MINNUO GROUP

PSA OXYGEN/NITROGEN GENERATOR

FOCUS ON GAS INDUSTRY FOR 32 YEARS

MASTER CORE TECHNOLOGY

WWW.CNMNGROUP.COM

PSA NITROGEN GENERATORS
PSA OXYGEN GENERATORS
VPSA OXYGEN GENERATORS
CRYOGENIC AIR SEPARATION SERIES

Jiangsu Minnuo Group Co., Ltd.
Jiangsu Minnuo Purification Equipment Co., Ltd

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MINNUO
GAS EQUIPMENT

EXPORTED TO MORE THAN
150 COUNTRIES AROUND THE WORLD

SAFE

RELIABLE

DURABLE

EFFICIENT

LOW NOISE

CONTENTS

MINNUO GROUP

PROVIDE VARIOUS
GAS SUPPLY SOLUTIONS

CONTENTS

150+

Exported to more than 150 countries

50+

Invention patents and utility model patents

2003YEAR

Established R&D center

Jiangsu Minnuo Group Co., Ltd. is located in Jingjiang, which is the Chinese hometown of Gas Equipment. Our company is professionally engaged in developing and manufacturing gas equipment.

As a professional manufacturer engaged in research, production and development of Air separation equipment, we can provide customers with PSA Nitrogen Generators, PSA Oxygen Generators, VPSA Oxygen Generators, Ammonia Decomposition to Hydrogen Generators for HDAQ series, Ammonia Decomposition and purification for HDFC series, gas purification equipment, gas recovery equipment, air purification engineering and other gas equipment, etc.We also can provide a variety of gas supply solutions according to customer requirements, and also provide users with repair and maintenance, technical training and technical advice in respect of nitrogen, oxygen, hydrogen generating equipment and related equipment.

PSA OXYGEN AND NITROGEN PRODUCTION EQUIPMENT

The device adopts double tower adsorption, and uses molecular sieve to absorb gas from the air. Separate excess gas to obtain high-purity oxygen or nitrogen.

OUR FACTORY

A COMPANY DEDICATED TO MANUFACTURING PROFESSIONAL GAS TREATMENT EQUIPMENT



Cooperate closely with professional design institutes and colleges and universities to give full play to the technical advantages of high-tech products, continuously carry out technological innovation, improve product performance and improve product quality.



The equipment has the advantages of compact structure, high degree of automation, stable performance, low energy consumption, low noise, and environmental friendliness.


THE COMPANY'S MAIN PRODUCTS

Pressure swing adsorption nitrogen generator, nitrogen purification device, pressure swing adsorption oxygen generator, VPSA oxygen generator, ammonia decomposition hydrogen production, purification device, nitrogen and hydrogen mixing automatic proportioning system, automatic hydrogenation device, cryogenic air separation equipment, etc. .

ENTERPRISE HONOR

Take customer as the center
quality as the foundation

TYPICAL INDUSTRY

- METALLURGY
- WATER TREATMENT
- CHEMICAL INDUSTRY
- OZONE PRODUCTION
- COAL GASIFICATION
- GLASS FURNACE
- MEDICAL INDUSTRY
- AQUACULTURE

ENERGY SAVING

ENVIRONMENTAL PROTECTION

LOW NOISE

PSA OXYGEN GENERATOR

LOW MAINTENANCE COST
HIGH OXYGEN PRODUCTION AND LOW ENERGY CONSUMPTION
FULL AUTOMATION AND FAST START-UP
EASY TO INSTALL AND MAINTAIN

MINNUO®

MINNUO GROUP.1987

MEDICAL OXYGEN GENERATION SYSTEM

Medical oxygen generation and cylinder filling system uses PSA oxygen generator to directly produce medical oxygen from compressed air on site. After pressurization, the pressure for cylinder filling can reach 150 or 200bar, which can realize continuous production and Cylinder filling of medical oxygen on site.

medical oxygen generation and cylinder filling system is a fully integrated skid mounted design, which covers a small area and is easy to operate.

