

Simplewell 昇微

**Introduction to high and low
temperature environment
chamber (sunshine simulation
+ rotating hub) test chamber**

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01
Part

Product description

1.1 Scope of application

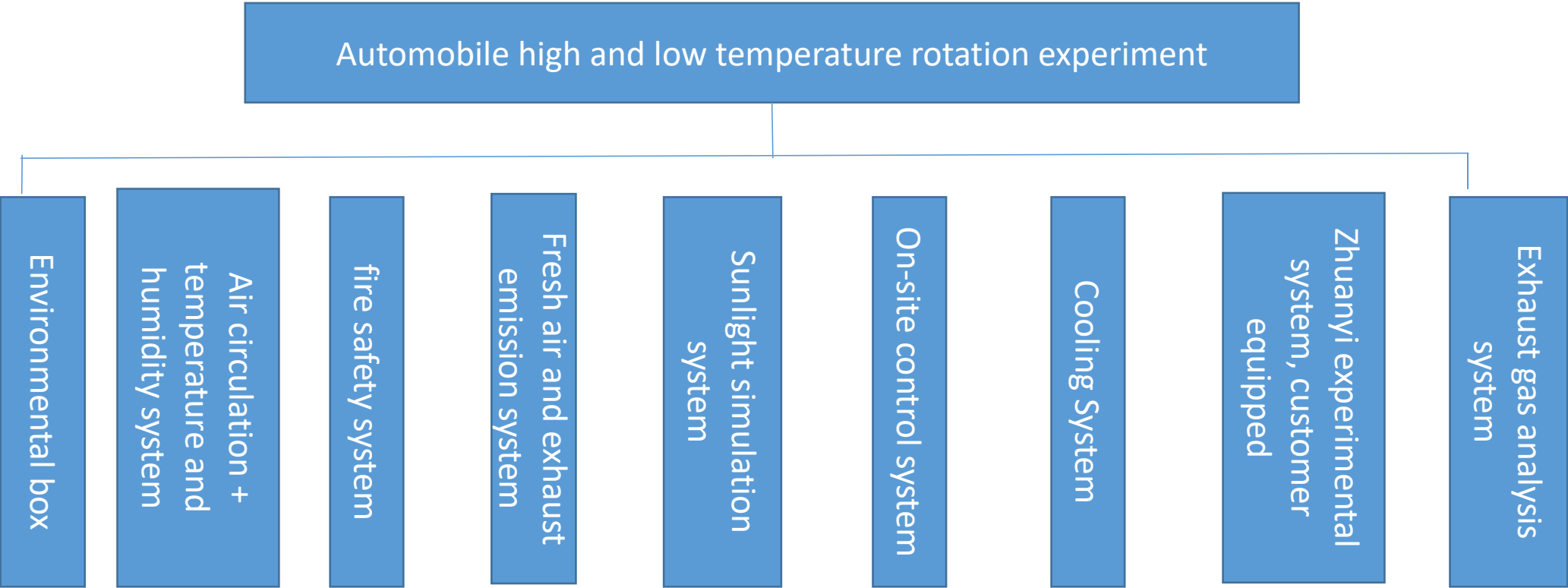
Scope of application of high and low temperature (rotating hub + sunlight simulation) test chamber:

The equipment is suitable for testing the air-conditioning performance of various properties of the entire vehicle, such as: cold start defrost and defog test, vehicle energy consumption rate and driving mileage test, constant speed test Driving fuel consumption test, constant humidity and heat test, etc. large windows on the side and door (1.2*1.4 specific size according to the design). Background curtain can be provided.



1.2 System Components

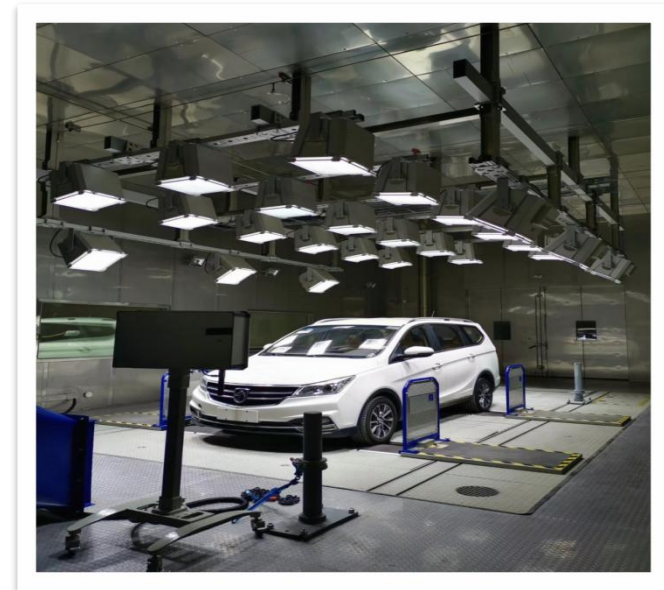
System composition: The walk-in high and low temperature heat and humidity test chamber is mainly composed of the following parts: environmental box, air treatment circulation system, heating system, humidification system, fire safety system, sunlight simulation system, fresh air and tail gas emission system, drum test system (customer configuration) and other components.



