

## Non-standard Custom Three-Tower Hydrogen & Carbon Dioxide Dryer

Explosion-Proof Air Dryer





【氢能源技术有限公司】  
运行数据报告

氢气三端取水系统 (MetalInteg/Power/Chemical/Drilling)  
系统状态: 运行稳定 | 系统压力: 2.81MPa | 氢气纯度: 99.999%

能耗降低 30%

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(MetalInteg/Power/Chemical/Drilling)  
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(2024年3月数据)







**Demargo<sup>®</sup>**  
德玛戈











## Product Description

Demargo (Shanghai) Energy-Saving Technology Co., Ltd. is focused on Compressed Air Purification Solutions, specializing in refrigerated air dryers and desiccant air dryers. We are dedicated to delivering high-quality, non-standard customized three-tower hydrogen & carbon dioxide (CO<sub>2</sub>) dryer solutions that precisely meet your specific industrial needs. Our three-tower hydrogen & CO<sub>2</sub> dryers are specially designed based on advanced pressure swing adsorption (PSA) principles, featuring a three-tower cyclic operation mode that achieves continuous drying, efficient regeneration and stable performance. They can effectively remove moisture, impurities and harmful components from mixed hydrogen and CO<sub>2</sub> gas, ensuring the purity, stability and safety of the gas during extraction, purification, storage, transportation and utilization, while fully complying with international standards such as CE, ISO 9001, ASME and relevant gas safety certifications.

## Applicable Industries

As a professional enterprise focused on Compressed Air Purification Solutions, our non-standard custom three-tower hydrogen & CO<sub>2</sub> dryers are widely used in various industries related to the production, purification, mixing and utilization of hydrogen and carbon dioxide, including but not limited to:



- **New Energy Industry:** Suitable for gas drying in electrolytic water hydrogen production, fuel cell projects, hydrogen refueling stations, and CO<sub>2</sub> hydrogenation synthesis projects, ensuring the efficiency and safety of new energy utilization.
- **Petrochemical & Chemical Industry:** Used in gas drying for hydrocracking, hydrogenation reaction, coal gasification (hydrogen & CO<sub>2</sub> co-production), and chemical synthesis projects, complying with strict industrial purity requirements for mixed gases.
- **Power Generation Industry:** Applied in gas drying for hydrogen-fired power plants, nuclear power plant hydrogen cooling systems, and CO<sub>2</sub> capture & utilization (CCUS) projects, ensuring stable operation of power generation equipment and gas treatment systems.
- **Metallurgical Industry:** For gas drying in metal smelting, hydrogen reduction, and CO<sub>2</sub>-based metallurgical processes, improving product quality and production efficiency.
- **Food & Pharmaceutical Industry:** Suitable for drying food-grade CO<sub>2</sub> and medical-grade hydrogen, complying with strict food safety and medical hygiene standards.
- **Environmental Protection & Energy Saving Industry:** Used in gas drying for industrial waste gas treatment, hydrogen & CO<sub>2</sub> recovery and reuse projects, contributing to low-carbon emission reduction and circular economy development.

### **Customization Process: What You Provide, We Customize**

Adhering to a customer-oriented customization concept, as your reliable partner focusing on Compressed Air Purification Solutions, you only need to provide us with the following key parameters. Our professional R&D and engineering team with rich experience in mixed gas treatment and compressed air purification equipment will design and configure the most suitable three-tower hydrogen & CO<sub>2</sub> dryer for you, ensuring perfect integration with your gas system:

- Mixed gas handling capacity (Nm<sup>3</sup>/min or CFM), inlet pressure and inlet temperature (adapt to different on-site working conditions).
- Required pressure dew point (from -40°C to -70°C, or lower according to your special requirements, meeting ISO8573.1 standard levels).
- Gas composition (hydrogen content, CO<sub>2</sub> content, moisture content, impurity content such as sulfur compounds, oxygen and nitrogen).
- Working environment conditions (ambient temperature, humidity, installation space, corrosion level and explosion-proof requirements).
- Special industry standards or certification requirements (such as CE, ASME, ISO, food-grade or medical-grade certification).
- Other special needs (such as regeneration method, control system type, pipeline interface size, installation mode and remote monitoring requirements).

### **Optional Materials & Accessories**

To ensure the durability, corrosion resistance, safety and high efficiency of the equipment, and to maintain our high standards as an enterprise focusing on Compressed Air Purification Solutions, we select high-quality materials and accessories that meet international mixed gas industry standards, supporting you to choose flexibly according to your on-site environment, industry characteristics and budget:

#### **Optional Materials**

- **Body Material:** Carbon steel with anti-corrosion coating (standard), 304/316L stainless steel (for high-purity, corrosive mixed gas environment), corrosion-resistant alloy steel (for high-pressure gas scenarios).
- **Three Adsorption Towers Material:** 304/316L stainless steel (standard, corrosion-resistant, easy to clean and maintain), carbon steel with anti-corrosion lining (cost-effective choice), titanium alloy (for strong corrosive and high-pressure mixed gas environments).
- **Pipeline Material:** 304/316L stainless steel pipe, seamless steel pipe, corrosion-resistant alloy steel pipe (selected according to mixed gas pressure, corrosiveness and on-site requirements).

