HOUPU

厚普股份

证券代码：300471

厚普清洁能源（集团）股份有限公司

Houpu Clean Energy Group Co., Ltd.



做全球技术领先的清洁能源装备整体解决方案提供商

科技厚普 · 智造绿色未来

CONTENT



Company Profile

Advantages

NG Product Line

H2 Product Line

Southeast Asia

To build greener future



PART 01

Company Profile

Company Profile



Chengdu Headquarters Area：100 Acres



Cryogenic Pileline Production Base
Area： 42 Acres



IoT R&D Base
Area：38 Areas



Aviation Production Base
Area： 5169.1Sqm



Pressure Vessel Production Base
Area：38 Acres

200 Acre+	1000+	500 Acres
Area	Employee	H2 Industrial Park

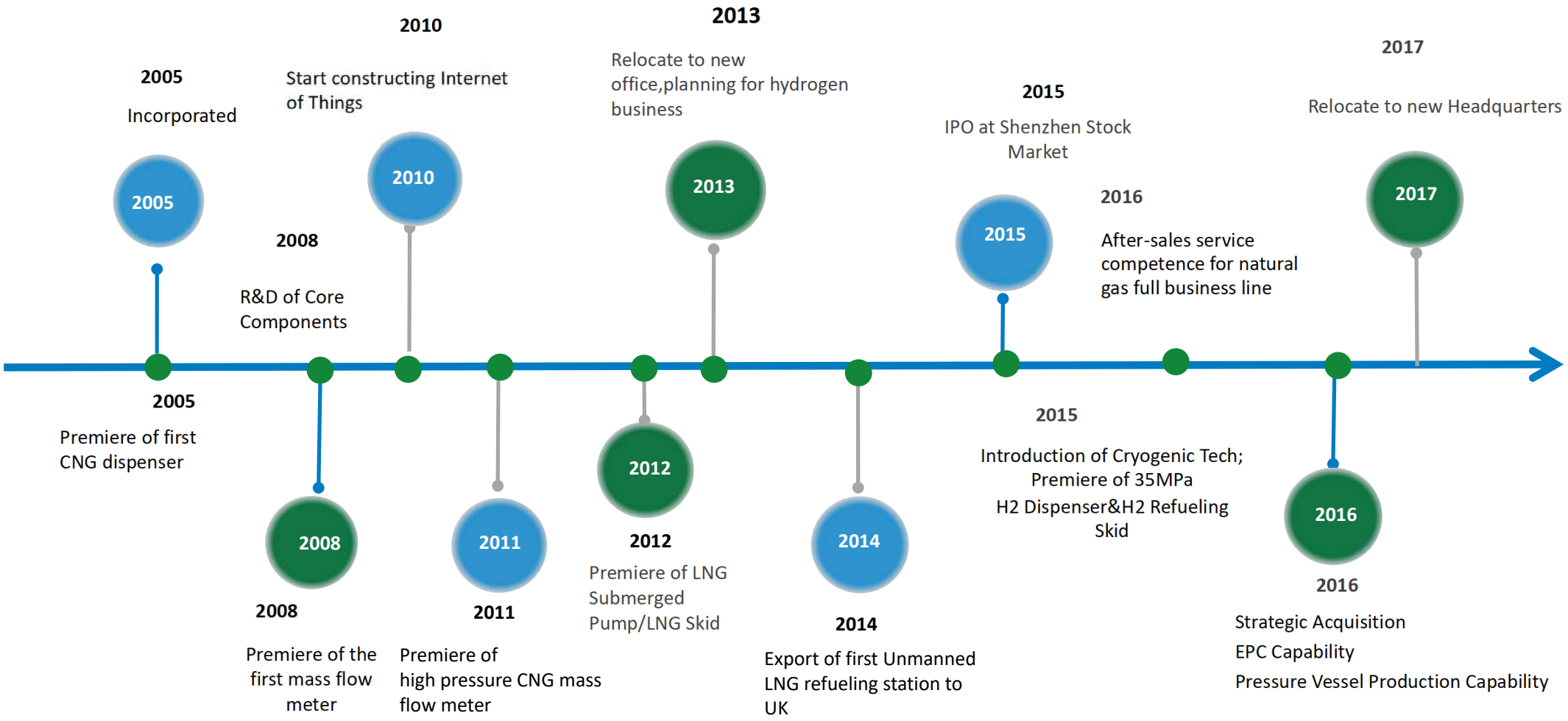


Houpu Clean Energy Group Co., Ltd. was established in 2005 and listed on the **Shenzhen Stock Exchange Market in 2015 (stock code: 300471).** It has established six clean energy equipment R&D and production bases in Chengdu and Chongqing, and has more than 30 subsidiaries at home and abroad, it has established a clean energy equipment chain ecosystem.

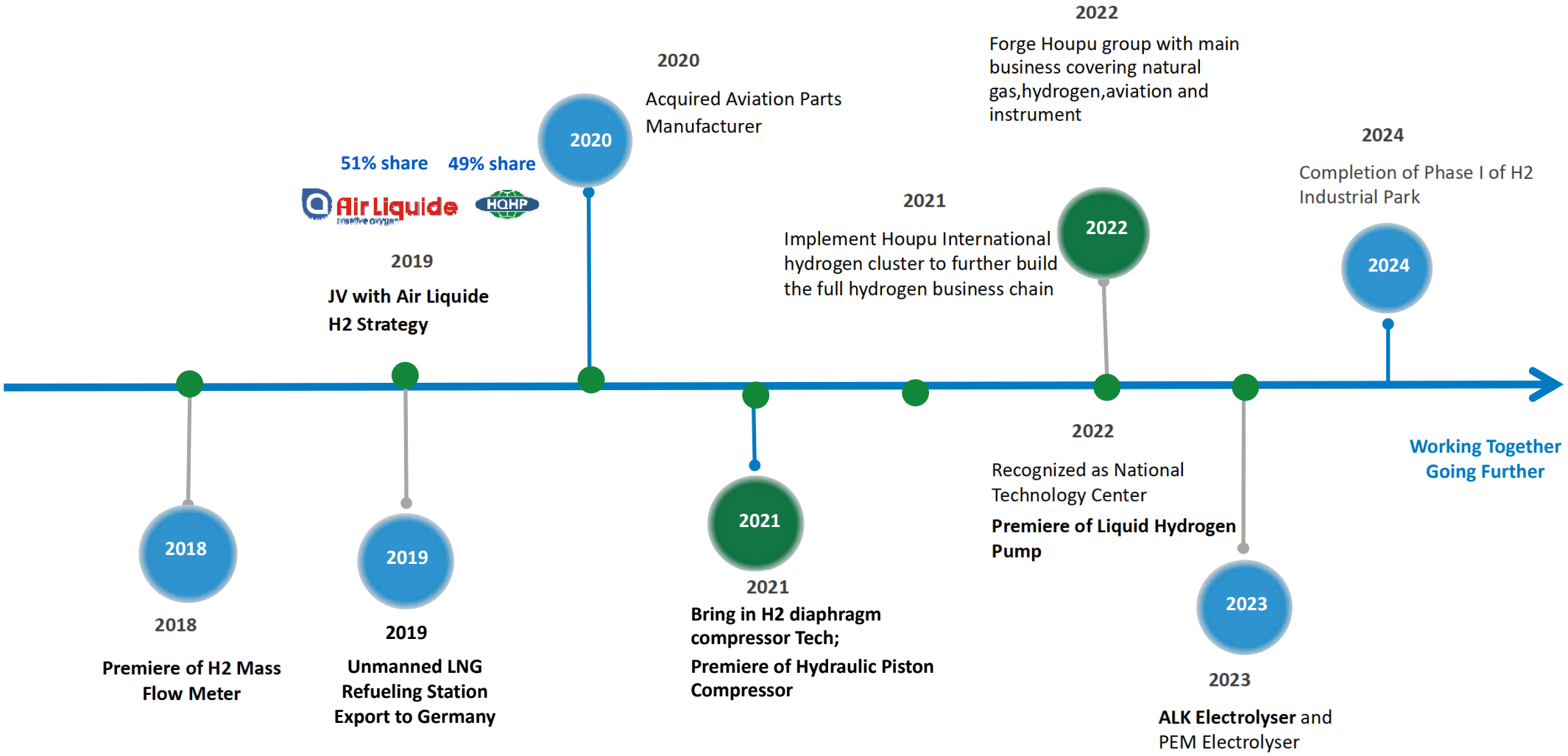
After continuous development and business expansion, Houpu has now forged itself as a group company with business **covering the production of natural gas exploitation/refueling equipment, hydrogen production,storage and refueling equipment/component, fuel gas refueling system and fuel gas supply system for ships, the provision of services, the R&D of clean energy and aviation parts as well as R&D of instrumentation.**

