GiantAir 节能高效 品质典范
AIRDRYER

PSA制氮机

PSA NITROGEN GENERATOR

高纯度 | 低气耗 | 长寿命

High purity Low gas consumption Long service life





江西沃科工贸有限公司

JIANGXI VOCO INDUSTRIAL AND TRADE CO., LTD.

GiantAir

节能高效 品质典范

AIRDRYER

专注压缩空气净化与分离行业

Focus on compressed air purification and separation

我们是国家高新技术企业，
我们是国家压缩气体净化设备标准的制定与修订企业之一，
我们掌握压缩空气净化与分离核心技术，
并精通如何制造品质优良的压缩空气净化与分离产品；
我们严格遵循IOS质量管理体系，
本着“严检来料、严控制程、严苛品质”的品管理念，
确保每一个产品都稳定可靠；
我们的产品通过了欧盟的CE认证，
我们的产品通过中国产品质量安全认证，
我们是江西省“守合同重信用”企业，
我们是南昌市成长型企业，
东莞市规模与效益倍增计划企业，
我们的销售和服务体系遍布全国各地。

We are a national high-tech enterprise.
We are one of the national companies in the development and revision of compressed gas purification equipment standards.
We have been grasped the core technical of compressed air purification and separation, also know how to make the best quality products;
We strictly follow the IOS quality management system, and adhere to the quality control concept of “strict inspection, strict control, and strict quality” to ensure each product is stable and reliable;
Our products have passed the CE certification and the Chinese product quality and safety certification.
We are a “contract-honoring and credit-respecting” enterprise in JiangXi Province, a growth enterprise in NanChang and a scale and benefit multiplication plan enterprise in NanChang
Our sales and service systems are spread all over the country.









VOCO

荣誉资质、证书

HONOURS QUALIFICATIONS、CERTIFICATES



















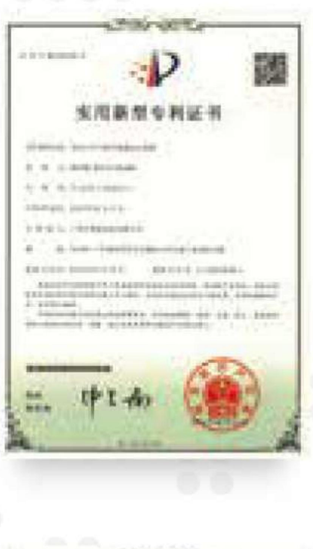


































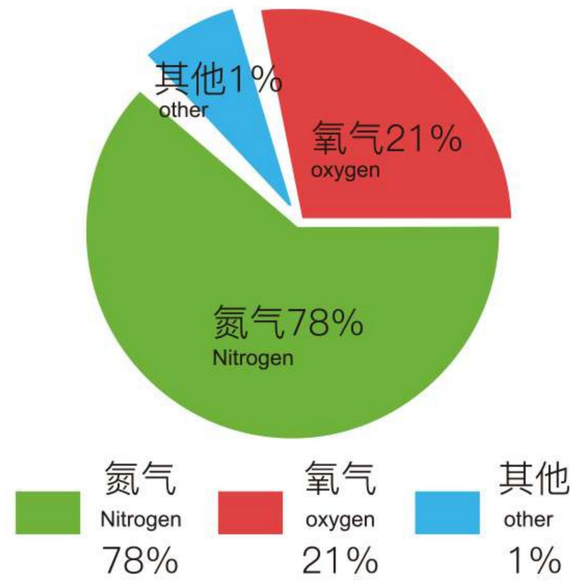




关于氮气 About N_2

氮气，化学式为N_2，通常状况下是一种无色无味的气体，而且一般氮气比空气密度小。氮气占大气总量的78.08%（体积分数），是空气的主要成份之一。在标准大气压下，氮气冷却至-195.8℃时，变成无色的液体，冷却至-209.8℃时，液态氮变成雪状的固体。氮气的化学性质不活泼，常温下很难跟其他物质发生反应，所以常被用来制作防腐剂。但在高温、高能量条件下可与某些物质发生化学变化，用来制取对人类有用的新物质。

Nitrogen, with the chemical formula N_2, is generally a colorless and odorless gas, and generally nitrogen is less dense than air. Nitrogen accounts for 78.08% (volume fraction) of the total atmosphere and is one of the main components of air. At standard atmospheric pressure, when nitrogen is cooled to -195.8 ° C, it becomes a colorless liquid, and when cooled to -209.8 ° C, liquid nitrogen becomes a snowy solid. Nitrogen is chemically inert and difficult to react with other substances at room temperature, so it is often used as preservatives. However, under high temperature and high energy conditions, it can undergo chemical changes with certain substances to prepare new substances useful to humans.



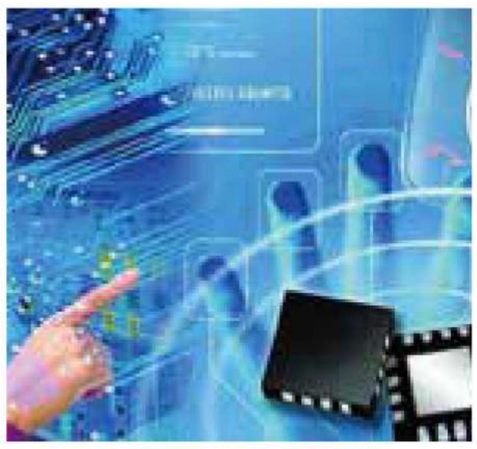
相应纯度的氮气工作范围
Working range of nitrogen with corresponding purity



95-99.9%氮气纯度（化工、新材料行业）
常用于化工原料气、管道吹扫、气体置换、保护气体、产品输送等。主要应用于化工、氨纶、橡胶、塑料、轮胎、聚氨脂、生物科技、中间体等领域。

99-99.9%氮气纯度（医药、食品行业）
主要应用于食品包装、食品保鲜、医药包装、医药置换气、医药输送气体。通过变压吸附制氮机制取纯度大于99%或纯度为99.9%的氮气，需通过除菌、除尘、除水等处理，得到高品质的氮气，才能满足该行业的特殊要求。





99.9-99.99%氮气纯度（电子行业）
一般用于电子产品的封装、焊接、烧结、退火、还原、储存等。主要应用于波峰焊、回流焊、水晶、压电、电子陶瓷、电子铜带、锂电池、电子合金、激光切料等行业。所以又根据用途不同对纯度的要求也有所变化，通常要求不能低于99.9%，或者更高，也有采用99.99%纯度的，更有甚者会采用氮气纯化设备得到纯度大于99.9995%、露点低于-65℃的高品质氮气。

≥99.999%氮气纯度（冶金、金属加工行业）
用于退火保护气体、烧结保护气体、氮化处理、洗炉及吹扫用气等。广泛应用于金属热处理、粉末冶金、磁性材料、铜加工、金属丝网、镀锌线、半导体、粉末还原等领域。通过变压吸附制氮机制取到纯度大于99.9%的氮气， 再联合氮气纯化设备得到纯度大于99.9995%、露点低于-65℃的高品质氮气。



PSA制氮机工作原理 Working principle of PSA nitrogen generator

变压吸附（Pressure Swing Adsorption简称PSA)是一种新型气体吸附分离技术，是以碳分子筛为吸附剂（碳分子筛是一种以煤粉为原料，经特殊加工而成的墨色颗粒，其表面布满了无数的微孔），用一个两床PSA装置，从空气中分离出富氮，从而获得氮气。其分离原理：利用氧氮分子的直径大小不同（氮大氧小），压缩空气经过吸附床时，氧分子直接进入碳分子筛表面的微孔而被吸附，氮分子无法进入微孔而在吸附床得到富集，形成一定纯度的氮气。碳分子筛吸附氧的能力因其压力升高而增大，压力下降而减小，利用碳分子筛加压时吸附，减压时解吸的这一原理，配合AB塔循环工作，达到分离目的，简称PSA制氮。

PSA制氮优点：

(1)产气快，纯度稳定。　(2)可在室温和常用压力(0.8MPa)下工作，床层再生时不用加热，节能经济。

(3)操作简单，维护方便。　(4)连续循环工作，可完全达到自动化。

Pressure Swing Adsorption (PSA) is a new type of gas adsorption separation technology, which uses carbon molecular sieve as an adsorbent (carbon molecular sieve is a kind of ink-colored particles made of coal powder as a raw material, which is specially processed, and its surface is distributed filled with countless micropores), using a two-bed PSA device to separate nitrogen-rich from the air, thereby obtaining nitrogen.

The separation principle: In consideration of different diameters of oxygen and nitrogen molecules (nitrogen small and oxygen larger), when compressed air passes through the adsorption bed, oxygen molecules directly enter the pores on the surface of the carbon molecular sieve and are adsorbed, and nitrogen molecules cannot enter the pores and are in the adsorption bed Enriched to form a certain purity of nitrogen. The capacity of carbon molecular sieve to absorb oxygen increases as its pressure rises and decreases with pressure decrease. The principle of adsorption when carbon molecular sieve is pressurized and desorption when depressurized is used in conjunction with the circulating work of AB tower to achieve the purpose of separation. Referred to as PSA nitrogen generator.

PSA nitrogen production advantages:

(1) Fast gas production and stable purity.

(2) It can work at room temperature and common pressure (0.8MPa), without heating during bed regeneration, saving energy and economy.

(3) Simple operation and convenient maintenance.

(4) Continuous cycle work can be fully automated.

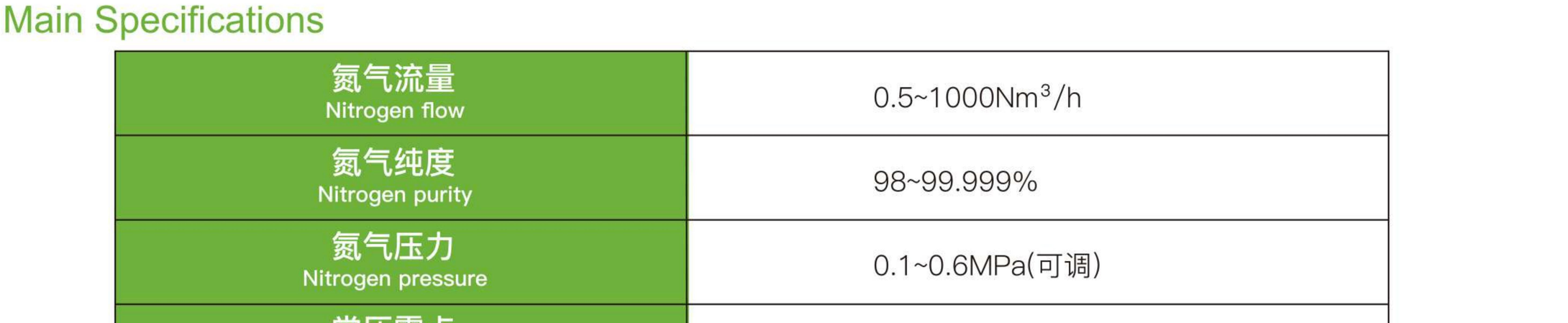
主要技术指标
Main Specifications

氮气流量 Nitrogen flow	0.5~1000Nm³/h
氮气纯度 Nitrogen purity	98~99.999%
氮气压力 Nitrogen pressure	0.1~0.6MPa(可调)
常压露点 Atmospheric dew point	–40℃ ~ –70℃

备注：因模组式制氮机体积受限，氮气流量小于等于40Nm³/h时，推荐模组式制氮机；氮气流量大于40Nm³/h时，推荐双塔式制氮机。

Note: Due to the limited volume of the modular nitrogen generator, when the nitrogen flow is less than or equal to 40Nm³ / h, the modular nitrogen generator is recommended;When the nitrogen flow rate is greater than 40Nm³ / h, twin-tower nitrogen generator is recommended.