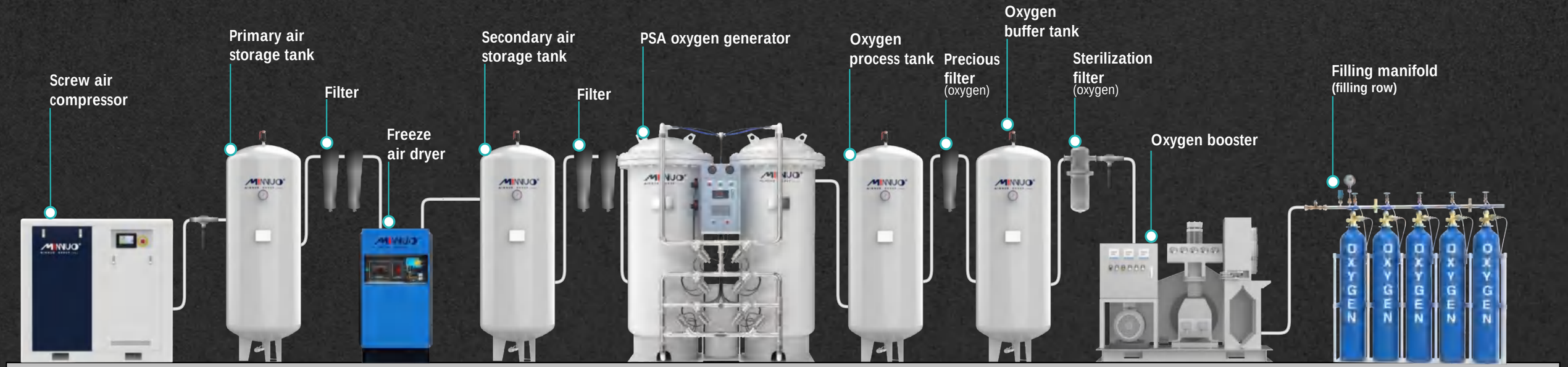
EQUIPMENT SELECTIONS

BASED ON THE ACTUAL REQUIREMENT OF USER,
WE WILL PROVIDE THE ENERGY-SAVING PSA OXYGEN
GAS GENERATOR SOLUTION.

MINNUO®

MINNUO GROUP. 1987

Purity	93±3% (Normal)
O2 Capacity	1-2000Nm3/h
Discharge O2 Pressure	0-5.5 Bar (Normal)
O2 Dew Point	−40℃ (Normal)
Operation	Full automatic



PSA OXYGEN PRODUCTION FLOW CHART

OPTIONAL ATLAS AIR COMPRESSOR AND REFRIGERATED DRYER

RELIABLE QUALITY

SUPPORT CUSTOMIZATION

ON TIME DELIVERY

OXYGEN EQUIPMENT DESIGNED BY MINNUO, MAINLY COMPOSED OF THE FOLLOWING COMPONENTS

- AIR COMPRESSOR
- COMPRESSED AIR PURIFICATION COMPONENTS (FILTERS AND AIR DRYER)
- AIR BUFFER TANK
- PSA O^2&N^2 SEPARATION SYSTEM
- O^2 STORAGE TANK

MNP05-2000 TYPE MEDICAL & INDUSTRIAL OXYGEN GENERATOR

Model No.	Capacity (Nm3/h)	Air Material (Nm3/h)	Power consumption (W)	Length x Width (mm)
MNPO-5	5	50	800	1600X1200
MNPO-IO	10	100	800	1800X1500
MNPO-20	20	200	800	2000X1600
MNPO-30	30	300	800	2200X1800
MNPO-40	40	400	800	2400X1800
MNPO-50	50	500	800	2600X1800
MNPO-60	60	600	800	2600X1800
MNPO-80	80	800	800	2800X1800
MNPO-lOO	100	1000	800	3500X2200
MNPO-120	120	1200	800	3600X2200
MNPO-150	150	1500	800	3800X2300
MNPO-180	180	1800	800	4000X2300
MNPO-200	200	2000	800	5200X2300
MNPO-300	300	3000	800	5800X2300
MNPO-400	400	4000	800	6000X2300
MNPO-500	500	5000	800	7000X2300
MNPO-l000	1000	10000	1000	9000X2300
MNPO-2000	2000	20000	1200	12000X2300