7000+	570+	170+	20+
Project Cases	Authorized Patents	Software Copyrights	National Regulation

Development Milestones



Development Milestones



Business Sector

Energy Project EPC

Houpu Engineering

NG Pipeline Transmission/Purification/Liquefaction
H2 Refueling/Multi-fuel Station/H2 Production &Refueling/H2 for green ammonia

Natural Gas

Xin Yu

Oil and Gas Related Purification/dehydration/heating equipment and transmission equipment
Reaction/storage/heat exchange chemical equipment
Cryogenic/marine/buffer storage tanks

Houpu Equipment

NG Refueling Solution
Power Plant

Houpu Global

Import and Export of Houpu Products and Tech

Houpu Marine

Ship bunkering system & fuel supply system (LNG, methanol, hydrogen), security control

H2

Houpu H2

ALK EZ
PEM EZ

CD Jiqing

H2 Storage Material/ Metal Hydride Storage Onboard Cylinder/Power Generation System

Houpu Equipment

Oil,Gas,H2 and EV Charging Solution

ALHP

H2 Equipment

Houding

Diaphragm Compressor

HP Tech

Maintenance of Oil,Gas,H2 and EV Station

Core Components

Andisoon

LNG Refueling	H2 Refueling
Nozzle	H2 Compressor
LNG/CNG Mass Flow Meter	Nozzle
Cryogenic Pump	H2 Mass Flow Meter
Valves	Breakaway Coupling
	LH2 Mass Flow Meter
	LH2 Pump

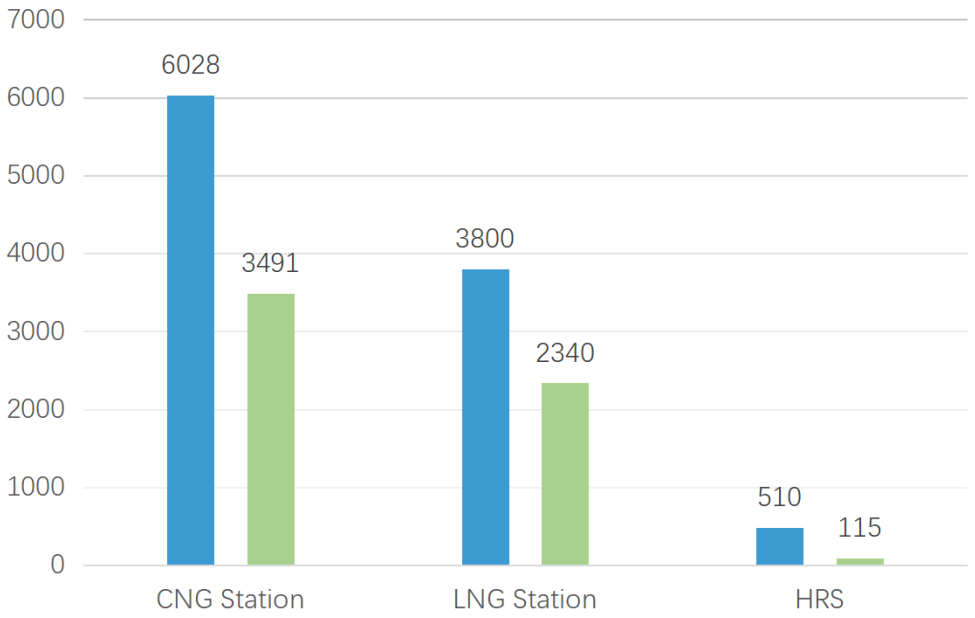
Houpu Cryogenic

LNG Refueling	H2 Refueling
Ambient Heat Exchanger	LH2 Heat Exchanger
Water-bath Heat Exchanger	LH2 Pipe
VIP/Vacuum Box	LH2 Pump Sump
Gas-Liquid Separator	

Houpu IoT

HopNet equipment operation and maintenance supervision platform
Hydrogen station digital twin platform; smart operation management platform

Market Share



CHINA: 6028
HOUPU:3491

CHINA: 3800
HOUPU:2340

CHINA: 510
HOUPU: 115

Present in 30 countries and regions

The first company to export hydrogen refueling station that meets EU standards

◆Sinopec, PetroChina, CNOOC, the major gas groups, as well as around the transport group, logistics, ports and terminals Exports to Europe (Germany,Netherlands,France,Hungary, Britain, Czech republic, Russia,Spain,Portugal,Poland), Asia (Thailand, Myanmar, Bangladesh, Malaysia, Singapore, Pakistan, Uzbekistan, Mongolia, PNG, Kazakhstan.), Africa (Nigeria,Egypt,Tanzania), America (Mexico, Honduras,Chile,Brazil,Argentina,Peru,Columbia), etc

To build greener future



PART 02

Advantages

Service Content



EPC+O+M

- Engineering design
- Procurement
- Construction
- Project Management
- Operation Maintenance

Design

- Process package design
- FEED
- Preliminary design
- Detailed design

Manufacturing

- Equipment production and manufacturing
- Manufacturing of core components
- Design/manufacture of skids

Technical Service

- Trial operation after driving
- Transportation guarantee service

Consulting

- Project proposal
- Project Feasibility study
- Overall project planning
- Technical service

Company Qualifications Related to Energy Project

Pipeline Design

Pipeline Installation

Engineering Consulting

System Certification

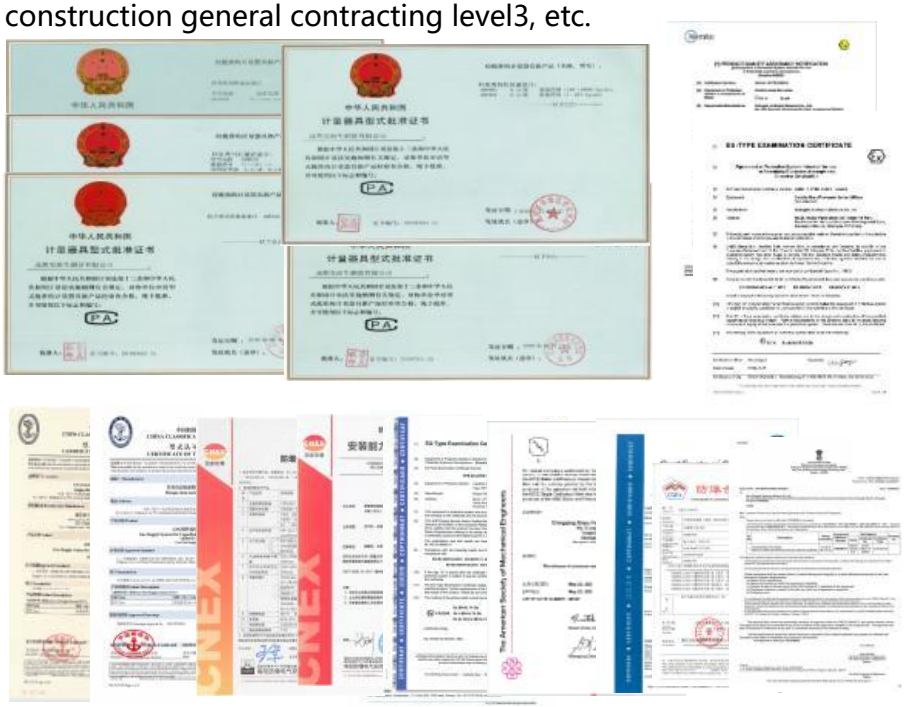
◆ **Engineering Design**

Class A in Urban Gas Specialty, Class A in Chemical, Petrochemical and Pharmaceutical Industry, Class B in Petroleum and Natural Gas Industry, Class B in Architectural Industry, Class B in Power Industry

◆ **Construction Engineering**

Petroleum and chemical engineering construction general contracting level2, municipal public works construction general contracting level3, mechanical and electrical engineering construction general contracting level3, etc.





