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About ENVAN

ENVAN is a high-tech enterprise specialist in producing, environmental testing chamber and performance testing chamber. It's started in 1994 with the name Shanghai An'quan Environmental Instrument Institute before it changed to Shanghai ENVAN Testing Equipment Co., Ltd. in 2008.

ENVAN provide high-quality products and services to customers around the world. In addition, we provide total solutions for environmental testing through various products and services, all from the customer's perspective.

For several years, our company consistently provide products and services for the following industries such as electrician, electron, semiconductor, advanced materials, measurement testing ,instruments and meters, electrical appliances , communication, medical , office equipment ,automobile ,research institute , universities , tobacco , military , aerospace , National defense and so on .



About ENVAN

ENVAN continuously growing in recent years and develop the market in Japan, Iran, India, Spain, Switzerland, Russia and other countries.



About ENVAN

Corporate culture
Mission
Vision
Core values



Our Mission

Provide quality products ,
offer efficient
service ,exceed customer
expectations and create
greater value

Our Vision

Devote to be the leader
of environmental test
equipment and
performance test
equipment

Our Core Values

Assistant client for
success, man-oriented,
innovation and
profession, integrity and
responsibility

About ENVAN

As a result of recent years continual development, we have built up a set of increasingly comprehensive quality management system according to ISO9001 and ISO14001 to provide products and service with high performance, high quality and high efficiency for customers.



High-tech industry enterprise certificate issued by Shanghai science commission.

The transformation projects of new and high-tech achievement for walk-in chamber



About ENVAN

Software Copyrights

- Rain simulation test chamber
- Temperature test chamber
- Temperature (humidity)test chamber
- Dust test chamber
- Thermal shock test chamber
- Salt spray corrosion test chamber
- Safety belt dust test chamber
- Multi-function climate simulation test chamber
- Temperature and humidity control software
- High pressure steam injection test chamber
- Durability test for vehicle water pump
- Vehicle water valve performance test bench



About ENVAN

For the past years, ENVAN focused on the continuous improvement of technical content of the products.

Up to now we have won some of patent certificates by National patent office, such as air cycle improvement, daylight simulation, dust recovery, pipe leakage detection and etc.



Products



ENVAN





Catalog



Temp (humidity) test chamber



Lithium battery test chamber



Thermal shock test chamber



Fast alternation test chamber



Extremely low temp test chamber



**Temp/humidity/vibration
synthetical test chamber**



Walk-in test chamber



High-temperature test chamber



Dust test chamber



Airbag deployment chamber



Tunneled oven



**Multifunctional Marine simulation
laboratory**



**Vehicle Sunlight simulation test
chamber**



Other customized test chamber



Temperature (humidity) test chamber



- With USB port, test data can be exported;
- With LAN communication interface, connected with the computer
- Chinese and English can switch interface
- Automatic adjustment of heating, humidification and refrigeration, low energy consumption



Temperature (humidity) test chamber



Lithium battery test chamber



1. Firefighting
2. Pressure release fitting
3. Smoke sensor
4. Suction exhaust valve
5. Gate lock
6. Combustible sensor
7. Optional: CO sensor, HC sensor, HF sensor, CO2 gas sensor and so on



Lithium battery test chamber



Firefighting

Pressure release fitting

Gate lock

Thermal shock test chamber

Characteristics

Option: The basket of Tow-box and Three-box

Option: The basket move up and down /left and right



Three box, basket can move between the three boxes for the temperature shock also be used as three boxes, independent temperature and humidity test



Tow box shock test chamber

Three box shock test chamber



Fast alternation test chamber

Heating rate	Average 5°C/min~20°C/min Linear 5°C/min~20°C/min
Cooling rate	Average 5°C/min~20°C/min Linear 5°C/min~20°C/min
Capacity	200L~2000L



Extremely low temp test chamber



Adopt mechanical refrigeration to realize low temperature control from -80°C to -120°C.

Customized product



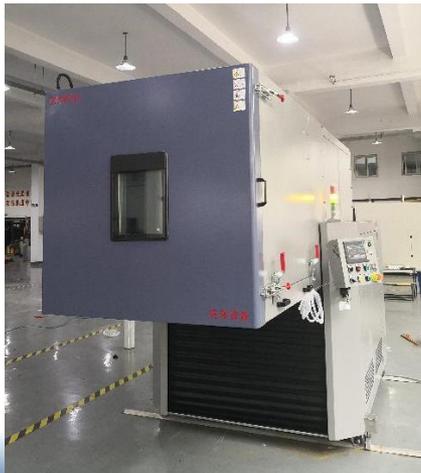
Temperature range	-80°C	-90°C	-100°C	-110°C	-120°C
Temperature fluctuation	$\leq \pm 0.5^{\circ}\text{C}$				
Temperature uniformity	$\leq 2.0^{\circ}\text{C}$				
Temperature deviation	$\leq \pm 2.0^{\circ}\text{C}$				
Cooling time	Design according to requirements				

Temp/humidity/vibration synthetical test chamber

- Moving mode can choose box moving or shaking table

The direction of vibration can be chose as vertical or horizontal

- Can be used as a single temperature(humidity)chamber or vibration table



Walk-in test chamber

Field assembly method, test space and temperature and humidity range, can be customized according to customer test needs.



High-temperature test chamber

- Temperature range: RT+20~ +100°C (+200°C or +300°C)



Dust test chamber

Characteristics

- Noise-free design ensures the working environment quiet.
- Automatic scraping powder loop device ,greatly improves the efficiency of dust recycling.
- Device has a timer function, and blowing dust cycle and vibration cycle can be adjusted.
- It can be specially used for dustproof test of safety belt and airbag.
- Negative pressure test system can be choose.



Airbag deployment chamber

- With remote control/external door opening device ,the linkage of the test equipment can be realized.
- It can realize the automatic ignition and detonation of the airbag after opening the door.
- Open the cylinder is equipped with low pressure locking device ,to prevent door open in case interruption of gas or power supply.
- Equipped with human detection device and electromagnetic door lock ,to make sure no person near the chamber when the door is opening.