1.3 Environmental box

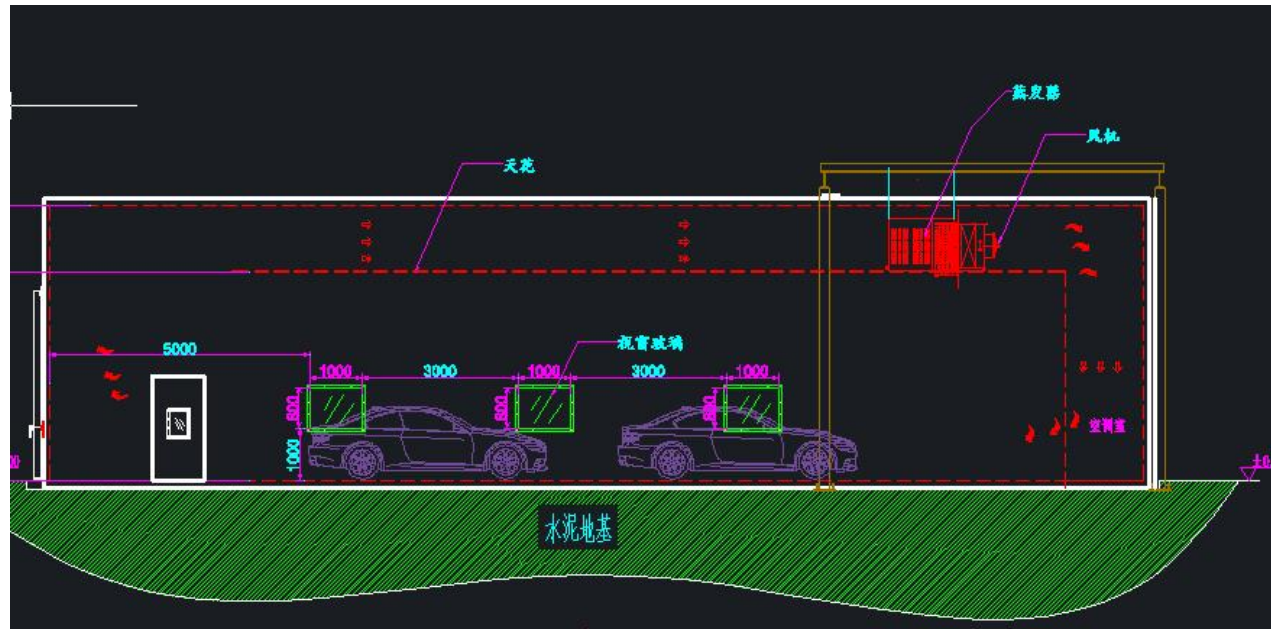
Structural features of the box: The thermal insulation interlayer of the box is made of high-density polyurethane and high-temperature flame retardant. The locking hook of the storage board is external. The inside and outside of the box are sealed with pressure strips. The size is customized according to the actual situation. The internal trapezoidal load-bearing reinforcement ensures the bottom. The stainless steel anti-skid plate is laid, which can bear heavy weight, does not deform, and is fully welded and sealed. The internal drainage system can drain the accumulated water in the chassis dynamometer pit in time.

Door: manual double door, or electric sliding door (optional). The outer wall material of the box and door is made of high-quality steel plate with plastic spray treatment. The middle insulation layer is polyurethane foam + high-temperature rock wool (flame retardant). The door frame is sealed. Use special high and low temperature resistant silicone rubber sealing strips for multiple seals.



1.4 Air circulation + temperature and humidity system

Air circulation system: Built-in air conditioning room, circulating air duct, return air duct and long-axis ventilator, using efficient refrigerator and energy adjustment system, effective heat exchange through efficient ventilator to achieve the purpose of temperature change. Vertical air circulation is used in the working room of the test chamber, and through the adjustment effect of the overhead air supply orifice plate, the temperature uniformity of the test chamber under load is greatly improved.



Schematic diagram of air duct
circulation



Axial Fan

1.4 Air circulation + temperature and humidity system

Test chamber heating system: The heating system realizes temperature control through PID adjustment, PWM and SSR.

Test chamber humidification system (steam + ultrasonic humidification): The humidification system realizes temperature control through PID adjustment, PWM and SSR. Equipped with ultrasonic humidifier to assist humidification, low energy consumption and high efficiency.

Pure water device: The humidifier uses a pure water treatment device (external) to facilitate water source access and waste water discharge. Equipped with float and liquid level monitoring.



Pure water machine +
water storage bucket



Humidification tube



Heating pipe



Ultrasonic humidifier
(optional)

1.5 Air duct system

Fresh air system: The air is taken from the outside and goes through refrigeration dehumidification and rotary dehumidification. The dew point reaches below -40 degrees, and the air volume reaches 1,000 cubic meters per hour.

Exhaust gas emission system: Use frequency conversion control and the fresh air system to form a closed loop to ensure that the slight positive pressure in the cabin is equipped with the exhaust gas emission hose and the exhaust gas emission interface, so that fresh air does not enter the environmental chamber before the dew point is reached.



Emissions



Exhaust exhaust fan



Dehumidification
control screen



Rotary dehumidifier
(Swedish imported brand)

1.6 Fire safety system

Fire safety system:

1. Smoke alarm: connected to the control system. After the alarm, the heating, humidification and wind circulation system will be stopped. Installed in various areas outside the test cabin (cannot be installed in high temperature, high temperature and high humidity environments).
2. Harmful gas alarm: Installed outside the cabin and connected to the control system. The gas alarm sensor detects the concentration of harmful gases in the air in the sampling pipe in high temperature, high temperature and high humidity environments. There are audible and visual alarms, and the control system also has warning prompts. The user can manually choose to stop the test. At the same time, high-pressure gas water mist and gas fire extinguishing equipment are optional.