设备安装示意图
Equipment installation diagram



模组式制氮机
Modular nitrogen generator

氮气流量 Nitrogen flow	0.5~40Nm³/h
工作温度 Working temp	5–40℃
最低进气压力 Minimum inlet pressure	0.6MPa
氮气纯度 Nitrogen purity	98~99.999%
噪音值 Noise	＜70dB
露点温度 PDP	–40℃ ~ –70℃
电源规格 Power supply	220V 50Hz/AC110V DC24V
氮气出口压力 Nitrogen outlet pressure	0.1—0.6MPa（可调，并可内置氮气罐）
最高环境温度 Maximum ambient temp	≤45℃
控制方式 Control method	PLC可编控制
	全功能人机界面微电脑控制器



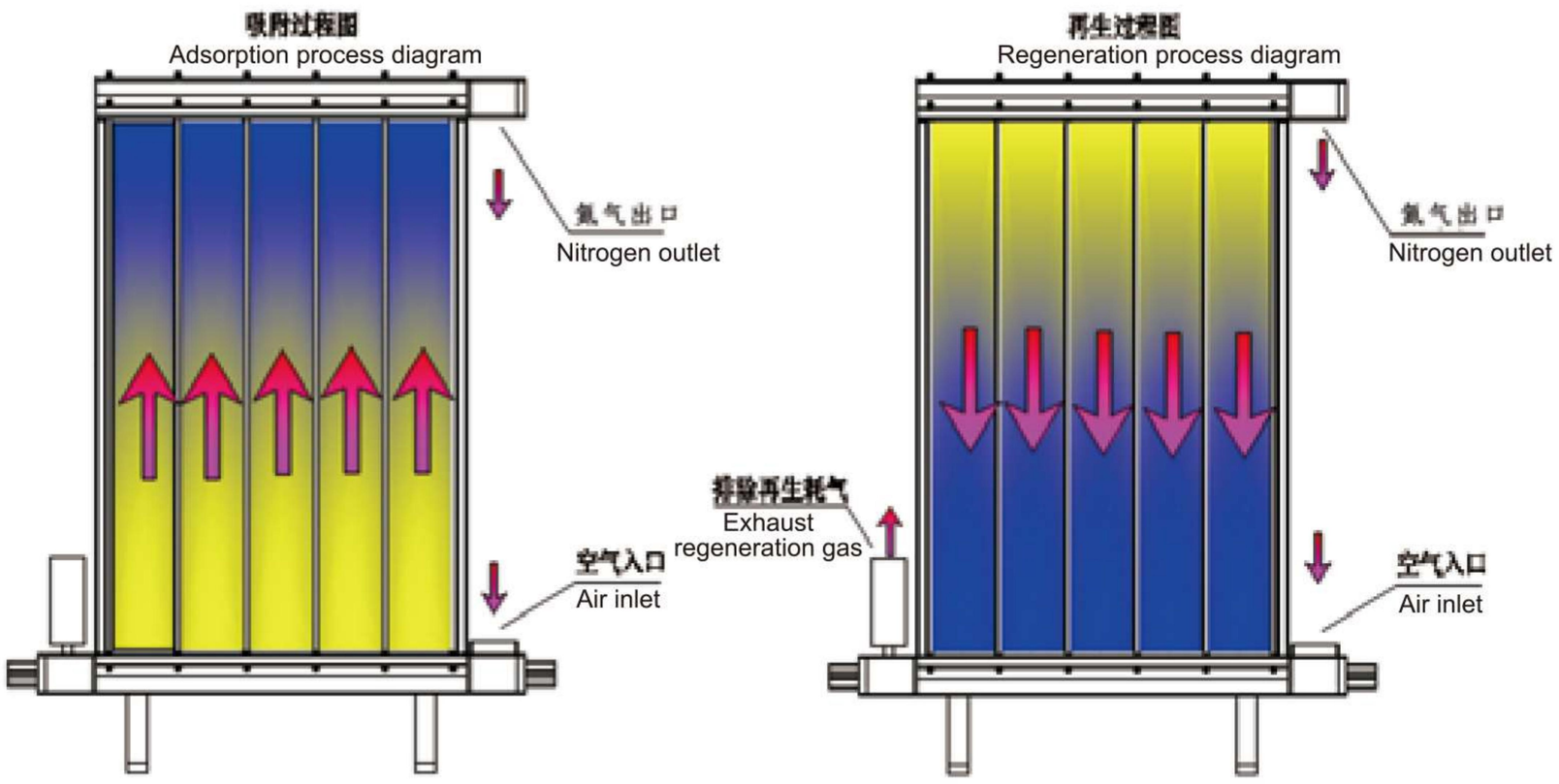
模组式制氮机特点 Features of Modular Nitrogen Generator

- 高效能、低空氮比，进而实现节能减排，提高经济效益。模组式制氮机采用高性能分子筛，99.99%空氮比达到4.2:1，传统双塔式制氮机99.99%空氮比为5.5:1。例40Nm³/h模组式制氮机需要压缩空气2.8Nm³/min，而40Nm³/h双塔式制氮机需要压缩空气3.7Nm³/min，节省24%的能耗。
- 采用PLC可编控制程序，配备高分辨率的人机交互，侦测各项数据（空气压力、氮气压力、氮气纯度、氮气流量），记录运行情况等。实现不合格氮气全自动排空、节能自动暂停机功能，最大限度的节省能耗。
- 采用独特的电磁阀与气动阀相结合的控制方式，避免传统繁琐的多阀门控制结构，运行稳定可靠。
- 采用高强度铝合金结构，不腐不锈，避免因管道内壁腐蚀、脱落等原因造成的设备故障，保证生产正常运转，大大延长整机使用寿命。部分机型可内置氮气罐，最大限度节省客户的有效安装空间。
- 设备支持连续24小时不间断提供所需品质氮气，避免因气瓶使用完造成的过渡时间停产。产能扩充时不需要考虑去除旧设备更换较大设备带来的成本问题，只需要增加相应的模块，就能满足扩充要求，方便快捷 ， 节约成本。
- High efficiency, low air nitrogen ratio, and then achieve energy saving and emission reduction, improve economic efficiency. The modular nitrogen generator uses a high-performance molecular sieve with a air-to-nitrogen ratio of 4.2: 1 when purity of 99.99%, and the traditional twin-tower nitrogen generator has a air-to-nitrogen ratio of 5.5: 1 when purity of 99.99%. For example, a 40Nm³ / h modular nitrogen generator requires compressed air of 2.8Nm³ / min, while a 40Nm³ / h twin tower nitrogen generator requires compressed air of 3.7Nm³ / min, saving 24% of energy consumption.
- Adopt PLC programmable control program, equipped with high-resolution human-computer interaction, detect various data (air pressure, nitrogen pressure, nitrogen purity, nitrogen flow), record the operation status, etc. It realizes the functions of automatic evacuation of unqualified nitrogen and energy-saving automatic pause machine to save energy consumption.
- A unique control method combining solenoid valve and pneumatic valve is adopted to avoid the traditional cumbersome multi-valve control structure, and the operation is stable and reliable.
- Adopt high-strength aluminum alloy structure, non-corrosive and rust-proof, avoid equipment failure caused by corrosion and shedding of the inner pipeline, ensure normal operation of production, and greatly extend the service life of the whole machine. Some models can be built-in with a nitrogen tank, which saves customers the most effective installation space.
- The equipment supports 24 hours of continuous supply of nitrogen of the required quality to avoid the production stoppage due to the transition time caused by the out of gas from cylinders. There is no need to consider the cost of removing old equipment and replacing larger equipment when expanding production capacity. It only needs to add corresponding modules to meet the expansion requirements, which is convenient and fast, saves costs.

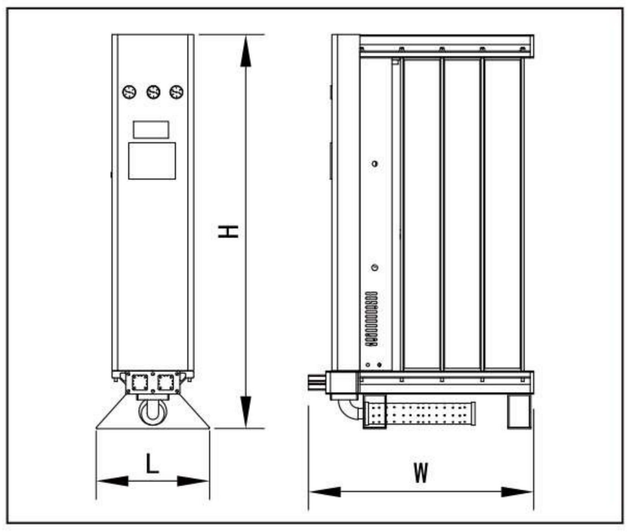
工作流程
Working process

◆ 沃科模组式制氮机由多个高强度铝合金腔体组成。每组腔体分为两个腔，每个腔体填满吸附剂，用以分离经过压缩空气中的氮气和氧气。当一个腔在工作（吸附）时，与其相对的另一侧利用变压吸附方法再生。工作时，压缩空气自吸附腔底部向上均匀扩散，空气中的氧气被吸附剂吸附，实现氮氧分离得到氮气。再生时，一部分高纯度氮气从工作压力膨胀到大气压力，经过含氧已饱和的吸附剂，将它吸附的氧气带走，吸附剂得以再生。

◆ The Voco Modular Nitrogen Generator is composed of multiple high-strength aluminum alloy cavities. Each group of chambers is divided into two chambers, and each chamber is filled with adsorbent to separate nitrogen and oxygen in the compressed air. When a chamber is working (adsorption), the opposite side is regenerated using a pressure swing adsorption method. During operation, compressed air diffuses upwards evenly from the bottom of the adsorption chamber, oxygen in the air is adsorbed by the adsorbent, and nitrogen and oxygen are separated to obtain nitrogen. During regeneration, part of the high-purity nitrogen expands from working pressure to atmospheric pressure, passes through the adsorbent that is saturated with oxygen, and takes away the oxygen it adsorbed, the adsorbent can be regenerated.