Advantages of Key Components

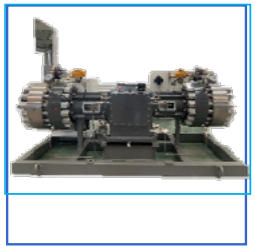
Independent R&D and production capacity of core components and parts



MASS FLOWMETER



HYDROGEN FLOWMETER



DIAPHRAGM HYDROGEN COMPRESSOR



HYDRAULIC PISTON COMPRESSOR



HYDROGEN REFUELING NOZZLE



CRYOGENIC SUBMERGED PUMP



LNG REFUELING NOZZLE



BREAK AWAY COUPLING

After-sales Service

Leading technical service support





30	30	180	7×24
Offices	Spare parts warehouse	Professional elite team	24x7 service

- Training service
- Maintenance service
- Itinerant inspection /maintenance service
- Upgrade service
- Customized service

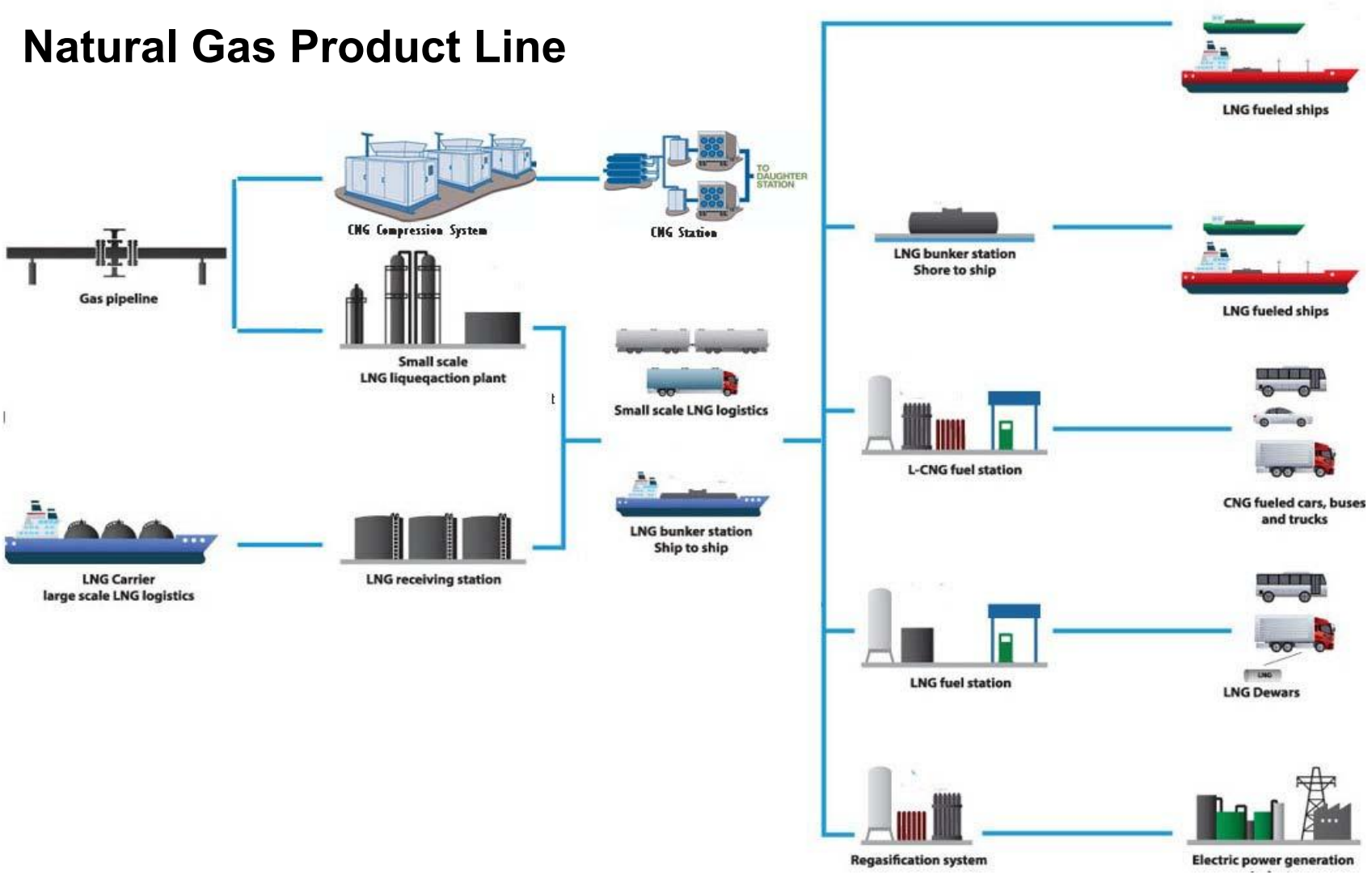
To build greener future



PART 03

NG Product Line

Natural Gas Product Line



Natural Gas Industry

Natural Gas

Purification

Field Station Equipment

- Wellhead Surface Engineering
- Natural Gas Purification Plant
- Sulfur Recovery
- BOG Ammonia Recovery
- Coke Oven Gas Purification
- CCUS Purification



Liquefaction

Liquefaction Plants

- Wellhead Gas Liquefaction
- Pipeline Gas Liquefaction
- Coke Oven Gas Liquefaction
- Helium Liquefaction
- BOG Reliquefaction
- Marine Scattered Gas Liquefaction
- CO2 Liquefaction



Refueling

Vehicle Refueling

- Refueling Station
- Vaporization Station Marine Bunkering
- Ship-to-Ship LNG Bunkering Station
- Shore-based LNG Bunkering Station
- LNG Ship Gas Supply System



Application

Industrial Point Supply

- Natural Gas Power Generation
- Vaporization & Transportation
- Peak Shaving with Cryogenic Storage Tanks

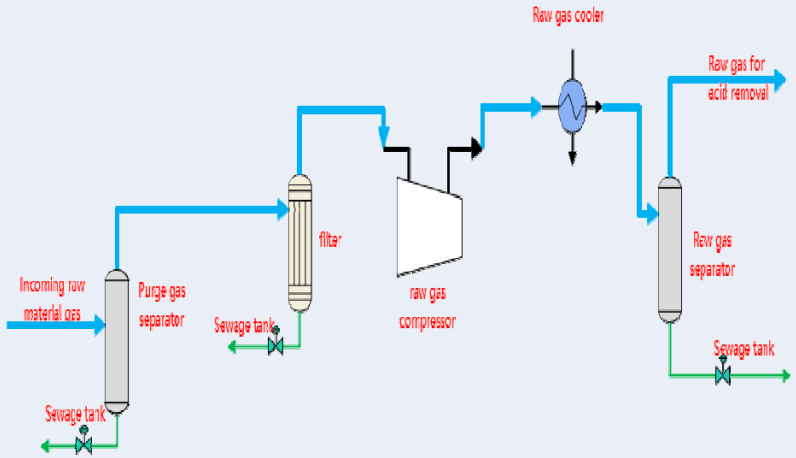


Natural Gas Related

Natural Gas Field Station Gathering, Transmission, Pressure Regulation, and Boosting

Natural gas pressure regulation and boosting are primarily used in natural gas gathering and transmission, specifically for adjusting gas pressure during the transportation process. Leveraging the company's extensive engineering experience in natural gas processing and treatment, we provide complete engineering technical services for natural gas pressure regulation and boosting.

Business Scope: Natural Gas Gathering & Transmission Stations, Natural Gas Pressure Regulation Stations, Natural Gas Boosting Stations, etc.



