



Integrated Medical PSA Oxygen Generating System

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Changsha, Hunan, China



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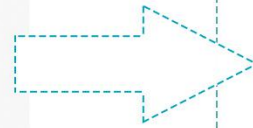
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Part 1

Product Introduction



Integrated Medical PSA Oxygen Generating System



PSA Oxygen Generating System

All-in-one Design:

all components are integrated

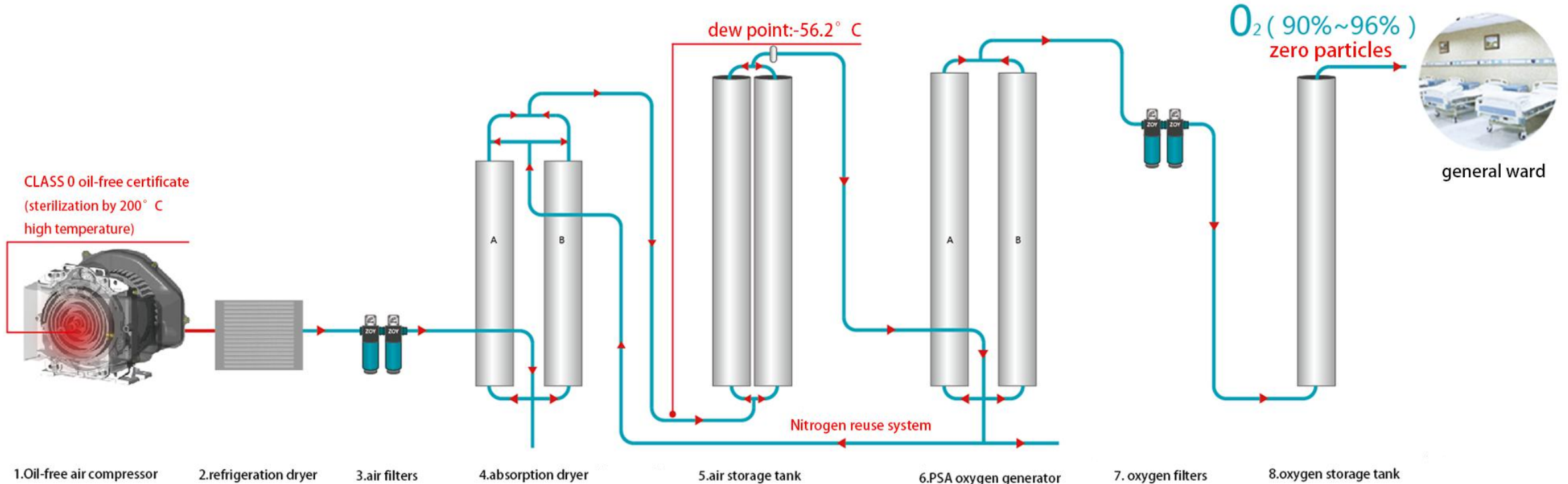




Items	Parameter
O ₂ rate	2 m ³ /h
O ₂ concentration	90%~96%
Pressure	0.2-0.5 MPa (adjustable)
Power	4.0kw
Size	1470*850*1800mm
Noise Level	65dB
Weight	630kgs



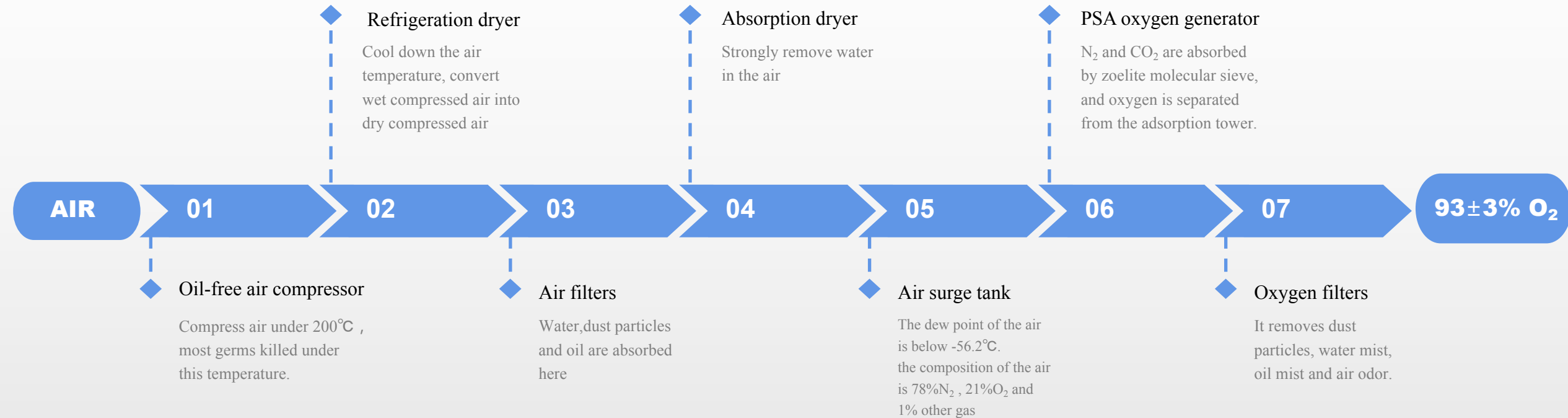
Diagram of Integrated PSA oxygen generator system