MNP05-2000 TYPE MEDICAL & PLATEAU OXYGEN GENERATOR

Model No.	Capacity (Nm3/h)	Air Material (Nm3/h)	Power consumption (W)	Length x Width (mm)
MNPO-5	5	60	800	1600X1200
MNPO-IO	10	120	800	1800X1500
MNPO-20	20	240	800	2000X1600
MNPO-30	30	360	800	2200X1800
MNPO-40	40	480	800	2200X1800
MNPO-50	50	600	800	2600X1800
MNPO-60	60	720	800	2800X1800
MNPO-70	70	840	800	3000X2000
MNPO-80	80	960	800	3200X3200
MNPO-90	90	1080	800	3300X2000
MNPO-l00	100	1200	800	3500X2300
MNPO-200	200	2400	800	5200X3000


NITROGEN

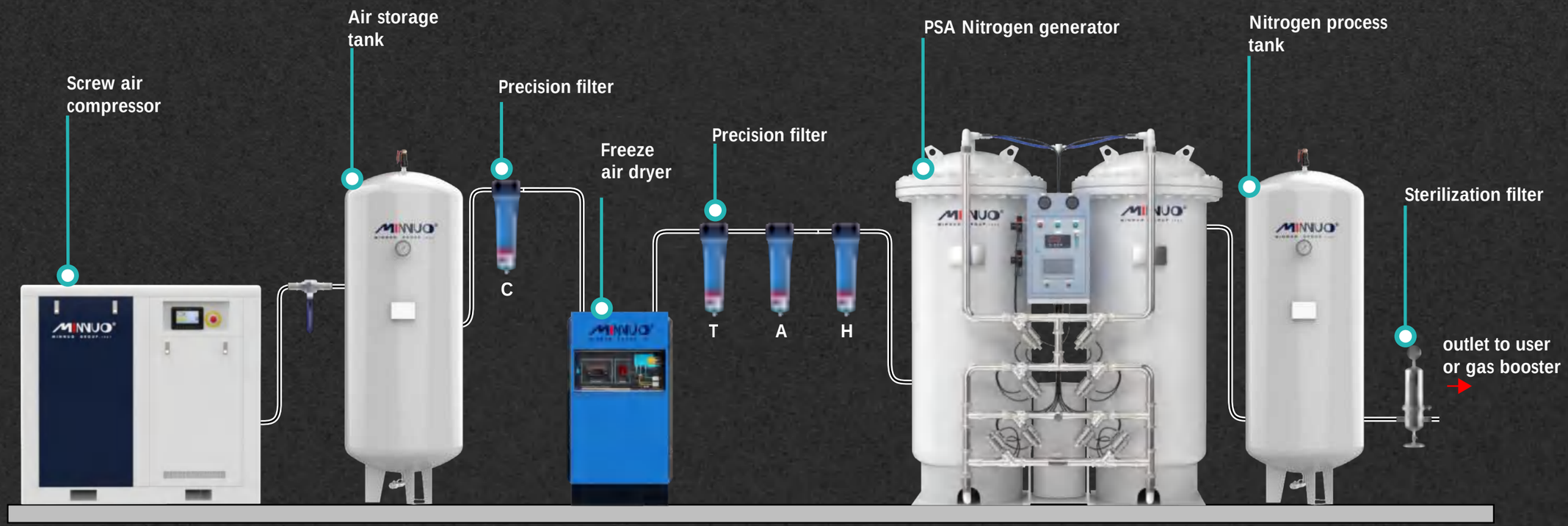
EQUIPMENT SELECTIONS

BASED ON THE ACTUAL REQUIREMENT OF USER,
WE WILL PROVIDE THE ENERGY-SAVING PSA
NITROGEN GAS GENERATOR SOLUTION.

