

Rizhao Yingde:
Two 60,000 Nm³/h air separation units



Zhangjiagang Yingde:
60,000 Nm³/h air separation unit



Small On-site Air Separation Units



www.yingde.com

YINGDE
GASES
GROUP

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盈德气体
YINGDE GASES



YINGDE ENGINEERING



DISCOVER THE POTENTIAL OF GASES

Yingde Gases

We believe in the potential of gases

Established in October 2001, Yingde Gases is a large-scale professional gas company which is committed to the development of industrial sectors. Headquartered in the Pudong Free Trade Zone in the Shanghai Pudong Free Trade Zone, China, we also set up our investment headquarter in Hong Kong and Yingde Engineering in Hangzhou. Yingde Gases has built nearly 170 production facilities with over 3,500 employees domestically and abroad.

Yingde Gases, a leading independent manufacturer of industrial gases, will continue to expand its global footprint. Its overseas brand, NovaAir, has already operated air separation plants in countries including Malaysia and Thailand. Yingde Gases focuses on on-site gas supply, bulk liquid, MiniBulk, packaged gases, rare and specialty gases, and Yingde Engineering (design and manufacturing of cryogenic equipment including air separation unit). We supply on-site pipeline gases, liquid gases in tanks and cylinder gases including oxygen, nitrogen, argon, and other high-quality industrial gas products, as well as innovative gas solutions to support the development of industries such as the metallurgy, chemical, electronics, semiconductor, photovoltaic, food product, medical care, new materials, energy and environmental protection. We continue to create value in numerous fields closely related to the national economy and strive towards fulfilling our goal of “empowering society through innovative and sustainable gas solutions”.



Yingde Engineering

Trustworthy with a strong understanding of customers

As one of the core business units of Yingde Gases, Yingde Engineering provides total solutions of design, manufacturing, installation, commissioning, engineering management and project consulting services for air separation equipment, cryogenic equipment, green hydrogen equipment, and coal-water slurry gasification equipment for the group and customers from various industries.

With a host of senior experts from various industries, we are able to participate in the design and optimization processes of our customers and provide value-added services such as technical consultation. We place high emphasis on safety, reliability, guaranteed after-sales service and the supply of spare parts. As such, we provide air separation units and coal-water slurry gasification process design packages to fulfil customer demand for low energy consumption and highly-reliable guaranteed supply, providing customers with customized gas supply and gas production system solutions.



- 80+ professional R&D and design personnel, 30% with a Master or Doctor degree, 50% with abundant experience at a global gas company.
- the construction of ~170 air separation units completed and 100+ liquefaction and nitrogen generation units.
- 50+ independently designed, manufactured and constructed metallurgical and chemical-type air separation units with 60,000 Nm³/h production capacity have successfully commenced operations.
- 12 air separation units with 60,000 to 120,000 Nm³/h annual production capacities and 20+ sets of skid-mounted equipment for argon recycling, oxygen recycling, and rare gas extraction.
- 16 large-scale clean energy chemical projects employ the "Tsinghua Gasification Technology".



Air Separation Engineering of Excellent Quality

Design, manufacturing, installation, commissioning and air separation turnkey engineering services

Scope of business

- Cryogenic air separation equipment (air separation equipment, liquefaction equipment, nitrogen generating equipment, etc)
- VPSA technology
- Green hydrogen technology (electrolyzer, hydrogen liquefaction, green ammonia, etc)
- Coal-to-gas technology (first-generation refractory brick technology, second-generation water-cooled wall technology, third-generation waste boiler technology)



Scope of services

- EPC General Contractor for air separation equipment
- Equipment turnkey and product supply
- Project management and consulting services
- Technical services



Partnership Models

Diversified options based on customer requirements



Based on customer requirements, we provide service packages such as E, EP, PC, EC, EPC, EPCC and PMC