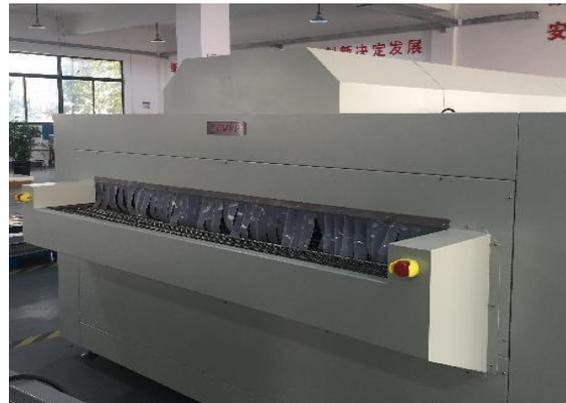
Tunneled oven



Preheating oven or heating oven or cooling oven for choose.

Cooling method: Fan cooled or water cooled.

Working rhythm: customized design according to requirement.



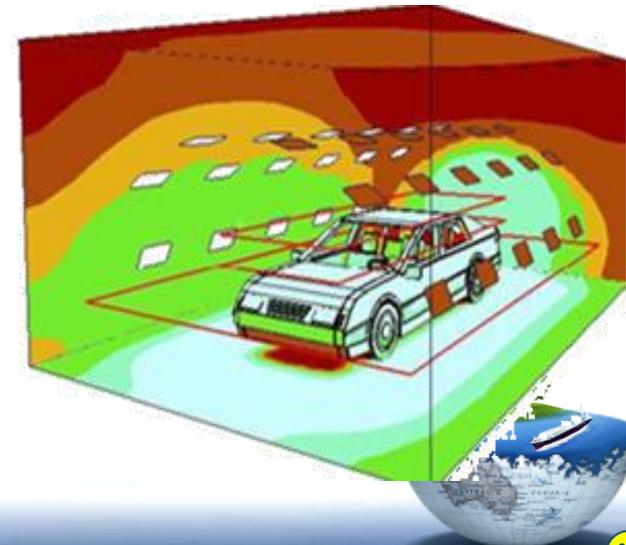
Complex salt spray corrosion test chamber

- The main functions of this equipment include salt spray, high temperature, low temperature, carbon dioxide, salt rain, humidity, uv lamp and other climate test environment simulation.



Vehicle Sunlight simulation test chamber

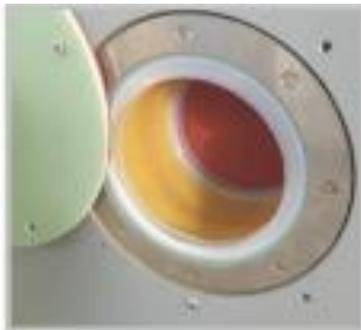
- Vehicle high and low temperature environment simulation test, vehicle temperature storage, temperature and humidity change, four-door and two-cover fatigue endurance test, etc.
- Full spectral irradiation
- Spectral distribution: according to CIE 85 and DIN75220 spectral requirements;
- Strength range: $700 \text{ W/m}^2 \sim 1120 \text{ W/m}^2$;
- Lamp group distribution: according to VW standard, the top lamp is planar, and according to the vehicle under test, the top lamp is arched. The simulation test of the two arrangements is free to change.



Other customized test chamber

Split style alternation temperature test chamber

- Purpose : Reduce noise and vibration in the operating environment.
- Temperature/humidity range : according to the test requirements.
- The distance from chamber to mechanical room can be reached 10 M.
- Suitable for limited site or test process is more sensitive to sample vibration occasions.



Other customized test chamber

Oil pump durability test chamber

During the test, the equipment can record the parameters such as inlet pressure, outlet pressure, pressure difference, ambient temperature, medium temperature and flow rate of each station, and automatically judge the test results of each station.

- Sample: Transmission oil.
- Temperature: $-20\sim 130^{\circ}\text{C}\pm 2^{\circ}\text{C}$.
- Specimen inlet and outlet pressure difference : $-300\sim 300\text{Kpa}$.
- Specimen flow range: $0\sim 15\text{L}/\text{min}$,
Max flow: $50\text{ L}/\text{min}$.
- Ambient temperature of specimen: $-50\sim 150^{\circ}\text{C}\pm 2^{\circ}\text{C}$.
- Ambient humidity of specimen: $30\sim 95\%\text{RH}$ (at $\text{RT}\sim 95^{\circ}\text{C}$) .
- Specimen inlet pressure range: $0\sim 200\text{Kpa}$ (Absolute pressure).
- Specimen outlet pressure range: $0\sim 600\text{Kpa}$ (Absolute pressure).



Other customized test chamber

Endurance test /life test /comprehensive performance

* Temperature alternating durability test chamber for vehicle water pump of new energy vehicle.

- 6 station test, monitoring temperature, pressure, flow, differential pressure data.
- Special measurement and control software, data chart analysis function is powerful.



Other customized test chamber

Endurance test /life test /comprehensive performance

*** Comprehensive performance test chamber for vehicle water valve of new energy vehicle**

- Can meet a variety of specifications of water valve test, 6 stations and 8 channels.
- High precision flow pressure test, flow meter accuracy up to 0.1%.
- Flow resistance test and flow coefficient test at different opening degrees and temperatures.
- With independent intellectual property rights of the special measurement and control software, data chart analysis powerful.



Other customized test chamber



* Open the door on both sides



* Matching with pulling machine



* Double layer



* Matching with fixture



* With operation hole



Other customized test chamber

Water bath:

