



**JINHONG GAS CO., LIMITED**



# COMPANY OVERVIEW

Founded in 1999, JinHong Gas Co., Limited is a total gas solution supplier specialized in R&D, Production, Sales and Services. Headquartered in Xiangcheng District, Suzhou, China and focusing on safety, environmental-friendliness and intensiveness, Jinhong has been listed at SSE STAR Market in June, 2020 (Stock Code: 688106). After years of development, Jinhong Gas has established over 60

subsidiary companies and embarked on the road of collectivized management. Dedicated to build No. 1 national brand of the industry, creating golden value for customers.

Jinhong Gas provides comprehensive gas solutions of all types of specialty gas, bulk gas and LNG. To provide professional service to customers at all times, we have always attached great importance to R&D and conformity. Jinhong holds numbers of certifications, including ISO9001, CNAS ISO17025, ISO14001, ISO45001, and ISO22000. Jinhong has established a national enterprise technology center, a national post-doctoral research station, a provincial high purity special gas engineering center, and a provincial special gas engineering technology research center.

Our main products: Ammonia, Nitrous Oxide, Silane, Argon, and Carbon Dioxide... have been exported to over 20 countries on 6 continents, including Germany, India, Japan, Nigeria, South Korea, the United States, Tanzania etc. Our customers come from all walks of life: Semiconductor, IC, Photovoltaic, Infrastructure, etc.