Hazardous gas (CO, hydrocarbon) alarm



Flame detector (optional)



Smoke detector

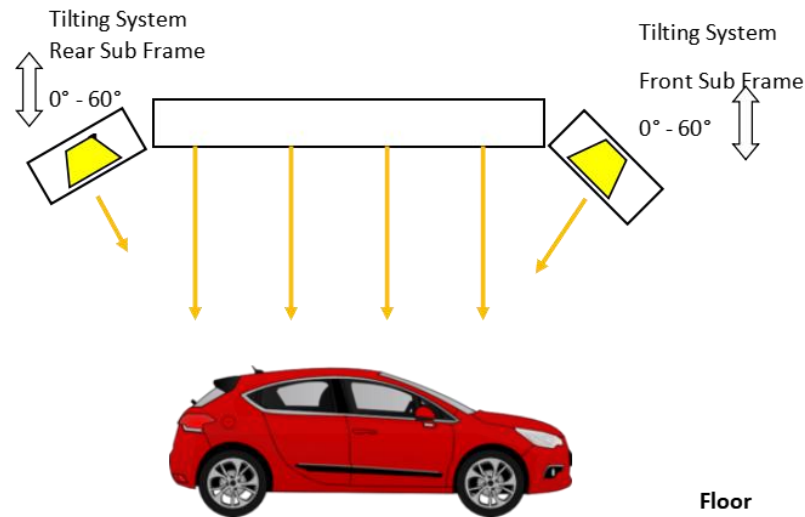
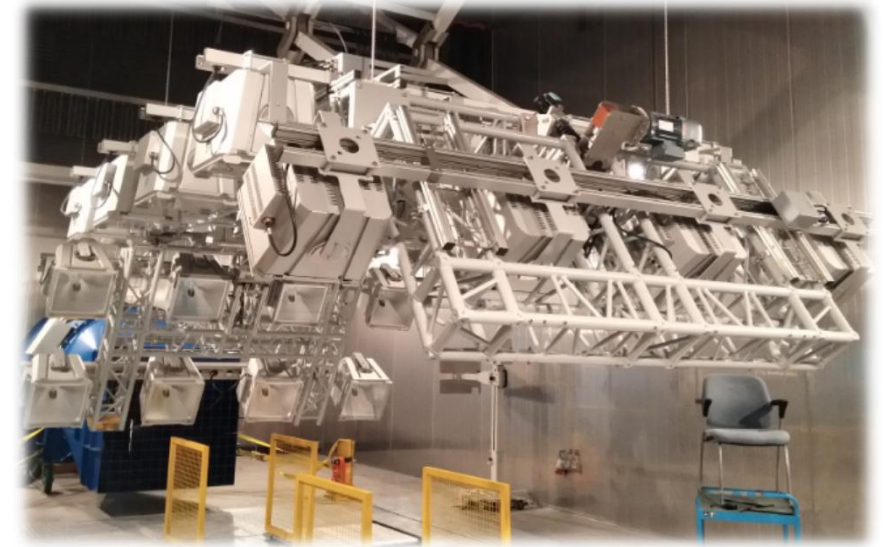


Flame detector (optional)

1.7 Full spectrum simulation system (optional)

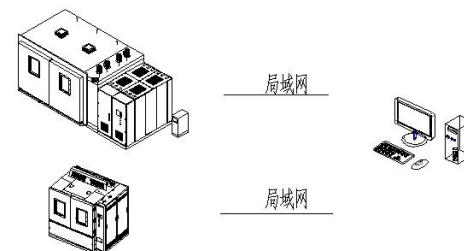
Full spectrum simulation system features:

1. Choose imported or domestic full-spectrum radiation system lamps
2. The radiation range is not less than $6\text{m} \times 2.5\text{m}$, and the light intensity is adjustable from $500 \sim 1200\text{W/m}^2$.
3. The light group can be adjusted in height, and the distance from the ground when raised to the highest state is $\geq 3.5\text{m}$. The front and rear light holders can be adjusted at an angle of $0^\circ - 60^\circ$.



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.



1.9 Control 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.



Distribution
Cabinet



Operation room



Cabinet control panel
(emergency stop switch, over-
temperature protection,
communication interface, etc.)



Main power switch with leakage
protection (Schneider)



Faulty three-color light

1.10 Circuit accessories

Circuit accessories



Electronic humidity sensor
(Imported from
Switzerland/Finland)



Solid state
relay (Jiale)



Electronic temperature sensor
(Imported from
Switzerland/Finland)



Contactor
(Schneider)



Overload protector
(Schneider)



PLC controller (Mitsubishi)



Flame retardant wire



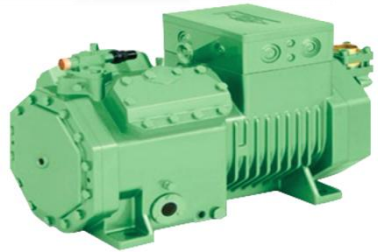
Fuseless switch
(Schneider)

1.11 Refrigeration system design

Main refrigeration parts configuration



2. Emerson high-efficiency oil separator is used to 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.



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



3. Combined shell and tube condenser



Cascade screw compressor (BITZER) refrigeration unit

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

1.12 Circulating waterway (optional)

Circulating waterway accessories



water tower



water pump



ball valve



Y type filter



ball valve



One-way valve

pressure
gaugewater
temperature
gaugeWater 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 Structural accessories

other optional



PVC waterproof and flame
retardant junction box



Lead test hole
 $\phi 100$, $\phi 150$ (optional)



HD camera remote monitoring
(optional)



Pressure calibrator (optional)



Air curtain machine
(optional)

1.15 Equipment 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.



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.

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.

