



杭州川空



## 杭州川空通用设备有限公司 浙江大川空分设备有限公司

Hangzhou Chuankong General Equipment Co., Ltd.  
Zhejiang Dachuan Air Separation Plant Co., Ltd.

### 杭州川空通用设备有限公司

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创领

初心不改，创领未来  
Never change the original aspiration,  
and create and lead the future



以“创造”为企业导向，  
承着30年以来的无畏前行，  
初心不改  
推动杭州川空、浙江大川  
持续快速和稳定的发展。

With the "CREATION" as the enterprise's orientation,  
Continuing to move forward fearlessly for 30 years.  
Never change the original aspiration.  
Promoting Hangzhou Chuankong and Zhejiang Dachuan  
Sustained, rapid and steady development.



# 集团简介

## Group introduction

四川空分设备（集团）是以低温技术为核心的国家高新技术企业集团，系全国大型一档企业、国家机械行业重点骨干企业、中国深冷设备主要研发制造基地。公司占地近110万m<sup>2</sup>，建筑总面积30多万m<sup>2</sup>，拥有全资及控股子公司24个，参股企业5个，总资产超过50亿元，年销售收入40多亿元。

（集团）公司下辖工程、低温设备、工业气体、通用机械和低温技术研究院五大板块。公司专业从事空气分离、天然气液化、低温化工等领域的技术研发、制造及工程总承包服务，装备制造和工程服务于钢铁、有色冶金、煤化工、石油化工、能源、电子、航空航天、国防等领域；同时，投资建设的气体工厂遍布全国各地，主要从事现场制气及管道供应工业气体，生产空气制品（氧、氮、氩等）。设计及制造能力在中国同行业中名列前茅，世界知名。

Sichuan Air Separation Plant (Group) is a national high-tech enterprise group with cryogenic technology as its core. It is the large-scale first-class enterprise in China, and the key backbone enterprise in the national machinery industry, and the major R&D and manufacturing base for cryogenic equipment in China. SASPG occupies an area of nearly 1.1 million m<sup>2</sup>, with a total construction area of more than 300,000 m<sup>2</sup>. has 24 wholly-owned and holding subsidiaries, 5 shareholding companies, with the total assets of more than 5 billion CNY, and annual sales income of more than 4 billion CNY. (Group) The company has five major sections: Engineering, Cryogenic Equipment, Industrial Gas, General Machinery and Cryogenic Technology Research Institute. The company specializes in technology research and development, manufacturing and EPC services in the fields of air separation, natural gas liquefaction, and cryogenic chemicals etc., as well as the equipment manufacturing and engineering services serve in the field of iron and steel, non-ferrous metallurgy, coal chemical, petrochemical, energy, electronics, aerospace, national defense and so on. At the same time, the gas plants invested and built are all over the country, mainly engaged in on-site gas production and pipeline supply of industrial gas, and the production of air products (oxygen, nitrogen, argon, etc.). The design and manufacturing capacity is not only among the best in the same industry in China and is also well-known in the world.



# 公司简介

## Company introduction

130

多亩占地面积  
Cover an area of  
more than 130 acres

5

亿多元  
资产总额  
Total assets of more  
than 500 million  
CNY

400

多名优秀员工  
More than 400  
outstanding employees

80

多位高中级  
专业技术人  
More than 80 senior  
and intermediate  
professional and  
technical personnel

杭州川空通用设备有限公司（简称杭州川空）  
浙江大川空分设备有限公司（简称浙江大川）

Hangzhou Chuankong General Equipment Co., Ltd. (Referred to as Hangzhou Chuankong)  
Zhejiang Dachuan Air Separation Plant Co., Ltd. (Referred to as Zhejiang Dachuan)

杭州川空、浙江大川是四川空分设备(集团)有限责任公司的全资子公司,是空气分离设备、低温液体贮运设备、天然气液化设备等产品的专业生产厂家。公司取得了国家质监总局颁发的A2, C2级压力容器设计、制造许可证和GC1级压力管道安装许可证,取得ISO9001质量体系证书以及美国ASME许可证和U钢印。公司为国家重点支持的高新技术企业,拥有技术研发中心,取得了十多项专利技术,其中两个项目列为国家火炬计划,多项新产品列为省市首台套产品以及技术创新项目;开发的开架式气化器已成功运用于中石油唐山项目,填补了国内空白。“杭通”商标为浙江省著名商标,“低温液体贮槽”为浙江省名牌产品。公司为美国普莱克斯、德国梅塞尔、中海油集团、中国石化、中国石化、宝钢、武钢、中国寰球工程公司、泰山核电、福清昌江核电、阳江防城港核电等企业提供成套设备,公司产品远销欧洲、东南亚、中南美、中东、非洲等国家和地区。