Oil-free air compressor ⇒ Refrigeration dryer ⇒ Air filters ⇒ Absorption dryer ⇒ Air surge tank ⇒ PSA oxygen generator ⇒ Oxygen filters ⇒ Oxygen storage tank



Diagram of Integrated PSA oxygen generator system



Part 2

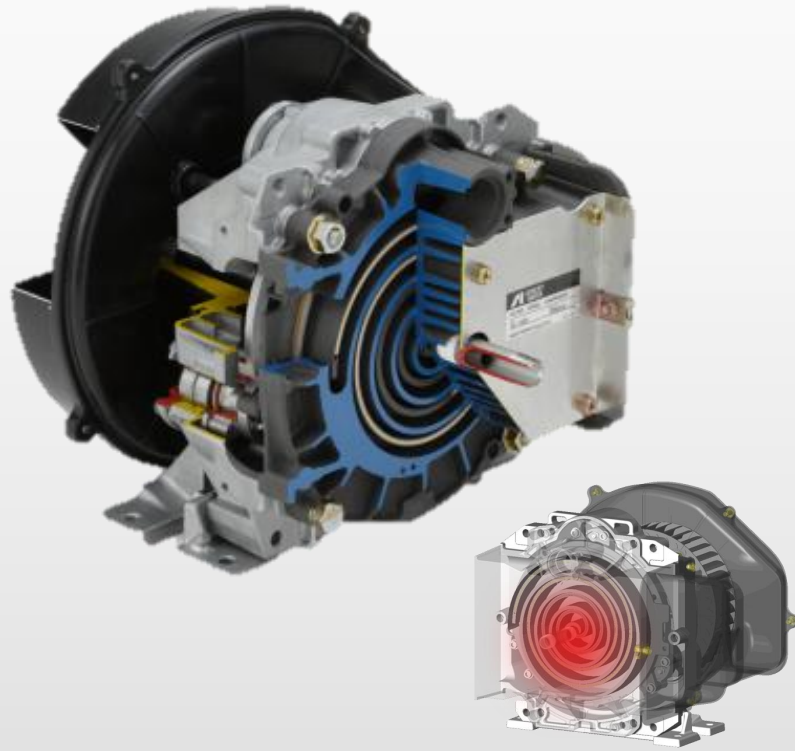
Product Components



No'	Main parts and accessories	Details	Quantity	Manufacturer
1	Oil-free Air Compressor	① Oil-free air compressor: 1 set ② Toshiba motor: 1 set	1 set	ANEST Iwata
2	Zero-Gas-consumption Absorption Dryer System	① Zero-air-consumption adsorption dryer: 1 set; ② Aluminum alloy nitrogen recovery tank: 2 sets	1 set	ZOY Tech
3	PSA Oxygen Generating System	① PSA adsorption tower A and B: 1 set; ② SMC VNA series two-way gas control valves: 8 sets	1 set	ZOY Tech
4	Gas Storage Components	① Air surge tank: 2 sets; ② Nitrogen storage tank: 2 sets; ③ Oxygen surge tank: 1 set ; ④ Oxygen storage tank: 4 sets;	/	ZOY Tech
5	Air Filters and Pipeline Components	① WS Series: 1 set ② AO Series: 1 set ③ ACS Series: 1 set ④ AX Series: 1 set	1 set	ZOY Tech
6	The Control System	① ZOY 10" touch screen: 1 set ② Siemens PLC system: 1 set ③ ZOY remote intelligent controller: 1 set ④ SMC oxygen flow meter: 1 set ⑤ BEEGAS oxygen analyzer: 1 set	1 set	/
7	Remote Monitoring System	① GIS map; ② Real-time monitoring; ③ Maintenance center; ④ Historical data and other interfaces	1 set	SANY Cloud Server

1.Oil-free Air Compressor

Oil-free vortex air compressor, with high-efficiency motor to ensure extreme energy saving, which has lots of advantages, such as: small volume; ISO 8573-1 CLASS 0 oil-free certificate; work with oil-free and environment-friendly engine; very low noise; no wearing parts; high quality. The temperature of compressed air goes up to 200°C, the pressure goes up to 0.8 MPa. The features of high temperature and high pressure sterilization ensure clean air.

