

TewinCryo®

Zhejiang TewinCryo Liquefy Equipment Co., Ltd.

Industrial Gas Separation Plants H_2 Production Units
CCUS Systems Optimized Solutions and Equipment Provider

Company Profile

TewinCryo®

History

Over **20 years** of experience in R&D, design, sales, manufacturing and assembly of plants for industrial gas separation, liquefaction and exhaust gas recovery.

Locations

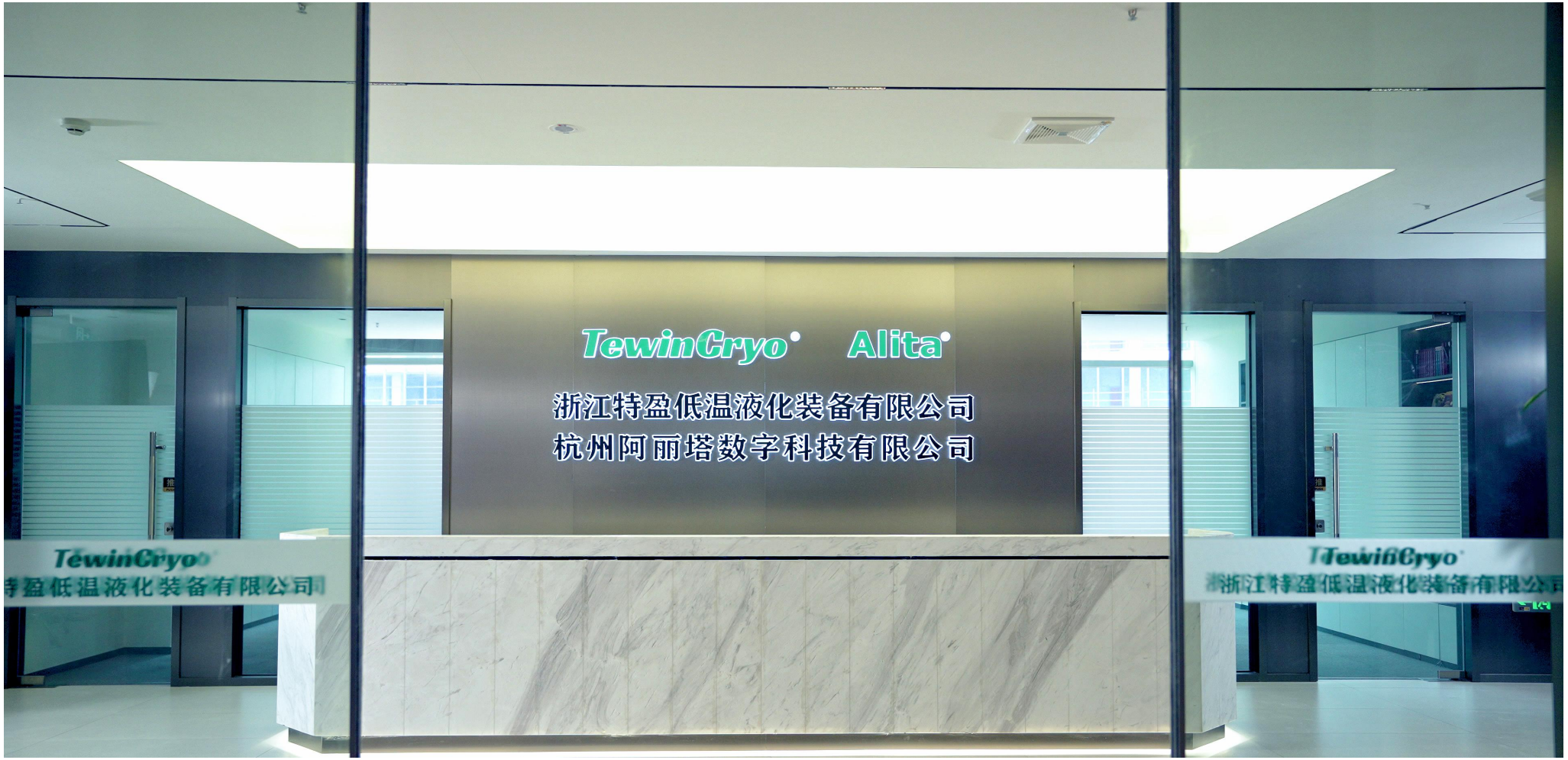
Our HQ and engineering center is in Hangzhou, Zhejiang China, the habor of China‘s ASU industry.