Temperature control range: RT~ +90°C



alcohol trough

Temperature control range: -30°C~+60°C



Partial customer list

浙江三花汽车零部件有限公司	浙江三花制冷集团有限公司	浙江三花智能控制股份有限公司	上汽大众汽车有限公司
上汽集团乘用车有限公司	上海电器科学研究院	上海机动车检测中心	上海汽轮发电机有限公司
丰田合成（上海）管理有限公司	上海美增汽车检测有限公司	天合汽车零部件（上海）有限公司	上海自动化仪表股份有限公司
苏州爱维斯机电有限公司	信德宝炭化钨制造（上海）有限公司	中国第一汽车集团公司技术中心	大唐微电子技术公司
上海标准件机械厂	上海市质量监督检验技术研究院	山东米歇尔生物制品有限公司	罗姆电子（大连）有限公司
上海吉谊汽车零部件制造有限公司	上海现代摩比斯汽车零部件有限公司	上海华汇机电有限公司	北京雀巢研发中心有限公司
广州汤浅蓄电池有限公司	蒂森克虏伯电梯（上海）有限公司	罗森伯格亚太电子有限公司	宁波太阳能电源有限公司
达丰电脑（上海）有限公司	上海奥托立夫汽车零部件有限公司	上海模数仪表有限公司	中国科学院声学研究所
思科系统（上海）视频技术	上海鸣志电器有限公司	正泰电气股份有限公司	厦门通士达照明公司
上海永大电梯有限公司	无锡泰阔电子科技有限公司	杭州九阳小家电有限公司	飞利浦照明电子（上海）
上海神开石油设备有限公司	无锡夏普	英特尔中国有限公司	信息产业部第二十三研究所
杭州华普永明光电股份有限公司	石家庄军科智微波技术有限公司	上海新通联包装材料有限公司	上海硅酸盐研究所中试基地
美光半导体（上海）有限责任公司	英斯特朗（上海）有限公司	格拉默车辆内饰（上海）有限公司	爱迪尔汽车及零部件配件（上海）
杰恩邦得通信技术（上海）	日明光电（深圳）有限公司	大连柯尼卡美能达有限公司	上海计量测试技术研究院
上海天祥质量技术服务有限公司	无锡世成晶电柔性线路板有限公司	上海德布森电气有限公司	上海光维通信技术有限公司
横店集团浙江得邦公共照明	中科院上海微系统与信息技术研究所	北京红源光电技术公司	上海技术物理研究所
天合富奥汽车安全系统（成都）	SGS通标公司	上海天合汽车安全系统有限公司	法可赛汽车零部件有限公司
ESPEC China CO,Ltd	芜湖永裕汽车工业有限公司	迪卡龙（青岛）电子有限公司	东莞新洋电子有限公司
法雷奥汽车零部件有限公司	山西机电设计研究院	上海盈智汽车零部件有限公司	雅马哈发动机（中国）有限公司
圣邦微电子有限公司	上海航海仪器有限责任公司	沪东中华造船（集团）有限公司	奥托立夫汽车方向盘有限公司
爱德夏汽车技术（上海）有限公司	深圳學之泉科技有限公司	福建江夏学院	上海鸣志电器有限公司



Partial customer list



Partial customer list



Partial customer list



Q & A

Thank You !



Battery, new energy test

“

1. Battery explosion-proof oven
2. Battery explosion-proof vacuum oven
3. High low temperature explosion-proof test chamber
4. Walk-in high temperature explosion-proof chamber
5. Battery thermal abuse test chamber
6. Parallel wind test chamber for battery
7. Explosion-proof high low temperature shock chamber
8. Walk-in high low temperature and humidity battery explosion proof chamber

”



Precision high temperature oven



Double-layer battery oven



High and low temperature explosion-proof test chamber



Walk-in high temperature explosion-proof test chamber

Reliability test

“

1. Temperature humidity chamber
2. Thermal shock chamber
3. ESS chamber
4. Temperature test chamber
5. Walk in altitude test chamber
6. Walk in temperature test chamber
7. Temperature humidity and vibration integrated chamber

”



Temperature and Humidity Test Chamber



Thermal Shock Chamber



Rapid Temperature Change Test Chamber



AGREE Test Chamber

Weathering resistance test

“

1. Rain test chamber (IP1-9K)
2. Dust test chamber
3. Xenon lamp weathering test chamber
4. Ozone aging test chamber
5. UV weathering test chamber
6. Walk in temperature humidity and salt spray integrated test chamber

”



Rain test chamber



Ozone aging test chamber



UV weathering test chamber



Xenon Lamp Weathering Test Chamber

Vibration/Shock test

“

1. Vibration test system
2. Shock test system

”