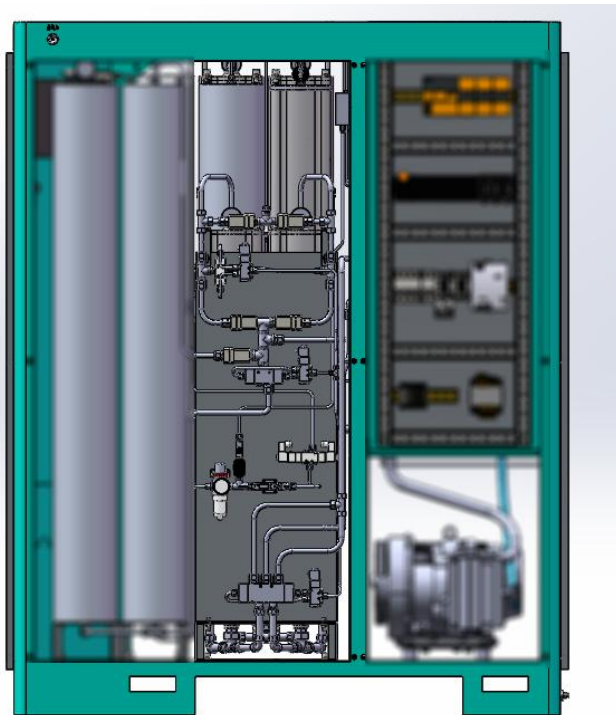


Brand	Anest Iwata
Series	SLBJ-37B
Quantity	1 Set
Air Displacement	405L/min
Outlet Pressure	0.8MPa
Transmission Mode	Belt Drive
Power	3.7kW
Rated Voltage	380V
Full Load Noise	65±3dB(A)
Ambient Temp. (Min/Max)	0/40°C
Outlet size	3/8"
Dimension	770*390*320mm
Weight	73KGS

2.Zero-Gas-consumption Adsorption Dryer System

The adsorption dryer adopts the principle of pressure swing adsorption (PSA), which uses the difference in the amount of moisture adsorbed by the adsorbent under different pressures. The adsorbents adsorb under working pressure but regenerate and desorb with near-normal pressure. Through periodic circulation, the adsorption and regeneration process of two absorbers will work alternately, which removes the moisture from compressed air. The dew point of compressed air can easily reach -40°C.

Our company's zero gas consumption adsorption dryer uses the exhaust gas produced by PSA oxygen generator for water removal. This process is without the consumption of compressed air. It is also high efficiency, and energy-saving. The dew point of compressed air can be blow -56.2°C.

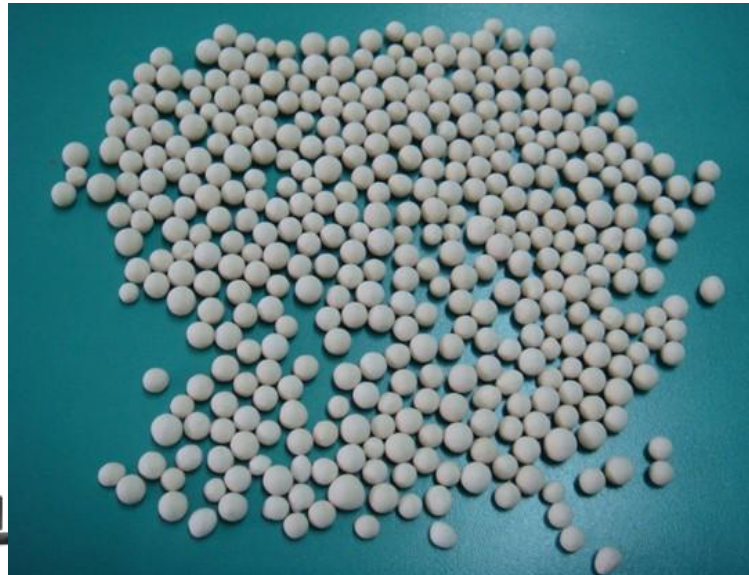


Main parts and accessories	Details			Manufacturer
	Details	Specification	Quantity	
Zero-Gas-consumption Adsorption Dryer System	Combined oil-water separator	Remove 99% liquid water	1 set	ZOY Tech
	Zero-air-consumption adsorption dryer	0.5m ³ /min , pressure : 1.0Mpa ,	1 set	ZOY Tech
	Aluminum alloy nitrogen storage tank	Capacity : 28L , pressure : 0.8Mpa	2 sets	ZOY Tech

3.PSA Oxygen Generating System

Integrated PSA Oxygen Generating System, Equipped with Zeolite molecular sieve as the adsorbent, PSA Oxygen Generator can separate oxygen from the surrounding air by adsorption and release of nitrogen. Oxygen concentrations can be 93%(±3%).