HANGZHOU CHUANKONG and ZHEJIANG DACHUAN are wholly owned subsidiaries of Sichuan Air Separation Plant (Group) Co., Ltd., and are professional manufacturers of air separation plant, cryogenic liquid storage and transportation equipment, natural gas liquefaction equipment and other products. The company has obtained the A2, C2 pressure vessel design and manufacture license and GC1 pressure pipe installation license issued by the General Administration of Quality Supervision, and obtained the ISO9001 quality system certificate as well as the American ASME license and U-stamp. The company is a state-supported high-tech enterprise with sophisticated technology equipment, and the company has obtained more than ten patented technologies, two of which have been included in the National Torch Program of the Ministry of Science and Technology. A number of new products are listed as the first set or piece of products in the province and city. Moreover, the developed open-rack vaporizer has been successfully applied to CNPC's Tangshan project, which fills the domestic gap. The "HANGTONG" trademark is a famous trademark in Zhejiang Province, and the "Cryogenic Liquid Storage Tank" is a famous brand product in Zhejiang Province. The company provides complete sets of equipment for Praxair of the United States, Messer of Germany, CNOOC, CNPC, Sinopec, Baosteel, Wuhan Iron and Steel, HQCEC, Taishan Nuclear Power, Fuqing Changjiang Nuclear Power, Yangjiang Fangchenggang Nuclear Power and other enterprises. The products of company are exported to Countries and regions in Europe, Southeast Asia, Central and South America, the Middle East and Africa etc.





荣誉资质

初心不改，载誉前行。  
一项项荣誉对我们实力的有力见证，  
更是支持我们继续前行的坚实后盾。

高新技术证书  
High-tech certificate



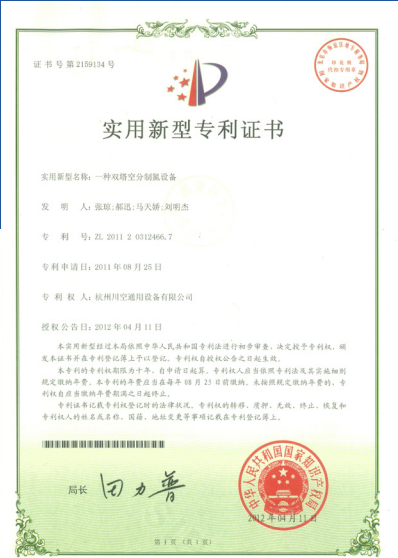
省级研发中心  
Provincial R&D Center



Honorary qualification

Never change the original aspiration, and move forward with  
reputation.  
Honor after honor is the strong witness to our strength,  
And it's also the solid backing supporting us to move ahead.

发明专利  
Patents for Invention



ASME U证  
ASME U-stamp



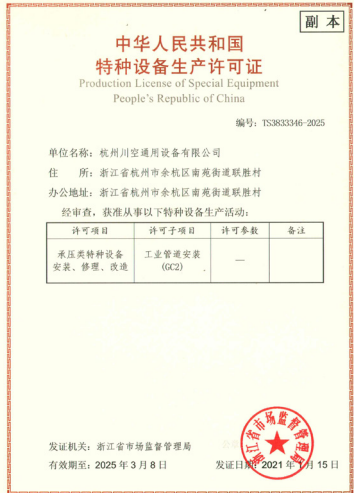
国家火炬计划项目  
National Torch Program Project



名牌产品  
Brand-name products



压力管道、容器制造许可  
Pressure piping and vessel manufacturing license





# 创新

创新驱动，技术领跑  
Innovation-driven, technology-leading



科学技术是第一生产力  
创新是引领发展的第一动力  
川空人不断创新，领跑行业

Science and technology are the primary productive forces  
Innovation is the first driving force to lead development  
CHUANKONG stuffs continually innovate and lead the industry

## 区域布局

Religion distribution



### 亚洲 Asia

菲律宾、越南、缅甸、泰国、印度尼西亚、马来西亚、新加坡、尼泊尔、印度、巴基斯坦、土库曼斯坦、伊拉克、沙特、亚美尼亚、也门、格鲁吉亚、以色列、卡塔尔、约旦。

Philippines, Vietnam, Myanmar, Thailand, Indonesia, Malaysia, Singapore, Nepal, India, Pakistan, Turkmenistan, Iraq, Saudi Arabia, Armenia, Yemen, Georgia, Israel, Qatar, Jordan.