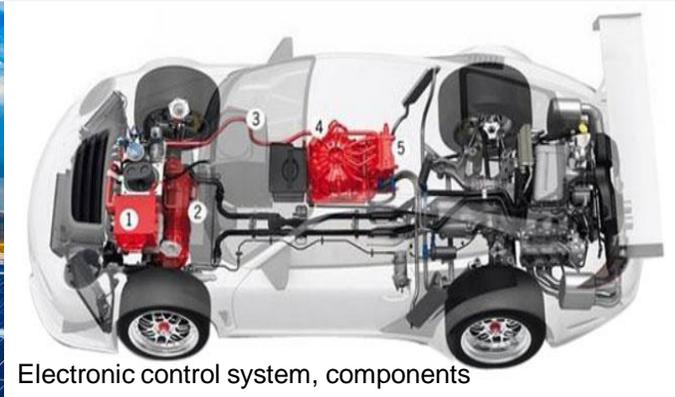


Vibration test system

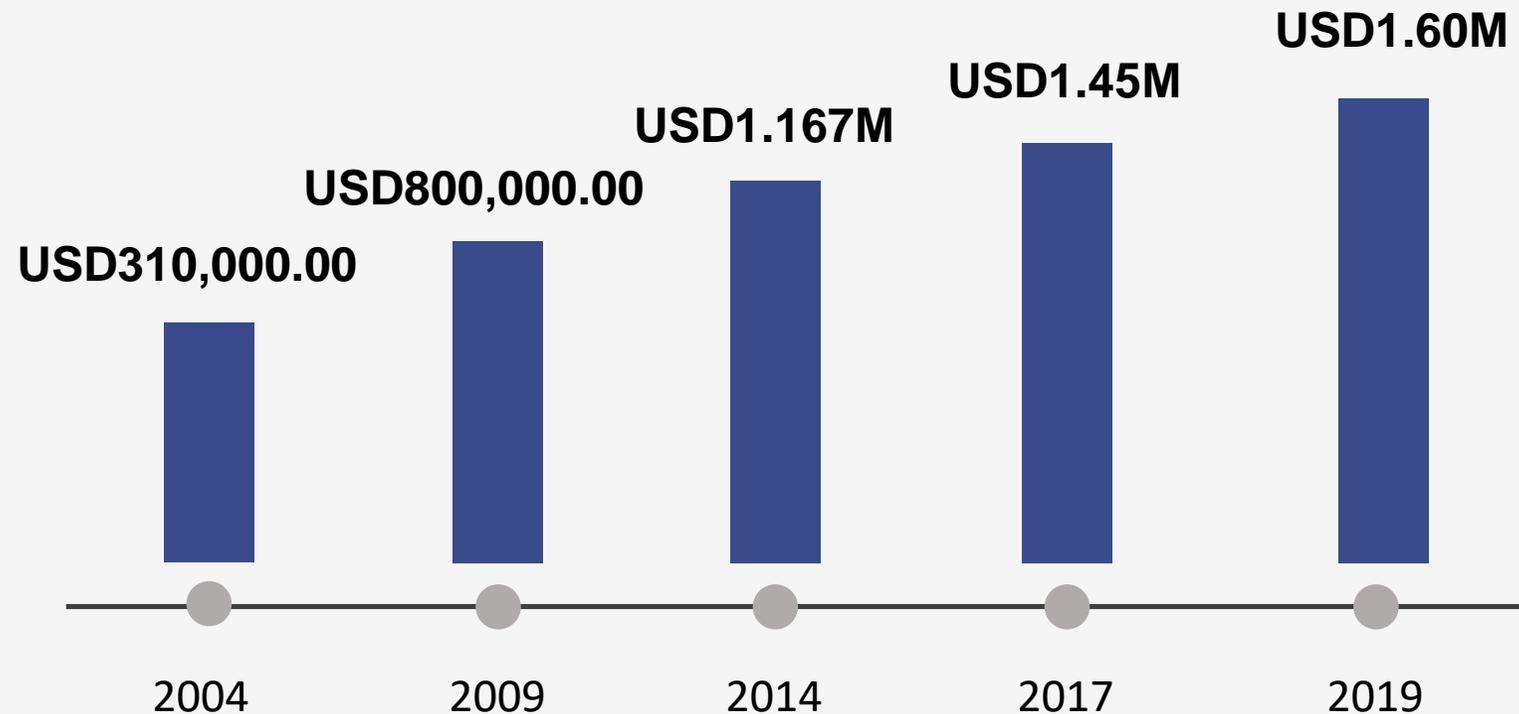


Shock test system

Application industries



Sanwood R&D investment in the past 5 years



SANWOOD has been focusing on the production and development of reliable environmental testing equipment for 24 years, and has a strong technical team and rich design experience.

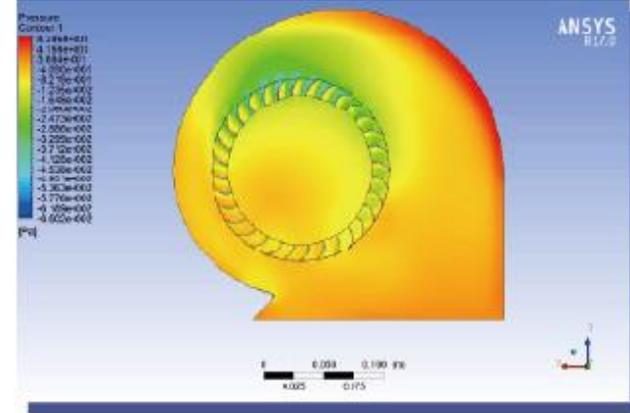
SANWOOD invests 10% of its fixed income for research and development every year, and has achieved certain results, which has been fully recognized by the market.

SANWOOD holds many patents and obtained certifications from many authoritative organizations.

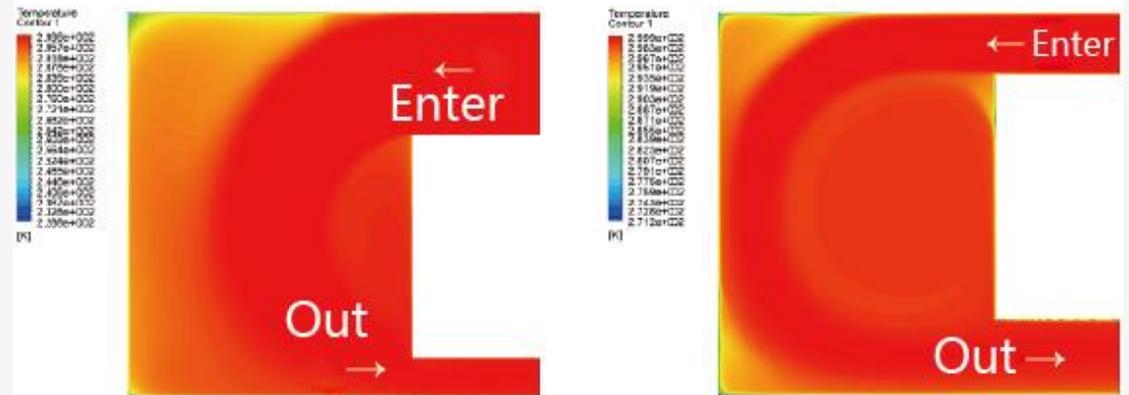
Fluid simulations

Why do fluid simulations?

- Flow optimization of the refrigeration system is an important means to reduce system power consumption.
- The flow optimization of the environmental test equipment system is an important factor that affects the temperature uniformity in the test area of the cabinet.
- Fluid optimization is a new research and development field of environmental testing equipment based on traditional technical factors to reduce energy consumption and save costs.



3D diagram of fan pressure distribution



Before improvement

After improvement

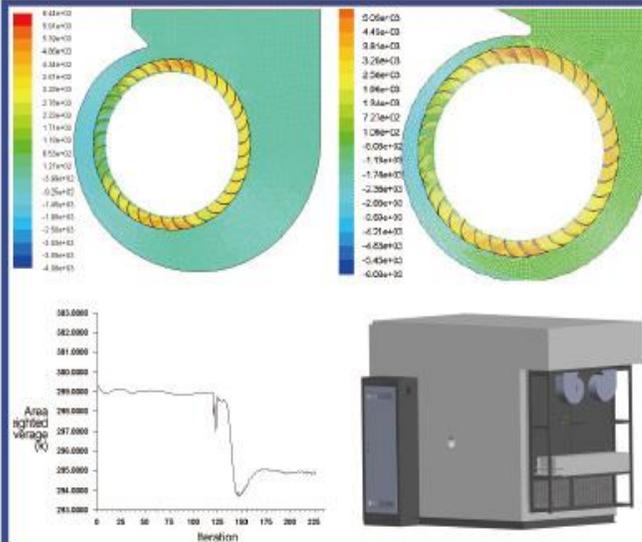
Temperature distribution inside the test chamber

Technical features

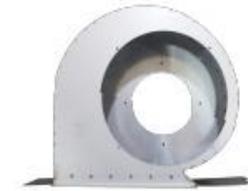
■ How do we do this?