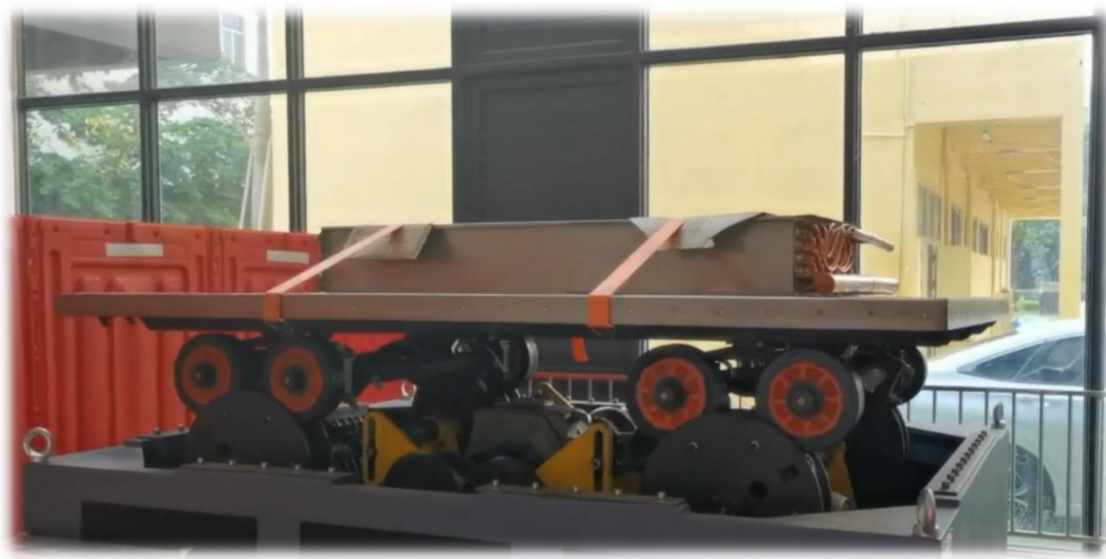


4、 Noise control: The condenser is equipped with a German MAR low speed and high air volume condensing fan, and a wave type sound-absorbing sponge is installed around the refrigeration unit to achieve a lower noise effect.



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

1.14 Equipment manufacturing process and requirements

浙江三晶光电科技股份有限公司										浙江三晶光电科技股份有限公司	
三晶光电科技股份有限公司										三晶光电科技股份有限公司	
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2	人工费	2.1	人工费	2.1	人工费	2.1	人工费
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5	利润	5.1	利润	5.1	利润	5.1	利润
6	税金	6.1	税金	6.1	税金	6.1	税金
7	其他	7.1	其他	7.1	其他	7.1	其他
8	合计	8.1	合计	8.1	合计	8.1	合计

[illegible]

中国医药

Approved

病人知情同意书及病历记录表

姓名: 王德明 性别: 男 年龄: 45 职业: 教师

日期: 2008.10.10

内容	是否知情	是否同意	备注
1. 医生诊断病情: "糖尿病、高血压、糖尿病并发症"	2-0	2-0	
2. 详细解释病情、治疗目的及治疗方案, 告知患者病情严重性, 告知患者治疗过程中可能出现的不适, 告知患者治疗过程中可能出现的不适, 告知患者治疗过程中可能出现的不适	2-0	2-0	
3. 告知患者治疗过程中可能出现的不适, 告知患者治疗过程中可能出现的不适, 告知患者治疗过程中可能出现的不适	2-0	2-0	
4. 告知患者治疗过程中可能出现的不适, 告知患者治疗过程中可能出现的不适, 告知患者治疗过程中可能出现的不适	2-0	2-0	
5. 告知患者治疗过程中可能出现的不适, 告知患者治疗过程中可能出现的不适, 告知患者治疗过程中可能出现的不适	2-0	2-0	
6. 告知患者治疗过程中可能出现的不适, 告知患者治疗过程中可能出现的不适, 告知患者治疗过程中可能出现的不适	2-0	2-0	
7. 告知患者治疗过程中可能出现的不适, 告知患者治疗过程中可能出现的不适, 告知患者治疗过程中可能出现的不适	2-0	2-0	
8. 告知患者治疗过程中可能出现的不适, 告知患者治疗过程中可能出现的不适, 告知患者治疗过程中可能出现的不适	2-0	2-0	
9. 告知患者治疗过程中可能出现的不适, 告知患者治疗过程中可能出现的不适, 告知患者治疗过程中可能出现的不适	2-0	2-0	
10. 告知患者治疗过程中可能出现的不适, 告知患者治疗过程中可能出现的不适, 告知患者治疗过程中可能出现的不适	2-0	2-0	

姓名		学号		日期		地点	
姓名	王小明	学号	123456	日期	2023.10.27	地点	实验室
实验名称	Python 列表操作与字典应用						
实验目的	掌握 Python 列表的增删改查操作，以及字典的遍历与操作。						
实验原理	Python 列表是可变的有序集合，支持多种操作。字典则是无序的键值对集合。						
实验步骤	<pre> 1. 列表操作 list1 = [1, 2, 3, 4, 5] list1.append(6) # 添加元素 list1.remove(3) # 删除元素 list1[2] = 10 # 修改元素 print(list1) # 输出: [1, 2, 10, 4, 5, 6] 2. 字典操作 dict1 = {'name': '小明', 'age': 20} dict1['gender'] = '男' # 添加键值对 print(dict1) # 输出: {'name': '小明', 'age': 20, 'gender': '男'} </pre>						
实验结果	<pre> 1. 列表操作结果: [1, 2, 10, 4, 5, 6] 2. 字典操作结果: {'name': '小明', 'age': 20, 'gender': '男'} </pre>						
实验结论	通过本次实验，成功掌握了 Python 列表和字典的基本操作，验证了理论知识。						
实验心得	在操作过程中，深刻体会到了 Python 列表的灵活性和字典的便捷性，对数据结构的理解更加深入。						