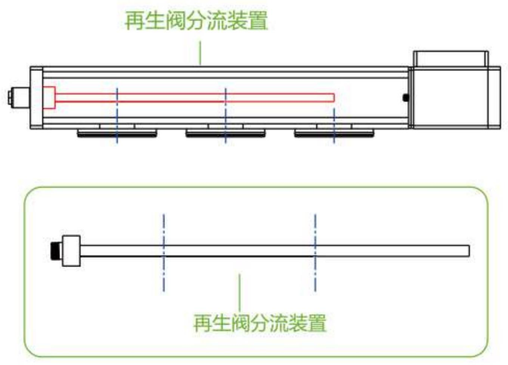




外形结构优势
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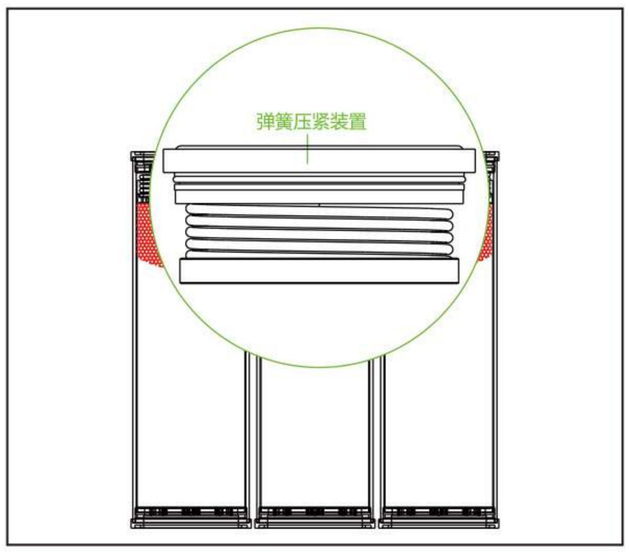
沃科模组式制氮机采用铝合金腔体式模组化结构，突破了传统双塔式外型设计，设备外形美观大方，体积只有传统双塔制氮机的一半左右。

模组化结构允许更大的灵活性，它可以节省机房空间，并且允许单独的制氮机放置于车间使用现场，用于高纯度氮气供应，同时保持工厂清洁。



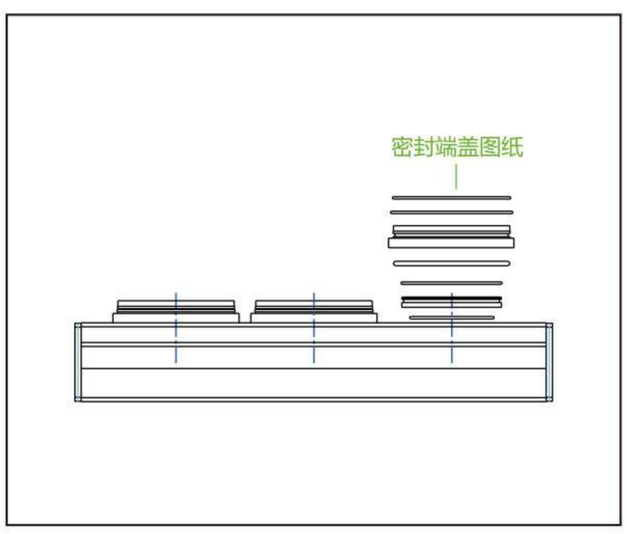
整体布局优势
（专利号：ZL201820620740.9）

吸附腔的多管道设计，使机身变得更紧凑合理；科学的流体分配设计，使气体高速均匀通过吸附腔体，避免吸附剂的隧道效应，解决了原有双塔吸附塔体内气流分布不均衡造成的吸附效率低下、吸附剂粉化速率快等问题，使吸附剂能够充分分离空气中的氮气和氧气；独特的防氧防腐处理，避免碳钢管道生锈给气体带来的二次污染，使结构件更耐用，氮气更洁净，纯度更稳定。



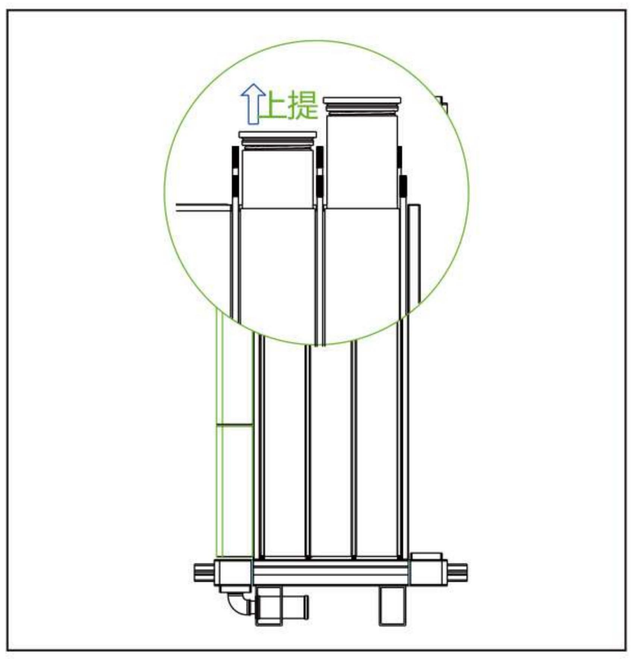
核心效率优势
（专利号：ZL201621149318.7）

吸附腔体由吸附管、吸附剂、扩散网板、密封材料、弹簧压紧装置和连接构件组成，采用暴风雪填充技术，加上独特的弹簧压紧装置，使吸附剂填充更为紧密，消除了吸附剂与端盖间隙，不但延长了吸附剂使用寿命，还能让吸附效率最大化，确保氮气纯度更稳定。



性能稳定优势
（专利号：ZL201621155071X)

每组模组都有单独的扩散器，以确保气流的均匀分布，让每一颗吸附剂都发挥最大的吸附能量；新型密封端盖由外暗盖和内暗盖组成，采用双端盖五道密封进行全方位的密封保护，有效防止漏气现象，提高氮气的品质，增强使用寿命。



维护简便优势
（专利号：ZL201820618715.7）

吸附腔体内设计安装有第二层模芯装置，模芯体采用耐高温耐腐蚀的塑料外壳，模芯内填满了吸附剂，更换吸附剂时只需要取出模芯即可，可实现现场快速更换吸附剂等问题，有效解决了双塔吸附式制氮机更换吸附剂工作量大、时间长及填充不紧密等缺陷。

模组式制氮机优势
Advantages of modular nitrogen generator

- 平均分流技术，充分利用每颗吸附剂；
- 体积小巧，适用各种场合应用；
- 无需压力容器检测，为用户省去费用和时间；
- 吸附塔腔体采用铝合金材质，尤其适合食品医药行业；
- 模芯更换技术，维保轻松便捷；
- 吸附塔采用直管设计，暴风雪填充技术，弹簧压紧装置，避免吸附剂产生隧道化效应。
- The average split flow technology makes full use of each adsorbent;
- Small size, suitable for various occasions;
- No need for pressure vessel inspection, saving cost and time for users;
- The adsorption tower cavity is made of aluminum alloy, which is especially suitable for the food and pharmaceutical industry;
- Mold core replacement technology makes maintenance easy and convenient;
- The adsorption tower adopts straight pipe design, snowstorm filling technology, and spring compression device to avoid the tunneling effect of the adsorbent.

制氮机设备型号说明
Nitrogen generator equipment model description

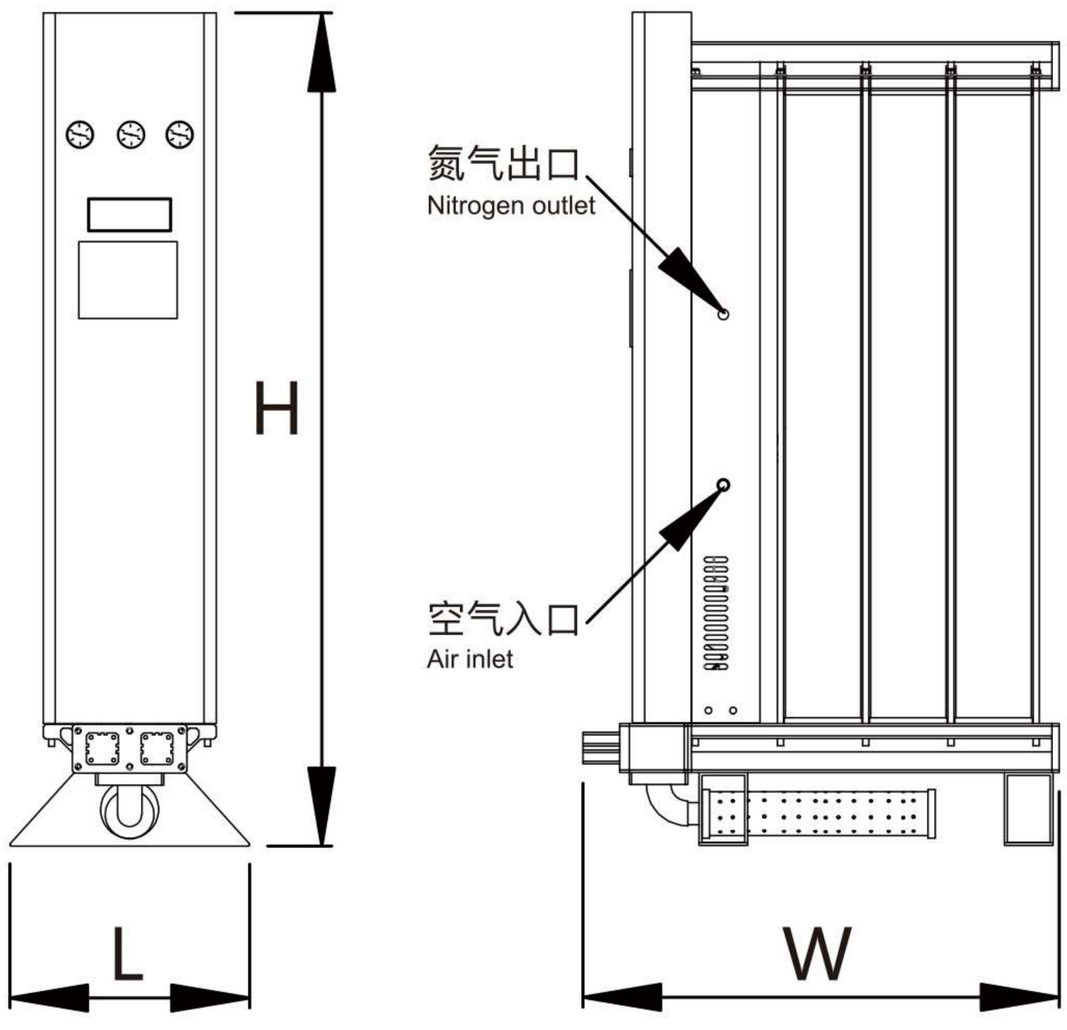
例：
Example:

GAB–40MZ

- 模组制氮机 Modular nitrogen generator
- 氮气流量 Nitrogen flow
- 氮气纯度 Nitrogen purity
- 沃科品牌缩写 Voco brand abbreviation