Zeolite is with three-dimensional structure which forms uniformly sized pores. As the pores preferentially absorb small molecules and exclude large molecules, Zeolite acts as molecular sieves. Zeolite molecular sieve will absorb nitrogen and separate high purity oxygen under high pressure; it will release nitrogen at low pressure. Two adsorption towers process nitrogen adsorption and release. Once Zeolite molecular sieve in tower A absorbs enough nitrogen, tower A will stop the separation process and begin to release nitrogen into the nitrogen storage tank. Tower B will begin to separate the oxygen. Two towers separate oxygen alternately.



Main parts and accessories	Details			Manufacturer
	Details	Specification	Quantity	
PSA Oxygen Generating System	PSA adsorption tower A and B	Oxygen output 20m ³	1 set	ZOY Tech
	SMC VNA series two-way gas control valves	Main Pressure:0-1Mpa Pilot Pressure:0.2-0.7Mpa	8 sets	SMC

4. Gas Storage Components

The Gas Storage Components include air surge tank, nitrogen storage tank, oxygen surge tank and oxygen storage tank. The tanks are made of 6063 special aluminum alloy, which complies with national standards and is reliable and safe.



Main parts and accessories	Details			Manufacturer
	Details	Specification	Quantity	
Gas Storage Components	Air surge tank	Capacity : 28L , pressure : 0.8Mpa	2 sets	ZOY Tech
	Nitrogen storage tank	Capacity : 28L , pressure : 0.8Mpa	2 sets	ZOY Tech
	Oxygen surge tank	Capacity : 28L , pressure : 0.8Mpa	1 set	ZOY Tech
	Oxygen storage tank	Capacity : 28L , pressure : 0.8Mpa	4 sets	ZOY Tech



5.1 Air Filters

The air filters' outer shell adopts grade-A raw material to ensure the toughness, strength and stability of the product. The process of anodized surface greatly improves corrosion resistance of the outer shell and avoid secondary pollution.

WS Series water-gas separator It can remove 99% liquid water in the compressed air, to improve air quality, and reduce the load of subsequent processing work effectively.

AO series precision air filter It has high effectiveness in general protection. It removes the dust particles, water mist and oil mist whose size is larger than $1\mu\text{m}$, and the residual content of oil mist does not exceed $0.6\text{mg}/\text{m}^3$ (21°C), 1ppm (w).

ACS series activated carbon filter It can remove dust particles, whose size is larger than $0.01\mu\text{m}$, oil vapor and odor, and the residual content of oil vapor does not exceed $0.003\text{mg}/\text{m}^3$ (21°C), 0.003ppm (w).

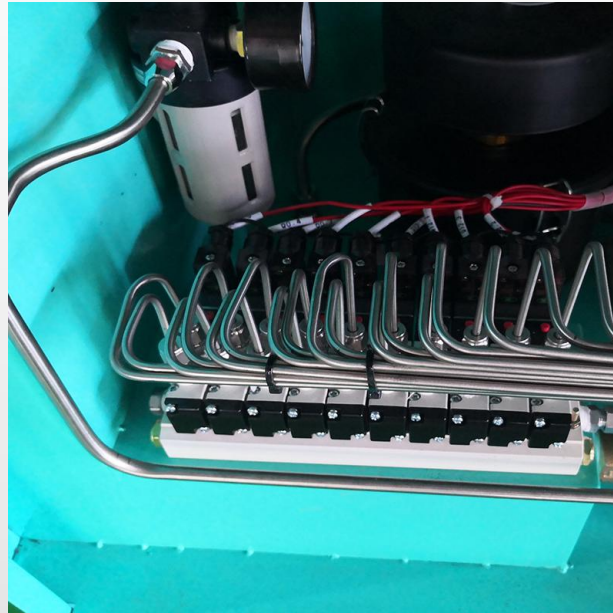
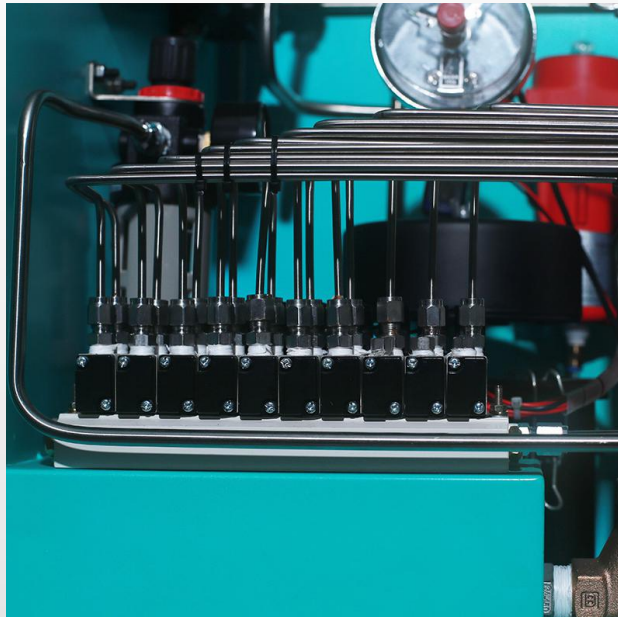
AX series advanced air filter, Ultra-efficient oil removal filtration. It could remove dust particles, water mist, oil mist whose size is larger than $0.01\mu\text{m}$, and the residual content of oil vapor does not exceed $0.001\text{mg}/\text{m}^3$ (21°C), 0.001ppm(w).