DELL Tower server



Large-scale general finite element analysis (FEA) software developed by ANSYS



Before improve

After improve

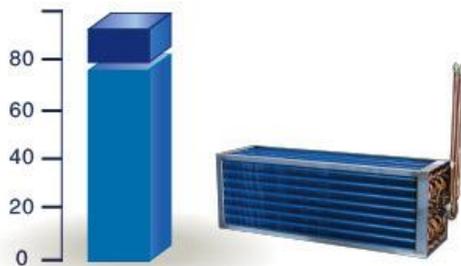


Comparison of volute improvement

Technical feature

■ Our purpose and achieved results

Makes the surface convection of the evaporator fins stronger and the heat exchange efficiency higher



Increase airflow 16%-20%

Optimize the heat transfer process of the refrigeration system



Reduce compressor energy consumption 8%-10%

Size before improvement



Outer chamber size reduced by 6%
Total cost savings up to 15%

Technical feature - International well-known compressors



France Tecumseh



Germany Bitzer



Germany GEA BOCK

- The oil pump is used for forced lubrication, the oil pressure is stable, the lubrication is sufficient, and the lubrication effect is good, which can ensure the reliable operation of the system.
- MP10 module has motor overheating protection (with LED indicator), exhaust temperature is too high protection (requires optional temperature monitoring probe and LED indicator), power indicator, alarm function.
- The motor is easy to disassemble, no special tools, no special training, and on-site maintenance. All HG series compressors are certified by ASERCOM)

Technical feature - Copper pipe technology



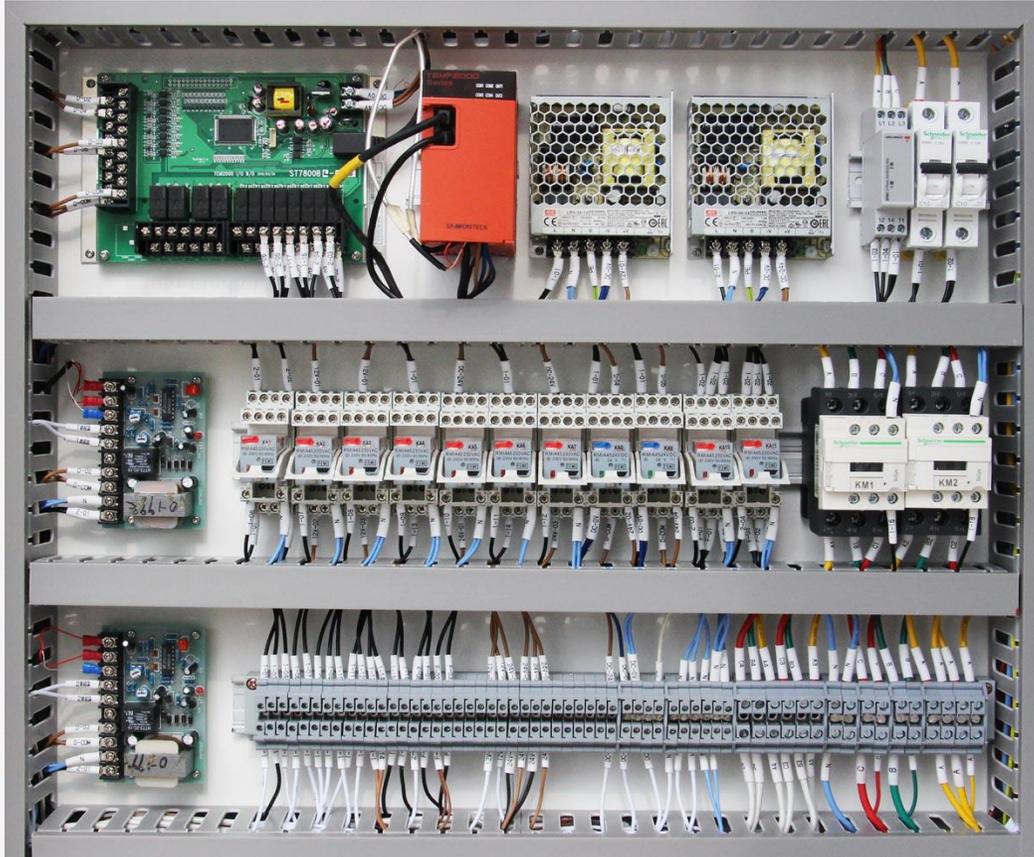
- We use fixing clips to fix the copper pipes, avoid shaking during transportation

- The traditional process has many welding points, and the welding slag in the pipeline will flow into the compressor, which will affect the compressor performance, waste energy consumption and reduce the service life of the equipment.

The new pipe bending technology has the following characteristics:

1. The bending process is 70% less welding points than the welding process;
2. The bending process can minimize the energy from the compressor;
3. The equipment's stability can reach the highest level, which can improve the service life of the equipment.