代码 Code	氮气纯度 Nitrogen purity
B	98%
D	99%
W	99.5%
P	99.9%
G	99.99%
V	99.999%

PSA模组式制氮机尺寸图表
PSA modular nitrogen generator size chart



模组式不同型号制氮机参数
Modular nitrogen generator parameters

纯度98%系列 98% purity series

型号规格 Model	产气量 Flow rate (Nm³/h)	空气耗气量 Air consumption (Nm³/min)	进口公称 Inlet connection 通径DN(mm)	出口公称 Outlet connection 通径DN(mm)	设备重量 Weight (kg)	设备尺寸 Dimensions (mm)
GAB-10MZ	10	0.34	15	15	150	500X580X1250
GAB-15MZ	15	0.50	15	15	200	500X780X1750
GAB-20MZ	20	0.67	15	15	250	500X900X1750
GAB-25MZ	25	0.84	15	15	350	500X900X1750
GAB-30MZ	30	1.00	20	20	450	500X1080X1750
GAB-40MZ	40	1.34	20	20	400	500X1350X1750

纯度99%系列 99% purity series

型号规格 Model	产气量 Flow rate (Nm³/h)	空气耗气量 Air consumption (Nm³/min)	进口公称 Inlet connection 通径DN(mm)	出口公称 Outlet connection 通径DN(mm)	设备重量 Weight (kg)	设备尺寸 Dimensions (mm)
GAD-10MZ	10	0.47	15	15	150	500X580X1250
GAD-15MZ	15	0.70	15	15	250	500X780X1750
GAD-20MZ	20	0.94	15	15	300	500X1150X1750
GAD-25MZ	25	1.17	15	15	350	500X1350X1750
GAD-30MZ	30	1.40	20	20	450	500X1550X1750
GAD-40MZ	40	1.87	20	20	500	500X1750X1750

纯度99.5%系列 99.5% purity series

型号规格 Model	产气量 Flow rate (Nm³/h)	空气耗气量 Air consumption (Nm³/min)	进口公称 Inlet connection 通径DN(mm)	出口公称 Outlet connection 通径DN(mm)	设备重量 Weight (kg)	设备尺寸 Dimensions (mm)
GAW-10MZ	10	0.60	15	15	150	500X580X1250
GAW-15MZ	15	0.90	15	15	200	500X780X1750
GAW-20MZ	20	1.20	15	15	300	500X1150X1750
GAW-25MZ	25	1.50	15	15	350	500X1350X1750
GAW-30MZ	30	1.80	20	20	400	500X1550X1750
GAW-40MZ	40	2.40	20	20	500	500X1750X1750

备注：PSA模组式制氮机使用条件：220V/50Hz，接口公称通径自DN80以下默认螺纹连接，螺纹标准GB/T7306；DN80(含)以上默认法兰连接，法兰标准HG20592,具体参数规范以实际机器为准，特殊标准可定制，以上技术规范如有更改，恕不另行通知。

Remarks: PSA modular nitrogen generator operation conditions: 220V / 50Hz, thread standard GB / T7306; specific parameter specifications are subject to the actual machine, special standards can be customized, the above technical specifications are subject to change without notice.

纯度99.9%系列 99.9% purity series

型号规格 Model	产气量 Flow rate (Nm³/h)	空气耗气量 Air consumption (Nm³/min)	进口公称 Inlet connection 通径DN(mm)	出口公称 Outlet connection 通径DN(mm)	设备重量 Weight (kg)	设备尺寸 Dimensions (mm)
GAP-5MZ	5	0.34	15	15	200	500X580X1250
GAP-10MZ	10	0.67	15	15	250	500X780X1750
GAP-15MZ	15	1.00	15	15	350	500X1150X1750
GAP-20MZ	20	1.35	15	15	400	500X1350X1750
GAP-30MZ	30	2.00	20	15	500	500X1750X1750
GAP-40MZ	40	2.67	20	20	800	750X1350X1750

纯度99.99%系列 99.99% purity series

型号规格 Model	产气量 Flow rate (Nm³/h)	空气耗气量 Air consumption (Nm³/min)	进口公称 Inlet connection 通径DN(mm)	出口公称 Outlet connection 通径DN(mm)	设备重量 Weight (kg)	设备尺寸 Dimensions (mm)
GAG-5MZ	5	0.35	15	15	350	500X1150X1750
GAG-10MZ	10	0.70	15	15	400	500X1350X1750
GAG-15MZ	15	1.05	20	15	450	500X1550X1750
GAG-20MZ	20	1.40	20	15	500	500X1750X1750
GAG-30MZ	30	2.10	20	20	900	750X1550X1750
GAG-40MZ	40	2.80	20	20	1000	750X1750X1750

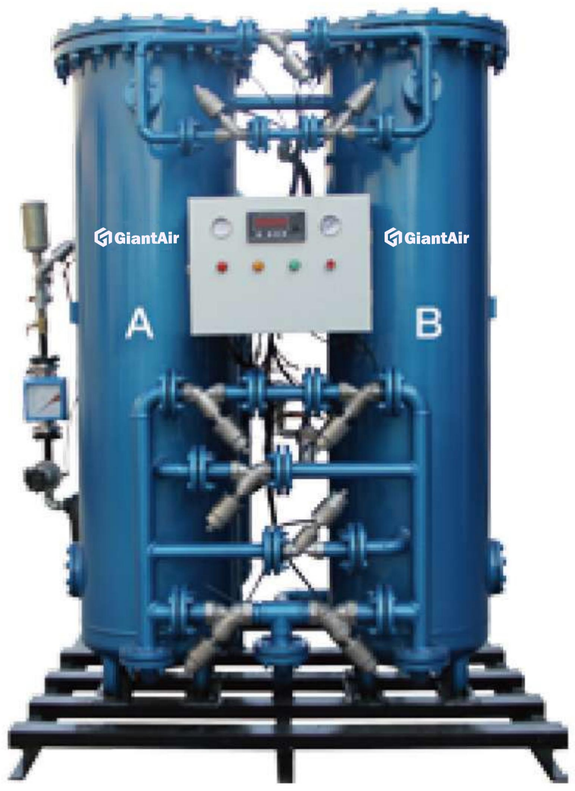
纯度99.999%系列 99.999% purity series

型号规格 Model	产气量 Flow rate (Nm³/h)	空气耗气量 Air consumption (Nm³/min)	进口公称 Inlet connection 通径DN(mm)	出口公称 Outlet connection 通径DN(mm)	设备重量 Weight (kg)	设备尺寸 Dimensions (mm)
GAV-5MZ	5	0.50	15	15	350	500X1150X1750
GAV-10MZ	10	1.00	15	15	400	500X1350X1750
GAV-15MZ	15	1.50	20	15	450	500X1550X1750
GAV-20MZ	20	2.00	20	15	500	500X1750X1750
GAV-30MZ	30	3.00	20	20	900	750X1550X1750
GAV-40MZ	40	4.00	20	20	1000	750X1750X1750

备注：PSA模组式制氮机使用条件：220V/50Hz，接口公称通径自DN80以下默认螺纹连接，螺纹标准GB/T7306；DN80(含)以上默认法兰连接，法兰标准HG20592,具体参数规范以实际机器为准，特殊标准可定制，以上技术规范如有更改，恕不另行通知。

Remarks: PSA modular nitrogen generator operation conditions: 220V / 50Hz, thread standard GB / T7306; specific parameter specifications are subject to the actual machine, special standards can be customized, the above technical specifications are subject to change without notice.

双塔式制氮机
Twin tower nitrogen generator





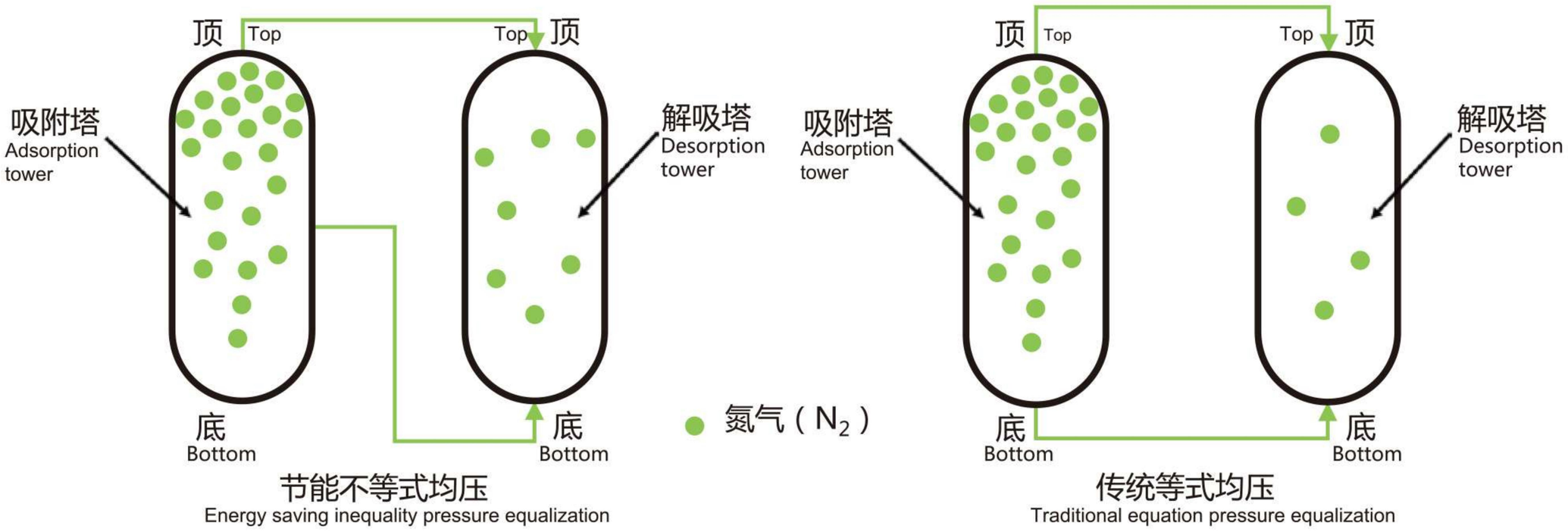
不同型号制氮机参数
Parameters of different nitrogen generators

氮气纯度 Nitrogen purity	98~99.999%	电源要求 Power requirements		220V 50Hz/110V DC24V
最高进气温度 Maximum intake air temp	≤40℃	噪音 Noise		＜70dB
最低进气温度 Minimum intake air temp	5℃	氮气露点 Nitrogen dew point		≤-40℃
最低进气压力 Minimum inlet pressure	0.6MPa	控制方式 Control type	标配 Standard	PLC可编程序
最高环境温度 Maximum ambient temp	≤45℃		高配 High match	人机触控界面

核心部件
Core components

 采用上市公司不锈钢控制阀门，确保有效动作300万次	 与国内外优质厂家合作，根据客户使用情况，调配出最经济，最节能的分子筛	 选用进口椰棕垫，密度高、韧性强，确保有效的过滤颗粒，防止粉化和漏筛
 采用西门子PLC控制，防止乱码、程序异常，保障设备正常运行	 采用原装台湾亚德客控制元件，确保阀门正常工作，延长使用寿命	 选用国内顶尖的气体分析仪器，精准、实测偏差＜0.001，寿命长、可达5年以上

产品特点
Features



◆ 先进的节能型不等式均压结构，提高吸附剂利用率，直接降低压缩空气消耗量。

◆ 先进的内部结构，确保气流均匀分布，降低对吸附剂的冲击力，提高吸附剂的使用寿命。

◆ 与国内外知名碳分子筛厂家合作，可根据实际工况选配最节能高效的配比。

◆ 可靠的气源处理配件，保障设备的稳定运行和使用寿命。

◆ 采用暴风雪填充方式，使吸附剂填装更加均匀、密实，摩擦系数降低到最小值，提高整机长期运行的可靠性。

◆ 采用西门子PLC可编控制器自动控制，一键启动无需专人操作，并可预留与计算机、手机等远端设备的连接，实时观测运行情况。

◆ 采用国内知名不锈钢气动角座阀门，具有启闭速度快、消耗能量少、密封性能好、安装维修方便，使用寿命长等特点。

◆ 采用专门的弹簧压紧装置，当吸附塔内碳分子筛体积减少时，自动补偿，杜绝碳分子筛粉化问题，延长使用寿命。

◆ 采用不合格氮气自动排空装置/手动排空装置（选配）

◆ 选用国内外著名品牌元器件，保证设备的稳定运行和氮气品质。

◆ The advanced energy-saving inequality equalization structure improves the adsorbent utilization rate and directly reduces the compressed air consumption.