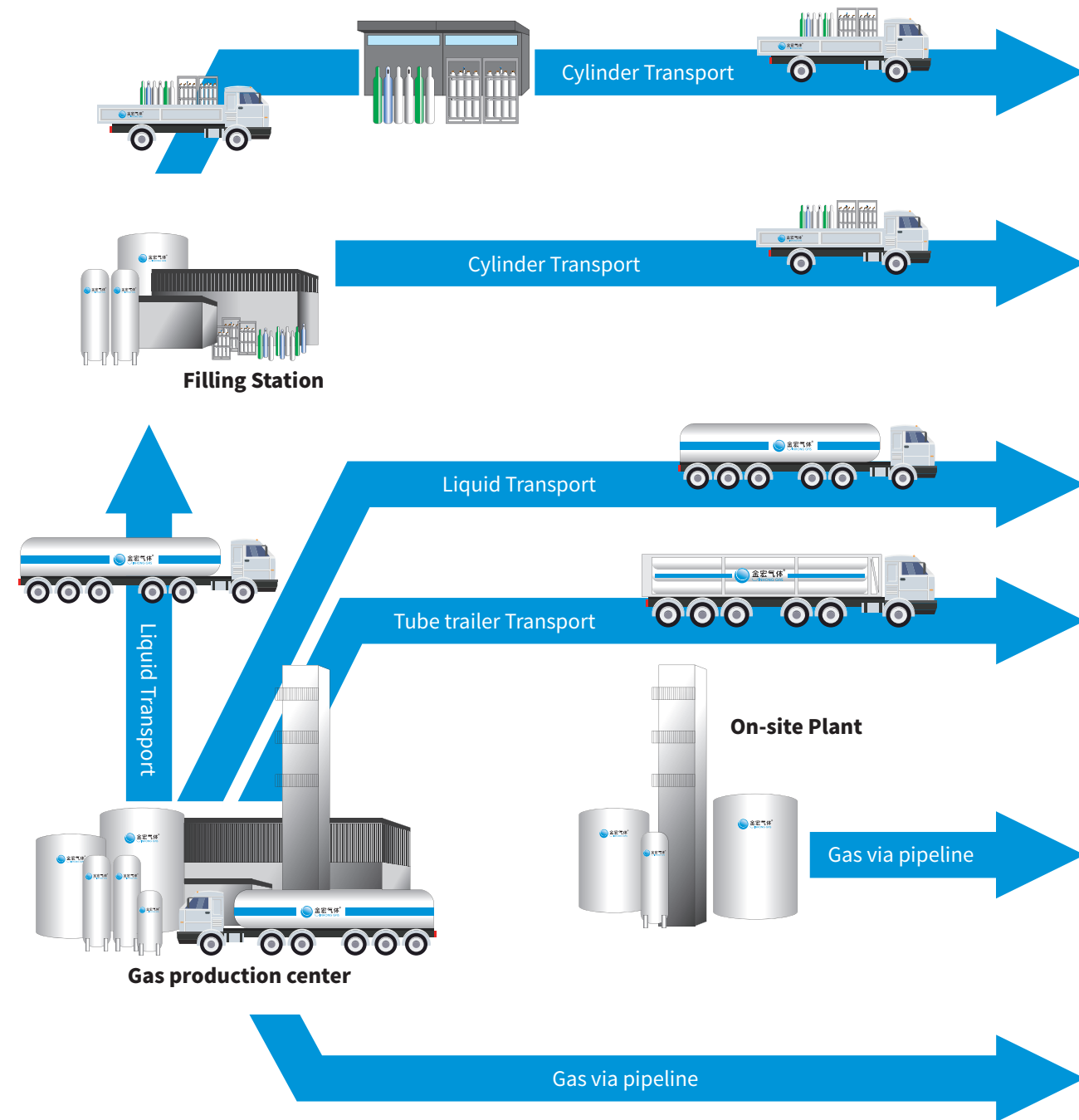
# PRODUCT LIST

Product	Formula	Highest Purity	Package	Valve
Oxygen	O <sub>2</sub>	5N	40L	CGA540
Nitrogen	N <sub>2</sub>	6N	47L	CGA580
Argon	Ar	6N	47L	CGA580
Hydrogen	H <sub>2</sub>	6N	47L	CGA350
Ammonia	NH <sub>3</sub>	7N	47L/930L/ISOTANK	DISS720
Silane	SiH <sub>4</sub>	6N	47L/470L/TT	DISS632
Nitrous Oxide	N <sub>2</sub> O	5N5	44L/440L/TT	DISS712
Carbon Dioxide	CO <sub>2</sub>	5N5	40L/440L/ISOTANK	DISS716
Methane	CH <sub>4</sub>	5N	40L	CGA350
Acetylene	C <sub>2</sub> H <sub>2</sub>	3N	40L	QF-15A
Ethylene	C <sub>2</sub> H <sub>4</sub>	5N5	40L/47L	DISS724
Propane	C <sub>3</sub> H <sub>8</sub>	2N5	40L/72L/112L	BWF-1
Ethylene Oxide	C <sub>2</sub> H <sub>4</sub> O	3N	50L/800L	QF-2A
Helium	He	6N5	47L/50L/TT	CGA580
Neon	Ne	5N	40L/44L	CGA580
Krypton	Kr	5N	40L	CGA580

Product	Formula	Highest Purity	Package	Valve
Xenon	Xe	5N	10L/47L	CGA580
Tetraethyl Orthosilicate	C <sub>8</sub> H <sub>20</sub> O <sub>4</sub> Si	9N	5GAL/10GAL/200L	1/4' VCR
Carbon Tetrafluoride	CF <sub>4</sub>	5N	44L	CGA580
Fluoroform	CHF <sub>3</sub>	5N	47L	DISS716
Fluoromethane	CH <sub>3</sub> F	4N	7L/47L	DISS724
Hexafluorobutadiene	C <sub>4</sub> F <sub>6</sub>	4N	47L	DISS716
Octafluorocyclobutane	C <sub>4</sub> F <sub>8</sub>	5N	47L	DISS716
Nitrogen Trifluoride	NF <sub>3</sub>	4N	47L/470L/TT	CGA640
Sulfur Hexafluoride	SF <sub>6</sub>	5N	40L	DISS716
Sulfur Oxide	SO <sub>2</sub>	3N	40L/800L	QF-10
Chlorine	Cl <sub>2</sub>	5N	44L/1000L	DISS634
Hydrogen Chloride	HCl	5N	44L/1000L	DISS720
Hydrogen Bromide	HBr	5N5	47L	DISS634
Boron Trichloride	BCL <sub>3</sub>	5N	47L	CGA660
Hexachlorodisilane	Si <sub>2</sub> Cl <sub>6</sub>	6N	7L	1/4' VCR
Disilane	Si <sub>2</sub> H <sub>6</sub>	4N8	47L	DISS632
Dichlorosilane	SiH <sub>2</sub> Cl <sub>2</sub>	3N	40L	DISS636
Hydrogen & Argon Mixture	H <sub>2</sub> +Ar	H2 6N/Ar 6N	40L	CGA580
Silane & Nitrogen Mixture	SiH <sub>4</sub> +N <sub>2</sub>	SiH4 6N/H2 6N	47L	DISS632
Phosphine & Hydrogen Mixture	PH <sub>3</sub> +H <sub>2</sub>	PH3 6N / H2 6N	47L /470L	DISS632
Diborane & Hydrogen Mixture	B <sub>2</sub> H <sub>6</sub> +H <sub>2</sub>	B2H6 4N5 /H2 6N	47L /470L	DISS632
Methane & Argon Mixture	CH <sub>4</sub> +Ar	CH4 5N5 /Ar 6N	47L	CGA580
Ethylene Oxide & Carbon Dioxide Mixture	C <sub>2</sub> H <sub>4</sub> O+CO <sub>2</sub>	EO 3N/CO2 3N	50L/800L	QF-2A
Customized Mixture Gas	Customized	Customized	Customized	Customized