Technical feature - Circuit system



Germany-Schneider



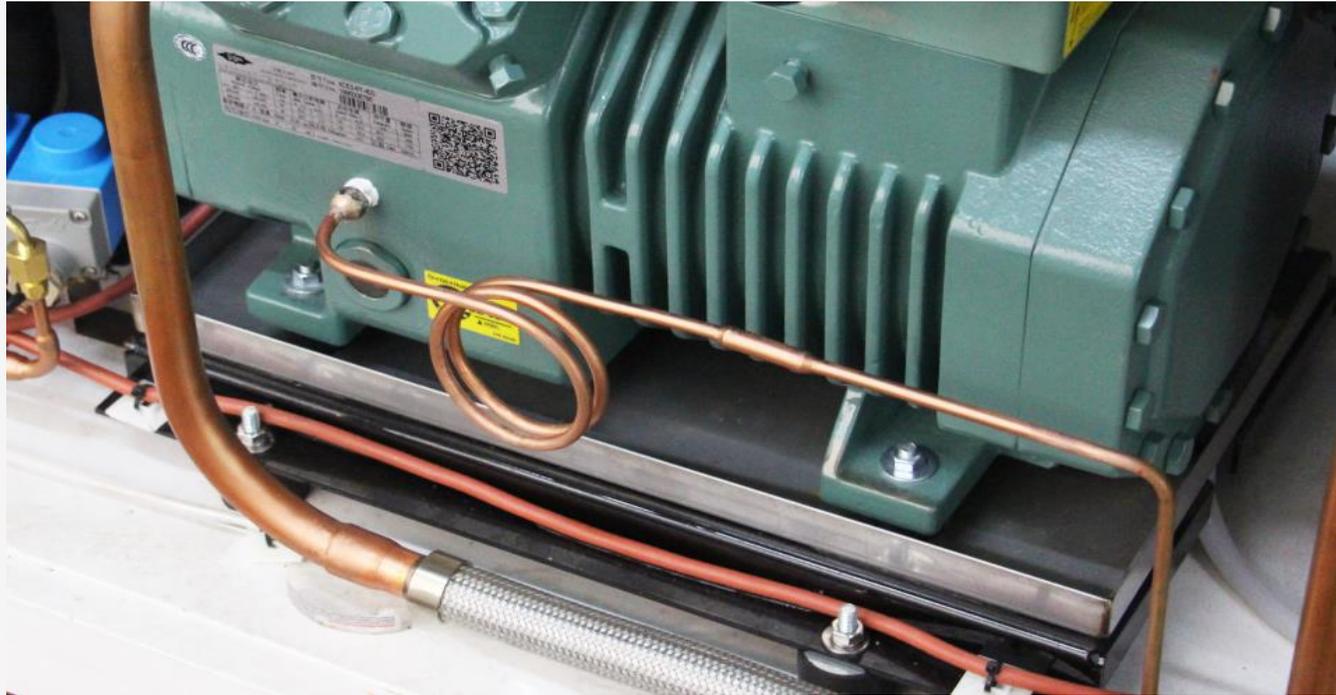
Switzerland-carlogavazzi



Korea-Rainbow

- Our circuits are arranged in accordance with international standards and are equipped with complete circuit diagrams. Each line has a clear line number
- Most of electrical components come from well-known international brands

Technical feature - vibration reduction and noise reduction



- 1. Reduce vibration, protect compressor, protect components;
- 2. Reduce failure rate and improve equipment life;
- 3. Reduce noise and protect the health of users.

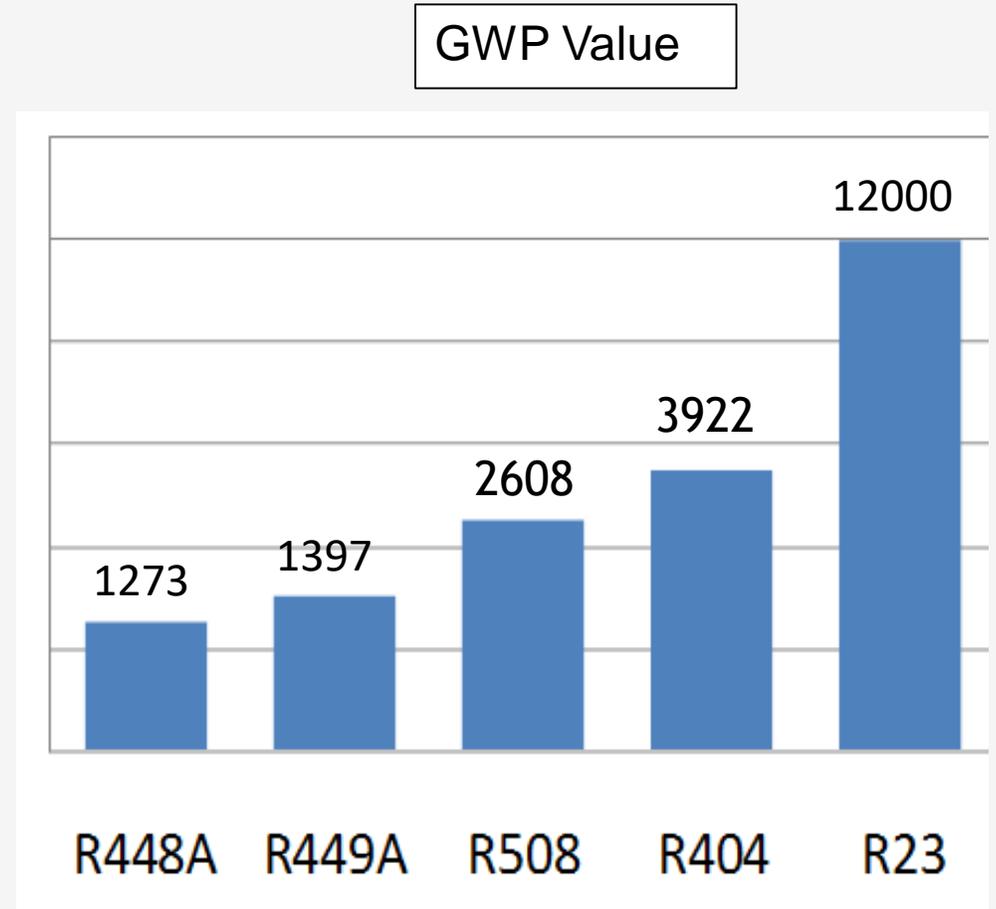
Environmentally friendly refrigerant

European F-Gas regulations aim to reduce carbon dioxide emissions by 70% in the industrial sector by 2030 compared to 1990 levels. Carbon dioxide emissions have fallen by 23% from 1995 to 2016. The purpose of the new rules is to reduce emissions of fluorinated greenhouse gases (fluorinated gases) in the European Union by 2030, reducing 700,000 tons of carbon dioxide equivalent, equivalent to 35 million tons.

In response to EU regulations and environmental protection, our company uses more environmentally friendly, lower GWP refrigerants in the European market.

R448A or R449A to replace R404;

R508 to replace R23.



Product advantage - Cold output

Sanwood Energy-saving refrigeration system

Reduce operating costs by 40%

It has cooling capacity adjustment devices such as evaporation temperature adjustment and energy regulation. Hot gas bypass energy adjustment to ensure that equipment consumption is reduced and constant temperature at any low temperature point while meeting the main technical specifications, there is no need to heat balance. Different from the traditional one. Simple cooling bypass (heating balance is needed, waste of energy), reducing the power consumption by 40%, which can save the operating cost, which is the most advanced control method in China.