答题时间		姓名: 学号: 分数: 日期: 2014.11.11	
单项选择题		单项选择题答案速记表	
1. 下列哪项不是... (text)		1. ☒ A	1. ☒ A
2. 下列哪项不是... (text)		2. ☒ B	2. ☒ B
3. 下列哪项不是... (text)		3. ☒ C	3. ☒ C
4. 下列哪项不是... (text)		4. ☒ D	4. ☒ D
5. 下列哪项不是... (text)		5. ☒ E	5. ☒ E
6. 下列哪项不是... (text)		6. ☒ F	6. ☒ F
7. 下列哪项不是... (text)		7. ☒ G	7. ☒ G
8. 下列哪项不是... (text)		8. ☒ H	8. ☒ H
9. 下列哪项不是... (text)		9. ☒ I	9. ☒ I
10. 下列哪项不是... (text)		10. ☒ J	10. ☒ J
11. 下列哪项不是... (text)		11. ☒ K	11. ☒ K
12. 下列哪项不是... (text)		12. ☒ L	12. ☒ L
13. 下列哪项不是... (text)		13. ☒ M	13. ☒ M
14. 下列哪项不是... (text)		14. ☒ N	14. ☒ N
15. 下列哪项不是... (text)		15. ☒ O	15. ☒ O
16. 下列哪项不是... (text)		16. ☒ P	16. ☒ P
17. 下列哪项不是... (text)		17. ☒ Q	17. ☒ Q
18. 下列哪项不是... (text)		18. ☒ R	18. ☒ R
19. 下列哪项不是... (text)		19. ☒ S	19. ☒ S
20. 下列哪项不是... (text)		20. ☒ T	20. ☒ T
21. 下列哪项不是... (text)		21. ☒ U	21. ☒ U
22. 下列哪项不是... (text)		22. ☒ V	22. ☒ V
23. 下列哪项不是... (text)		23. ☒ W	23. ☒ W
24. 下列哪项不是... (text)		24. ☒ X	24. ☒ X
25. 下列哪项不是... (text)		25. ☒ Y	25. ☒ Y
26. 下列哪项不是... (text)		26. ☒ Z	26. ☒ Z
27. 下列哪项不是... (text)		27. ☒ AA	27. ☒ AA
28. 下列哪项不是... (text)		28. ☒ AB	28. ☒ AB
29. 下列哪项不是... (text)		29. ☒ AC	29. ☒ AC
30. 下列哪项不是... (text)		30. ☒ AD	30. ☒ AD
31. 下列哪项不是... (text)		31. ☒ AE	31. ☒ AE
32. 下列哪项不是... (text)		32. ☒ AF	32. ☒ AF
33. 下列哪项不是... (text)		33. ☒ AG	33. ☒ AG
34. 下列哪项不是... (text)		34. ☒ AH	34. ☒ AH
35. 下列哪项不是... (text)		35. ☒ AI	35. ☒ AI
36. 下列哪项不是... (text)		36. ☒ AJ	36. ☒ AJ
37. 下列哪项不是... (text)		37. ☒ AK	37. ☒ AK
38. 下列哪项不是... (text)		38. ☒ AL	38. ☒ AL
39. 下列哪项不是... (text)		39. ☒ AM	39. ☒ AM
40. 下列哪项不是... (text)		40. ☒ AN	40. ☒ AN
41. 下列哪项不是... (text)		41. ☒ AO	41. ☒ AO
42. 下列哪项不是... (text)		42. ☒ AP	42. ☒ AP
43. 下列哪项不是... (text)		43. ☒ AQ	43. ☒ AQ
44. 下列哪项不是... (text)		44. ☒ AR	44. ☒ AR
45. 下列哪项不是... (text)		45. ☒ AS	45. ☒ AS
46. 下列哪项不是... (text)		46. ☒ AT	46. ☒ AT
47. 下列哪项不是... (text)		47. ☒ AU	47. ☒ AU
48. 下列哪项不是... (text)		48. ☒ AV	48. ☒ AV
49. 下列哪项不是... (text)		49. ☒ AW	49. ☒ AW
50. 下列哪项不是... (text)		50. ☒ AX	50. ☒ AX
51. 下列哪项不是... (text)		51. ☒ AY	51. ☒ AY
52. 下列哪项不是... (text)		52. ☒ AZ	52. ☒ AZ
53. 下列哪项不是... (text)		53. ☒ BA	53. ☒ BA
54. 下列哪项不是... (text)		54. ☒ BB	54. ☒ BB
5			

		姓名: _____ 学号: _____	
simplewe		步入军魂确认表	
第一选读教材: _____		第二选读教材: _____	
第三选读教材: _____		第四选读教材: _____	
第五选读教材: _____		第六选读教材: _____	
第七选读教材: _____		第八选读教材: _____	
第九选读教材: _____		第十选读教材: _____	
第十一选读教材: _____		第十二选读教材: _____	
第十三选读教材: _____		第十四选读教材: _____	
第十五选读教材: _____		第十六选读教材: _____	
第十七选读教材: _____		第十八选读教材: _____	
第十九选读教材: _____		第二十选读教材: _____	
第二十一选读教材: _____		第二十二选读教材: _____	
第二十三选读教材: _____		第二十四选读教材: _____	
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第四十五选读教材: _____		第四十六选读教材: _____	
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第四十九选读教材: _____		第五十选读教材: _____	
第五十一选读教材: _____		第五十二选读教材: _____	
第五十三选读教材: _____		第五十四选读教材: _____	
第五十五选读教材: _____		第五十六选读教材: _____	
第五十七选读教材: _____		第五十八选读教材: _____	
第五十九选读教材: _____		第六十选读教材: _____	
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第六十三选读教材: _____		第六十四选读教材: _____	
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第六十七选读教材: _____		第六十八选读教材: _____	
第六十九选读教材: _____		第七十选读教材: _____	
第七十一选读教材: _____		第七十二选读教材: _____	
第七十三选读教材: _____		第七十四选读教材: _____	
第七十五选读教材: _____		第七十六选读教材: _____	
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第八十三选读教材: _____		第八十四选读教材: _____	
第八十五选读教材: _____		第八十六选读教材: _____	
第八十七选读教材: _____		第八十八选读教材: _____	
第八十九选读教材: _____		第九十选读教材: _____	
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第九十五选读教材: _____		第九十六选读教材: _____	
第九十七选读教材: _____		第九十八选读教材: _____	
第九十九选读教材: _____		第一百选读教材: _____	