#### **Optional Accessories**



- Adsorbent: Activated alumina, molecular sieve (3A, 4A, 5A), silica gel (international high-quality brands, large adsorption capacity for moisture and impurities, long service life and easy regeneration).
- Control System: PLC control (Siemens, Mitsubishi), touch screen operation, optional remote monitoring, dew point monitoring and fault alarm function, realizing intelligent operation and easy maintenance.
- Regeneration System: Heatless regeneration (standard, energy-saving and efficient), micro-thermal regeneration (optional, suitable for high-purity mixed gas scenarios), with heater and circulating fan for stable regeneration effect.
- Auxiliary Accessories: Dew point analyzer (real-time monitoring of gas moisture), automatic drain valve, precision filter (further improving mixed gas purity), hydrogen/CO<sub>2</sub> concentration detector, flame arrester.
- Valves: Pneumatic valves, manual valves (international famous brands, reliable performance, corrosion-resistant and suitable for hydrogen & CO<sub>2</sub> mixed gas environment).
- Safety Accessories: Pressure relief valve, gas leakage detector, over-temperature and over-pressure protection device, emergency shutdown system (comprehensively ensuring equipment and on-site safety).

### **Our Advantages**

As a professional manufacturer focusing on Compressed Air Purification Solutions, we have years of experience in R&D and production of compressed air treatment equipment and mixed gas drying equipment. We boast a professional technical team familiar with hydrogen & CO<sub>2</sub> treatment technology, compressed air purification and international industry standards, as well as a strict quality control system. All customized three-tower hydrogen & CO<sub>2</sub> dryers undergo 48-hour full-load performance testing before leaving the factory, ensuring stable performance, reliable operation and compliance with relevant standards. We also provide 24-hour technical support, on-site installation guidance and after-sales service to solve your problems in a timely manner.

For more specific details about non-standard custom three-tower hydrogen & carbon dioxide dryers, including customized solutions, technical parameters, quotation and delivery time, please contact us directly. We will provide you with one-to-one professional consultation and customized services to meet your unique mixed gas drying and compressed air purification needs.

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## **Refrigerated Air Dryer & Desiccant Air Dryer - Demargo**

Demargo (Shanghai) Energy-Saving Technology Co., Ltd. is a national high-tech enterprise and a Shanghai "Specialized, Refined, Characteristic and Innovative" enterprise, devoting itself to the R&D, production, sales and after-sales service of compressed air purification equipment for 19 years. With a firm commitment to energy conservation, environmental protection and technological innovation, we have grown into a leading manufacturer in the air compression post-treatment industry, providing high-quality, customized solutions for global industrial customers.

Our core strength lies in strong technological research and development capabilities. Up to now, we have owned 24 authorized patents and 22 patents under application, covering key technologies of air drying and purification equipment, which effectively guarantees the stability and energy efficiency of our products. We have passed ISO9001 and QS certifications, and our products comply with international industrial standards, with dew point ranging from -23°C to -70°C, air treatment capacity of 1~500Nm<sup>3</sup>/min, and outlet oil content as low as 0.003PPM, reaching the industry-leading precision level.

We boast a comprehensive and diverse product portfolio, covering more than 60 product categories, including 21 standard products and a variety of non-standard customized products that lead the industry. Our main products include air compressors and their accessories, air receivers, refrigerated dryers (including plate heat exchanger type, high-temperature air-cooled type, DC inverter type, etc.), adsorption dryers, combined dryers, heat of compression adsorption dryers, filters, zero-air-consumption blower-heated dryers, self-cleaning air filters, compressed air pre-cooling units, low-temperature high-pressure nitrogen pre-cooling units, industrial chillers, oil-water separators, oil removers and aftercoolers, etc.. We support

12 types of product configurations such as air-cooled/water-cooled, fluorine-free/high-temperature, inverter/explosion-proof, and can provide intelligent solutions such as industrial computer and programmable control according to customer needs.

With excellent product quality and professional service, we have won wide recognition in the global market. Our customers are distributed in more than 20 countries and regions around the world, including Brazil, Australia, etc., and we have established in-depth cooperation with more than 20 OEM manufacturers and 2299 brand agents. Our annual output reaches 9,682 sets, and the cumulative sales volume exceeds 100,000 sets, which fully demonstrates the market influence and customer trust in our brand.

Customer-centricity is our consistent service philosophy. We provide a full-cycle service system from pre-sales design, in-sales installation to after-sales maintenance: we promise 30-minute response, 24-hour online guidance and 48-hour on-site service, and ensure spare parts supply response within 24 hours, effectively solving the worries of customers in product use. We are committed to tailoring the most suitable compressed air purification solutions for customers in more than 30 industries such as power, aerospace, electronics, and chemical industry, helping enterprises reduce energy consumption, improve production efficiency and product quality.

Looking forward to the future, Demargo will continue to increase R&D investment, accelerate technological innovation, expand the global market layout, and strive to become a world-class provider of compressed air purification and energy-saving solutions. We sincerely look forward to cooperating with partners from all over the world to jointly promote the development of the global industrial energy-saving and environmental protection industry!

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