# OUR GAS SOLUTIONS



# INDUSTRIAL GAS

## NITROGEN/OXYGEN/ARGON



Oxygen, nitrogen, and argon are indispensable industrial gases in metallurgy, medical and other industries, and are widely used in metal processing, heat treatment, waste-water treatment, electronics, and protective gas, etc.

The construction of cryogenic air separation equipment provides a large number of high-quality liquid oxygen, liquid nitrogen and liquid argon products. Air separation equipment is an equipment that takes air as raw material, turns air into liquid by compression cycle deep freezing method, and then gradually separates oxygen, nitrogen, argon and other gases from liquid air through rectification. It is also a large and complex system, mainly composed of the following subsystems: power system, purification system, refrigeration system, heat exchange system, distillation system, product transport system, liquid storage system and control system.

Strong production and distribution capabilities allows Jinhong to provide a guarantee for industrial gas users.

# HYDROGEN



As an environment-friendly energy source, hydrogen is drawing increasing attention from people. Jinhong is committed to developing hydrogen to provide cleaner energy solutions, and to build a clean energy society.

Hydrogen has important applications in chemical industry, metallurgy, electronics, national defense, scientific research and other fields. It is widely used as raw material gas, carrier gas and reducing gas. With the development of liquid hydrogen production, hydrogen has been gradually applied to space flight and rocket as an excellent rocket propellant and an important liquid fuel.

JinHong Gas hydrogen plant uses water electrolysis, exhaust purification recovery, light acetylene pyrolysis to supply high purity hydrogen and provide services for hydrogen users in various industries.

# HELIUM



Jinhong has always been committed to developing and recycling helium resources to establish our own helium center and provide guarantee to our helium users.

Helium is the most valuable and versatile inert gas in the world. It is a non-renewable resource gas, but also an indispensable resource gas in all professions. It is widely used in military industry, scientific research, petrochemical, refrigeration, medical care, high-precision welding, helium leak detection, optoelectronic products, deep-sea diving, gas inflation and other fields.

# ACETYLENE

Acetylene is often used in metal welding and cutting, organic synthesis, atomic absorption spectroscopy, carrier gas, calibration gas, synthetic rubber, lighting, etc.

JinHong Gas makes use of advanced and unique technology to make innovation in production system, utilizes the hydropower resources, reduces energy consumption, and then comprehensively treats the process waste to achieve high efficiency and environmental protection.