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
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: $40 \pm 2 \text{ kg/m}^3$ 。	40.66 kg/m^3	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; $\geq 160 \text{ kPa}$ 。	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; $\leq 0.024 \text{ W/m} \cdot \text{K}$ 。	0.024 $\text{W/m} \cdot \text{K}$	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 0.1 MPa ; $> 0.1 \text{ MPa}$ 。	0.143 MPa	合格
5	抗弯承载能力	简支夹芯板在两支点的跨度范围内, 承受 0.5 kN/m^2 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); $\leq 8.80 \text{ mm}$; 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蓝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

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 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。 宽度 长度公差: $\pm 3 \text{ mm}$; 宽度公差: $\pm 2 \text{ mm}$; 厚度 厚度公差: $\pm 1 \text{ mm}$; 对角线 对角线公差: $\pm 4 \text{ mm}$ 。	1 mm 0 mm 0 mm 1 mm	合格 合格 合格 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 黄白色泡沫垫块, 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	合格
	20S 内滴落物现象		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: 夏利英 审核: 陈新佳 审批: 吴昊
(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

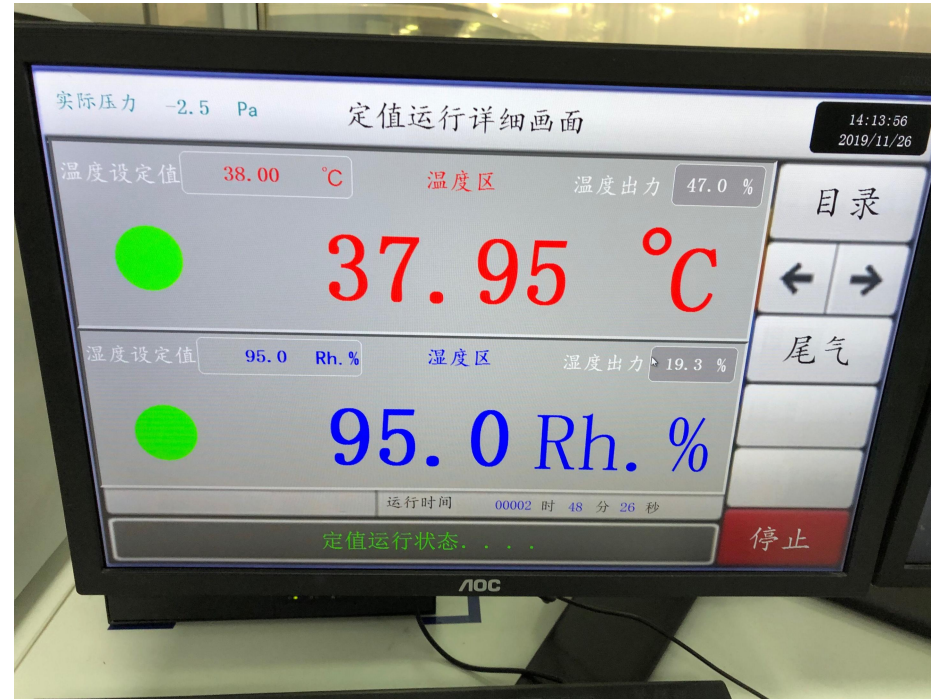
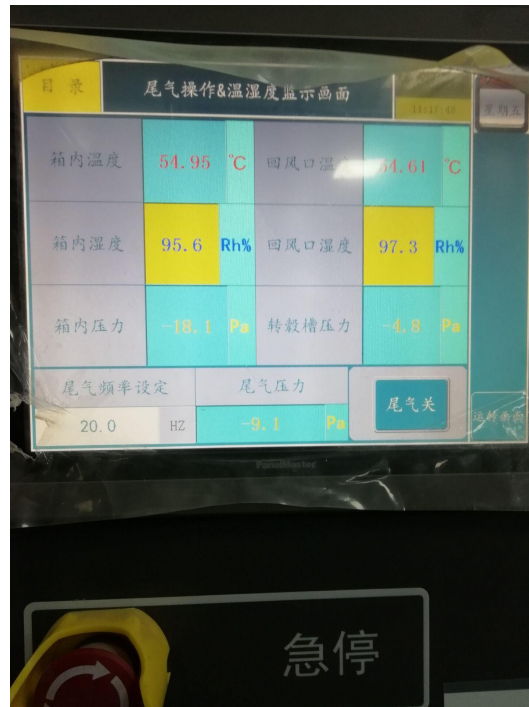


10、 Flame retardant wires are used, and the figure shows the flame retardant certification certificate of the wires.

1.16 Products meet standards

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. DIN75220 汽车构件在阳光模拟装置中的老化
13. GB 11555汽车风窗玻璃除雾系统的性能要求及试验方法
14. GB 11556汽车风窗玻璃除雾系统的性能要求及试验方法
15. GB11085汽车风窗玻璃刮水器的性能要求及试验方法
16. GB/T12535汽车启动性能试验方法
17. GB/12782汽车采暖性能试验方法
18. QC/T449 《保温汽车，冷藏汽车性能试验方法》
19. ES92101-00乘用车前照灯技术要求大灯湿气试验

2.1 Simplewell Product innovation features



2.1 Product innovation features

High temperature and humidity uniformity and stable performance.