Our factory is located in Quzhou City, Zhejiang China, with a floor space of **48,000 m^2** , near Qujiang riverport.



Hangzhou Office

TewinCryo®



Our HQ and Engineering Center in Hangzhou

Hangzhou Office

TewinCryo®









Quzhou Workshop

TewinCryo®



Quzhou Workshop

Quzhou Workshop

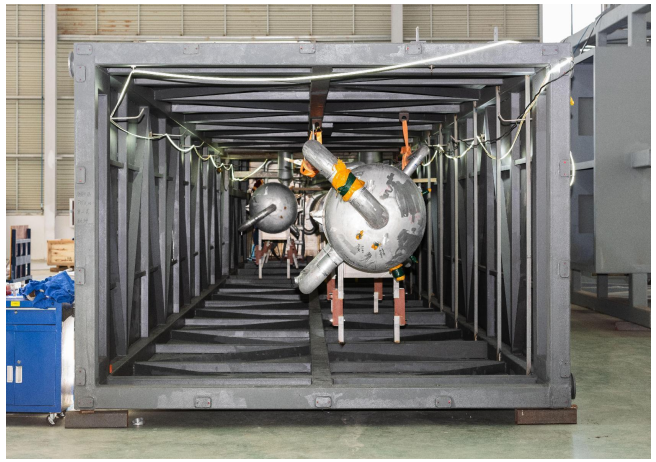
TewinCryo®



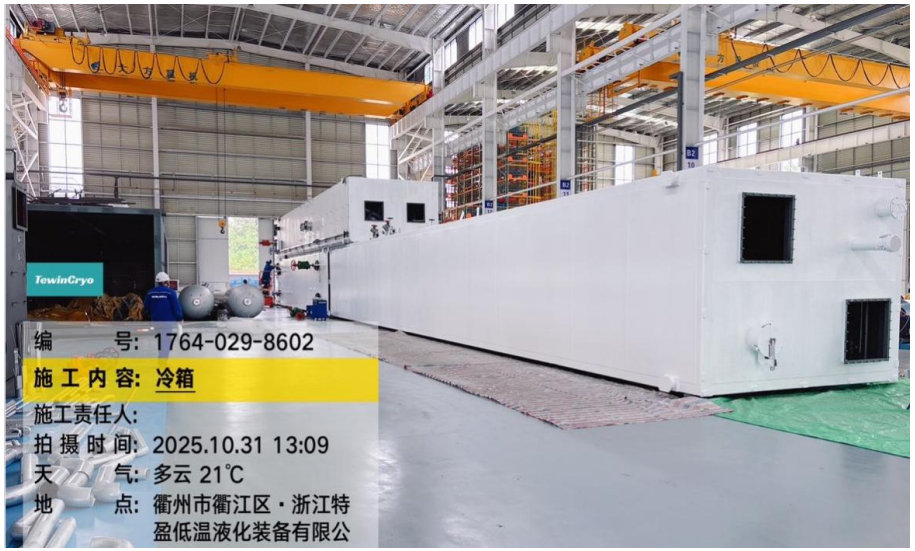


Quzhou Workshop

TewinCryo®



Coldbox



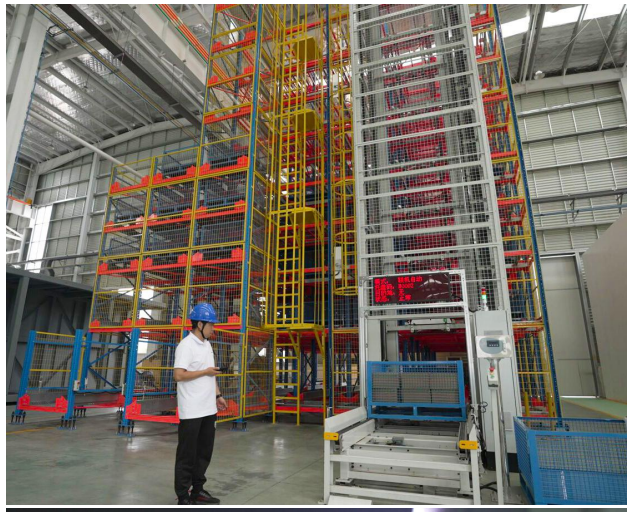
Rectification column



Quzhou Workshop

TewinCryo®













Business & Market

TewinCryo®



Business Product Lines:

- ✓ Air separation plants (O_2, N_2, Ar, Noble gases)
- ✓ Liquefaction plants (LO_2, LN_2, NG etc.)
- ✓ Argon recovery plants
- ✓ H_2 Production Plants
- ✓ CO_2 recovery, purification & separation system (CCUS)
- ✓ PSA nitrogen plant and oxygen plants

Qualification & Certificates

TewinCryo®



UDEM

MACHINERY DIRECTIVE