### 欧洲 Europe

英国、俄罗斯、丹麦、塞尔维亚、波兰。  
Britain, Russia, Denmark, Serbia, Poland.

### 美洲 America

墨西哥、巴西、玻利维亚、秘鲁、智利、阿根廷。

Mexico, Brazil, Bolivia, Peru, Chile, Argentina.

### 非洲 Africa

埃及、阿尔及利亚、肯尼亚、坦桑尼亚、摩洛哥、几内亚、苏丹、尼日利亚、南非。

Egypt, Algeria, Kenya, Tanzania, Morocco, Guinea, Sudan, Nigeria, South Africa.



# 先进技术

Advanced technology

以质量为基础 以技术为核心 以创新为灵魂 以品牌为导向  
以创新打造企业的核心竞争力。  
先进的技术与强大装备为支撑，不断提高公司的技术的核心竞争力。

Take the quality as the foundation, the technology as the core, the innovation as the soul, and the brand as the orientation  
Build the core competitiveness of enterprises through innovation.  
Take advanced technology and strong equipment as the support, continue to improve the core competitiveness of the company's technology.

## 重型装备组装车间（二号厂房）

配备大型起重设备、水下等离子切割设备、自动焊机等各类设备230台(套)。车间配备了160吨的大型起吊设备和挖入式码头等，码头紧邻京杭运河德清支流，可以把长50米、宽10米、高7.5米、重量达500吨的超大件货物通过京杭运河直接运达上海港。

### Heavy equipment assembly workshop (Workshop II)

Equipped with 230 sets of various types of equipment such as large-scale lifting equipment, underwater plasma cutting equipment, automatic welding machines and so on. The workshop is equipped with 160 tons of large lifting equipment and an excavated wharf, which is close to the Deqing tributary of the Beijing-Hangzhou Grand Canal. And It can directly transport oversized goods with a length of 50 meters, a width of 10 meters, a height of 7.5 meters and a weight of 500 tons to Shanghai Port through the Beijing-Hangzhou Grand Canal.



# 19258

平方米建筑面积（一号厂房）  
m<sup>2</sup> of building area (Workshop I)

# 10000

立方米建筑面积（二号厂房）  
m<sup>3</sup> of building area (Workshop II)







03

# 创造

匠心制造，创立精品  
Exquisite craftsmanship, create high-quality product



匠心制造  
用精湛的技术和生产制造能力  
创时代精品  
多项技术填补国内乃至世界空白

Exquisite craftsmanship  
With superb technology and manufacturing ability  
To create the best product of the times  
Numbers of technologies fill the gaps in China and even in the world



# 深冷空分设备 Cryogenic Air Separation plant

## ● 印尼青山钢铁

QINGSHAN STEEL, INDONESIA

青山钢铁Qingshan Steel KDONAr-12500/12500/450Y  
 青山钢铁Qingshan Steel KDONAr-25000/20000/860Y  
 青山钢铁Qinshan Steel KDONAr-30000/50000/1100Y



本空分装置采用分子筛吸附净化、增压透平膨胀机、下塔采用筛板塔，上塔和粗氩塔采用规整填料、无氢制氩的工艺流程。

The air separation unit adopts molecular sieve adsorption purification, booster turbine expander, and sieve tray is used for the lower column, structure packing is used for upper column and crude argon column. And the technological process of hydrogen-free argon recovery is used for this plant.



## ● 青岛海晶KDON-5600/14000

带增压透平膨胀机、常温分子筛吸附纯化、下塔采用筛板、上塔采用规整填料、氧氮外压缩的全低压工艺流程。

### QINGDAO HAIJING: KDON-5600/14000

A full low-pressure process with booster turbo-expander, molecular sieve adsorption and purification at room temperature, sieve tray using for lower column, structure packing using for upper column, and external compression of oxygen and nitrogen.