GRGTEST

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:  第 1 页 共 9 页
Certificate No. Page of

委托方
Client

委托方地址
Address

仪器名称
Description
整车耐候性试验舱 (温湿度部分)

型号规格
Model/Type
ATH-SOR-761D-45

制造商
Manufacturer
东莞市升微机电设备科技有限公司

出厂编号
Serial No.
SW20171207

校准日期
Date of Calibration
2019年05月10日
Y M D

样品接收日期
Date of Receipt
2019年05月10日
Y M D

批准人
Approved Signatory
林金江(主任)

审核
Inspected by
刘艳

校准
Calibrated by
韩莹

总部地址: 广东省广州市黄埔大道西平云路163号 (分场详细地址见公司网站)
Headquarters Address: No.163 Pingyun Rd, West of Huangpu Ave, Guangzhou, Guangdong, China (Each Address Can be found on The Company's Website)

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扫一扫验真伪
(Stamp)

GRGTEST

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

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(一): 温度测量
1 测量点布置图 (Measurement point graph):

上层
.1 .2
.5 .3
门

中层
.6
.9 .15 .7
.8
门

下层
.10 .11
.14
.13 .12
门

2 温度测量 (Temp. measurement):

设定值 (Setting): -40.00 °C
指示值 (Indicated): -40.00 °C

测量点 (Measuring point)	最大值 (Max) (°C)	最小值 (Min) (°C)
1	-38.64	-38.78
2	-38.73	-39.04
3	-38.55	-38.64
4	-38.69	-38.79
5	-38.69	-38.88
6	-38.70	-38.81
7	-38.14	-38.33
8	-38.78	-38.88
9	-38.52	-38.60
10	-38.36	-38.56
11	-38.61	-38.95
12	-38.57	-38.75
13	-38.64	-38.98
14	-38.51	-38.65
15	-38.58	-38.77

温度偏差 (Temp deviation): -1.32 °C ±2.00 °C
温度波动度 (Temp fluctuation): ±0.10 °C ±0.50 °C
温度均匀度 (Temp uniformity): 0.68 °C 2.00 °C

允许误差 (MPE) ±2.00 °C
结论(PVF) P

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校准结果
RESULTS OF CALIBRATION

证书编号: J201904265609 A-0001 第 4 页 共 9 页
Certificate No. Page of

(二): 温度测量
1 测量点布置图 (Measurement point graph):

上层
.1 .2
.5 .3
门

中层
.6
.9 .15 .7
.8
门

下层
.10 .11
.14
.13 .12
门

2 温度测量 (Temp. measurement):

设定值 (Setting): -30.00 °C
指示值 (Indicated): -30.00 °C

测量点 (Measuring point)	最大值 (Max) (°C)	最小值 (Min) (°C)
1	-28.95	-29.06
2	-29.32	-29.42
3	-28.71	-28.78
4	-28.94	-28.99
5	-28.61	-28.72
6	-29.14	-29.28
7	-28.92	-29.04
8	-29.07	-29.11
9	-28.89	-28.95
10	-28.83	-28.91
11	-29.15	-29.33
12	-28.97	-29.06
13	-29.37	-29.46
14	-28.71	-28.81
15	-28.95	-29.04

温度偏差 (Temp deviation): -1.00 °C ±2.00 °C
温度波动度 (Temp fluctuation): ±0.04 °C ±0.50 °C
温度均匀度 (Temp uniformity): 0.76 °C 2.00 °C

允许误差 (MPE) ±2.00 °C
结论(PVF) P

3.1 Product advantages

Product advantages:

1. The self-developed controller is compatible with hub linkage and lighting control.
2. Linked to the rotating hub speed control and linked to the rotating hub anti-freeze signal.
3. 20°C to 40°C humidity 80% can automatically balance the heat generated by sunlight simulation, and the temperature and humidity will not fluctuate.
4. Meets the 23°C/45% exhaust emission test sports car curve, and meets the low temperature -30°80 code sports car speed requirements.
5. Adopt ceiling air duct design, high temperature and humidity uniformity, and stable static/dynamic performance of the rotating hub.
6. When using a third-party lighting system, the control system has an interlocking linkage function to protect the lamp from damage due to poor heat dissipation.

3.2 Relevant technological advancement

Energy saving

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.



Product Energy Saving Certification Report

报告编号: 20210103W00644X

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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

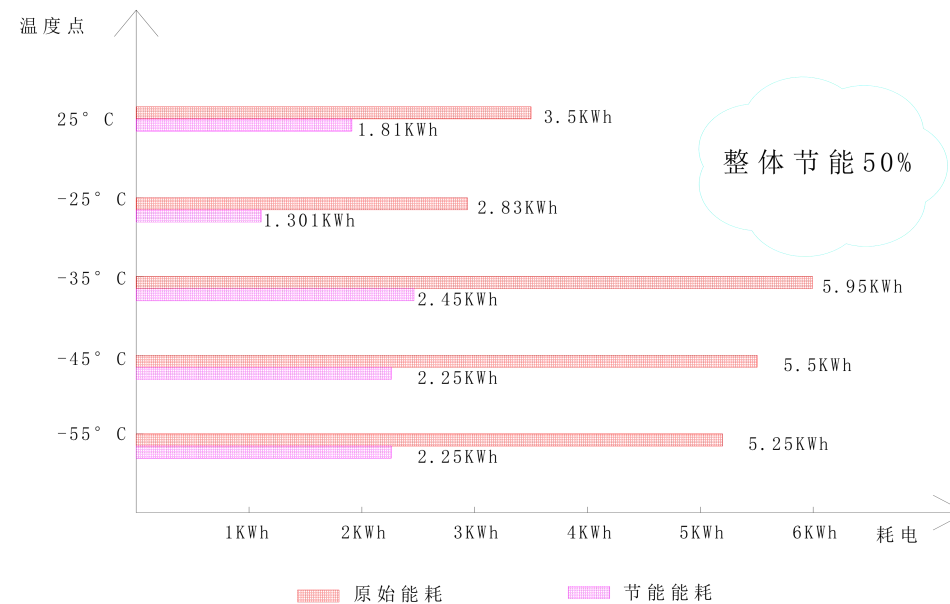
3.2 Relevant technological advancement

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.