Typical Case: Jiaoye 155# Platform Metering and Separation Skid-Mounted Integrated Tank for Jianghan Oilfield (simultaneously processing 11 wells, setting a domestic record for the highest number of shale gas platform wells processed concurrently)


Desanding Skid


Separator Metering Skid


TEG Dehydration Skid


Filter Separator Skid


Water Jacket Heater Skid


Pigging Skid


Valves Skid


Header Skid

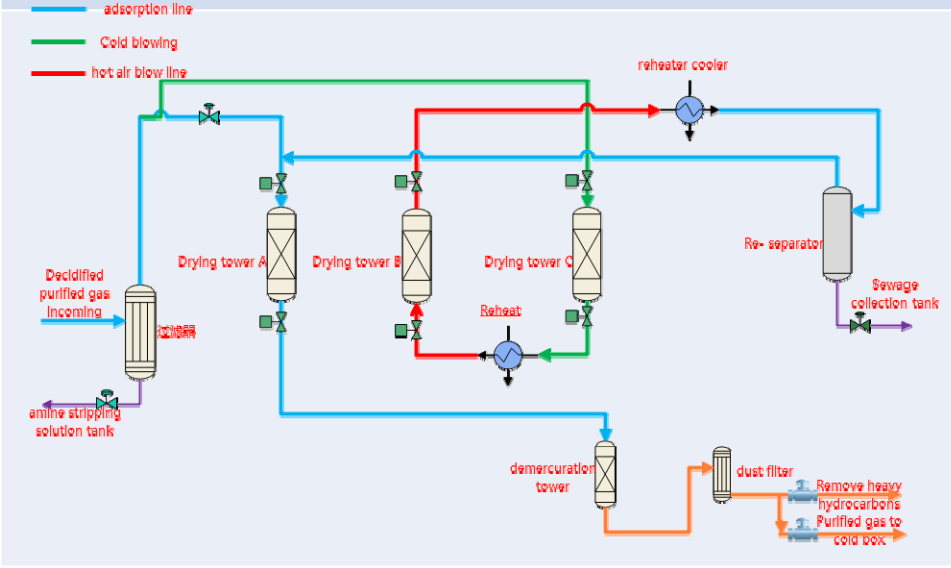

Instrument Air Skid

Natural Gas Related

Natural Gas Dehydration

Proficient in various natural gas dehydration processing technologies. Leveraging years of engineering experience in natural gas processing and treatment, the company selects the most optimized dehydration process based on different dehydration depth requirements. This approach achieves optimal dehydration results with the lowest energy consumption and investment costs, meeting customer needs. Key technical routes include Triethylene Glycol (TEG) Dehydration, Solid Adsorbent Dehydration, External Refrigeration Dehydration, and J-T Valve Refrigeration processes.

Business Scope: Deep Dehydration for LNG Production, Pipeline Natural Gas Dehydration, Underground Gas Storage Dehydration, CNG Dehydration, etc.



Typical Case: 300,000 Nm³/d TEG Desulfurization & Dehydration Skid for a CNPC CPE Project.



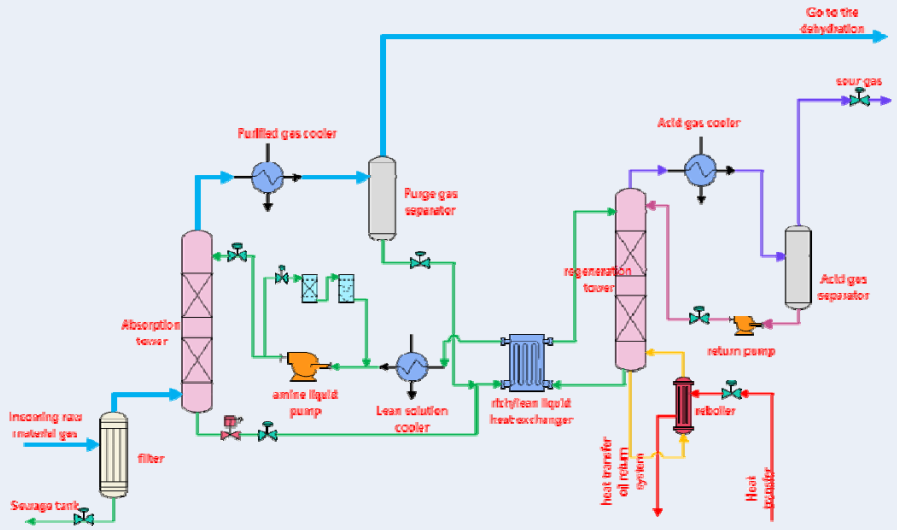
Natural Gas Related

Natural Gas Decarbonization

Proficient in various natural gas decarbonization processing technologies. Drawing upon years of engineering experience in natural gas processing and treatment, the company selects the most optimized process route based on the carbon content of different natural gas components and decarbonization depth requirements. This approach delivers the best decarbonization results with minimal energy consumption and cost, fulfilling customer needs. Key technical routes include Activated MDEA Decarbonization (1+1, 1+2, 2+2 processes), Solid Adsorbent Decarbonization, and Membrane Separation Decarbonization.

Business Scope: Deep Decarbonization for LNG Production, Pipeline Natural Gas Decarbonization, Biogas Decarbonization, etc.

Typical Case: 100,000 Nm³/d Decarbonization Skid for Shaanxi Yanchang.





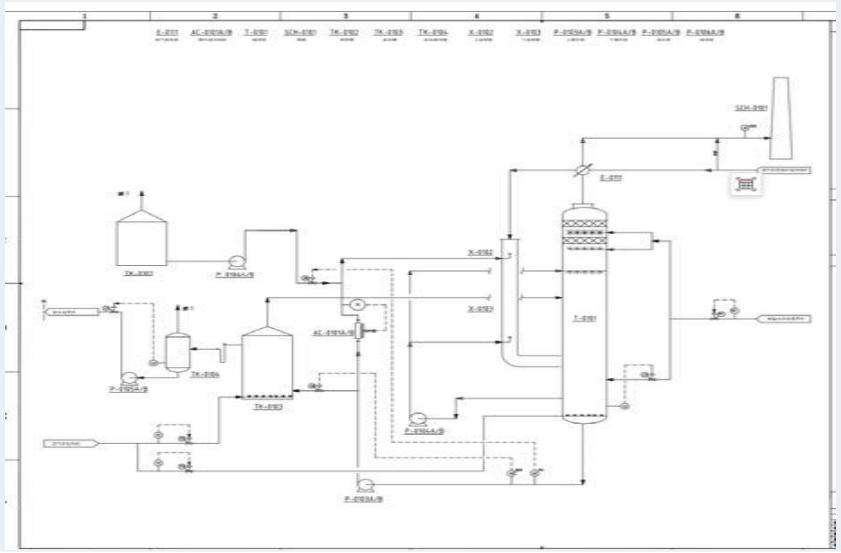
Natural Gas Related

Natural Gas Desulfurization

Proficient in various natural gas desulfurization processing technologies. Leveraging years of engineering experience in natural gas processing and treatment, the company selects the most optimized process route based on the sulfur content of different natural gas components and the required removal depth. This approach achieves the best desulfurization results with minimal energy consumption and cost, fulfilling customer needs. Key technical routes include Solid Adsorbent Desulfurization (Dry Process), Activated MDEA Desulfurization (Wet Process), and the Claus Process.

Business Scope: Deep Desulfurization for LNG Production, Pipeline Natural Gas Desulfurization, etc.

Typical Case: 60,000 Nm³/day Desulfurization Unit for Ganquan (contributing to the completion of Yanchang Petroleum's 15 BCM/a Natural Gas Capacity Doubling Project six months ahead of schedule).

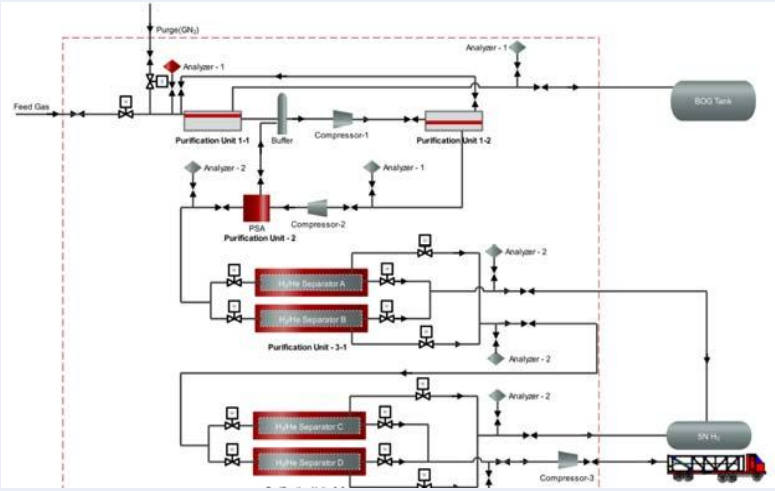




Natural Gas Helium Recovery

Helium is widely used in aerospace, nuclear industries, scientific research, petrochemicals, refrigeration, medical fields, and optoelectronic product manufacturing. It is a fundamental material for national security and the development of high-tech industries, classified as a strategic resource. As an extension of our natural gas business, the company provides services for helium collection, capture, extraction, purification, and liquefaction. Key technical routes include processes such as dehydrogenation (membrane separation, catalytic separation, alloy separation), deoxygenation, dehydration, decarbonization, cryogenic adsorption, deep cryogenic liquefaction, and solidification separation denitrification to achieve high-purity or ultra-pure helium.