MINNUO®

MINNUO GROUP. 1987

Purity	95%-99.9995%
N2 Capacity	1-2000Nm3/h
Discharge N2 Pressure	0-5.5 Bar (Normal)
N2 Dew Point	－40℃ (Normal)
Operation	Full automatic



PSA NITROGEN PRODUCTION FLOW CHART

OPTIONAL ATLAS AIR COMPRESSOR AND SUPPORT COLOR CUSTOMIZATION

PSA NITROGEN GENERATOR GENERALLY CONSISTS OF FIVE PARTS

A COMPRESSED AIR PURIFICATION SYSTEM
B AIR TANK SYSTEM
C O^2/N^2 SEPARATION SYSTEM
D N^2 BUFFER SYSTEM
E ELECTRICAL CONTROL SYSTEM

MNPN5-2000 TYPE MEDICAL & INDUSTRIAL NITROGEN GENERATOR

Model	Purity	Capacity	Model	Purity	Capacity	Model	Purity	Capacity
MNPN95-1	95%	1	MNPN99-1	99%	1	MNPN99.5-1	99.5%	1
MNPN95-5		5	MNPN99-5		5	MNPN99.5-5		5
MNPN95-10		10	MNPN99-10		10	MNPN99.5-10		10
MNPN95-20		20	MNPN99-20		20	MNPN99.5-20		20
MNPN95-30		30	MNPN99-30		30	MNPN99.5-30		30
MNPN95-40		40	MNPN99-40		40	MNPN99.5-40		40
MNPN95-50		50	MNPN99-50		50	MNPN99.5-50		50
MNPN95-100		100	MNPN99-100		100	MNPN99.5-100		100
MNPN95-120		120	MNPN99-120		120	MNPN99.5-120		120
MNPN95-150		150	MNPN99-150		150	MNPN99.5-150		150
MNPN95-200		200	MNPN99-200		200	MNPN99.5-200		200
MNPN95-500		500	MNPN99-500		500	MNPN99.5-500		500
MNPN95-800		800	MNPN99-800		800	MNPN99.5-800		800
MNPN95-1000		1000	MNPN99-1000		1000	MNPN99.5-1000		1000
MNPN95-2000		2000	MNPN99-2000		2000	MNPN99.5-2000		2000
MNPN99.9-1	99.9%	1	MNPN99.99-1	99.99%	1	MNPN99.999-1	99.999%	1
MNPN99.9-5		5	MNPN99.99-5		5	MNPN99.999-5		5
MNPN99.9-10		10	MNPN99.99-10		10	MNPN99.999-10		10
MNPN99.9-20		20	MNPN99.99-20		20	MNPN99.999-20		20
MNPN99.9-30		30	MNPN99.99-30		30	MNPN99.999-30		30
MNPN99.9-40		40	MNPN99.99-40		40	MNPN99.999-40		40
MNPN99.9-50		50	MNPN99.99-50		50	MNPN99.999-50		50
MNPN99.9-100		100	MNPN99.99-100		100	MNPN99.999-100		100
MNPN99.9-120		120	MNPN99.99-120		120	MNPN99.999-120		120
MNPN99.9-150		150	MNPN99.99-150		150	MNPN99.999-150		150
MNPN99.9-200		200	MNPN99.99-200		200	MNPN99.999-200		200
MNPN99.9-500		500	MNPN99.99-500		500	MNPN99.999-500		500
MNPN99.9-800		800	MNPN99.99-800		800	MNPN99.999-800		800
MNPN99.9-1000		1000	MNPN99.99-1000		1000	MNPN99.999-1000		1000
MNPN99.9-2000		2000	MNPN99.99-2000		2000	MNPN99.999-2000		2000

MINNUO AIR COMPRESSOR

AIR COMPRESSOR OPTION

You can choose the equipment brand you need according to your actual needs and equipment operating environment.

ATLAS COPCO AIR COMPRESSOR

MINNUO
AIR DRYER

AIR DRYER OPTION

You can choose the equipment brand you need according to your actual needs and equipment operating environment.