◆ The advanced internal structure ensures that the air flow is evenly distributed, reduces the impact on the adsorbent, and increases the service life of the adsorbent.

◆ In cooperation with well-known carbon molecular sieve manufacturers at domestic and abroad, the most energy-efficient and efficient ratio can be selected according to the actual working conditions.

◆ Reliable air source treatment accessories ensure the stable operation and service life of the equipment.

◆ The blizzard filling method is used to make the adsorbent filling more uniform and dense, the friction coefficient is reduced to the minimum, and the reliability of the long-term operation of the whole machine is improved.

◆ It adopts Siemens PLC programmable controller for automatic control, one-button start does not require special personnel to operate, and can reserve connections with remote devices such as computers and mobile phones, and observe the running status in real time.

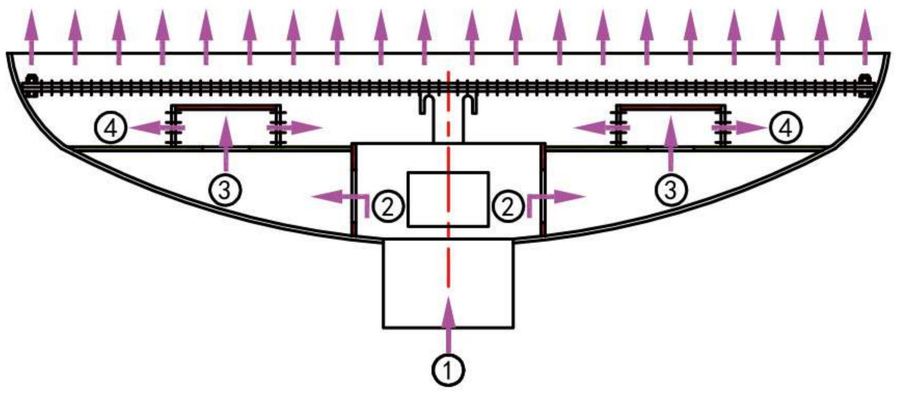
◆ The domestic well-known stainless steel pneumatic angle seat valve is adopted, which has the characteristics of fast opening and closing speed, low energy consumption, good sealing performance, easy installation and maintenance, and long service life.

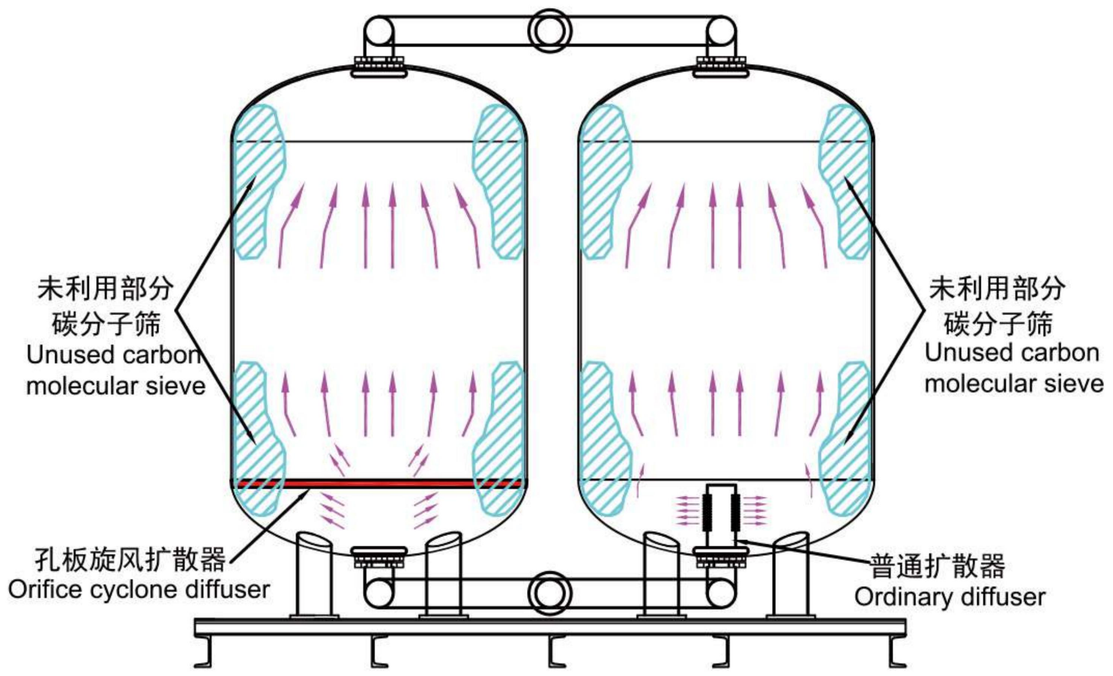
◆ A special spring compression device is adopted, and when the carbon molecular sieve in the adsorption tower is reduced, it is automatically compensated to eliminate the problem of powdering the carbon molecular sieve and prolong the service life.

◆ Use unqualified nitrogen automatic evacuation device / manual evacuation device (optional).

◆ Use components from famous brands at domestic and abroad to ensure stable operation and nitrogen quality.

气体扩散装置
Gas diffusion device





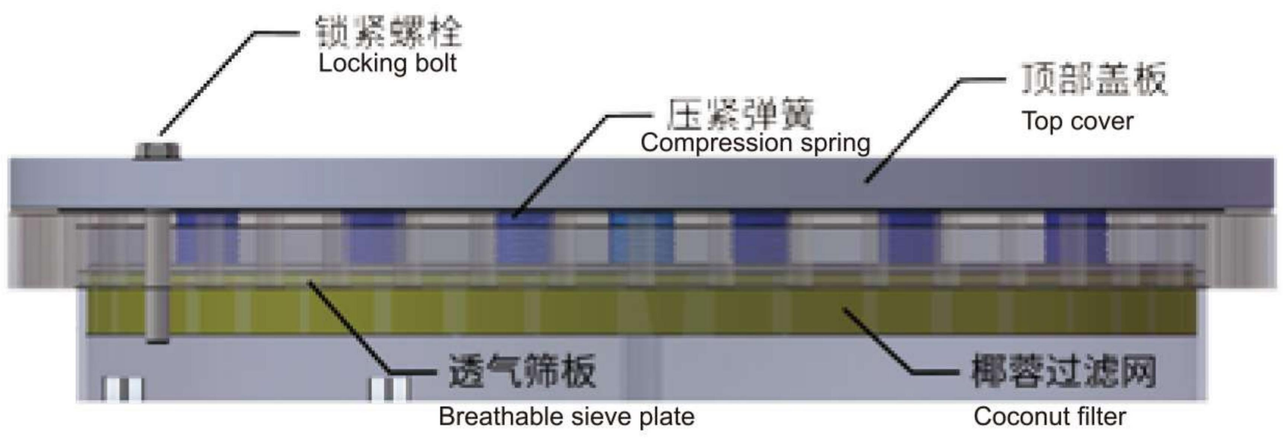
◆ 沃科独创气流扩散器，将压缩空气强制分流呈面扩散方式，避免产生气流死角和隧道化效应，提升吸附剂利用率及产氮率。

◆ Voco's original air flow diffuser will force the compressed air to be diverted in a face-to-face way to avoid airflow dead ends and tunneling effects to improve the adsorbent utilization rate and nitrogen production rate.

◆ 常规的两种气流扩散器，易产生气流死角，导致吸附剂无法完全利用，且易造成吸附剂粉化及隧道化反应，直接影响氮气品质和吸附剂寿命。

◆ Conventional two kinds of airflow diffusers are easy to form dead angle, which makes the adsorbent unable to be fully utilized, and it is easy to cause the powdering and tunneling reaction of the adsorbent, which directly affects the quality of nitrogen and adsorbent life.

自力式弹簧压紧装置
Self-acting spring pressing device



制氮机设备型号说明
Twin tower nitrogen generator equipment model description

例：GAG–240N

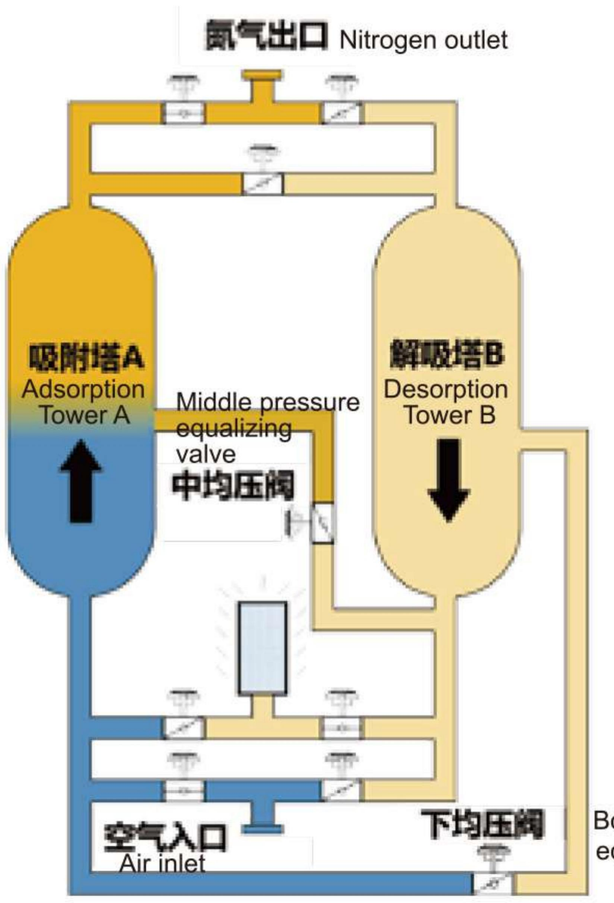
- GAG：沃科品牌缩写 Voco brand abbreviation
- 240：氮气流量 Nitrogen flow
- N：双塔制氮机 Twin tower nitrogen generator
- 氮气纯度 Nitrogen purity

