30％相对湿度
– 60 分钟	冷却过程	至 + 23℃，30％相对湿度

在升温过程 – 升至 + 80℃，30％相对湿度，空气中的实际含水量不得超过 95g/m³进行汽车内饰件试验时，在任何时间都不能出现露水。

PV2005 单个零件

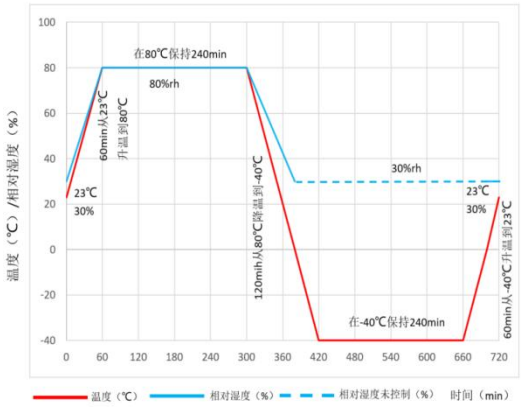


PV2005, at -40℃, relative humidity <30%RH, the difficulty is not to control humidity starting below 0℃, and to maintain relative humidity <30%RH, and to linearly increase the temperature from low temperature -40℃ to start controlling humidity at 0℃.

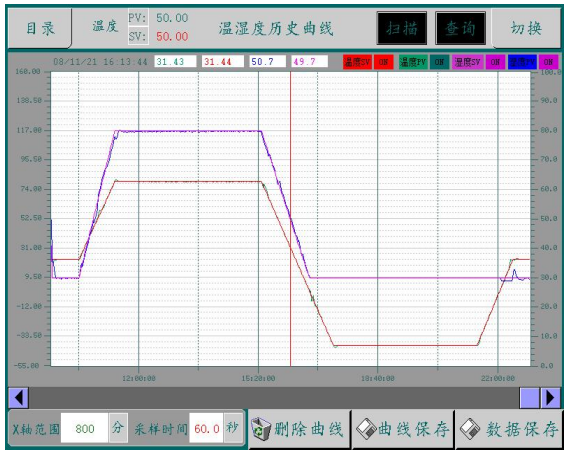


1.20 Curve comparison

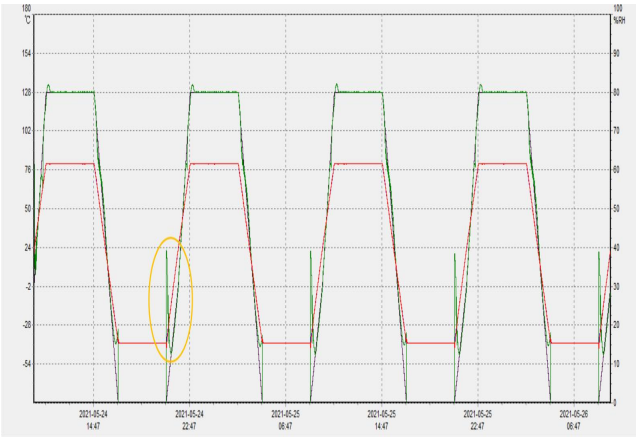
PV 1200



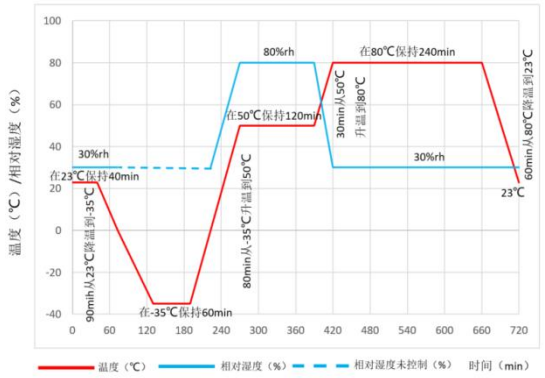
Simplewell cave

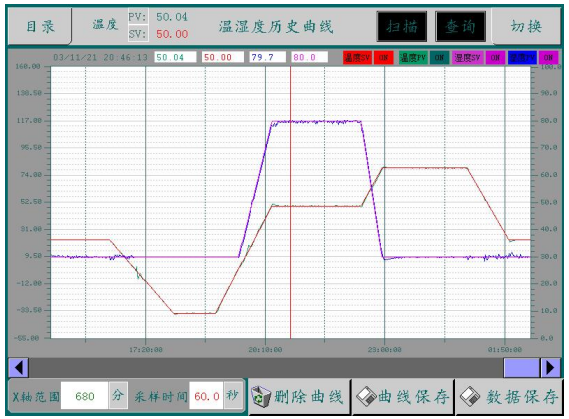


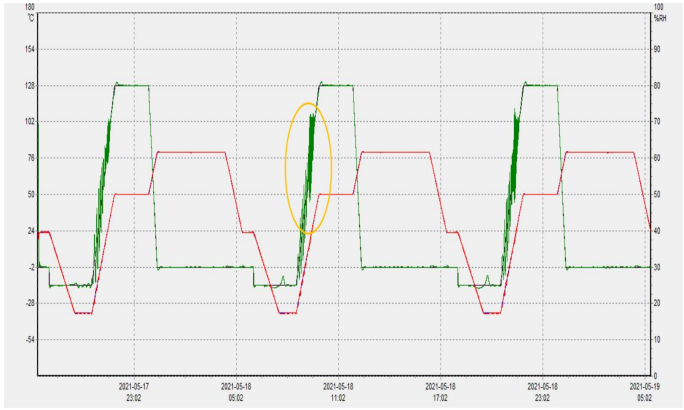
Friend-Business Curve



PV 2005







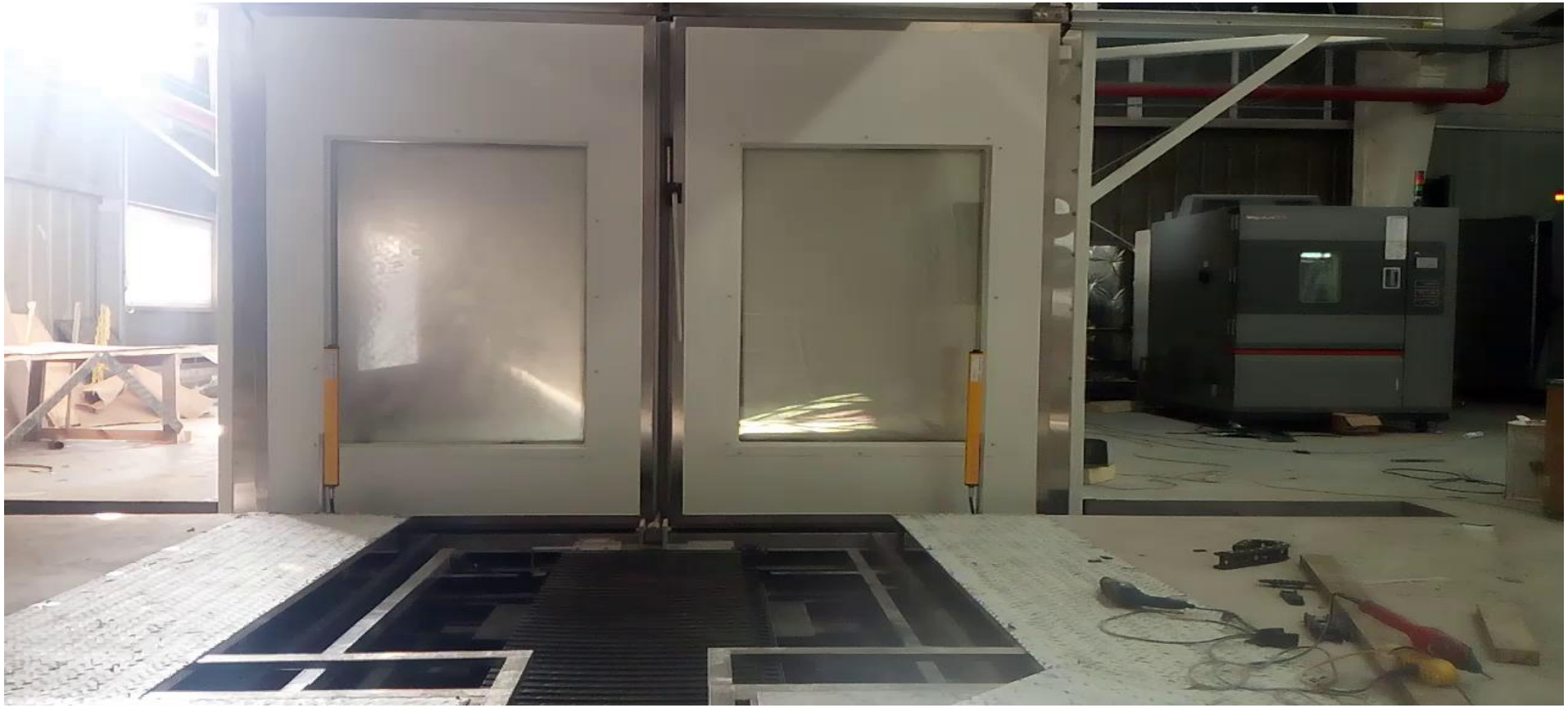
2.1 Simplewell Product innovation features