- ▶ E Process & Engineering Design
- ▶ P Equipment and Material Procurement
- ▶ C Construction and Engineering Management
- ▶ C Commissioning Service
- ▶ M Project Management Contract



Design and Manufacturing

Customized professional solutions



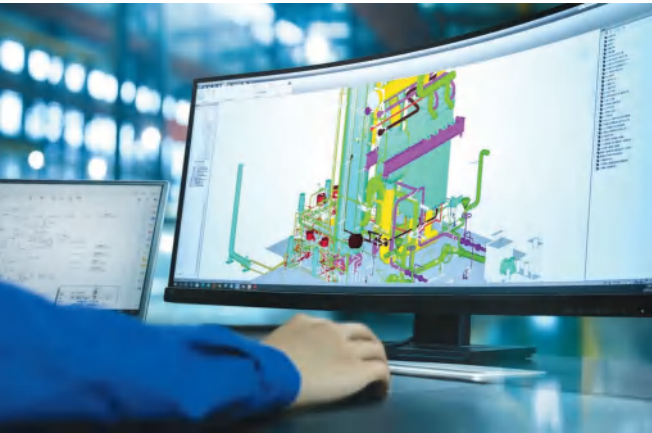
Our pursuit is to understand our customers better.

With our standardized, professional and comprehensive design system, unique equipment structure, equipment setup and cold container design, as well as our advanced process flow, lean production manufacturing system and reliable supporting equipment, we partner with our customers to optimize operations and innovate processes by providing customized solutions.



We specialize in and are responsible for designing products that strictly adhere to professional specifications.

- 250+ product design specifications and design standards
- 20+ professional safe design specifications and process control-related safety specifications
- 19 standardization documents



Serialized, standardized and diversified design and product manufacturing systems enable us to better respond to customer needs.

Proprietary intellectual property system

- Air separation field: 128 utility model patents and 9 invention patents.
 - Gasification field: 18 utility model patents and 9 invention patents.
- The "Tsinghua Gasification Technology " (patent application number: 201110044695.X) has obtained invention patent authorization in 14 countries/regions.



Honors and Qualifications

- National high-tech enterprise certification
- Provincial Enterprise Research Institute
- American Society of Mechanical Engineers (ASME) certification
- Service System certification





Engineering Management and Project Consulting

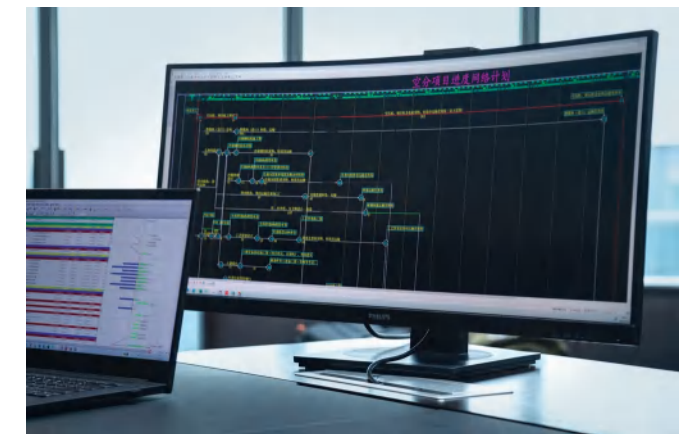
Professional services based on extensive experience



Our business is based on understanding and meeting customer needs as well as growing and progressing together with our customers. The 137 project management and control systems we have put in place have guided us in the performance of engineering construction and project management services for nearly 170 air separation units and chemical production units.

Scope of services

- Air separation and liquefaction projects: Industrial project execution, on-site construction, on-site services, startup and commissioning, unit modification and relocation, unit maintenance, etc.
- Clean energy projects: Technical services, training, project consulting, project management, gasification engineering and other services for syngas equipment.