## ● 江苏宏仁KDONAr-5200Y/8150Y/175Y

本空分装置是液氮返注、常温分子筛吸附、精馏塔都采用规整填料的工艺流程和外挂一套氮气循环、带高、低温增压透平膨胀机的液化装置。

### JIANGSU HONGREN KDONAr-5200Y/8150Y/175Y

This air separation unit is a liquefaction plant of which process is liquid nitrogen re-filling, molecular sieve adsorption at room temperature, structure packing using for the rectification column, and externally associated with another set of nitrogen recycling, high and low temperature booster turbo expander.



操作灵活  
 根据市场决定是否开启外挂液化装置

Flexible operation  
 Decide whether to open the external liquefaction plant according to the market







## ● 墨西哥KZONAr-8000(1500Y)11600Y/280Y

Mexico CRYOINFRA KZONAr-8000(1500Y)11600Y/280Y

本空分装置是液氮返注、常温分子筛吸附、下塔采用筛板塔，上塔和粗氩塔采用规整填料的工艺流程和外挂一套氮气循环、带高、低温增压透平膨胀机的液化装置。

This air separation unit is a liquefaction plant of which process is liquid nitrogen re-filling, molecular sieve adsorption at room temperature, sieve tray using for lower column, structure packing using for upper column and crude argon column, and externally associated with another set of nitrogen recycling, high and low temperature booster turbo expander.



操作灵活  
根据市场决定是否开启外挂液化装置

Flexible operation  
Decide whether to open the external liquefaction plant according to the market



## ● 60000空分主冷箱

60000 air separation main cold box

尺寸: (LxWxH) 67100x12500x7500mm

重量: 690000kg

Size: (LxWxH) 67100x12500x7500mm

Weight: 690000kg



## ● 广东广星18000空分

GUANGDONG GUANGXING 18000 ASU







## LNG液化分离装置

LNG liquefaction separation plant



内蒙古杭锦旗兴圣联合天然气液化化工厂全貌  
Overall view of Xingsheng United Natural Gas Liquefaction Plant in Hangjin Qi, Inner Mongolia

### ● 新疆协鑫KDN-14000/500Y

XINJIANG XIEXIN KDN-14000/500Y

本装置采用分子筛吸附净化、增压透平膨胀机制冷，单塔单主冷返流工艺制氮流程。

This ASU adopts molecular sieve adsorption purification, booster turbo expander for refrigeration, single tower and single main condenser reflux process for nitrogen production.



冷凝蒸发器汽化后出来的污氮或塔内抽出的污氮返流进主换热器复热到一定温度后进入膨胀机去膨胀制冷。

The waste nitrogen comes from the vaporization of the condenser-evaporator or is extracted from the tower is returned to the main heat exchanger and reheated to a certain temperature and then entered into the expander for expansion refrigeration.



氮气产品出冷箱后进膨胀机增压端增压，降低能耗

Nitrogen product goes out of the cold box and then enters the booster end of the expander for pressuring to reduce energy consumption



内蒙古兴圣200x10<sup>4</sup>Nm<sup>3</sup>/h天然气液化装置  
Inner Mongolia Xingsheng 200x10<sup>4</sup>Nm<sup>3</sup>/h Natural Gas Liquefaction Plant

兴圣天然气LNG大槽 Xingsheng Natural Gas LNG Flat-bottom Tank	兴圣13.5万m <sup>3</sup> LNG液化装置 Xingsheng 135,000 m <sup>3</sup> LNG liquefaction plant
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黑龙江双鸭山20000Nm<sup>3</sup>-h焦炉尾气制LNG装置  
20000Nm<sup>3</sup>/h LNG plant from coke oven tail gas in Shuangyashan, Heilongjiang