1. The whole process of the airbag explosion test adopts the "one-button button type (the explosion system gives a start signal and feedback is in place to trigger the explosion signal)" control method to complete the entire airbag explosion test, from the opening of the box door to the completion of the box within 9 seconds. External blast test process (2S for opening the sliding door + 5S for pulling out the platform + 2S for closing the sliding door). The electric platform has a total of 2 stations: (test station and loading station); the platform is driven by a servo motor and can automatically run to the airbag detonation test station outside the warehouse. The servo motor + screw (the screw is fixed, The movement mechanism (the nut seat rotates and makes linear motion) makes the control smoother and the moving position more accurate. The platform can move automatically during the test, or it can be manually operated and jogged during the test preparation. During the test, the mobile platform runs smoothly and the environment There is a position sensor outside the warehouse to detect the position of the electric platform. The entire ignition system can be interconnected with the buyer's existing ignition system.
2. During ordinary temperature and humidity experiments, place the sample on the platform and manually control the platform in and out at a slow speed.
3. The size of the slide is customized, and the load-bearing capacity is based on the design. The maximum movement of the slide is 5M.
4. Special keyway-type removable anti-rotation stainless steel screw sleeves are used to prevent damage to the screw threads of the platform.

Extravehicular airbag detonation

Stainless steel anti-rotation thread sleeve

2.1 Simplewell Product innovation features



Platform mobile video

3.1 Relevant technological advancement

Energy saving (energy saving cannot be achieved when doing PV and PR standards)

The refrigeration system of related series of equipment (R404A and R23) adopts electronic expansion valve energy-saving control. The valve opening is automatically adjusted through software to achieve temperature stability. During the low temperature (below 0°C) stabilization process, the heater does not work and the compressor becomes smaller with the refrigeration flow. The power consumption is reduced accordingly to achieve the purpose of energy saving. The energy-saving control effect of relevant equipment has passed 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