“Tsinghua Gasification Technology”

Patented environmental protection technology with widely applicable



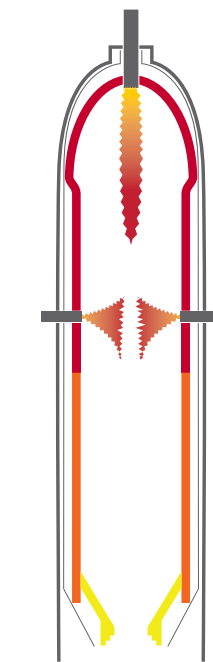
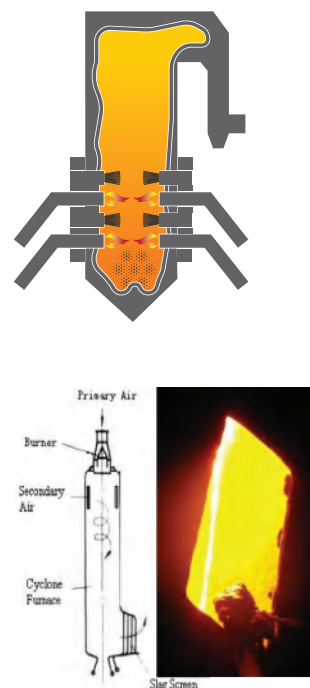
Jointly owned by Yingde Gases and Tsinghua University, the patent for the “Tsinghua Gasification Technology” includes the first-generation refractory brick technology, second-generation water-cooled wall technology and third-generation waste boiler technology.

Technical advantages

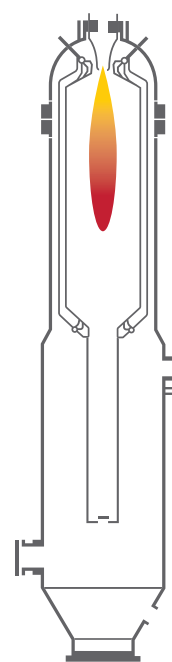
- Strong safety features
- Environmental-friendly technology
- High operation rate
- Strong adaptability and stability to coal type
- High gasification efficiency
- Fast system startup
- High degree of localization

Scope of services

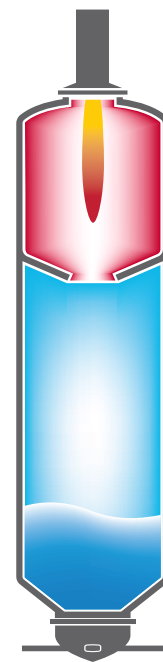
- Coal gasification technology research and development
- Patent implementation license
- PDP preparation
- Technical consulting
- Technical services