志丹LNG冷箱  
ZHIDAN LNG coldbox



13.5万方每天天然气液化装置  
135,000m<sup>3</sup>/d natural gas liquefaction plant

真空储罐主要技术参数 Main technical parameters of vacuum storage tank

规格型号 Specification model	有效容积 Effective volume(m <sup>3</sup> )	工作压力 Working pressure(kPa)	设备尺寸 Dimension(mm)	设备空重 Empty weight(T)	静态蒸发率 Static evaporation rate(%/day)		
					LOX	LIN	LAR
ZCF-5000/8	5	0.8	Φ2016×5050	4200	0.43	0.65	0.46
ZCF-5000/16	5	1.6	Φ2016×5050	4500	0.43	0.65	0.46
ZCF-10000/8	10	0.8	Φ2416×6050	6400	0.36	0.55	0.38
ZCF-10000/16	10	1.6	Φ2416×6050	7300	0.36	0.55	0.38
ZCF-15000/8	15	0.8	Φ2416×8150	8600	0.35	0.53	0.37
ZCF-15000/16	15	1.6	Φ2416×8150	9700	0.35	0.53	0.37
ZCF-20000/8	20	0.8	Φ2416×10150	10600	0.33	0.5	0.35
ZCF-20000/16	20	1.6	Φ2416×10150	12500	0.33	0.5	0.35
ZCF-30000/8	30	0.8	Φ2520×12050	13900	0.29	0.44	0.31
ZCF-30000/16(PS)	30	1.6	Φ2620×12100	15300	0.29	0.44	0.31
ZCF-50000/8	50	0.8	Φ3020×13050	22500	0.23	0.35	0.24
ZCF-50000/16(PS)	50	1.6	Φ3224×12050	24100	0.23	0.35	0.24
ZCF-100000/8(PS)	100	0.8	Φ3724×16550	44500	0.16	0.25	0.17
ZCF-100000/16(PS)	100	1.6	Φ3824×15900	43000	0.16	0.25	0.17
ZCF-150000/8(PS)	150	0.8	Φ4428×17200	52200	0.14	0.22	0.15
ZCF-150000/16(PS)	150	1.6	Φ4428×17200	60900	0.14	0.22	0.15
ZCF-200000/8(PS)	200	0.8	Φ4428×22050	76600	0.13	0.2	0.14
ZCF-250000/8(PS)	250	0.8	Φ4632×24450	80500	0.12	0.18	0.13
ZCF-300000/8(PS)	300	0.8	Φ4632×30100	115200	0.11	0.16	0.12







潮州1750子母罐  
Chaozhou 1750 cluster tank



大型低温液体储罐 The large-scale cryogenic liquid storage tank

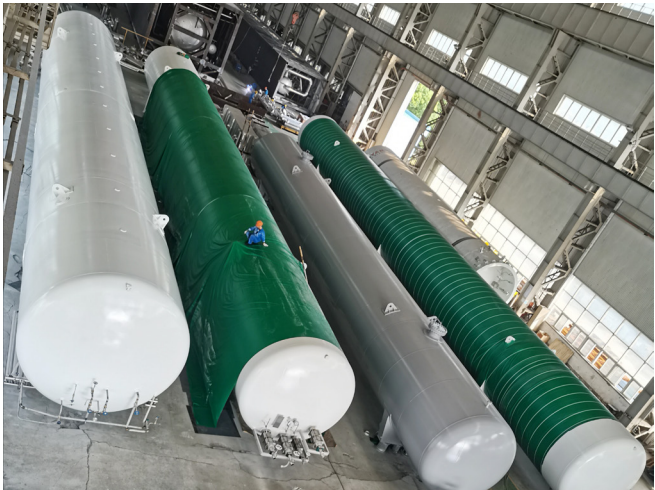
特点 Feature	容积 Volume	压力 Pressure	盛装介质 Medium	结构特点 Structural features
大型低温液体储罐采用先进的设计建造技术，工艺流程完善、结构成熟可靠。 The large-scale cryogenic liquid storage tank adopts advanced design and construction technology, with perfect process flow and mature and reliable structure.	300~50000m³	10~40kPa	液氧、液氮、液氩、LNG和液态乙烯等 LOX, LIN, LAr, LNG and liquid ethylene, etc.	立式圆筒形、双层壁、平底、拱盖结构，采用粉末堆积绝热，储罐主要由内罐、外罐以及绝热夹层组成。 Vertical cylindrical, double-walled, flat-bottomed, arch-covered structure, using powder accumulation for heat insulation. The storage tank is mainly composed of an inner tank, an outer tank and a thermal insulation interlayer.