ATLAS COPCO
AIR DRYER

STAINLESS STEEL CONNECTING PIPE

A The pipeline does not rust, effectively protecting the downstream gas equipment

B Quick connection, easy installation

C The inner wall is smooth, the gas pressure drop is small, and the energy is saved

D The sealing performance is reliable, the pipeline does not leak, and it can be used for 20 years

E The inner wall of 304 stainless steel is clean and pollution-free, which can be used in the food and medical industry

PRECISION FILTER

EFFICIENT REMOVAL OF POLLUTANTS IN COMPRESSED AIR

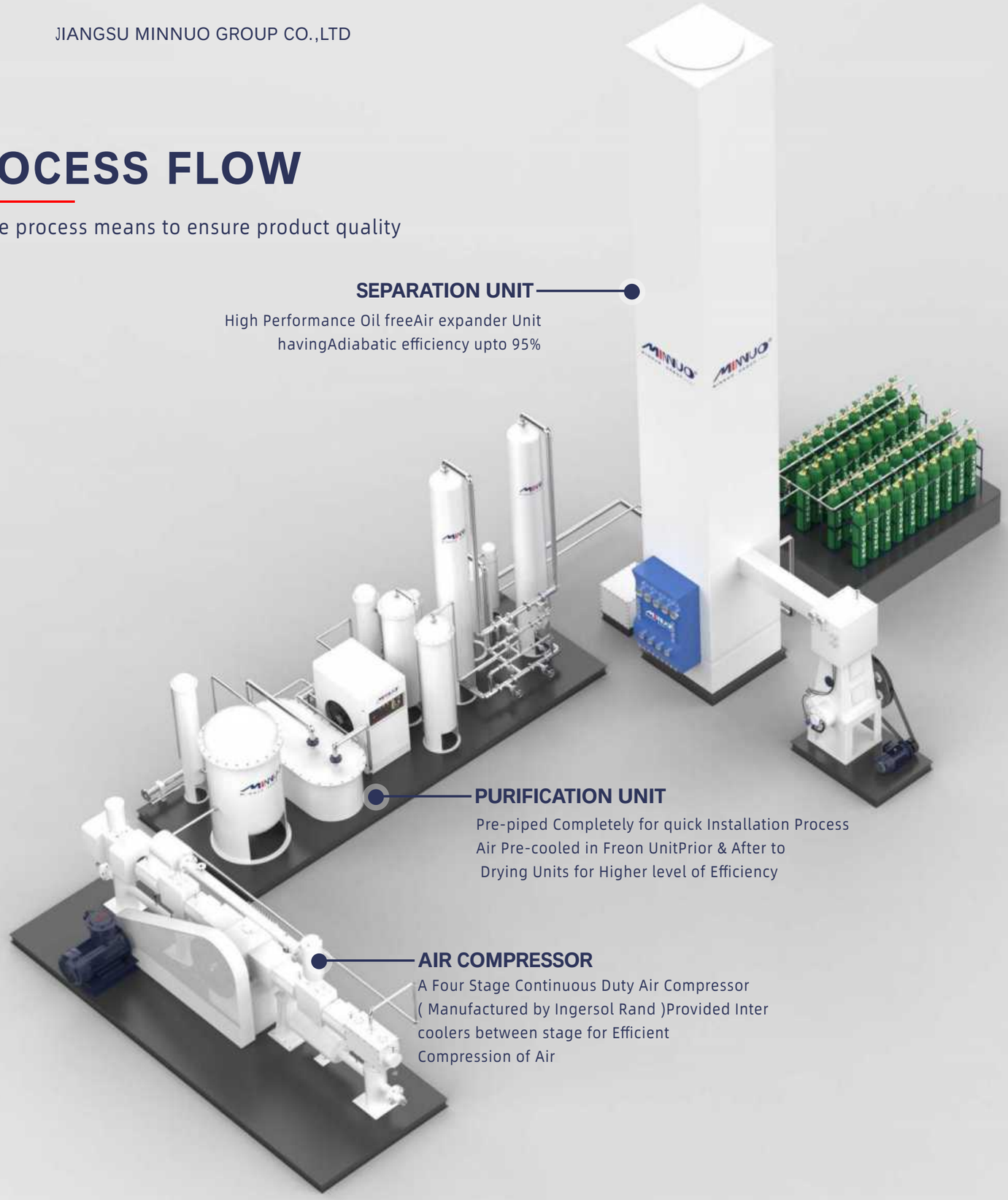
Provide users with high-quality compressed air filtration, dedicated to laser cutting, bottle blowing, advanced spraying, food, electronics, petrochemical and other industries. By installing CJ series ultra-clean precision filters, compressor air pollutants (such as oil, water, dust, etc.) are effectively removed.