Main parts and accessories	Details			Manufacturer
	Details	Specification	Quantity	
Air Filters and Pipeline Components	Gas-Water Separator WS Series	Remove 99% liquid water	1 piece	ZOY Tech
	Precision filter AO Series	Residual amount of oil vapor: $0.6\text{mg}/\text{m}^3$, 1ppm	1piece	ZOY Tech
	Carbon Filter ACS Series	Residual amount of oil vapor: $0.003\text{mg}/\text{m}^3$, 0.003ppm	1 piece	ZOY Tech
	Advance Filter AX Series	Residual amount of oil vapor: $0.001\text{mg}/\text{m}^3$, 0.001ppm	1 piece	ZOY Tech

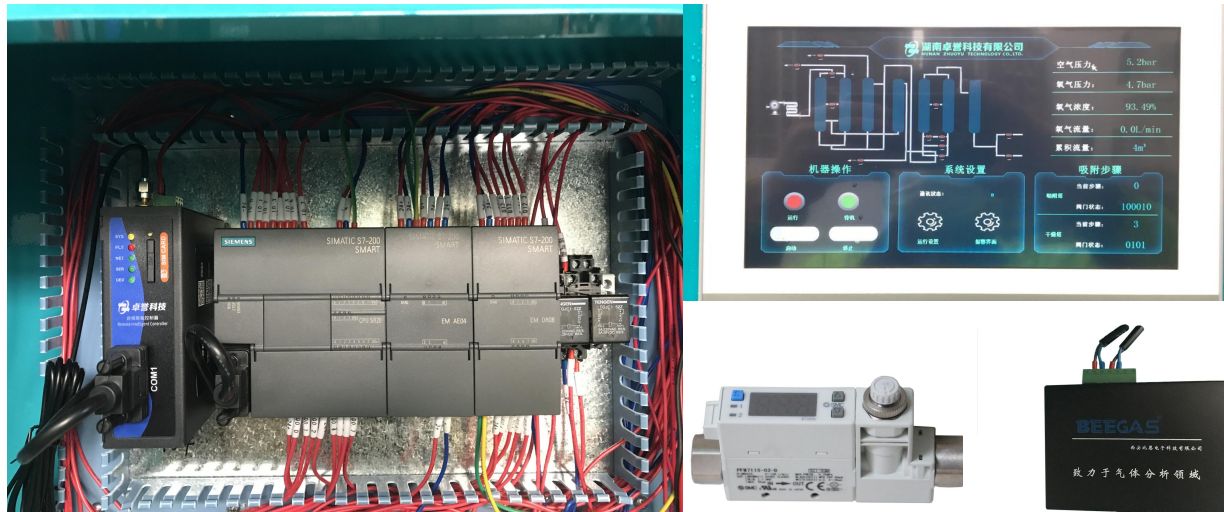
5.2 Pipeline Components

Pipeline components include stainless steel pipes and joints whose material is with strong corrosion resistance, heat resistance and high pressure resistance, preventing oxygen from secondary pollution. It can work safely for a long time at a temperature of -270°C - 400°C . The inner wall of the stainless steel pipe is smooth, so the resistance is very small, which can reduce pressure loss and energy consumption. The layout of pipeline is modular and designed.