# CARBON DIOXIDE

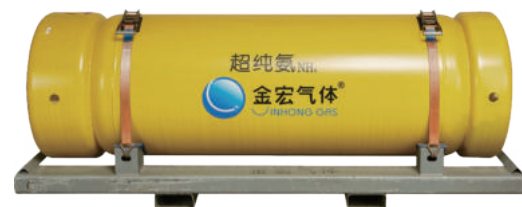


Over a long period of time, Jinhong focuses on recycling waste carbon dioxide and converting greenhouse gases into usable resources. Through the recovery of chemical exhaust gas, various standards of carbon dioxide products are purified and manufactured. Food-grade carbon dioxide can meet the needs of the food industry for the production of carbonated beverages, preservation of fruits and vegetables, and agricultural fertilization. Industrial-grade carbon dioxide can be used in chemical synthesis industry, mechanical protection welding, metal casting processing, petroleum exploration, fire-fighting, medical care and other industries. The electronic grade carbon dioxide is used in a wide range of industries such as semiconductors.



# SPECIALTY GAS

## AMMONIA



UHP Ammonia is a high-purity gas commonly used in semiconductor manufacturing and other high-tech applications such as silicon wafer manufacturing and semiconductor device production. It can also be used in high-tech fields such as graphene growth, solar cell manufacturing, and chemical vapor deposition. In these applications, high-purity ammonia gas is critical for manufacturing quality and equipment reliability.

Jinhong Gas provides high-quality UHP ammonia products to ensure that customers get the best performance and results during use.

The purity of our UHP ammonia products can reach 99.99999%, and the most advanced production technology and quality control methods are adopted to ensure that the purity and quality of each batch of products meet the standard.

## NITROUS OXIDE



Nitrous oxide is an essential high-purity gas in the semiconductor industry and can be used to manufacture high-purity semiconductor materials and devices. In addition, nitrous oxide is also widely used in fields such as medical treatment, food, chemistry, metallurgy and aviation.

Jinhong Gas is a professional supplier of nitrous oxide. We provide nitrous oxide with a purity of up to 99.9995%. With advanced production equipment and lean production management.

Jinhong also provides comprehensive technical support and consulting services while supplying gas, to ensure that customers can obtain stable excellent performance and high production efficiency in the manufacturing process.

## SILANE



Silane is mainly used in semiconductor manufacturing, solar panel manufacturing, coating manufacturing, textile processing and chemical products. It is one of the important materials for the production of devices such as silicon wafers and transistors.

We have a stable source of silane and professional related technologies to meet the purity and quantity requirements of different clients to ensure timely delivery and stable supply.

Jinhong is committed to providing customers with comprehensive support and solutions, not only providing high-quality silane products, but also providing related services such as distribution, equipment leasing and technical support. Our professional team can provide customers with comprehensive technical consultation and solutions to meet the different needs of customers and create greater value together with our customers.

## OCTAFLUOROCYCLOBUTANE

As an inert gas, octafluorocyclobutane is widely used in the manufacture of semiconductor devices. It can be used as a fluorine source in etching, cleaning and deposition processes, and as a raw material for preparing thin films. In addition, C4F8 can also be used to prepare ultra-thin films, such as submicron photoresist films and packaging materials for LCD.

Jinhong specializes in providing customers with high-quality C4F8 gas with purity up to 99.999%, which can meet the requirements of various semiconductor and electronics industry applications. We have modern production lines and strict quality control system to ensure stable and reliable product quality.

Jinhong is committed to providing customers with the highest quality gas supply services. Whether you are engaged in the manufacture of semiconductor devices, LCD or other electronic components, we can provide you with professional gas supply and technical support.



## CARBON DIOXIDE



Jinhong Gas is committed to promoting the sustainable development of industrialization, recycling waste carbon dioxide gas, providing customers with practical green and environmental protection gas solutions, and building a sustainable social and economic environment. We offer a variety of packaging and delivery options to meet the diverse needs of our customers in semiconductor, industrial and other fields.

High-purity carbon dioxide is one of the main products supplied by Jinhong. 99.9995% high-purity carbon dioxide plays a vital role in semiconductor manufacturing and other industrial fields. In the field of semiconductor manufacturing, high-purity carbon dioxide is necessary to protect the surface of the wafer from contamination and ensure product quality and production efficiency. In addition, high-purity carbon dioxide gas is also widely used in protecting food, enhancing soda beverage, accelerating laser cutting, and manufacturing medical devices.