液氧/液氮/液氩储罐的主要技术参数 Main technical parameters of liquid oxygen/liquid nitrogen/liquid argon storage tanks

有效容积 Effective volume(m³)	工作压力 Working pressure(kPa)	设备尺寸 Dimension(mm)	设备空重 Empty weight(T)	静态蒸发率 Static evaporation rate(%/day)		
				LOX	LIN	LAR
300	15	φ9800×11200	107	0.29	0.45	0.31
400	25	φ10300×12100	135	0.26	0.45	0.28
500	15	φ11200×11900	137	0.25	0.39	0.27
600	15	φ11500×13100	150	0.23	0.36	0.25
1000	15	φ12200×17300	215	0.19	0.30	0.20
1500	15	φ14200×18500	296	0.16	0.25	0.17
2000	25	φ18300×16200	436	0.15	0.23	0.16
3000	15	φ18300×22000	469	0.13	0.20	0.14
4000	15	φ21200×20500	610	0.11	0.17	0.12
5000	15	φ23000×21800	657	0.10	0.16	0.11



150m³LNG储罐  
150m³ LNG storage tank

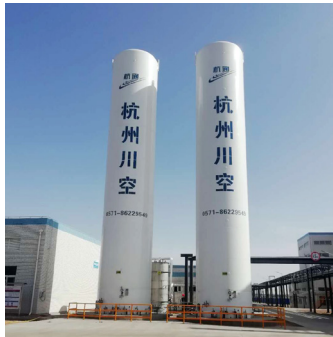


400m²真空储槽  
400m² vacuum storage tank



尼日利亚40X250m³LNG储罐  
Nigeria 40X250m³LNG storage tank

真空储罐 vacuum storage tank



150m³真空储罐  
150m³ vacuum storage tank



300m³LO2, LN2, LAr真空储罐  
300m³LO2, LN2, LAr vacuum storage tank



广东广星大槽  
GUANGDONG GUANGXING flat-bottom tank

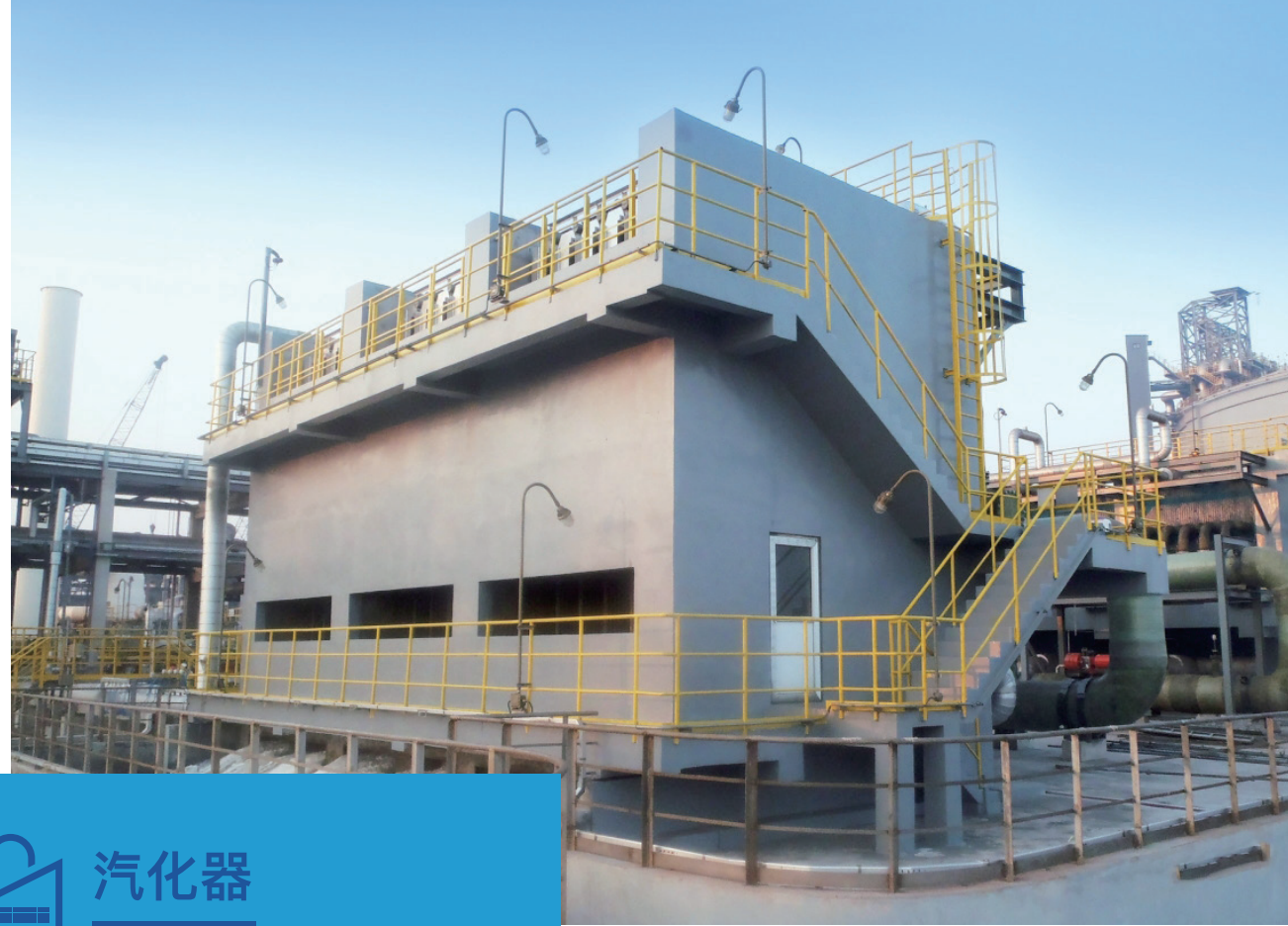




• 200m³真空储罐  
200m³ vacuum storage tank



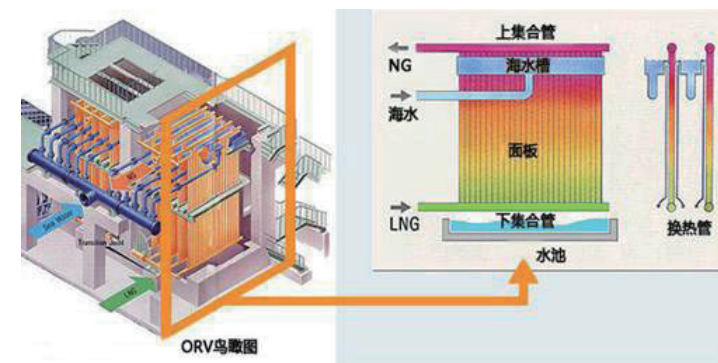
• 北京卫星研究所真空储罐  
Vacuum Storage Tank for Beijing Satellite Research Institute



• 中海油LNG子母罐及真空储罐  
LNG cluster tank and vacuum storage tank for CNOOC

开架式海水汽化器（ORV）是大型LNG接收站的关键设备，由川空自行设计制造的国内首台开架式海水汽化器于2014年在中国石油唐山液化天然气接收站一次性开车成功并投入运行，填补了国内空白。