6. The Control System

The Control System includes touch screen, Siemens PLC system, remote intelligent controller and various sensors. 10 inch LCD touch screen is convenient for man-machine interaction. Siemens S7-200 series PLC system is with features of smaller volume, faster speed(processing speed 0.8-1.2ms), standardization and stability. It can control the valves of the oxygen system in milliseconds. Zoy RIC series remote intelligent controller is used for remote control. The SMC PFM series oxygen flowmeter adopts two-color display, the outliers is very obvious. Measured deviation is blow 1%. Flow valve and display parts are integrated, greatly saving installation space. Beegas BEE series oxygen analyzer adopts the European-imported ion flow oxygen sensor as the measuring unit, whose measurement accuracy is $\pm 1\%$ F.S and stability is $\pm 1\%$ FS/7d. Its power dissipation is blow 6 W and is with 4-20 mAsignal output. The equipment has a series of advantages, such as just plug and play, one-button to start and stop, stable control and simple operation.



Main parts and accessories	Details			Manufacturer
	Details	Specification	Quantity	
The Control System	touch screen	10 inch LCD	1 set	ZOY Tech
	Siemens PLC system	Processing speed :0.8-1.2ms	1 set	Siemens S7-200 series
	Remote intelligent controller		1 set	ZOY RIC series
	Oxygen flowmeter	accuracy $\leq \pm 1\%$ F.S	1 set	SMC PFM series
	Oxygen analyzer	Power ≤ 6 w Current:4-20mA	1 set	Beegas BEE series

7. Remote Monitoring System

The remote monitoring system makes the upload and download of data through the remote controller come true. Users can log in to the cloud platform on their mobile phones and computers to search real-time data and historical data; equipment administrators can also send instructions to the equipment through the cloud platform and control the operation of the equipment through the remote controller. Through real-time monitoring of the operating conditions of equipment, faults and other abnormal conditions can be discovered and even predicted in time. There is no need to arrange personnel to guard equipment, which not only reduces management costs and labor cost, but also increases the reliability of oxygen supply.



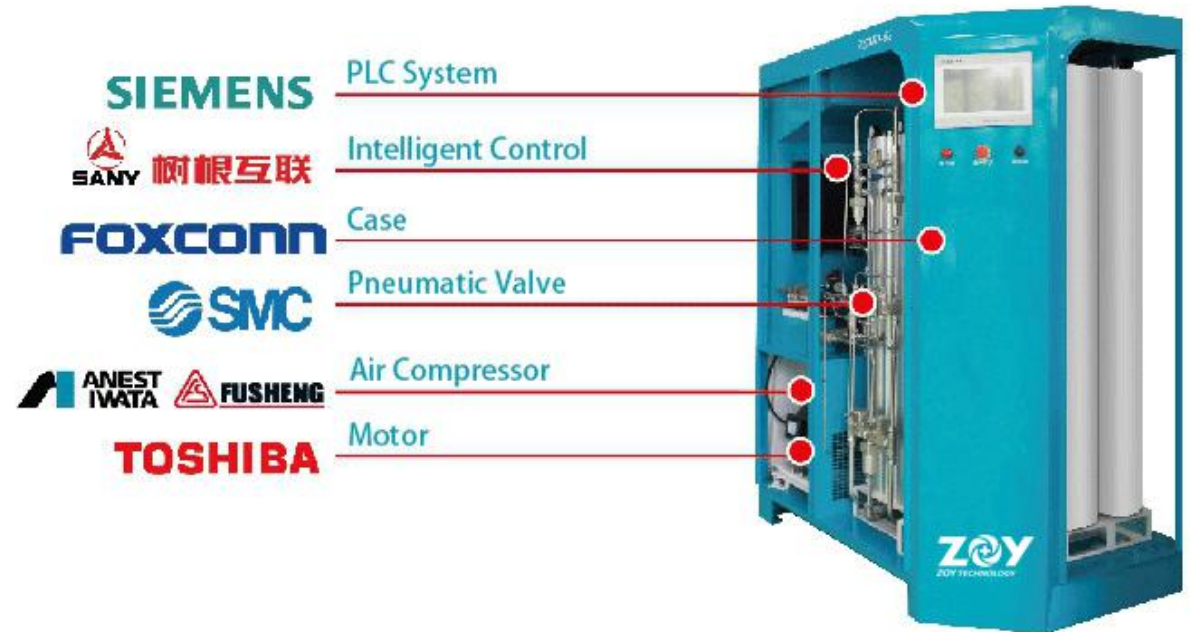
Part 3

Products Advantages



1. Core Components from well-known brands all over the world

Core Components from well-known brands all over the world, Strong supply chain system ensures stable and reliable quality and after-sales service support.