## TETRAETHOXYSILOXANE-TEOS



TEOS, also known as tetraethoxysilane, is a common inorganic compound with the molecular formula  $\text{Si}(\text{OC}_2\text{H}_5)_4$ . The metallic ion purity of TEOS provided by Jinhong Gas has reached 99.9999999% (9N). In semiconductor manufacturing, TEOS gas is an important precursor that can be used to create thin films of silicon dioxide for the fabrication of capacitors, MOSFETs, and other microelectronic devices. In the optical field, TEOS gas can also be used to manufacture high refractive index optical glass, which is widely used in lasers, optical fibers and other optical devices.

## HIGH PURITY BULK GASES



High-purity bulk gas is an important raw material widely used in all walks of life. It has a wide range of application fields and uses, and is also one of Jinhong's main businesses. We provide a variety of high-purity bulk gases such as oxygen, nitrogen, hydrogen, helium, and argon with a purity greater than 5N. These high-purity gases are widely used in semiconductor, pharmaceutical, aviation, chemical, energy, food and other industries.

In the semiconductor industry, high-purity gases are important materials for semiconductor manufacturing. Gases such as nitrogen, hydrogen, and helium play an important role in semiconductor production to ensure the quality and stability of semiconductor chip production. In the field of medicine, high-purity bulk gas is also an important material for the manufacture of medicines and medical equipment. For example, in the pharmaceutical process, oxygen, nitrogen and other gases need to be used to control the gas composition and content in the environment.

In addition, in aviation, energy, food and other fields, high-purity gases are also widely used. For example, oxygen is used in oxygen systems in aviation cabins, hydrogen is used as fuel for energy devices such as fuel cells, and argon is used to protect high-temperature processes such as welding.

Jinhong Gas specializes in providing high-quality, high-purity bulk gas products, and provides high-quality gas services for customers in various industries. According to the characteristics and storage methods of each industry or each gas, we provide various gas supply and gas consumption solutions for customers, and strive to promote the sustainable development of social resources and create a safe, efficient, and environmentally friendly conservation-oriented society.

## GAS MIXTURE

Mixed gas has good uniformity and stability, can preserve the chemical composition and characteristic value of the substance, and transfer its value in different spaces and times. With the rapid development of economy and science & technology, the use of mixed gases has become more extensive and the demand has increased sharply. They are used in oil and gas development, chemical industry, food industry, medical care, public security and transportation, national defense aviation, environmental monitoring, and verification and calibration of instruments. The application in such fields is very extensive.





# GAS FOR MEDICAL / FOR HOME

## OXYGEN/HELIUM/ANESTHETIC GAS



No matter in the medical institutions or at home, Jinhong is able to provide a gas solution. Jinhong's original medical gas technology has stably provided high-quality services and medical gas for major hospitals.

Our Family Medical Oxygen Service Center allows citizens to have more convenient access to medical oxygen services. Jinhong Gas is committed to providing medical gas products and services that enable people in needs to receive the best treatment in hospitals, clinics, nursing homes, emergency centers and households.

Helium is often used in MRI equipment and other medical inspection field. Anesthetic Gas always recognizes as the gas mixture of Nitrous Oxide and Oxygen. Jinhong keeps a close cooperation with local hospitals and medical institutions to ensure the fast response whenever needed.

## STERILIZATION GAS



Jinhong does not only supply medical gas services to the hospitals. We have also found our road to the medical supplies companies. Ethylene oxide is a broad spectrum sterilization agent, can kill a variety of microorganisms at room temperature, including spores, tuberculosis bacilli, bacteria, viruses, fungi, etc. The mixed gas of Ethylene Oxide and Carbon Dioxide is often applied in this field.



## CARBON DIOXIDE / DRY ICE



Many people are pursuing a healthier lifestyle these days, so the products such as diet soda become more and more popular. Carbon dioxide, as an essential material for carbonated drinks, has also become one of the main products of Jinhong in the civil field.