CRYOGENIC AIR SEPARATION SERIES

The air is condensed into liquid by cryogenic rectification, and the air is separated according to the evaporation temperature of each component. The two-stage rectification column obtains pure nitrogen and pure oxygen at the top and bottom of the upper column.

PROCESS FLOW

Improve process means to ensure product quality



SEPARATION UNIT

High Performance Oil freeAir expander Unit havingAdiabatic efficiency upto 95%

PURIFICATION UNIT

Pre-piped Completely for quick Installation Process Air Pre-cooled in Freon UnitPrior & After to Drying Units for Higher level of Efficiency

AIR COMPRESSOR

A Four Stage Continuous Duty Air Compressor (Manufactured by Ingersol Rand)Provided Inter coolers between stage for Efficient Compression of Air

AIR COMPRESSOR

Air be compressed to 0 . 5-0 . 7mpa by air compressor.

PRE-COOLING

The air is pre-cooled to 5-10 , in the pre-cooling unit , and the moisture is separated.

AIR PURIFICATION SYSTEM

Removing the remained moisture , carbon dioxide and hydrocarbons ofcompressed air in the molecular sieve purifie.

AIR EXPANSION

The air expands and cools in the turbo expander and provides the cooling capacity required by the device.

HEAT EXCHANGE

The air exchanges heat with the refluxing oxygen , nitrogen , and dirty nitrogen inthe heat exchanger of the fractionation tower , and is cooled close to the liquefaction temperatureand the refluxed oxygen , nitrogen , and dirty nitrogen are repeatedly heat exchanged to the ambient temperature.

COOLING

Cooling the liquid air and liquid nitrogen before the throttling of the nitrogen in the chiller.

DISTILLATION

The air is rectified and separated in the rectification tower, and the product nitrogen isobtained at the top of the upper tower , and the product oxygen is obtained at the bottom of theupper tower .