Business Scope: BOG Helium Recovery, Pipeline Natural Gas Helium Recovery, etc.



Typical Case: Northwest Gaseous & Liquid Helium Co-production Project



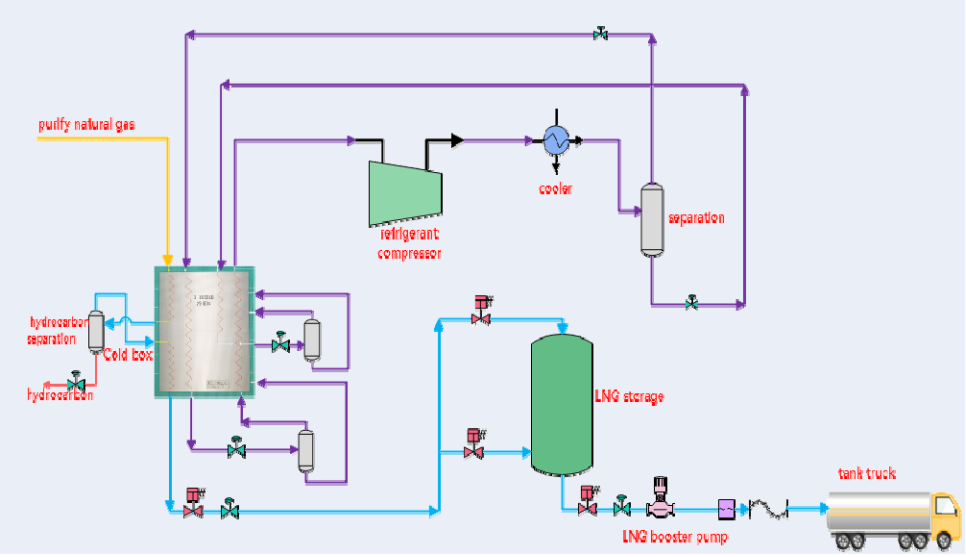
Natural Gas Related

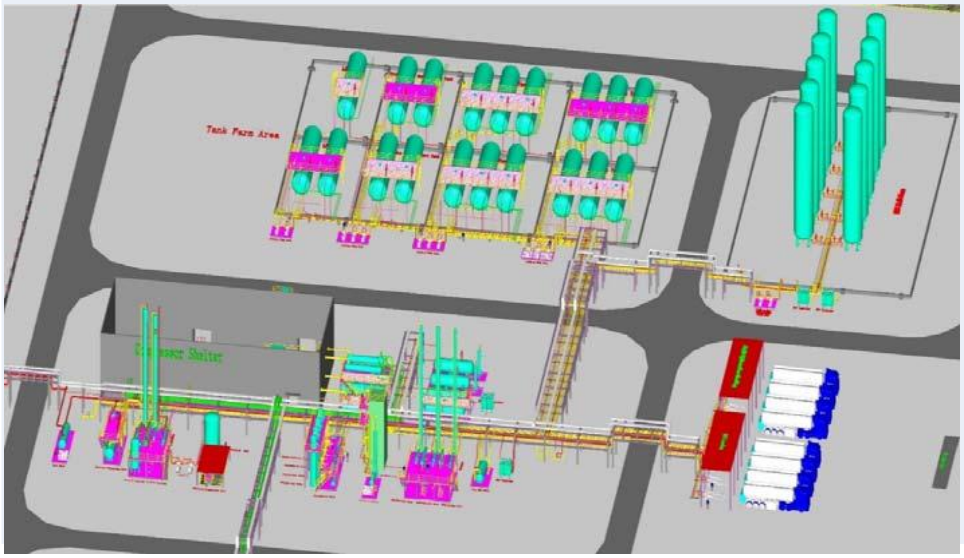
Natural Gas Liquefaction

LNG, produced from natural gas liquefaction, is one of the most mature utilization methods for natural gas domestically. The company possesses mature process solutions and technical routes for daily processing capacities ranging from 50,000 to 2.4 million standard cubic meters, meeting client requirements with minimal energy consumption and investment costs.

Business Scope: Wellhead Natural Gas Liquefaction, Pipeline Natural Gas Liquefaction, Coalbed Methane Liquefaction, Shale Gas Liquefaction, Biogas Liquefaction, etc.

Typical Case: Nigeria 600,000 Nm³/d LNG and LPG Co-production Project





LNG Refueling Station



Permanent LNG Refueling Station



Containerized LNG Refueling Station



Unmanned Containerized LNG Refueling Station

LNG Regasification Station



LNG Regasification Station can be divided into single-point and satellite stations according to different supply targets, which are used to **receive, store, and vaporize** LNG purchased from upstream to supply gas locally. LNG Regasification Stations can be regarded as small-scale LNG receiving terminals, and some stations also have liquefaction facilities.

Service:

Provide complete sets of natural gas vaporization station equipment, offer integrated solutions for natural gas Regasification Station facilities, provide feasibility studies, project proposals, engineering design, and EPC general contracting services.

Natural Gas Power Plant



Description:

A natural gas power station generates electricity by burning natural gas. It is efficient, cleaner than coal-fired plants, and produces lower carbon emissions. Natural gas turbines are often used for both base-load and peak-load power generation, making the station a reliable and flexible energy source.