As a product extended from carbon dioxide, dry ice is widely used in low temperature refrigeration, food preservation, equipment surface cleaning. But because of its characteristic, dry ice is not recommended for long distance transportation.

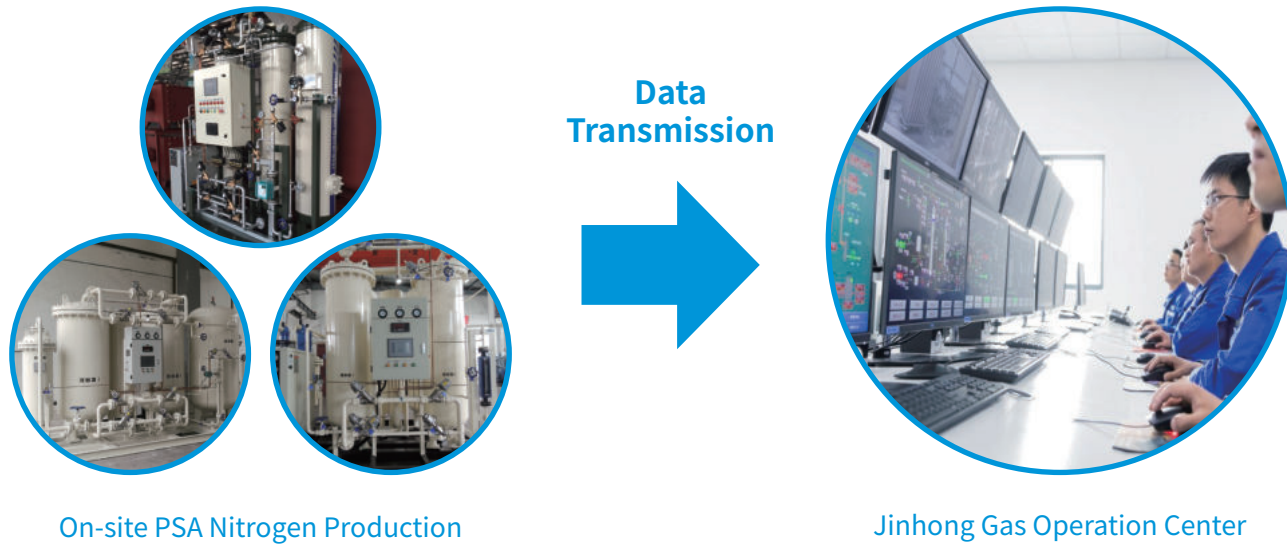


## GAS ACCESSORIES

As a total gas solution supplier, Jinhong does not only provide gas products, but also gas accessories, including Cylinders, Cylinder Trolley, Valves, Regulator, Gas Hose, Manifold, etc. We are experienced in exporting gas accessories to our overseas clients.







# PSA SPECIFICATION

PSA On-site Nitrogen Unit has the advantages of simple structure, easy operation, low energy consumption, small occupied area, etc. It is especially suitable for small gauge nitrogen production needs. Widely used in nitrogen protection, metal bellows, SMT, cemented carbide, vanadium nitride, iron vanadium, mechanical parts of the heat treatment protection atmosphere; Nitrogen filling and oxidation prevention in copper processing, pharmaceutical chemical industry, float glass and other production processes.

## Production Range:

N <sub>2</sub> Output	Purity	Pressure	Temperature
50-500Nm <sup>3</sup> /h	99%-99.99%	0-0.8MPa	Room Temp.

- ◆ **Low Energy Consumption:** 0.2-0.4kW.h/Nm<sup>3</sup>
- ◆ **Power Demand:** 380V, Three Phase
- ◆ **Small Occupied Area:** PSA nitrogen production device as a whole skid, compact structure, small footprint. Dimensions of some models:

50Nm <sup>3</sup> /h	100Nm <sup>3</sup> /h	150Nm <sup>3</sup> /h	≥ 200Nm <sup>3</sup> /h
4300*2300*2800	4900*2500*3100	8400*2100*3500	Designed Accordingly

## ◆ PSA Sketch:



# STRATEGIC CUSTOMERS











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