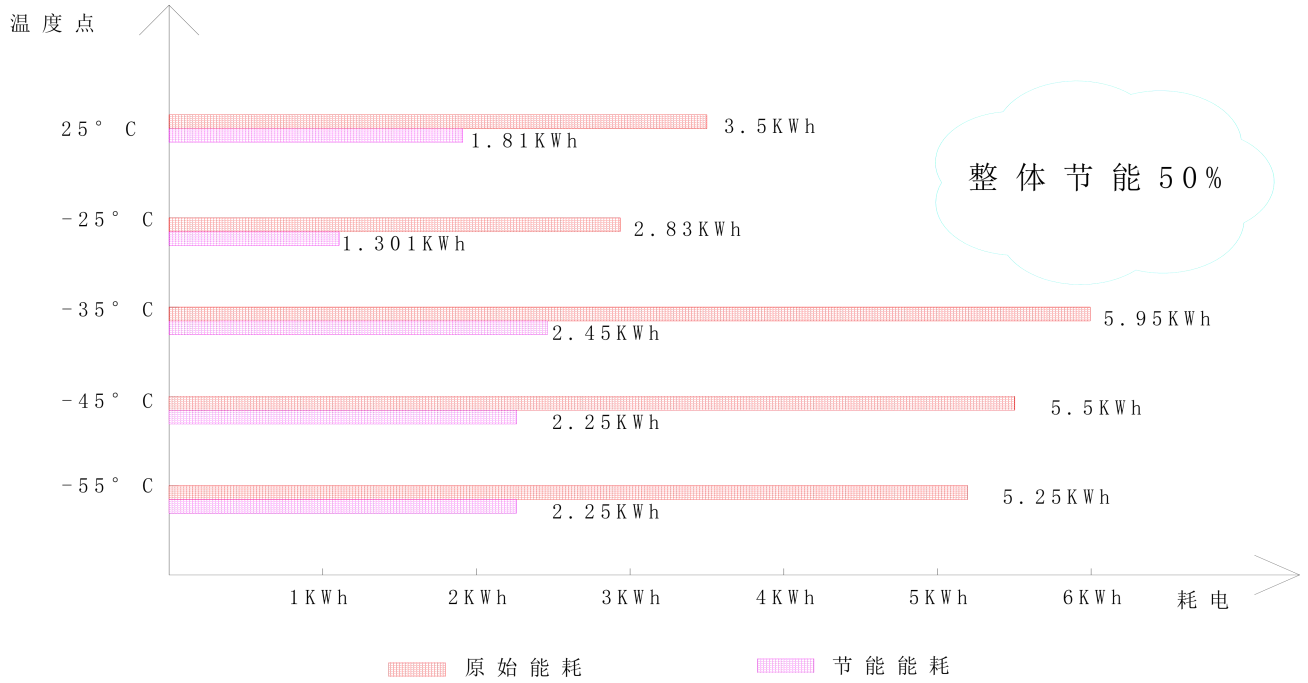
3.1 Relevant technological advancement

Temperature: The refrigeration system can control the output refrigeration capacity with high precision, achieving the goals of high performance and substantial power saving; when the normal and low temperature ranges are stable, the energy saving can reach more than 50% compared with the traditional mode.

STH408-70复叠制冷机组用电量对比				
序号	温度点	开启机组	老机型耗电量	新机型耗电量
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 advancement

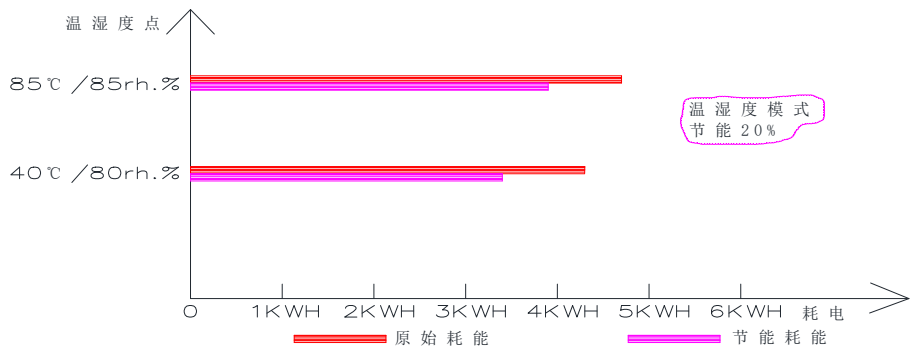
Temperature: The refrigeration system can control the output refrigeration capacity with high precision, achieving the goals of high performance and substantial power saving; when the normal and low temperature ranges are stable, the energy saving can reach more than 50% compared with the traditional mode.



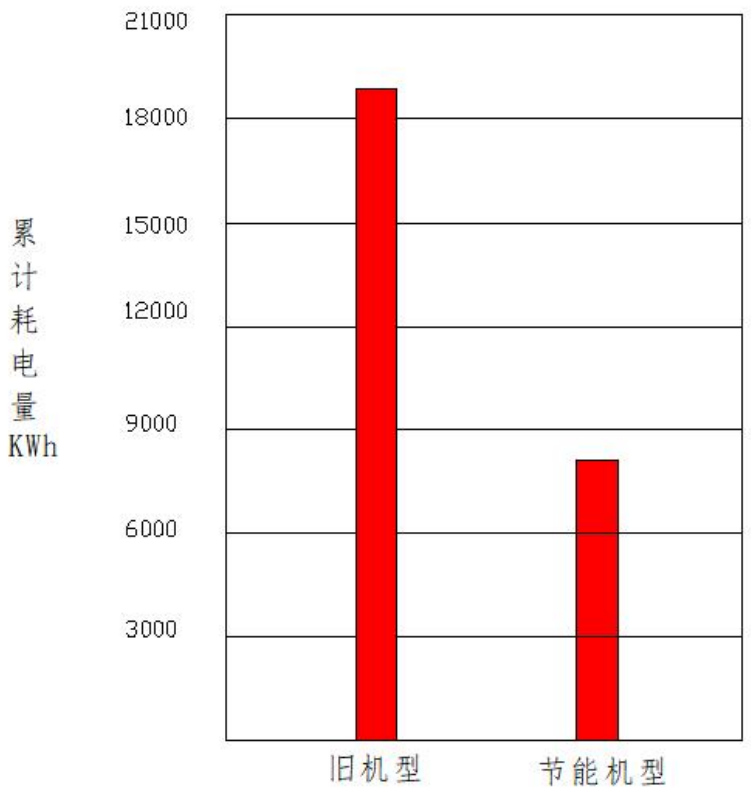
3.1 Relevant technological advancement

Temperature and humidity: The traditional control method is used at the low and high humidity limits (because at the low humidity limit, the humidification output itself is small, and at the high humidity limit, the heating tube output is small); when the temperature and humidity are in other ranges, the evaporator is adjusted according to the dew point corresponding to the set value. The evaporation pressure is used to control the stability of humidity, so that the heating and humidification output power becomes smaller. At the same time, due to the increase in evaporation pressure, the compressor displacement of the refrigeration system decreases, and its operating power becomes correspondingly smaller, achieving the purpose of energy saving.