Natural Gas Related

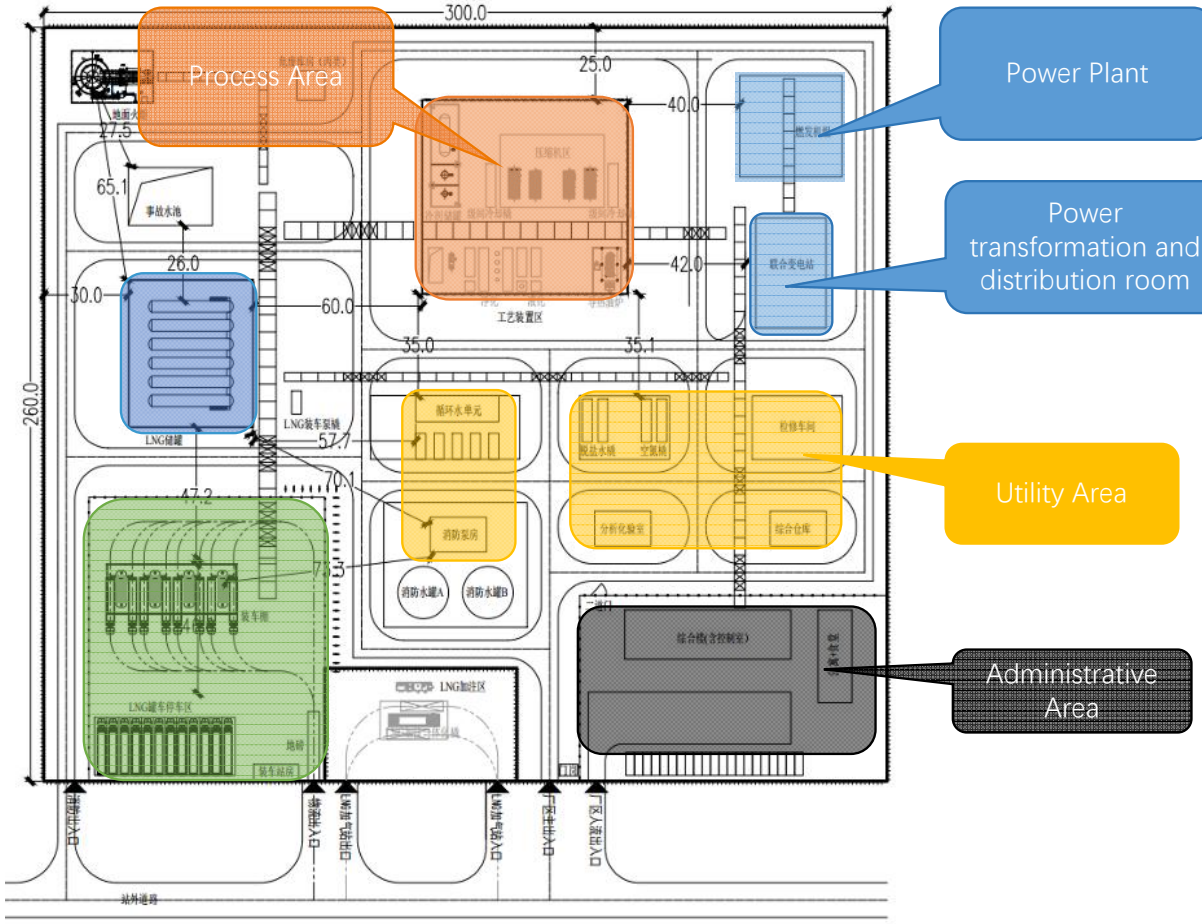




机组型号 Model	电压 Voltage (V)	频率 Frequency (Hz)	功率 Power (kW)	转速 Speed (r/min)	尺寸 Dimension (mm)	重量 Weight (kg)
YC4DG-30N5LC	400	50	30	1500	1800×1000×1110	789
YC4DG-50N5LC	400	50	50	1500	1840×1000×1110	826
YC4GG-60N5LC	400	50	60	1500	1900×720×930	1100
YC6GG-80N5LC	400	50	80	1500	2080×965×1525	1273
YC6GG-90N5LC	400	50	90	1500	2280×980×1450	1370
YC6GG-100N5LC	400	50	100	1500	2485×965×1525	1478
YC6MKG-150N5LC	400	50	150	1500	2840×1230×1505	1903
YC6MKG-180N5LC	400	50	180	1500	2900×1030×1780	2500
YC6KG-200N5LC	400	50	200	1500	3600×1300×1780	3200
YC6KG-250N5LC	400	50	250	1500	3600×1300×1780	3200
YC6TG-250N5LC	400	50	250	1500	3270×1300×1760	3800
YC6TDG-350N5LC	400	50	350	1500	3900×1850×2290	5500
YC6TFG-500N5LC	400	50	500	1500	3600×1500×2100	7400
YC6CG-500N5LC	400	50	500	1500	4107×1633×2111	8890
YC6CG-600N5LC	400	50	600	1500	4107×1633×2111	8890
YC12VTDG-700N5LC	400	50	700	1500	3880×2080×2370	8000
YC12VTDG-700N5HC	10500	50	700	1500	4415×2135×2130	9500
YC12VTDG-800N5LC	400	50	800	1500	3880×2080×2370	8000
YC12VTDG-800N5HC	10500	50	800	1500	4415×2135×2130	9500
YC12VCG-1000N5LC	400	50	1000	1000	5210×2110×2660	16100
YC12VCG-1000N5HC	10500	50	1000	1000	5510×2110×2660	17500
YC16VTDG-1000N5LC	400	50	1000	1500	4618×1992×2280	11700
YC16VTDG-1000N5HC	10500	50	1000	1500	4918×1992×2280	12500
YC16VTDG-1100N5LC	400	50	1100	1500	4618×1992×2280	11700
YC16VTDG-1100N5HC	10500	50	1100	1500	4918×1992×2280	12500
YC16VCG-1500N5LC	400	50	1500	1000	7138×2086×2790	22000
YC16VCG-1500N5HC	10500	50	1500	1000	7138×2086×2790	22500
YC16VCG-2000N5LC	400	50	2000	1500	8416×2055×2890	24800
YC16VCG-2000N5HC	10500	50	2000	1500	8834×2055×2890	25500

Ranges from 0.03MW-2MW per unit

Natural Gas Related



300,000 m³ LNG project features a natural gas power station co-located with the LNG plant.



100,000 m³ LNG Plant



Onsite Gas Generator

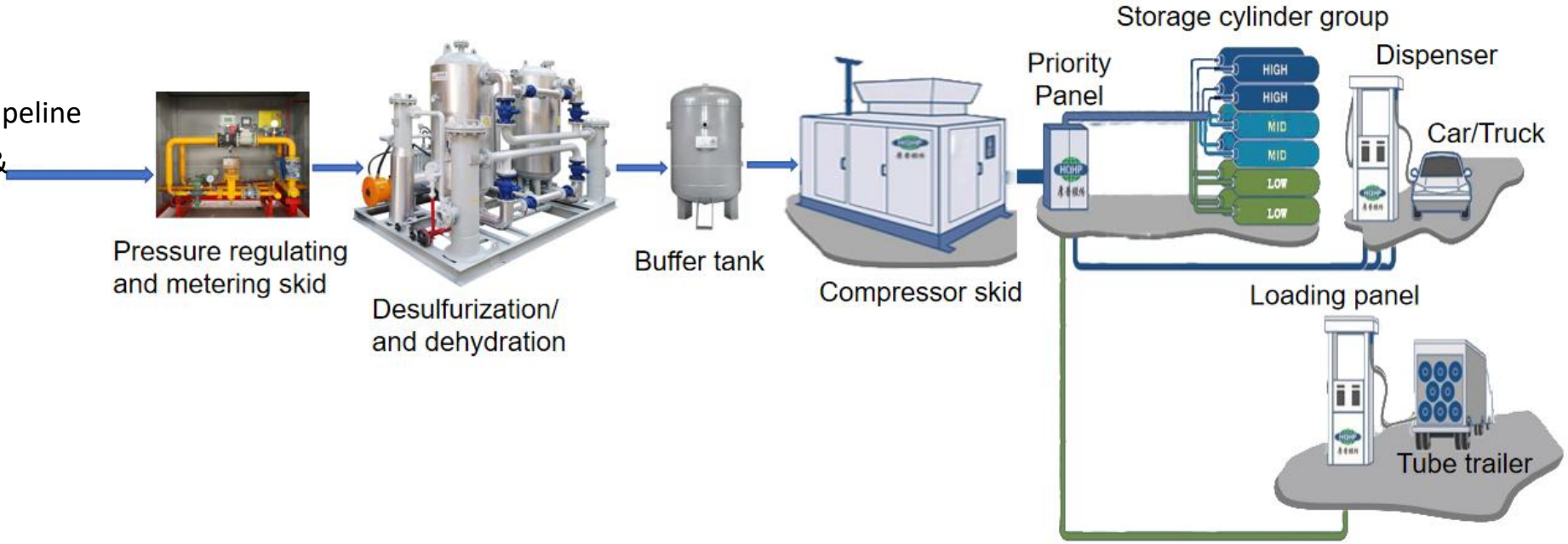
CNG Solution-CNG Mother Station

CNG Mother Station:

generally standard CNG stations which dispense a large volume of compressed natural gas into mobile CNG trailers, which transport the gas to sites that do not have access to a natural gas pipeline. In the meantime,it is able to dispense CNG to NGVs

Gas Source

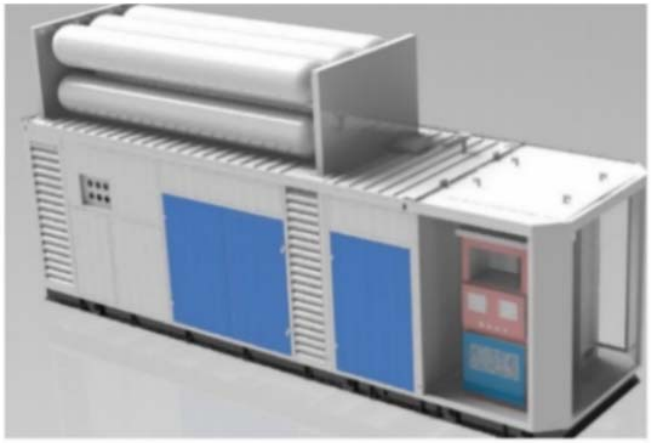
- Natural Gas Pipeline
- LNG Storage & Vaporization
- Biogas
- Shale Gas
- ...



CNG Solution-CNG Refueling Station



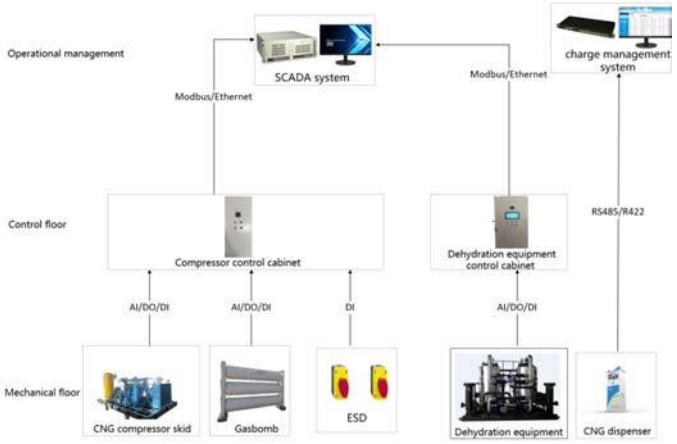
Permanent CNG Refueling Station



Containerized CNG Refueling Station



Mobile CNG Refueling Station



Station Control System

Typical Performance



Guizhou's first pipeline gas LNG plant (300,000 cubic meters per day



300,000 cubic meter TEG desulfurization and dehydration skid, JT skid for PetroChina CPE project

- Yunnan's first pipeline gas LNG plant (300，000 cubic meters/day)
- CNOOC Hubei's first fully loaded LNG liquefaction (30000 cubic meters per day)
- Shengli Oilfield High Oil and Sulfur Associated Gas LNG Plant (300000 cubic meters/day)
- Yunnan Fuyuan's first coke oven gas methane LNG plant (200000 cubic meters/day)
- Heilongjiang Hegang's first coke oven gas methane LNG plant (300000 cubic meters/day)
- .....