代码 Code	氮气纯度 Nitrogen purity
B	98%
D	99%
W	99.5%
P	99.9%
G	99.99%
V	99.999%

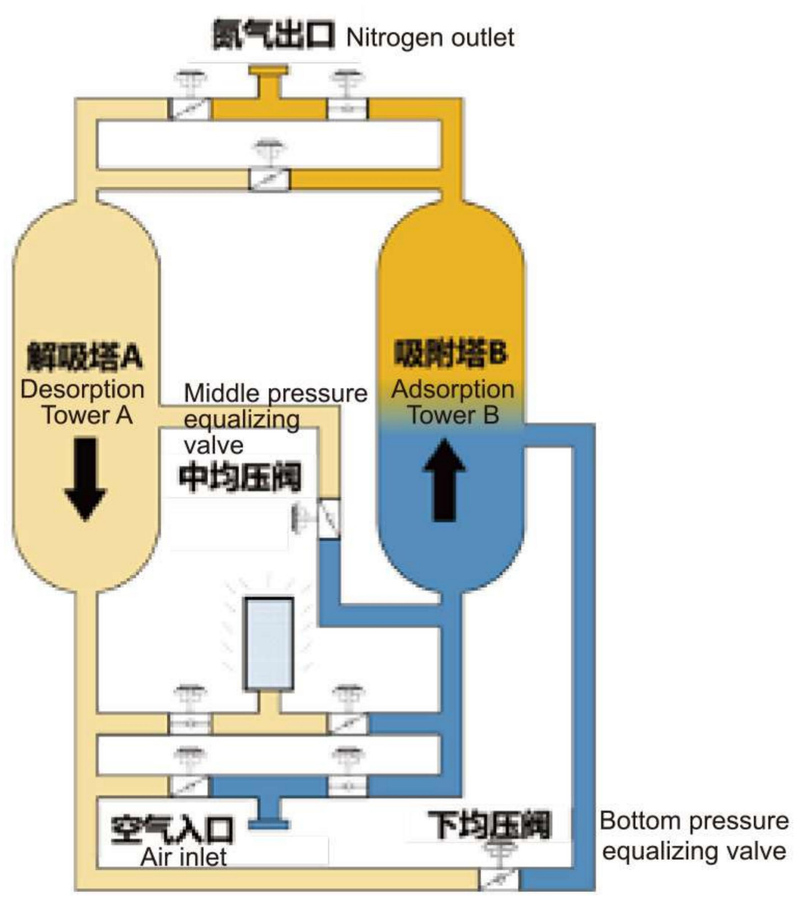
工作流程
Working process

◆ 洁净的压缩空气由填充碳分子筛的吸附塔底部进入，气流经特殊结构的均分扩散器扩散以后，均匀进入吸附塔，进行氧氮吸附分离，然后从吸附塔顶部产出高纯度氮气，送入氮气工艺罐储存；而少量成品氮气进入再生塔对碳分子筛进行吹洗，脱除所吸附的氧气实现再生。二个吸附塔交替循环操作，连续送入原料空气，连续生产氮气。

◆ The clean compressed air enters from the bottom of the adsorption tower filled with carbon molecular sieve. After the airflow diffuses through the special structure of the uniform diffuser, it evenly enters the adsorption tower for oxygen and nitrogen adsorption separation, and then produces high purity nitrogen from the top of the adsorption tower It is sent to a nitrogen process tank for storage; a small amount of product nitrogen enters the regeneration tower to purify the carbon molecular sieve to remove the adsorbed oxygen to achieve regeneration. The two adsorption towers are operated alternately and cyclically, feeding the raw air continuously to produce nitrogen.

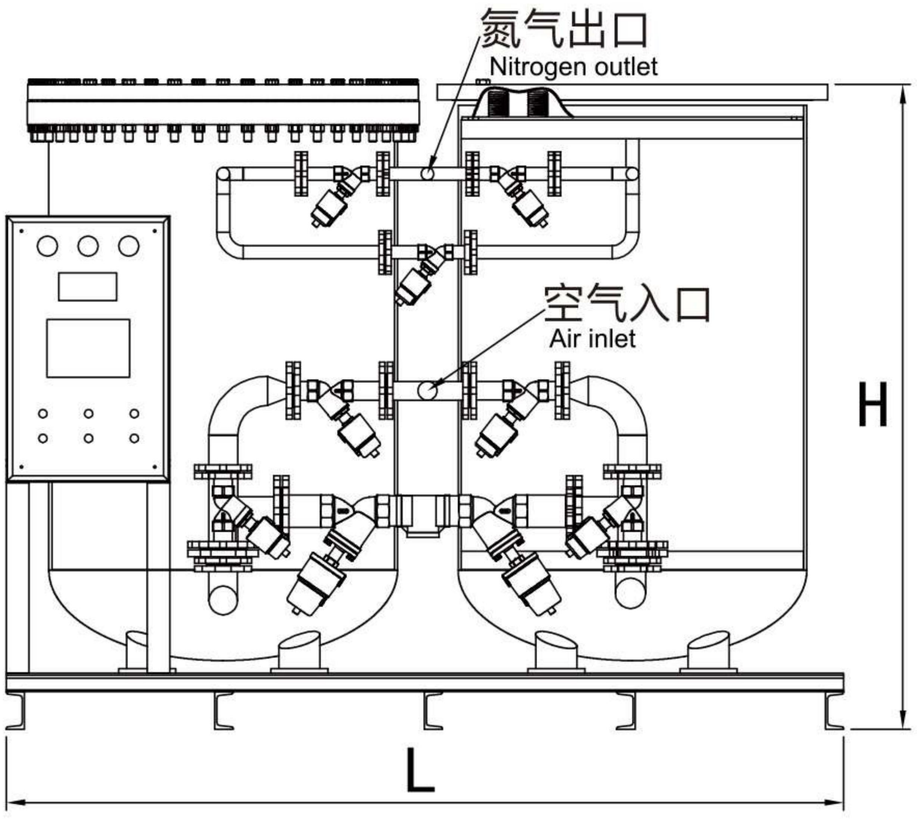


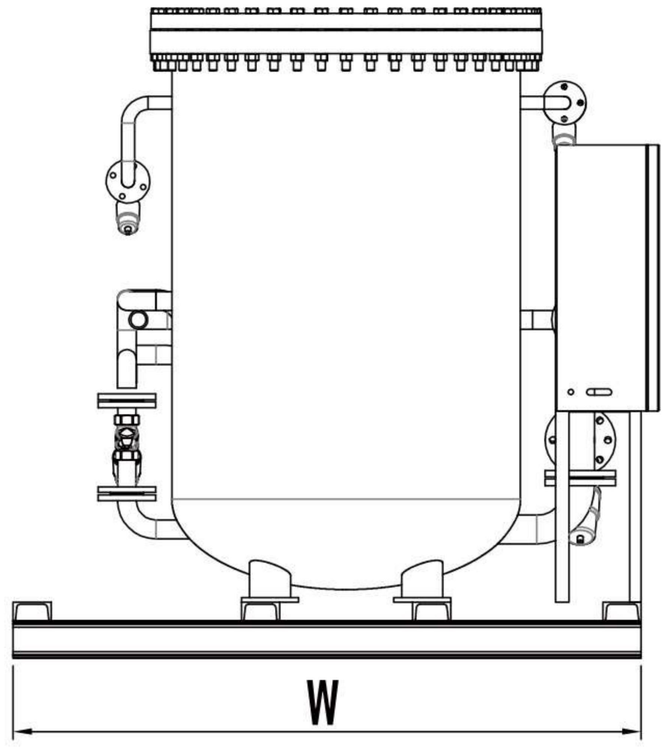
A塔吸附，B塔解附
Tower A adsorption,Tower B desorption



A塔解附，B塔吸附
Tower A desorption,Tower B adsorption

PSA双塔式制氮机尺寸图表
PSA twin tower nitrogen generator dimension chart





双塔式不同型号制氮机参数
Twin-tower type nitrogen generator parameters
纯度98%系列 98% purity series

型号规格 Model	产气量 Flow rate (Nm³/h)	空气耗气量 Air consumption (Nm³/min)	进口公称 Inlet size 通径DN(mm)	出口公称 Outlet size 通径DN(mm)	设备重量 Weight (Kg)	设备尺寸 Dimensions (mm)
GAB-40N	40	1.87	20	20	800	1300X1000X1800
GAB-50N	50	2.34	20	20	1100	1400X1000X1800
GAB-60N	60	2.80	25	25	1350	1400X1000X1850
GAB-70N	70	3.27	25	25	1500	1500X1000X2000
GAB-80N	80	3.74	25	25	1600	1600X1300X2200
GAB-100N	100	4.67	32	32	1780	1650X1350X2250
GAB-120N	120	5.60	32	32	2000	1800X1400X2350
GAB-150N	150	7.00	40	40	2400	2000X1500X2400
GAB-180N	180	8.40	40	40	2600	2000X1600X2550
GAB-200N	200	9.34	40	40	2800	2200X1600X2550
GAB-250N	250	11.67	50	40	3000	2200X1800X2650
GAB-300N	300	14.00	50	50	3500	2300X1800X2700
GAB-350N	350	16.34	50	50	4200	2500X1850X2500
GAB-400N	400	18.67	50	50	4800	2500X1850X2650

纯度99%系列 99% purity series

型号规格 Model	产气量 Flow rate (Nm³/h)	空气耗气量 Air consumption (Nm³/min)	进口公称 Inlet size 通径DN(mm)	出口公称 Outlet size 通径DN(mm)	设备重量 Weight (Kg)	设备尺寸 Dimensions (mm)
GAD-40N	40	2.20	25	25	1100	1400X1000X1800
GAD-50N	50	2.75	25	25	1350	1400X1000X1850
GAD-60N	60	3.30	25	25	1500	1500X1000X2000
GAD-70N	70	3.85	25	25	1600	1600X1300X2200
GAD-80N	80	4.40	32	25	1780	1650X1350X2250
GAD-100N	100	5.50	40	32	2000	1800X1400X2350
GAD-120N	120	6.60	40	32	2400	2000X1500X2400
GAD-150N	150	8.25	40	32	2600	2000X1600X2550
GAD-180N	180	9.90	40	32	2800	2200X1600X2550
GAD-200N	200	11.00	40	40	3000	2200X1800X2650
GAD-250N	250	13.75	50	40	3500	2300X1800X2700
GAD-300N	300	16.50	50	50	4200	2500X1850X2500
GAD-350N	350	19.25	50	50	4800	2500X1850X2650
GAD-400N	400	22.00	50	50	5200	2500X1850X2860

备注：PSA双塔式制氮机使用条件：220V/50Hz，接口公称通径自DN80以下默认螺纹连接，螺纹标准GB/T7306；DN80(含)以上默认法兰连接，法兰标准HG20592,具体参数规范以实际机器为准，特殊标准可定制，以上技术规范如有更改，恕不另行通知。

纯度99.5%系列 99.5% purity series

型号规格 Model	产气量 Flow rate (Nm³/h)	空气耗气量 Air consumption (Nm³/min)	进口公称 Inlet size 通径DN(mm)	出口公称 Outlet size 通径DN(mm)	设备重量 Weight (Kg)	设备尺寸 Dimensions (mm)
GAW-40N	40	2.67	25	20	1200	1400X1000X1850
GAW-50N	50	3.34	25	25	1500	1500X1000X2000
GAW-60N	60	4.00	25	25	1800	1600X1300X2200
GAW-70N	70	4.67	32	25	2200	1650X1350X2250
GAW-80N	80	5.34	32	25	2400	1800X1400X2350
GAW-100N	100	6.67	40	25	2800	2000X1500X2400
GAW-120N	120	8.00	40	32	3100	2000X1600X2550
GAW-150N	150	10.00	40	32	3500	2200X1600X2550
GAW-180N	180	12.00	40	32	4000	2200X1800X2650
GAW-200N	200	13.34	40	40	4500	2300X1800X2700
GAW-250N	250	16.67	50	40	4800	2500X1850X2500
GAW-300N	300	20.00	50	50	5200	2500X1850X2650
GAW-350N	350	23.33	50	50	6000	2500X1850X2860
GAW-400N	400	26.67	65	50	7500	2800X2000X3000