The open-rack seawater vaporizer (ORV) is the critical equipment of the large-scale LNG terminal. The first domestic ORV seawater vaporizer designed and manufactured by SASPG was successfully started up and put into operation at the Tangshan LNG terminal of PetroChina in 2014, which filled the blank in China.





# 创变

文化聚力，创变共赢

Cultural cohesion, win-win with reformation



世界在生长，时代在变化，  
不变的是我们所坚持和弘扬的企业文化  
我们应对变化、拥抱变化、创造变化  
用文化聚力、用创变共赢

World is growing, time is changing  
What remains unchanged is the corporate culture that we persist and promote.  
We face to change, embrace it, and create it.  
Gather power with culture, Win-win with creation.

## 企业文化

Enterprise culture

近30年来沉淀出优秀的企业文化，通过我们坚持、弘扬先进文化和全体员工共同努力，使我们的企业不断发展壮大。我们将一如既往的坚持先进企业文化理念，努力实现远景目标，把杭州川空、浙江大川建设的更加美好。

Over the past 30 years, we have precipitated an excellent corporate culture, and through our adherence to and promotion of advanced culture and the joint efforts of all our staff, our enterprise has continued to develop and grow. We will, as always, adhere to the concept of advanced corporate culture, strive to achieve long-term goals, and make the construction of Hangzhou Chuankong and Zhejiang Dachuan more beautiful and glorious.

### 杭州川空、浙江大川企业文化

Enterprise culture of HANGZHOU CHUANKONG and ZHEJIANG DACHUAN