Refractory brick coal water slurry gasifier

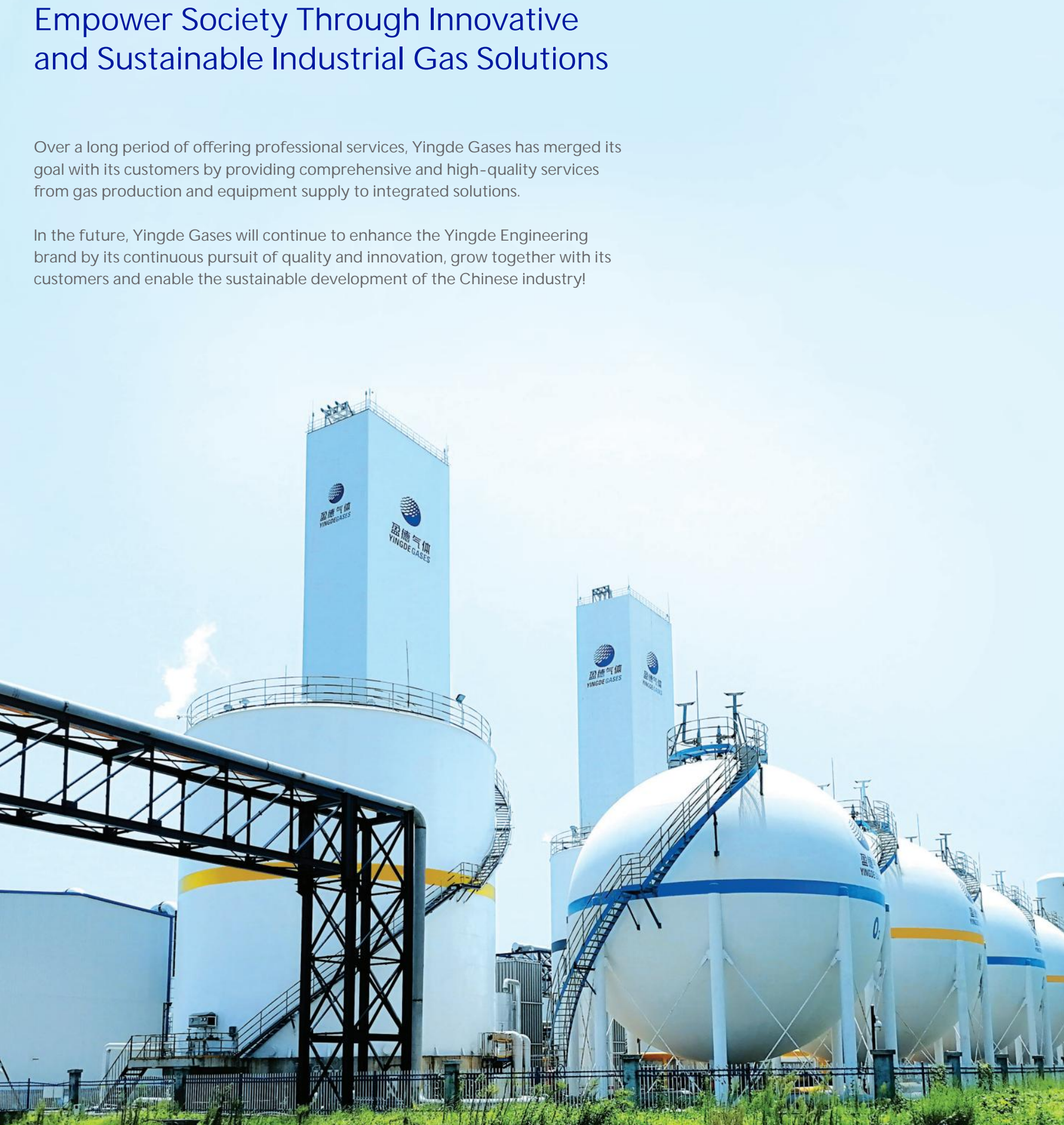


Water-cooled wall coal-water slurry gasifier



Water-cooled wall coal-water slurry waste boiler gasifier





Empower Society Through Innovative and Sustainable Industrial Gas Solutions

Over a long period of offering professional services, Yingde Gases has merged its goal with its customers by providing comprehensive and high-quality services from gas production and equipment supply to integrated solutions.

In the future, Yingde Gases will continue to enhance the Yingde Engineering brand by its continuous pursuit of quality and innovation, grow together with its customers and enable the sustainable development of the Chinese industry!



Xinan Copper
66,000 Nm³/h Air Separation Project
Establishment of cooperation with Aluminum Corporation of China, one of the world's top 500 companies. As this project is located in a high-altitude area, the capacity of this unit is equivalent to a 80,000 Nm³/h air separation unit in a plain area.



Meishan Wanhua
40,000 Nm³/h Air Separation Project
High-end chemical industry customers.



Guangxi Huayou
30,000 Nm³/h and 60,000 Nm³/h Air Separation Project
Huayou Cobalt is a new energy battery materials industry leader.



CATL
30,000 Nm³/h Air Separation Project
This project provides turnkey equipment EPC services for CATL, a new materials industry leader.



40,000 Nm³/h Air Separation Project in Laiwu
The first pilot project involving an air separation unit with intelligent one-click start-up features and smart site implementation functions.