2. Advantages of PSA Integrated Oxygen Generating System

- 1. Air compressor with ANEST IWATA oil-free engine
- 2. Material of stainless steel and aluminium alloy

- 6. Integrated design
- 7. Built-in nitrogen reuse system
- 8. Components from well-known brands



- 3. Zero particles
- 4. Simple operation: one button to start and stop
- 5. With Noise eliminator, below 65db

- 9. Environment friendly
- 10. Real-time monitor system
- 11. Extremely safe
- 12. Cost-efficient

Part 4

Comparison

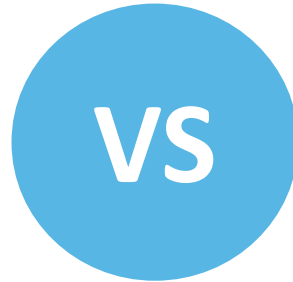


Comparison



	Oxygen Cylinder	Liquid Oxygen	PSA Oxygen Generating System
Cost	\$2.3 / m ³	\$0.5 / m ³	\$0.15 / m ³
Operation	Complicated	Complicated	Simple
Stability	Unstable	Unstable	Stable
Convenience	Unconvenient	Unconvenient	Convenient
Safety	Potential risks	Potential risks	Safe

Leader of PSA Oxygen Generating System



Oxygen Cylinder & Liquid Oxygen

1. Potential safety hazards;
2. Investment of a lot of labour and material resources for transportation and storage;
3. Hard to count oxygen reserves and easy to cause the waste of oxygen;
4. Strict environmental requirement of storage;
5. Frequent installation and replacement.

Our Medical PSA Oxygen Generating System

1. Remote Intelligent Control System in Real time:
 - (1). Online monitoring of data in real-time: oxygen concentration, oxygen flow, oxygen pressure, etc;
 - (2). Monitor via mobile and computer;
 - (3). Remote Control and Maintenance: pre-warning of abnormal data and machine error;
 - (4). Simple operation: one button to start and stop;
 - (5). PLC : S7-200 PLC of SIEMENS brand.
2. Optional installation scenarios: basement, courtyard, etc.
3. No need to transfer oxygen cylinders and continuous supply of high purity oxygen.
4. Don't have any potential danger and cost low.



Part 5

Certificates and Patents



93±3% High Purity Oxygen

检测报告编号: 2019130-30-1999197001
Test report series No.

上海市计量测试技术研究院
SHANGHAI INSTITUTE OF MEASUREMENT AND TESTING TECHNOLOGY
华东国家计量测试中心
NATIONAL CENTER OF MEASUREMENT AND TESTING FOR EAST CHINA
中国上海测试中心
NATIONAL CENTER OF TESTING TECHNOLOGY, SHANGHAI

检测报告

Test Report

委托者: 湖南卓普科技有限公司
Customer: 湖南卓普科技有限公司

联络信息: 长沙经济技术开发区螺丝塘路1号德普企业公元2-C栋
Contact information: 长沙经济技术开发区螺丝塘路1号德普企业公元2-C栋

样品名称: 富氧空气(93%氧)
Name of sample: 富氧空气(93%氧)

制造厂: 湖南卓普科技有限公司
Manufacturer: 湖南卓普科技有限公司

型号/规格: 医用分子筛中心制氧系统
Model/Specification: 医用分子筛中心制氧系统

样品编号: ZY/MO-02
No. of sample: ZY/MO-02

批准人: 郝玉红
Approved by: 郝玉红

核验员: 姜阳
Checked by: 姜阳

检测员: 于瑞祥
Tested by: 于瑞祥

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Inquire line: 800-820-5172 Tel. to complain: 021-50798262

未经本院/中心批准, 部分采用本证书内容无效。
Partly when the report will not be addressed unless allowed by SIMT.

第 1 页共 4 页
Page 1 of total 4 pages

检测报告编号: 2019130-30-1999197001
Test report series No.