STH408-70Comparison of power consumption of cascade refrigeration units				
serial number	temperature point	Start the unit	Power consumption of old models	Power consumption of new models
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

3.2 Relevant technological advancement

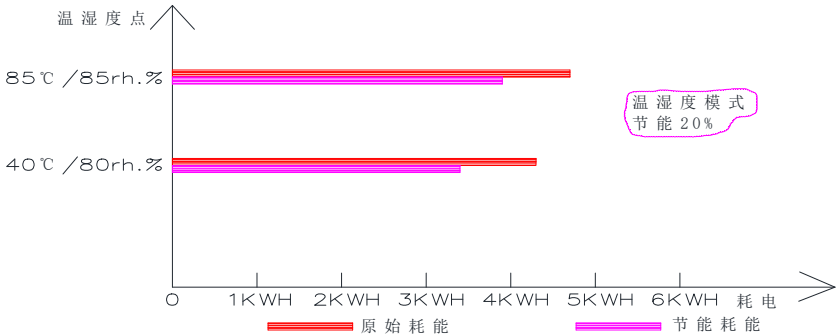
Temperature: The refrigeration system can control the output refrigeration capacity with high precision, achieving the goal of high performance and substantial power saving; when the normal and low temperature ranges are stable, the energy saving can reach more than 50% compared with the traditional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



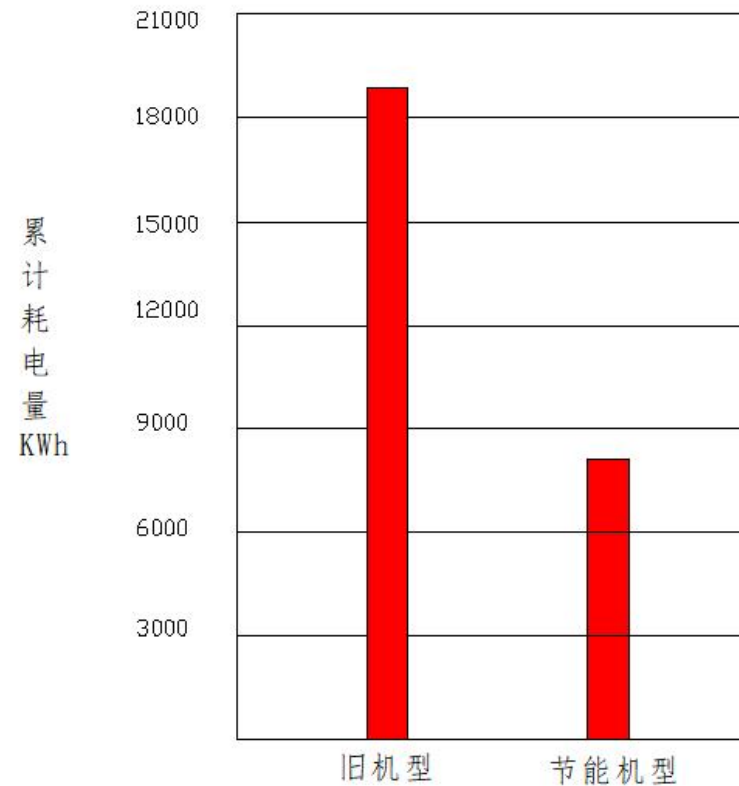
3.2 Relevant technological advancement

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.

	STH408-70Temperature and humidity energy consumption comparison			
serial number	temperature point	humidity point	Power consumption of old models	Power consumption of new models
1	85℃	85rh%	4.7kWh	3.9kWh
2	45℃	80rh%	4.3kWh	3.4kWh



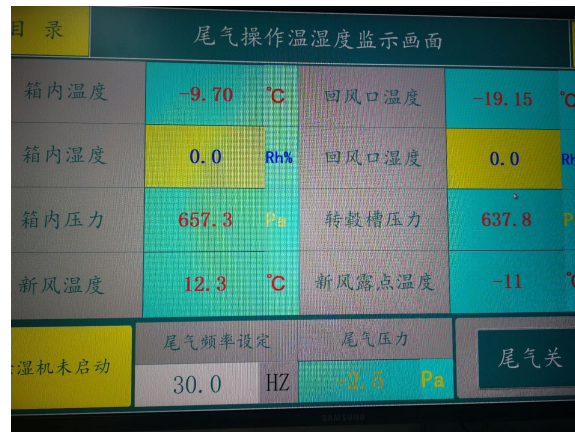
3.2 Relevant technological advancement



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

3.2 Product advantages

Special software can be used to use computers for centralized control and management. Data such as temperature, humidity, pressure, light temperature, light irradiance, etc. can be used to save the collected data for historical data query and historical data curve drawing at any time. Data is stored for more than 5 years. It can control xenon lamp lighting, exhaust emission system, environmental cabin temperature and humidity control system, etc.



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4 Some customer cases

Quality Inspection Co., Ltd.



Thanks for watching

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