How can the Sanwood system help you save money?

Compared to traditional cascade refrigeration technology, SANWOOD only needs one compressor to achieve -45 ° C and -50 ° C. This can save you a lot of operating costs.

What is the Sanwood refrigeration system?

- Traditional stand-alone refrigeration technology only provides an effective test temperature of -34 ° C.
- Sanwood stand-alone refrigeration system provides an effective test temperature of -45 ° C to -50 ° C.

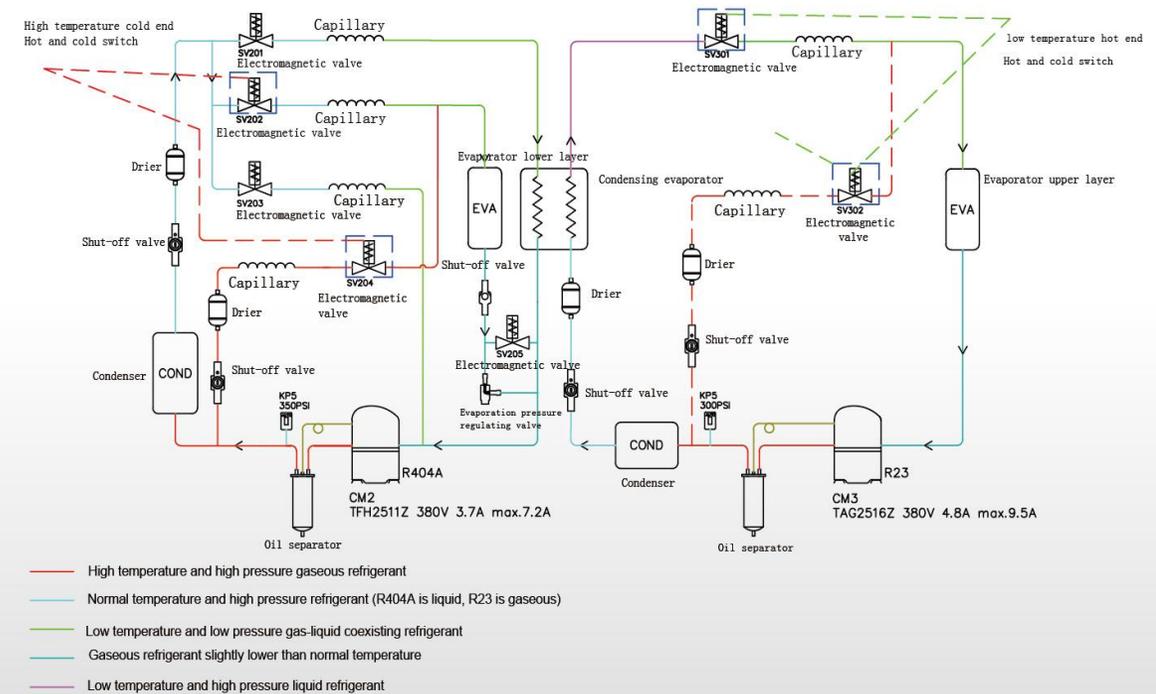
Sanwood refrigeration system

Sanwood uses stand-alone cooling from 3P to 30HP and provides an effective test temperature of -50°C.

Sanwood refrigeration system has the following features:

- High Performance - the system provides greater test product capacity and test product load capacity at the same temperature rate.
- High reliability - with a proven cooling system design with fewer accessories (compared to a cascade system, Sanwood uses just one compressor).
- Low maintenance costs - Reduced maintenance costs due to reduced accessories and reduced reliability.

Sanwood Refrigeration system patent map



Civil electronics and electrical appliances test solutions

Applications	Test	Test purpose	Test equipment recommended
Body structure	Low temperature test High temperature test Damp heat test	Investigate whether the structure of the body is deformed or damaged	High temperature test chamber High and low temperature (humid heat) test chamber
Electronic system	Low temperature test High temperature test Damp heat test	High and low temperature damp heat test	High temperature test chamber High and low temperature (humid heat) test chamber
Control system	Low temperature test High temperature test Damp heat test	Investigate whether the various systems work together, the stability of operation, the function and performance status	

Solution - Vehicle environmental experiment



The walk-in environment simulation chamber is widely used in automobiles, metrology and testing, aerospace and defense industries; it has high reliability requirements, a wide range of temperature and humidity, multiple comprehensive environmental parameters, and complex test conditions.

Operators can enter the laboratory to operate the test product, which provides temperature and humidity environment testing conditions for industrial manufacturers' batches or large parts, semi-finished products and finished products.

Temperature range: -70 °C ~ 150°C,

Humidity range: 10% ~ 98%RH;

Test standard complied: PV2005, PV1200, PV2205, PV2206, PR303.5, PR308.2, DBL5471 4.1.2

Solution-Full spectrum solar simulation test chamber



Users can evaluate changes in the performance of parts or vehicles after irradiation, including shape, color, gloss, feel, strength, and various thermal expansion results.

This series of products comply with the standards MIL-STD-810, DIN75220, BMW PR306, etc., and can be specially designed according to other testing needs of customers.

Size: 1m³ ~400 m³, Temperature range: -40- + 100 °C, Humidity range: 10%~75% RH, Refrigeration method: mechanical compression refrigeration, humidification method: isenthalpic humidification

Solution - Road simulation environment chamber



- The four-post laboratory allows to perform structural durability, abnormal noise, and ride comfort testing. The four pillars can set different wheel-track and wheelbases of the vehicle through automatic positioning of the driver. The laboratory provides appropriate noise reduction processing to reproduce tests and abnormal noise evaluation under extreme environmental conditions.
- 40°C~+100°C, 10%~95%R.H. ● Lighting control area: up to 9 independent control areas; ● Surface temperature control: RT+5C~RT+42C
- The height of the light stand is adjustable to adapt to different car models ● Irradiation area can be customized according to customer requirements
- Sealed bottom plate and 4-Poster system hydraulic cylinder move synchronously to match different wheel-track and wheelbase ● Optional air supply & exhaust extraction system and Infrared simulation system