检测结果/说明:
Results of test and additional explanation

检测项目	标准要求	检测结果
性状	无色气体、无臭、无味	无色气体、无臭、无味
酸碱度	符合WS1-XG-008-2012 标准要求	符合WS1-XG-008-2012 标准要求
水分 H2O	$\leq 67 \times 10^{-6} (v/v)$	$9.0 \times 10^{-6} (v/v)$
一氧化碳 CO	$\leq 5 \times 10^{-6} (v/v)$	$< 0.1 \times 10^{-6} (v/v)$
二氧化碳 C2O	$\leq 300 \times 10^{-6} (v/v)$	$11.5 \times 10^{-6} (v/v)$
二氧化硫 S2O	$\leq 1 \times 10^{-6} (v/v)$	$< 0.1 \times 10^{-6} (v/v)$
氮氧化物 NO	$\leq 2 \times 10^{-6} (v/v)$	$< 0.1 \times 10^{-6} (v/v)$
油分 Oil	$\leq 0.1 \times 10^{-6} (v/v)$	$< 0.1 \times 10^{-6} (v/v)$
其他气态氧化物	符合WS1-XG-008-2012 标准要求	符合WS1-XG-008-2012 标准要求
氧含量 O2	$90.0 \times 10^{-2} \sim 96.0 \times 10^{-2} (v/v)$	$94.2 \times 10^{-2} (v/v)$
颗粒度 (个/立方英尺)	$0.1 \mu m @ \leq 100000$	$0.1 \mu m @ 0$
	$0.2 \mu m @ \leq 23700$	$0.2 \mu m @ 0$
	$0.3 \mu m @ \leq 10200$	$0.3 \mu m @ 0$
	$0.5 \mu m @ \leq 3520$	$0.5 \mu m @ 0$
	$1.0 \mu m @ \leq 832$	$1.0 \mu m @ 0$
	$5.0 \mu m @ \leq 29$	$5.0 \mu m @ 0$

检测结果内容结束

test result
 $94.2 \times 10^{-2} (v/v)$

Authoritative Test Report for Zero Particle by National Metrology and Testing Center(SIMT)



Business License



Manufacture License of Medical Devices



Business License of Medical Devices



Manufacture License of Air Compressor



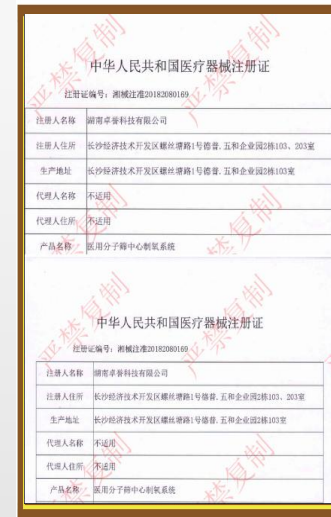
CE Certificate



ISO9001



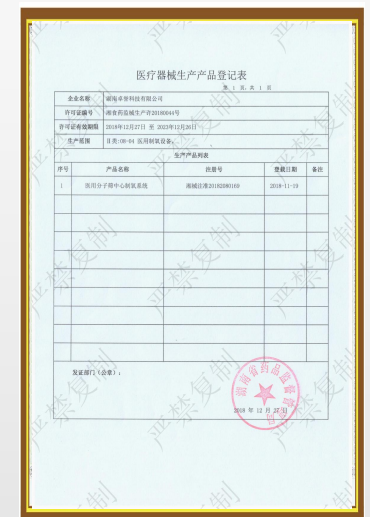
ISO13485



Business Registration Certificate



Product Quality and Security Certificate



Product Registration Form



1 Invention Patents and 9 Innovation Patents



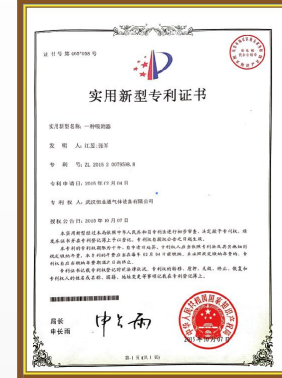
Invention Patents: PSA Oxygen Generating System



Innovation Patents: Oxygen Storage Tank



Innovation Patents: Automatic Compaction Device for Solid Particle Filler



Innovation Patents: Adsorber



Innovation Patents: Device for Preventing to the Efflorescence of Molecular Sieves



Innovation Patents: PSA Oxygen Generating Equipment



Innovation Patents: Liquid Electronic Drain Valve with Zero Gas Consumption



Innovation Patents: Intelligent Conveying Management System for Pneumatic Conveying



Innovation Patents: Device for Gas Refrigeration and Drying



Innovation Patents: Pneumatic Conveying for Bulk Cement

Part 6

Workshop & Projects





Bangladesh



Thailand



Singapore



The Republic of Suriname



Uganda



Congo



Malaysia



Australia



At the beginning of 2020, our company donated 8 million oxygen generators to Henan, Hubei and Hunan province and donated 27 sets of Oxygen Generating System equipments to hospitals in epidemic areas with other social forces.

We solved the problems of urgent need for oxygen in hospitals.





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1. The voltage of local country is 380V, match with the system voltage of the oxygen plant. Directly connect UVW ground wire and neutral wire one by one.

2. The voltage is not 380VAC
2.1 Need to be connected to the transformer, adjust the local voltage to 380V and then connect to the oxygen generator.

2.2 We need to adjust the electrical voltage of the oxygen generator to be consistent with to the local voltage.