纯度99.9%系列 99.9% purity series

型号规格 Model	产气量 Flow rate (Nm³/h)	空气耗气量 Air consumption (Nm³/min)	进口公称 Inlet size 通径DN(mm)	出口公称 Outlet size 通径DN(mm)	设备重量 Weight (Kg)	设备尺寸 Dimensions (mm)
GAP-30N	30	2.25	32	20	1200	1500X1000X2000
GAP-40N	40	3.00	40	20	1500	1600X1300X2200
GAP-50N	50	3.75	40	20	1800	1650X1350X2250
GAP-60N	60	4.50	40	20	2200	1800X1400X2350
GAP-70N	70	5.25	50	20	2400	2000X1500X2400
GAP-80N	80	6.00	50	20	2800	2000X1600X2550
GAP-100N	100	7.50	50	25	3100	2200X1600X2550
GAP-120N	120	9.00	50	25	3500	2200X1800X2650
GAP-150N	150	11.25	50	32	4000	2300X1800X2700
GAP-180N	180	13.50	65	32	4500	2500X1850X2500
GAP-200N	200	15.00	65	32	4800	2500X1850X2650
GAP-250N	250	18.75	65	40	5200	2500X1850X2860
GAP-300N	300	22.50	80	40	6000	2800X2000X3000
GAP-400N	400	30.00	80	50	7500	3000X2000X3300

Remarks: PSA twin tower nitrogen generator operation conditions: 220V / 50Hz, DN80 (inclusive) above is flange connection, flange standard HG20592, specific parameter specifications subject to the actual machine, special standards can be customized, the above technical specifications are subject to change without notice.

纯度99.99%系列 99.99% purity series

型号规格 Model	产气量 Flow rate (Nm³/h)	空气耗气量 Air consumption (Nm³/min)	进口公称 Inlet size 通径DN(mm)	出口公称 Outlet size 通径DN(mm)	设备重量 Weight (Kg)	设备尺寸 Dimensions (mm)
GAG-20N	20	1.84	20	15	1200	1500X1000X2000
GAG-30N	30	2.75	25	15	1500	1600X1300X2200
GAG-40N	40	3.70	32	25	1800	1650X1350X2250
GAG-50N	50	4.60	32	25	2200	1800X1400X2350
GAG-60N	60	5.50	40	25	2400	2000X1500X2400
GAG-70N	70	6.42	40	25	2800	2000X1600X2550
GAG-80N	80	7.34	40	25	3100	2200X1600X2550
GAG-100N	100	9.20	50	32	3500	2200X1800X2650
GAG-120N	120	11.00	50	32	4000	2300X1800X2700
GAG-150N	150	13.80	50	32	4500	2500X1850X2500
GAG-180N	180	16.50	50	40	4800	2500X1850X2650
GAG-200N	200	18.40	50	40	5200	2500X1850X2860
GAG-250N	250	23.00	50	40	6000	2800X2000X3000
GAG-300N	300	27.50	65	50	7500	3000X2000X3300

纯度99.999%系列 99.999% purity series

型号规格 Model	产气量 Flow rate (Nm³/h)	空气耗气量 Air consumption (Nm³/min)	进口公称 Inlet size 通径DN(mm)	出口公称 Outlet size 通径DN(mm)	设备重量 Weight (Kg)	设备尺寸 Dimensions (mm)
GAV-15N	15	2.00	25	15	850	1300X1000X1900
GAV-20N	20	2.67	25	15	1200	1500X1000X2000
GAV-25N	25	3.34	25	15	1500	1600X1300X2200
GAV-30N	30	4.00	32	25	1800	1650X1350X2250
GAV-40N	40	5.35	40	25	2200	1800X1400X2350
GAV-50N	50	6.70	40	25	2400	2000X1500X2400
GAV-60N	60	8.00	40	25	2800	2000X1600X2550
GAV-70N	70	9.34	40	25	3100	2200X1600X2550
GAV-80N	80	10.70	50	25	3500	2200X1800X2650
GAV-100N	100	13.40	50	25	4000	2300X1800X2700
GAV-120N	120	16.00	50	40	4500	2500X1850X2500
GAV-150N	150	20.00	50	40	4800	2500X1850X2650
GAV-180N	180	24.00	65	40	5200	2500X1850X2860
GAV-200N	200	26.70	65	40	6000	2800X2000X3000

备注：PSA双塔式制氮机使用条件：220V/50Hz，接口公称通径自DN80以下默认螺纹连接，螺纹标准GB/T7306；DN80(含)以上默认法兰连接，法兰标准HG20592,具体参数规范以实际机器为准，特殊标准可定制，以上技术规范如有更改，恕不另行通知。

Remarks: PSA twin tower nitrogen generator operation conditions: 220V / 50Hz, DN80 (inclusive) above is flange connection, flange standard HG20592, specific parameter specifications subject to the actual machine, special standards can be customized, the above technical specifications are subject to change without notice.

GAHC型加氢纯化装置
GAHC type hydrogenation purification device

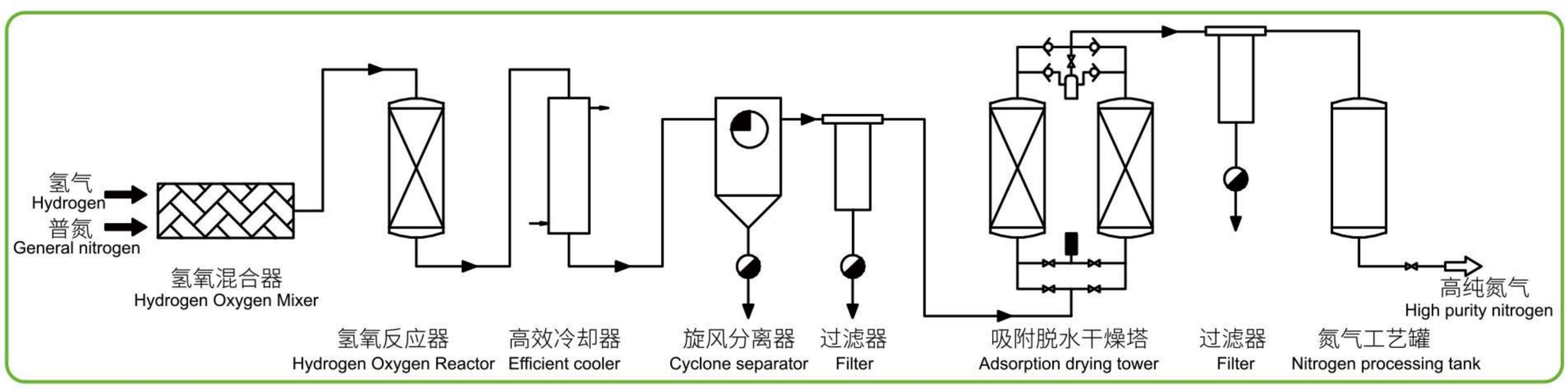
主要参数：Main parameters:

氮气流量 Nitrogen flow	10–2000Nm³/h
氮气纯度 Nitrogen purity	99.999%~99.9997%
氮气压力 Nitrogen pressure	0.1–0.6MPa（可调）(Adjustable)
露点温度 Nitrogen dew point	≤–60℃
含氧量 Oxygen content	3~10ppm
氢含量 Hydrogen content	≤1000ppm



◆ 氢气纯化机原理及产品特点：

经过变压吸附制氮机制取的原料氮气，与氢气按一定比例混合后，在装有金属钯催化剂的反应器内加高温使原料氮气中的残氧与氢发生反应生成水蒸气，通过冷却器使大部分的水蒸气冷凝。再经过旋风除水过滤器、微热吸干机干燥，露点可达–70℃，而成品氮气纯度通过微氧仪在线实时监测。



主要技术参数表（普氮纯度99.5%）：
Main technical parameter table (general nitrogen purity 99.5%):

型号规格 Model	普氮消耗量 General nitrogen consumption Nm³/h	纯氮产量 Pure nitrogen flow Nm³/h	耗氢量 Hydrogen consumption (Nm³/h)	装机功率 Power consumption (KW)	冷却水量 Cooling water (T/h)	设备尺寸 Dimensions (mm)
GAHC–60	66	60	0.7	1	0.5	1500×1800×1800
GAHC–80	88	80	1.0	1.1	0.6	1800×2000×2000
GAHC–100	110	100	1.2	1.1	0.8	2000×2500×2500
GAHC–150	165	150	1.8	2.4	1.1	2200×3000×2600
GAHC–200	220	200	2.4	3.4	1.5	2400×3300×2800
GAHC–250	275	250	3.0	7.0	1.9	2500×3300×3000
GAHC–300	330	300	3.7	7.0	2.3	2800×3500×3000
GAHC–400	440	400	4.9	7.0	3.0	3000×3500×3300
GAHC–500	550	500	6.1	10.5	4.5	3000×4000×3000
GAHC–600	660	600	7.3	13.8	6.0	3500×4200×3000
GAHC–800	880	800	9.7	21	7.5	3500×4500×3300
GAHC–1000	1100	1000	12.2	27.5	9.0	3800×4800×3000

注：以上数据以0.8Mpa(G)，99.5%原料氮气，环境温度20℃，0米标高和80%相对湿度为设计基准。本产品持续改进中，如有变动请以实际尺寸为准。

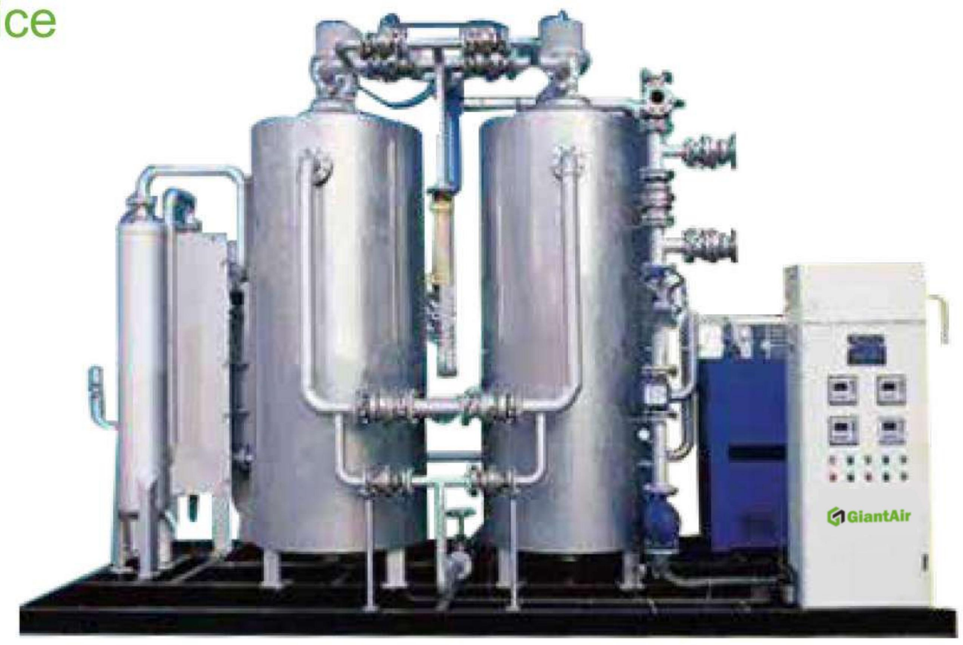
Note: The above data is based on 0.8Mpa (G), 99.5% raw nitrogen, ambient temperature 20 ℃, 0 meters elevation and 80% relative humidity as the design basis. In the continuous improvement of this product, if there is any change, please refer to the actual