- Two phase metering skid for Southwest oil and gas fields (first application in high sulfur blocks in China)
- Export gas volume reaches 3.5 billion cubic meters per year - Yanchang Petroleum Yangqiaopan Purification Plant Project
- Fuling shale gas project, China's first large-scale shale gas field with a capacity of billions of cubic meters (water jacket heating furnace)
- The largest NMP production capacity supply base in China (Zhongrun New Material Sulfur Recovery Tower)
- .....

Typical Performance



Project name: Well gas recovery project

Project scale: 4MMSCFD

Project loaction: Yichuan

Project mode: EPC

Liquefaction process route: MRC

Typical Performance



Project name: Sulfur Recovery Unit of Ganquan Natural Gas Purification Plant

Project scale: 200,000 square meters per

Project loaction: Ganquan

Project mode: EPC

Technical route: Wet desulfurization with complex iron

Typical Performance



Heilongjiang Hegang Tianfu Energy Co., Ltd. SNG, LNG and CNG (30×$10^4 m^3$/d) (10.59MMSCFD)



Yunnan Fuyuan Huaxin Energy Development Co., Ltd. COG methantion, LNG and CNG (48×10^4m3/d)(16.95MMSCFD)

Typical Performance



Guizhou Chitianhua New Energy Co., Ltd. LNG plant 1st phase 60×$10^4 m^3/d$（21.19MMSCFD）



Yunnan Shuifu Zhongcheng Natural Gas Co., Ltd. LNG plant 3×$10^4 m^3/d$ (1.06MMSCFD)

Typical Performance



LNG Refueling Station in UK



LNG Refueling Station in Germany







Typical Performance













Regasification Station for Sinopec

Regasification and Reserve Station

Regasification Station for Nigeria

To build greener future



PART 04

H2 Product Line

Hydrogen Business Line

EPC

HRS

Multi-fuel Station
Hydrogen Production
&Refueling Station

Green ammonia
Green ammonia synthesis

Fossil Fuel-to H2



▲ 深圳能源库尔勒绿氢制储加用一体化示范项目



▲ 瀚蓝可再生能源（沼气）制氢加氢母站项目

H2 → **Production** → **Storage** → **Refueling** → **Application** → **Operate**