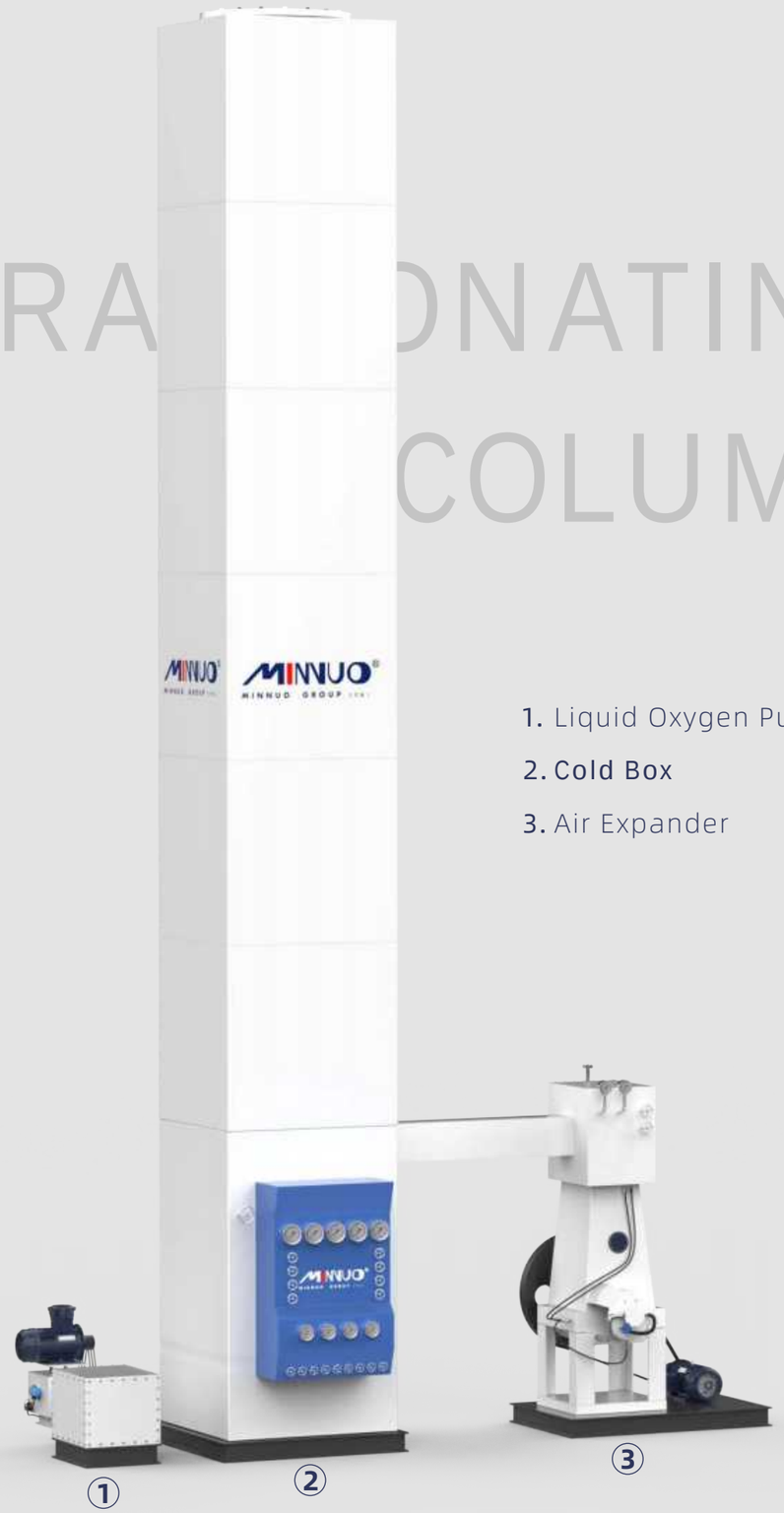
AIR COMPRESSION SYSTEM

Imported centrifugal air compressor ,
highefficiency
low consumption
stable andreliable operation

AIR PURIFICATION SYSTEM

The purifier adopts a vertical single-layerbed with simple and reliable structure andow resistance loss , built-in filter. Blowing off and purifier regeneration at the sameme , high-efficiency electric heaterensures complete regeneration of molecular sieve.

FRACTIONATING COLUMN



1. Liquid Oxygen Pump
2. Cold Box
3. Air Expander

FRACTIONATING COLUMN SYSTEM (COLD BOX)

The heating , cooling , liquid accumulation and purification of the fractionating tower can becompleted in one way , and the operation is simple , quick and easy . Adopt aluminum plate-fin heatexchanger , aluminum convection sieve plate tower , the entire fractionating tower equipment pipeline adopts argon arc welding , the tower body and main pipeline in the cold box are made ohigh-strength aluminum alloy or stainless steel to increase the strength , Reduce the torsiondamage of the pipeline . The equipment brackets , pipes and valve brackets in the cold box shall beade of stainless steel or aluminum alloe cold box is insulated withnd and sto ensure that the loss of cold capacity is minimized . The cold box structure guarantees the overastrength and the requirements of anti-seismic and wind resistance , and guarantees the loadbearing capacity of the cold box . When the cold box is running , it is equipped with airtight protectiod safety devices.

MNDO CRYOGENIC OXYGEN AIR SEPARATION UNIT

The cryogenic oxygen production oxygen & nitrogen production process introduces a lowpressure process into the air separation equipment , which reduces the energy consumption of theair separation and improves the safety of operation . Corresponding chemical software is used inprocess calculation and unit equipment design for process distillation calculation and structurecalculation to ensure advanced and reliable equipment.