Team advantages

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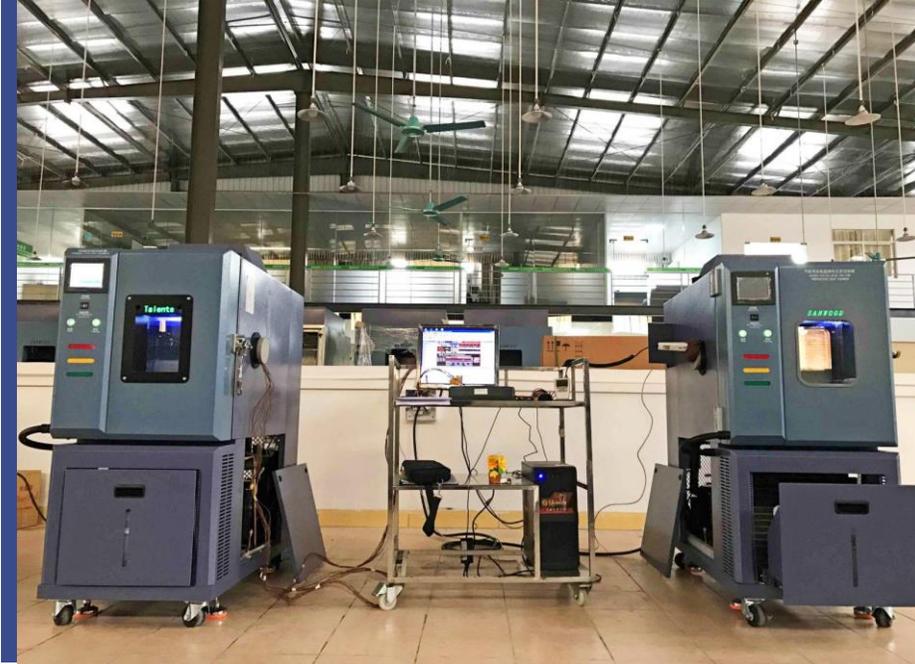
We invest more than 10% of annual sales as the R & D expenses which is used in the research and improvement of product software, structure, hardware, technology and etc.

We introduce the world's leading technology, attracting multinational high-tech talent to ensure the stable development of the company's industry and maintain long-term competitive advantages.

”



Quality Control



“

Before shipping, all chambers will accept strict quality inspection for about one week, such as nine-point test to make sure temperature uniformity inside the chamber. Also we will provide customer with an internal calibration report for each chamber.

”



Service policy



After-sales



Technical training:operation and routine maintenance;



Accessories reserve (within the warranty period, spare parts free replacement);



24H rapid response;



Professional maintenance staff timely troubleshooting.



Service promise



7x24h Customer service hotline: +86-769-81182799

Service support e-mail: info@sanwood.cc

Qatar sports center - Walk in sports chamber project



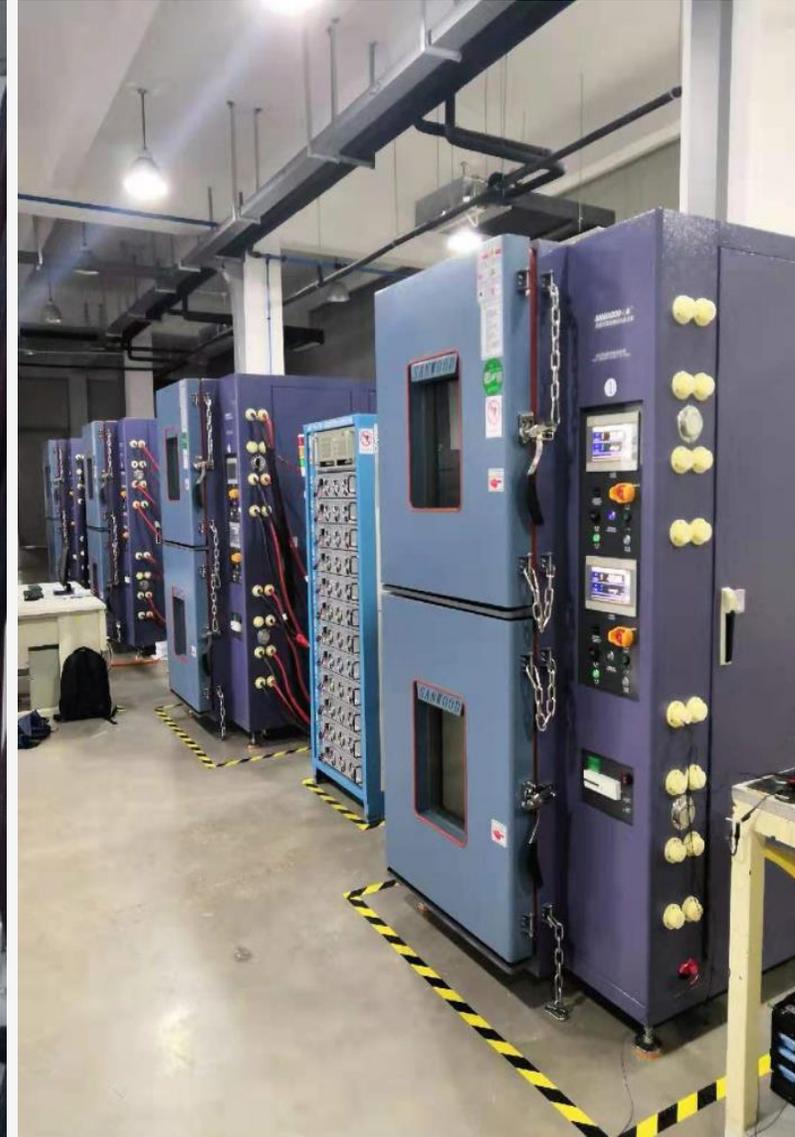
Case - New energy car 300pcs temperature explosion-proof chamber project



Case - Russia military 100pcs temperature test chambers project



Case - Electronics factory 30pcs thermal shock chambers project



Case - VOLVO Walk in chamber project



Case - India SUNWODA 30pcs thermal shock chamber project



Case - Thailand Ford temperature humidity chamber



Oversea installation cases





Thank you for your great attention!

SANWOOD - The World's Safest Environmental Test Chamber