	STH408-70温湿度能耗对比			
序号	温度点	湿度点	老机型耗电量	新机型耗电量
1	85℃	85rh%	4.7kWh	3.9kWh
2	45℃	80rh%	4.3kWh	3.4kWh



3.1 Relevant technological advancement



以STH408-70机型 控制温度在 -55℃ 无负荷
环境温度：25℃ 50%RH
电费按：300天*12*电量计算

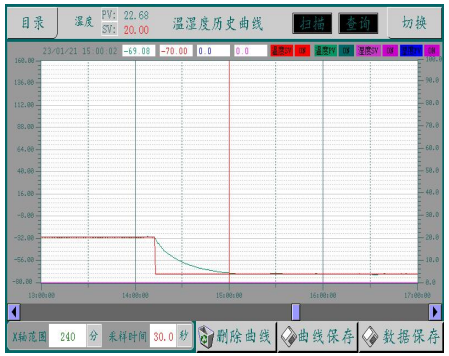
3.1 Relevant technological advancement

Just set the temperature (humidity) conditions, and the automatic control function can reach the set value with maximum power before reaching the set value, and maintain operation with minimum power after reaching the set value. Able to respond quickly to opening and closing doors and changes in heating load during the test to maintain a stable test environment

Related operation screen

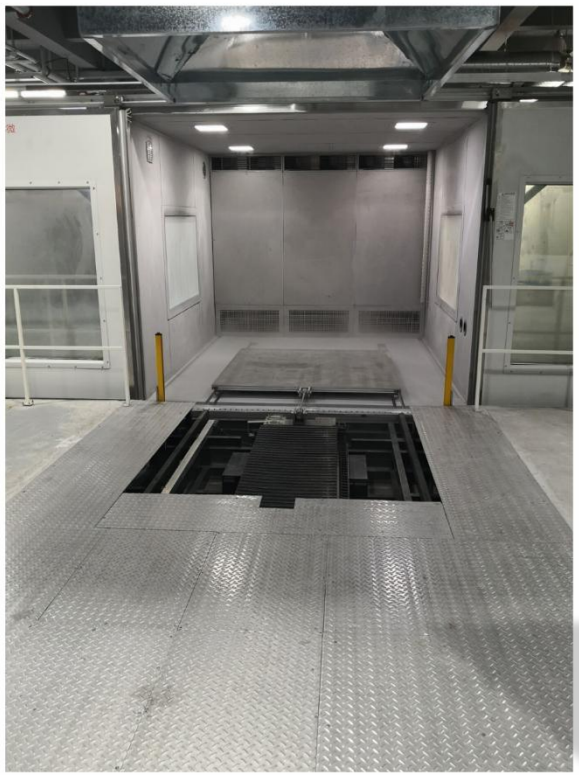
①

②

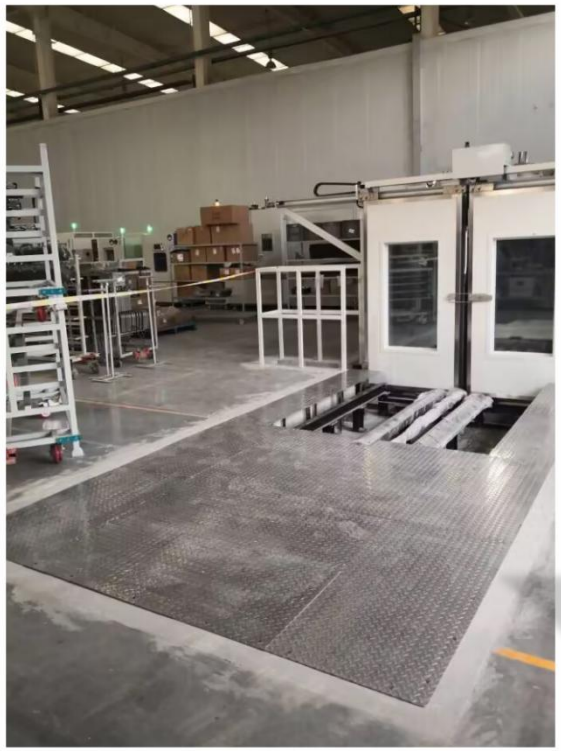


③

4 Some customer cases



4 Some customer cases



4 Some customer cases

Simplewell昇微

Thanks for watching

Full participation

Customer first

Technological innovation

Customer Satisfaction

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