TECHNICAL INDICATORS

Cryogenic Oxygen Air Separation Unit (MNDO)			
Name	Oxygen Gas	Pressure	20MpaG (Adjustable)
Purity	>99.6%	Operation Cycle	12 Months
Start Time	~ 24 Hours	Single Column, Internal compression Process	

TECHNICAL INDICATORS

Cryogenic Oxygen Air Separation Unit (MNDO)			
Name	Oxygen&Nitrogen Gas	Pressure	20MpaG(Adjustable)
Oxygen Purity	>99.6%O_2	Nitrogen Purity	>99.99%
Start Pressure	1.0MPaG	Double column, External compression Process	

SPECIFICATIONS CLASSIFICATION

Model	Unit	MNDON -50-50	MNDON -80/160	MNDON -180-300	MNDON -260-500	MNDON -350-700	MNDON -550-1000	MNDON -750-1500	MNDONAR-1200-3000-30Y
Oxygen Production	Nm^3/h	50	80	180	260	350	550	750	1200
Oxygen purity	$\%O_2$	≥99.6	≥99.6	≥99.6	≥99.6	≥99.6	≥99.6	≥99.6	≥99.6
Nitrogen Production	Nm^3/h	50	160	300	500	700	1000	1500	2000
Nitrogen Purity	$PPmO_2$	≤10	≤10	≤10	≤10	≤10	≤10	≤10	≤5
Liquid Argon Production	Nm^3/h	—	—	—	—	—	—	—	30
Liquid Argon Purity	$PPmO_2$+ $PPmN_2$	—	—	—	—	—	—	—	≤1.5PpmO2 +4PPmN2
Liquid Argon Pressure	MPa. A	—	—	—	—	—	—	—	—
Unit Consumption	Kwh/ Nm^3O_2	≤1.3	≤0.85	≤0.68	≤0.68	≤0.65	≤0.65	≤0.63	≤0.55
Device Occupied Area	m^2	145	150	160	180	250	420	450	800

MNDONAR-Y CRYOGENIC LIQUID AIR SEPARATION UNIT

Liquid air separation equipment requires more coolingcapacity than gas air separation equipmentAccording to the different production of liquid air separation equipment , we adopt a variety of different refrigeration cycleprocesses , turbine expander refrigeration , low temperaturepre-cooling refrigeration , circulating compressor high andlow pressure expander refrigeration, etc , through various methods to achieve reduction Energy consumption goalshe control system adopts DCS or PLC control system , and auxiliary field instruments, so that the whole set of equipment is simple to operate , stable and reliable.

SPECIFICATIONS CLASSIFICATION

Model	Unit	MNDO -180y	MNDO -250y	MNDO -400y	MNDON -1200y/300y	MNDONAR -1300y/200y/40y	MNDONAR -2700y/300y/90y
Liquid Oxygen Production	Nm^3/h	180	250	400	1200	1300	2700
Liquid Oxygen Purity	$\%O^2$	≥99.6	≥99.6	≥99.6	≥99.6	≥99.6	≥99.6
Liquid Oxygen Pressure	MPa.A	0.2	0.2	0.2	0.2	0.2	0.2
Liquid Nitrogen Production	Nm^3/h	—	—	—	300	200	300
Liquid Nitrogen Purity	$PPmO^2$	—	—	—	≤5	≤5	≤5
Liquid Nitrogen Pressure	MPa.A	—	—	—	0.5	0.5	0.5
Liquid Argon Production	Nm^3/h	—	—	—	—	40	90
Liquid Argon Purity	$PpmO^2$ +$PPmN^2$	—	—	—	—	≤1.5$PpmO^2$ +4$PPmN^2$	≤1.5$PpmO^2$ +4$PPmN^2$
Liquid Argon Pressure	MPa.A	—	—	—	—	0.2	0.2
Device Occupied Area	m^2	250	300	350	850	~4000	~4500

AFTER-SALES SERVICE

The key engineers have been engaged in the after-sales service of this system for more than 8 years,
and all the after-sales service engineers have undergone strict selection and training.
Maintain close cooperation with the suppliers of auxiliary facilities and components,
and provide spare parts and accessories timely.
7* 24 service.
Be equipped with the Wi-Ctrl remote wireless monitoring system developed by our company. When the equipment has alarm information,
it will automatically send the information to the remote data center and send an email to the mailbox of the local equipment maintenance engineer,
and automatic telephone notification, can promptly let remote and local joint maintenance equipment.
After-sales engineers have passed professional training and assessment and obtained authorized service certificates for air compressors,
refrigeration dryers and other equipment.