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Product Brochure

INERT GAS PURIFICATION SYSTEM

GP20 Gas Purification System Cabinet

G20

GP20 Gas Purification System Cabinet removes moisture and oxygen from inert gas in closed-loop systems for glove boxes, sealed chambers and process lines.

https://www.gloveboxs.com/products/inert-gas-purification-system/gp20-gas-purification-system.html

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Product Overview

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Technical Parameters

Parameter	G20
Parameter 1	
Parameter 2	

Product Introduction

Product Overview

The GP20 Gas Purification System Cabinet is designed to create and maintain a clean, high-purity inert atmosphere when connected to glove boxes, sealed chambers, process equipment or enclosed production lines. The system forms a closed gas circulation loop and continuously passes the working gas through a purification column containing dedicated purification materials for the removal of moisture and oxygen.

By continuously purifying and recirculating inert gas or nitrogen, the GP20 helps maintain a stable controlled atmosphere for operations involving air-sensitive, moisture-sensitive or oxidation-sensitive materials. It can be integrated into laboratory systems, pilot-scale equipment and specialized production processes where reliable atmosphere control is required.

The system is constructed using corrosion-resistant stainless steel and alloy materials for key components. Its external enclosure features a protective powder-coated finish. Standardized structural and component design simplifies installation, maintenance and component replacement, making the system suitable for both new installations and upgrades to existing sealed processing equipment.

Model: GP20

Parameter	Specification
Model	GP20
Product Type	Gas Purification System Cabinet
Purification Targets	Moisture (H_2O) and Oxygen (O_2)
Working Gas	Inert gas or nitrogen
Control Gas	Compressed air, inert gas or nitrogen
Regeneration Gas	Inert gas or a mixture of inert gas and hydrogen
Operating Method	Closed-loop gas circulation and purification
Main Construction Materials	Corrosion-resistant stainless steel and alloy materials
Exterior Finish	Protective powder-coated enclosure
Structural Design	Standardized modular construction with replaceable components
Compatible Systems	Glove boxes, sealed chambers, enclosed equipment and production lines
Main Function	Maintaining a clean and high-purity inert gas atmosphere

Working Principle

Working Principle

The GP20 Gas Purification System Cabinet operates by connecting to a sealed chamber, glove box, processing unit or enclosed production system to establish a closed gas circulation loop. The working atmosphere is typically an inert gas or nitrogen.

During operation, gas from the connected chamber is circulated through the purification system and directed into the purification column. The purification materials inside the column

remove moisture and oxygen from the circulating gas. The purified gas is then returned to the connected chamber, allowing the atmosphere to be continuously cleaned through repeated circulation.

This closed-loop purification process gradually reduces unwanted moisture and oxygen and helps maintain a stable inert environment. Continuous circulation also helps limit the influence of small amounts of residual air or contaminants introduced during routine material handling or system operation.

Gas Purification Cycle

1. Closed System Connection: The purification cabinet is connected to a glove box, sealed vessel, equipment enclosure or production line to form a closed gas circuit.

2. Gas Circulation: Inert gas or nitrogen from the working chamber enters the purification circuit and flows toward the purification column.

3. Moisture Removal: The purification material captures moisture contained in the circulating gas, reducing the water content of the controlled atmosphere.

4. Oxygen Removal: Oxygen is removed as the gas passes through the purification column, helping protect oxygen-sensitive materials and processes.

5. Purified Gas Return: After purification, the cleaned inert gas is returned to the sealed chamber.

6. Continuous Purification: The circulation and purification process repeats continuously, allowing the system to maintain a stable and clean inert atmosphere during operation.

Purification Material Regeneration

After extended operation, the purification materials gradually approach their adsorption or reaction capacity. A regeneration process can be used to restore the purification performance of the purification column. Depending on the system configuration, regeneration can use an inert gas or a suitable mixture of inert gas and hydrogen.

The regeneration process restores the activity of the purification materials so that the purification column can continue removing moisture and oxygen efficiently. This regenerative operating concept supports repeated use of the purification system and facilitates long-term controlled-atmosphere operation.

Atmosphere Control

The GP20 separates the working gas, control gas and regeneration gas according to their respective functions. The working gas provides the controlled atmosphere, while the control gas supports system operation and the regeneration gas is used when the purification materials require regeneration. This functional separation provides a flexible solution for

different laboratory and industrial inert-atmosphere applications.

Product Features

Closed-Loop Gas Purification

The GP20 is designed to work with sealed chambers and equipment through a closed circulation loop. Instead of relying only on gas replacement, the system continuously purifies the circulating atmosphere to remove moisture and oxygen and maintain a clean inert environment.

Effective Moisture and Oxygen Removal

The purification column contains dedicated purification materials designed to remove the two major atmospheric contaminants affecting air-sensitive processes: moisture and oxygen. Continuous purification helps provide a controlled environment for sensitive materials, samples and production processes.

Flexible Integration

The purification system is not limited to one specific type of enclosure. It can be integrated with glove boxes, sealed containers, enclosed laboratory equipment and specialized production lines, providing a flexible atmosphere purification solution for both research and manufacturing applications.

Multiple Working Gas Options

The system can operate with inert gas or nitrogen as the working atmosphere. Control functions can use compressed air, inert gas or nitrogen, while regeneration can be configured with inert gas or an appropriate inert gas and hydrogen mixture according to the selected operating process.

Modular and Standardized Design

Standardized system construction facilitates installation, servicing and replacement of components. The modular concept makes the GP20 suitable for incorporation into different controlled-atmosphere systems and helps simplify maintenance throughout the equipment lifecycle.

Durable Construction

Key system components are manufactured from corrosion-resistant stainless steel and alloy materials. The protective external enclosure provides additional protection for internal purification and control components, supporting reliable use in laboratory and industrial environments.

Suitable for Air-Sensitive Materials

The GP20 provides an appropriate atmosphere purification platform for materials and processes that may be adversely affected by oxygen or moisture. Typical operations include preparation, transfer, processing, testing and temporary handling of oxidation-sensitive or moisture-sensitive materials.

Application Areas

Scientific Research: Controlled-atmosphere experiments, material preparation and laboratory processes involving air-sensitive samples.

Lithium Battery Research: Handling and processing of battery materials, electrodes, electrolytes and other moisture-sensitive materials under a controlled atmosphere.

Fine Chemicals: Preparation and handling of reactive chemicals and compounds requiring protection from ambient moisture or oxygen.

Pharmaceutical Research: Controlled-environment processing and experimental operations involving atmosphere-sensitive materials.

OLED and Electronic Materials: Processing and handling of moisture- and oxygen-sensitive functional materials used in electronic and optoelectronic research.

Welding and Joining: Providing an inert environment for specialized welding, joining and material-processing operations where oxidation must be minimized.

New Energy Materials: Research and process development involving advanced energy materials requiring controlled gas conditions.

Specialized Industrial Processes: Integration with sealed equipment and production lines requiring continuous inert-gas purification and atmosphere protection.

Accessories & Customization

Accessories

Grinding jars, heating elements, sample holders, control modules and other matching accessories can be selected according to the product configuration.

Customization

For voltage, capacity, chamber size, process temperature or application requirements, please contact TENCAN for a suitable configuration.