Equipment Manufacturing

- **ALK Electrolyser**
- PEM Electrolyser
- Side Product H2
- PSA

- Metal Hydride
- LH2 Storage

HRS
- **Gaseous HRS**
- **LH2 HRS**
- **Metal Hydride HRS**

Core Components
- **Compressor,flow meters etc**

Scooters

Heavy Duty H2 Fuel Cell trucks

H2 drone

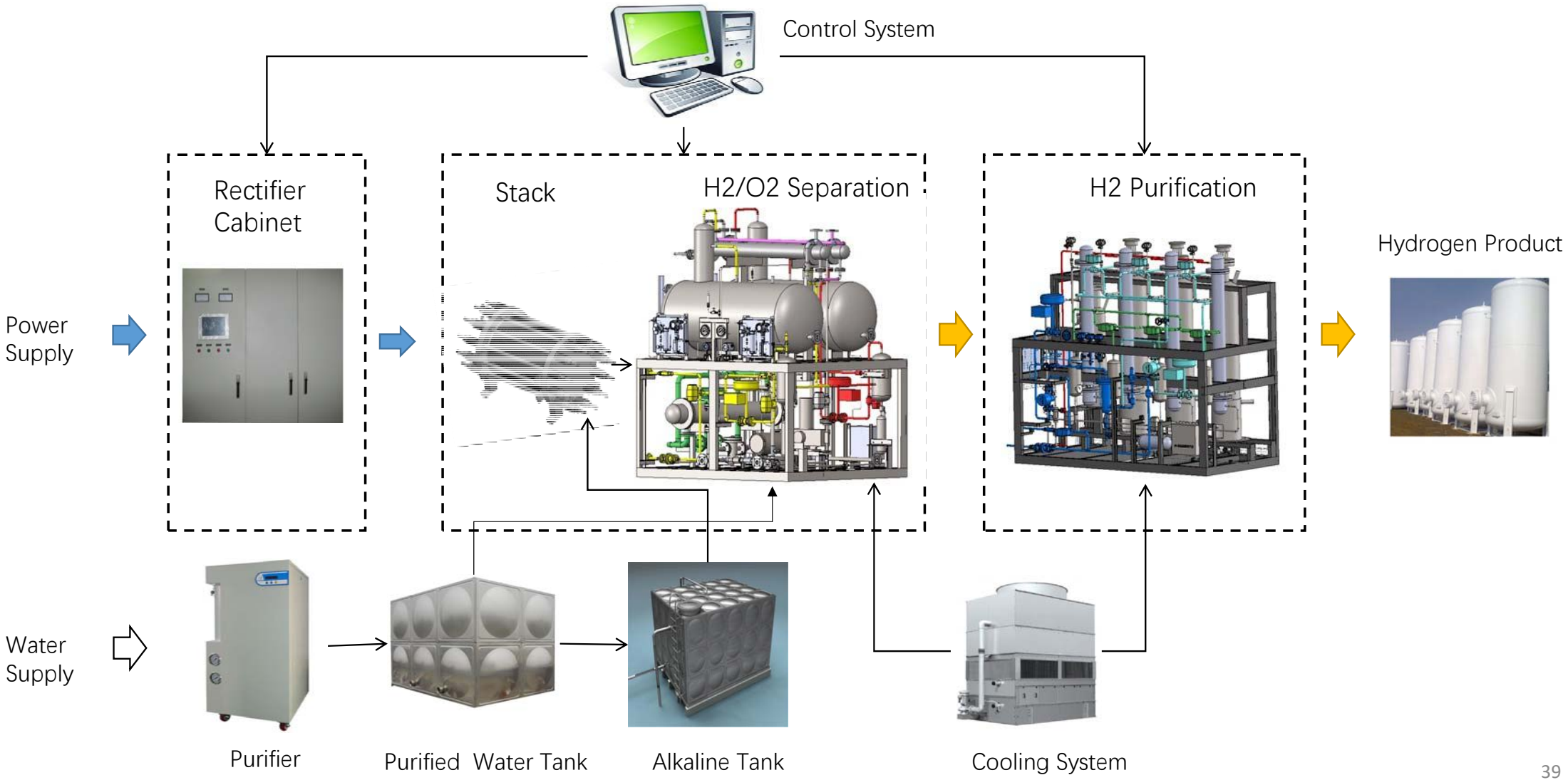




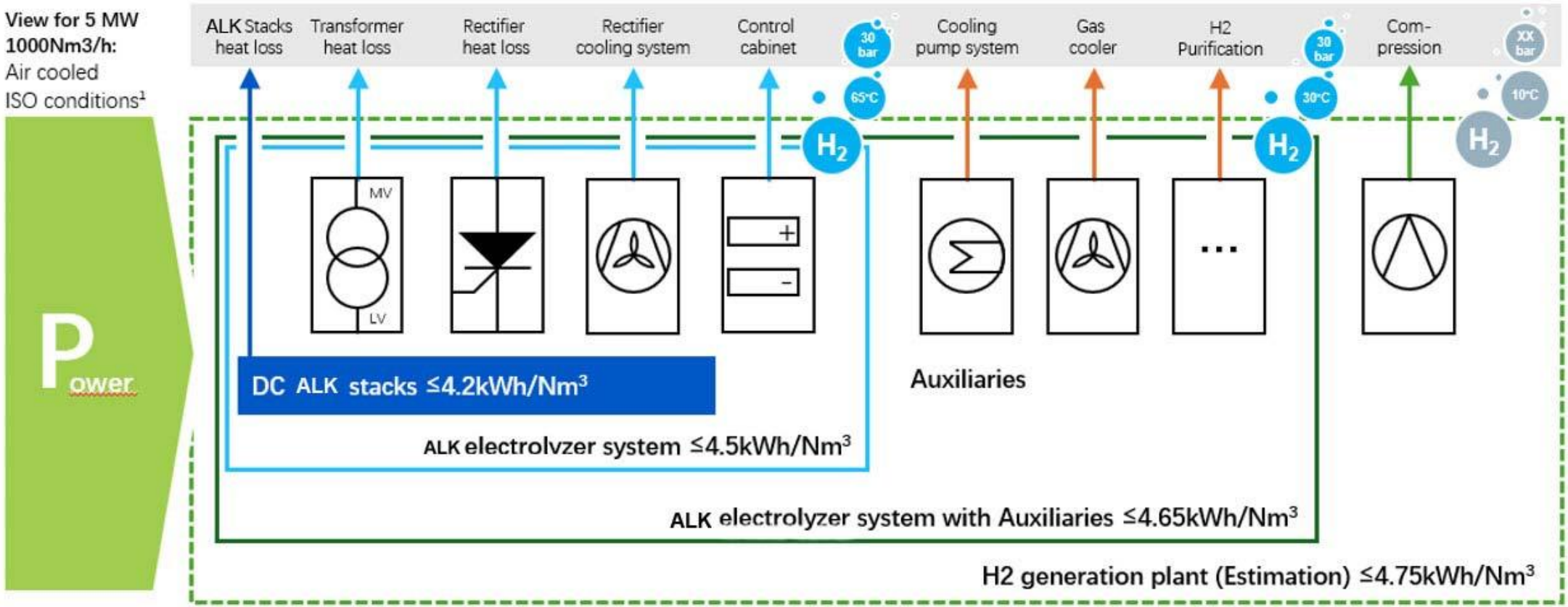




Hydrogen Electrolyser System-Process Flow

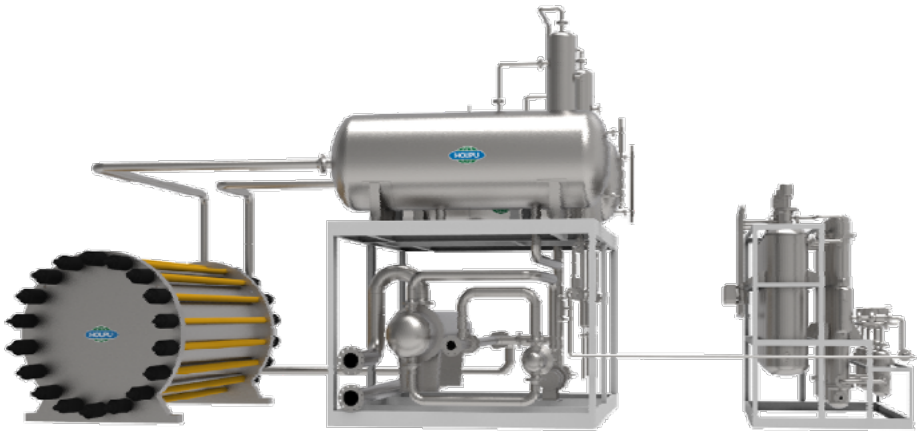


ALK Electrolyser Energy Consumption



1 ISO conditions: 15 °C, 1013 mbar, 0 m, 60% rel. hum.

ALK Electrolyser





ALK Electrolyser System includes: Electrolyser Stack Unit, Purification Unit,Separation Unit and Power Supply Unit

Production Capacity: we are able to produce 100 Units of ALK Electrolyser annually

Product Line; 10Nm3/h-1000Nm3/h

Delivery Time:8 months

CE Certificate: ATEX,PED,MD

Project Cases-Hannan Biogas-H2 Production+Trucking Filling Station EPC Project



瀚蓝可再生能源（沼气）
制氢加氢母站
EPC工程总承包



Status: in Operation

Scale：3000Nm3/h H2 Production and Refueling Station

Project Cases-Ulanqab Hydrogen Production-Refueling Integrated Station EPC Project



乌兰察布制-加氢一体站
EPC工程总承包



Status: in Operation

Scale：500Nm3/h H2 Production and Refueling Station

Project Cases-Korla H2 Production,Refueling and Truck Loading Station Project



深圳能源库尔勒绿氢制储运加一体化示范项目EPC工程总承包



Status: in Operation

Scale:1000Nm3/h H2 Production ,Refueling and Truck Loading Station

Project Cases-HRS

The Largest HRS in the World









A Beijing Daxing Hypower HRS

B Zhangjiakou Jiaotou Weisan Road HRS

C Gucheng HRS

D Jiashan Shantong HRS

Project Cases-Multi-Fuel Station

Shandong Yunkuang Multi-Fuel Station
(Petrol, Gas, Hydrogen, Electrical, Methanol)



Pengfei Beiyao Multi-Fuel Station
(Petrol, Gas, Hydrogen, Electrical)



Liaoning Sinopec-Dalian Haigang Multi-Fuel Station
(Petrol, Gas, Hydrogen, Electrical)



Pengfei Jingang Multi-Fuel Station
(Petrol, Gas, Hydrogen, Electrical)





PART 05

Southeast Asia

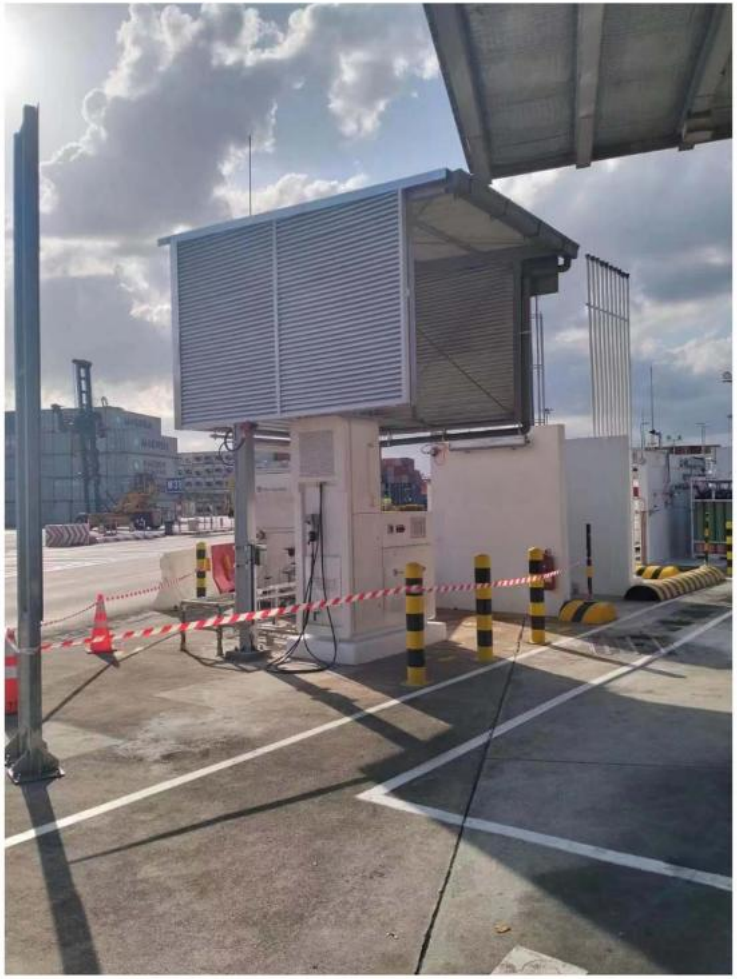
Project Cases-Southeast Asia

➢ **35+70MPa Hydrogen Refueling Station in Indonesia**



Project Cases-Southeast Asia

➢ **35+70MPa Hydrogen Refueling Station in Singapore**





CE Compliant
Hydrogen Station Delivered to Singapore
Completed Commissioning in July,2024

49

Project Cases-Southeast Asia

➢ **Skid-type hydrogen refueling station in Malaysia**



Project Cases-Southeast Asia

➢ **LNG Marine FGSS in Singapore**



Project Cases-Southeast Asia

- **CNG Station in Malaysia**



Project Cases-Southeast Asia

➢ LNG Dispenser in Thailand-PTT



Project Cases-Southeast Asia

- **LNG Regasification Station in Thailand**



Project Cases-Southeast Asia

➢ CNG Dispenser in Thailand





感谢您的聆听！
THANK YOU!

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