GATC型碳载纯化装置

GATC type carbon-loaded purification device

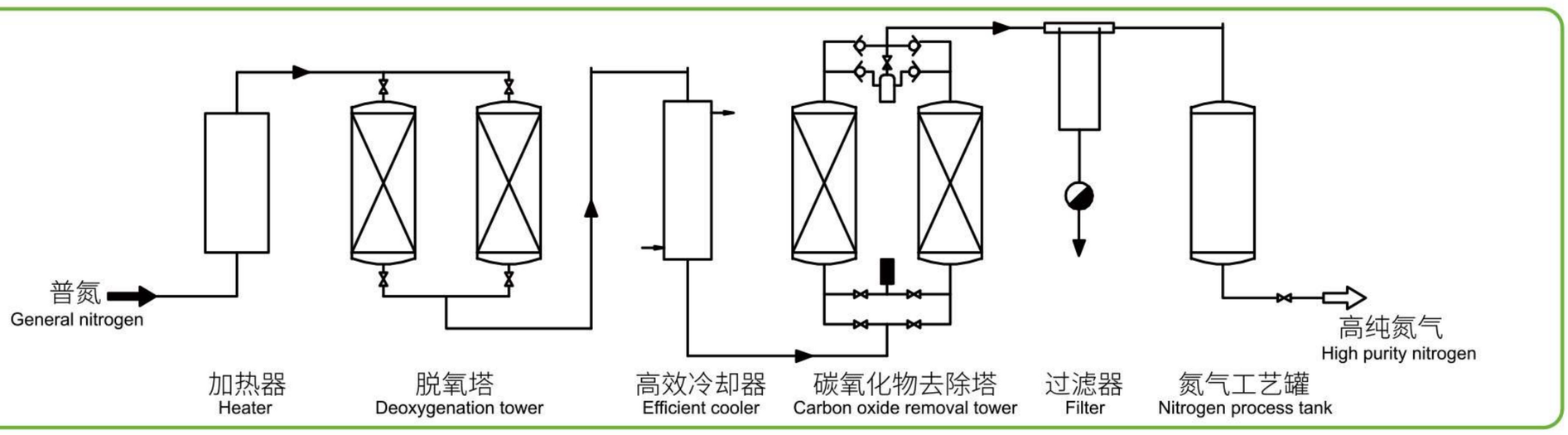
主要参数：Main parameters:

氮气流量 Nitrogen flow	10–2000Nm³/h
氮气纯度 Nitrogen purity	≥99.9995%
氮气压力 Nitrogen pressure	0.1–0.6MPa（可调）(Adjustable)
露点温度 Nitrogen dew point	≤–60℃
含氧量 Oxygen content	≤5ppm
氢含量 Hydrogen content	\



◆ 碳载纯化装置特点及原理：

碳载型氮气纯化系列装置技术特点：本系列产品采用碳载催化剂脱氧，不需消耗氢气源。碳与氮气中的余氧反应生成二氧化碳，再采用变压吸附工艺除去二氧化碳和水，经过滤后得到高纯度氮气，高纯度氮气技术指标可达：O_2≤3ppm　　H_2≤4ppm　　露点≤–60℃



主要技术参数表（普氮纯度99.9%）：

Main technical parameter table (general nitrogen purity 99.5%):

型号规格 Model	普氮消耗量 General nitrogen consumption Nm³/h	纯氮产量 Hydrogen consumption Nm³/h	催化剂损耗量 Catalyst loss (kg/month) (kg/月)	装机功率 Power consumption (KW)	冷却水量 Cooling water (T/h)	设备尺寸 Dimensions (mm)
GATC–10	11	10	5.0	3.4/1.3	0.1	1000×1500×1600
GATC–20	22	20	10	6.8/2.6	0.2	1000×1500×2000
GATC–30	33	30	15	10.2/3.9	0.2	1200×1500×1800
GATC–40	44	40	20	13.6/5.2	0.3	1200×1600×1800
GATC–50	55	50	25	17/6.5	0.4	1400×1500×1800
GATC–60	66	60	30	20/7.8	0.5	1500×1800×1900
GATC–80	88	80	40	27/10.4	0.6	1500×2000×2000
GATC–100	110	100	50	34/13	0.8	1800×3000×1900
GATC–150	165	150	75	51/19.5	1.1	1800×3300×2300
GATC–200	220	200	100	68/26	1.5	2000×3500×2500
GATC–250	275	250	125	85/32.5	1.9	2200×3800×2800
GATC–300	330	300	150	102/39	2.2	2500×4000×3000

备注：以上数据以0.8Mpa(G)，99.9%原料氮气，环境温度20℃，0米标高和80%相对湿度为设计基准。本产品持续改进中，如有变动请以实际尺寸为准。

Note: The above data is based on 0.8Mpa (G), 99.5% raw nitrogen, ambient temperature 20 ℃, 0 meters elevation and 80% relative humidity as the design basis. In the continuous improvement of this product, if there is any change, please refer to the actual

大气露点水分含量关系表

Atmospheric dew point moisture content relationship table

露点 dew point ℃	水分含量 Moisture content g/m³	露点 dew point ℃	水分含量 Moisture content g/m³	露点 dew point ℃	水分含量 Moisture content g/m³	露点 dew point ℃	水分含量 Moisture content g/m³	露点 dew point ℃	水分含量 Moisture content g/m³
64	153.8	39	48.7	14	12.1	−11	2.19	−36	0.26
63	147.3	38	46.3	13	11.4	−12	2.03	−37	0.236
62	141.2	37	44	12	10.7	−13	1.88	−38	0.214
61	135.3	36	41.8	11	10	−14	1.74	−39	0.194
60	130.3	35	39.6	10	9.3	−15	1.61	−40	0.176
59	124.7	34	37.6	9	8.8	−16	1.48	−41	0.159
58	119.4	33	35.7	8	8.3	−17	1.37	−42	0.144
57	114.2	32	33.8	7	7.8	−18	1.26	−43	0.13
56	109.2	31	32.1	6	7.3	−19	1.17	−44	0.117
55	104.4	30	30.4	5	6.8	−20	1.07	−45	0.106
54	99.8	29	28.8	4	6.4	−21	0.99	−46	0.095
53	95.4	28	27.2	3	5.9	−22	0.91	−47	0.085
52	91.1	27	25.8	2	5.6	−23	0.84	−48	0.077
51	87	26	24.4	1	5.2	−24	0.77	−49	0.069
50	83.1	25	23.1	0	4.8	−25	0.7	−50	0.062
49	79.3	24	21.8	−1	4.5	−26	0.65	−51.1	0.054
48	75.6	23	20.6	−2	4.2	−27	0.59	−53.9	0.04
47	72.3	22	19.4	−3	3.9	−28	0.54	−56.7	0.029
46	68.7	21	18.3	−4	3.7	−29	0.5	−59.4	0.021
45	65.5	20	17.3	−5	3.4	−30	0.45	−62.2	0.014
44	62.4	19	16.3	−6	3.2	−31	0.41	−65	0.011
43	59.4	18	15.4	−7	2.9	−32	0.38	−67.8	0.008
42	56.6	17	14.5	−8	2.7	−33	0.34	−70.6	0.005
41	53.8	16	13.6	−9	2.5	−34	0.31	−73.3	0.003
40	51.2	15	12.8	−10	2.4	−35	0.29		

饱和湿度及大气压露点的换算方法

Conversion method of saturation humidity and atmospheric pressure dew point

◆ 饱和水蒸气含量及大气压露点换算的方法

空压机入口空气温度30℃（湿度100%）被压缩0.69MPa，再经空气干燥机冷却成10℃（压力下）后，结果究竟能去除多少水分。

◆ 查饱和湿度表（大气压下）

30℃时的湿气含量为30.4g/m³。

◆ 查大气压露点、压力下露点换算表

因0.69MPa时压力下露点为10℃，换算成大气压下露点为-17℃。

◆ 查饱和湿度表

-17℃时的湿度为1.37g/m³，因此，30.4-1.37=29.03g/m³，即1m³的空气中能去除29.03g的水分。

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完善的售后服务体系

在一年的质保期内设备若有故障，负责无偿维修。质保期后终身有偿服务，并以优惠的价格长期提供备品备件的供应。

我公司的售后服务主要内容如下：

代为用户免费培训现场管理人员和操作人员。

负责现场的安装指导和开机的调试工作。

自产品出厂后就建立档案，并实行“定期用户回访”制度。

平时遇到设备运行故障，我公司售后服务工程师将在接到客户通知后5分钟内做出答复并根据故障情况尽快派售后服务人员到客户现场处理问题，确保客户生产的正常进行。









部分合作客户、典型客户案例

长虹 | 青岛啤酒 | 上汽通用 | 徐福记 | 椰岛集团 | 比亚迪 | 中国国际海运集装箱

美的 | 富士康 | 酷派电子 | 华能 | 格力 | 柳州五菱 | 东风日产

格兰仕 | 奥克斯 | 康师傅 | 三九药业 | 今麦郎 | 三星电机 | TCL



某电池厂制氮机案例



某电子厂制氮机案例



某电子厂制氮机案例



某电子厂制氮机案例



某医药厂制氮机案例



某电子厂制氮机案例



某通信电缆厂制氮机案例



某电子厂制氮机案例

MAKE YOU CAREFREE

ALWAYS BE OUR HONOUR

为了您的**“无忧”**

我们一直在努力做得更好！



全套的解决方案

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Complete solution

We are committed to establishing long-term trust and close relationships with partners and customers, and supporting our customers' long-term development with professional capabilities and dedicated services. According to the individual needs of different customers, tailor-made and flexible comprehensive solutions are implemented scientifically, directly improving the business competitiveness of customers, creating greater profits, mutual benefit and common development.

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JIANGXI VOCO INDUSTRIAL AND TRADE CO., LTD.

www.vocoair.com

地址：南昌市高新区火炬五路899号高航大厦裙楼309
邮箱：vocochina@hotmail.com
电话：17707952006

ADD:Room 309,Podium Building,Gaohang Building,No.899,Huoju 5th Road,Hightech Zone,Nanchang City
E-mail：vocochina@hotmail.com
TEL：17707952006