ATTESTATION OF CONFORMITY

Technical file of the company mentioned below has been inspected and audit has been completed successfully.

2006/42/EC Machinery Directive Annex VIII has been taken as references for these processes.

Company Name : Zhejiang Tewincryo Liquefy Equipment Co., Ltd.

Company Address : 12F, Jindi Viseen Science and Technology Park T1 (Building 16), Gongshu District, Hangzhou, 310015, PRC

Related Directives and Annex : 2006/42/EC Machinery Directive/Annex VIII

Related Standards : EN ISO 12100:2010; EN 60204-1:2018

Product Name : Air Separation Plant

Report No and Date : TCF-ZTLE241010-MD

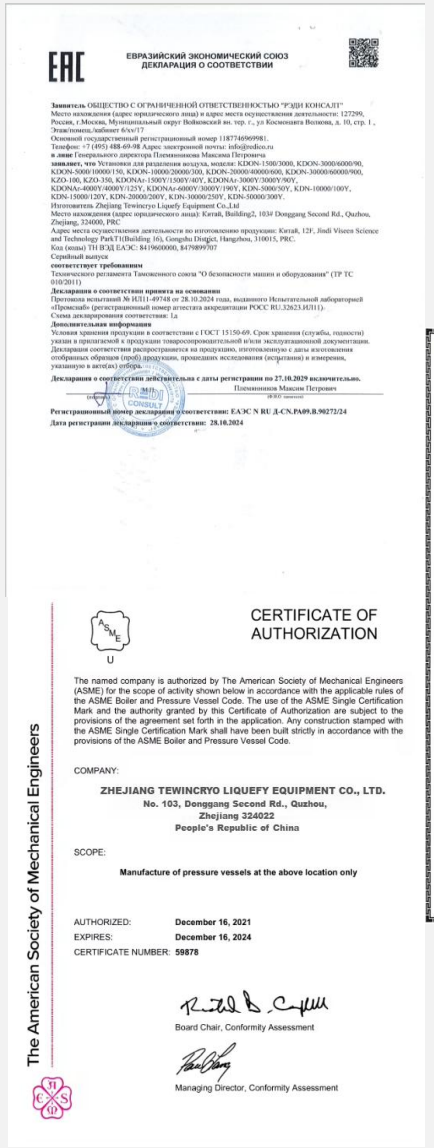
Product Brand/Model/Type : KDON-1500/3000, KDON-3000/4000/90, KDON-5000/10000/150, KDON-10000/20000/300, KDON-20000/40000/600, KDON-30000/60000/900, KZO-100, KZO-350, KDONAr-1500Y/1500Y/40Y, KDONAr-3000Y/3000Y/90Y, KDONAr-4000Y/4000Y/125Y, KDONAr-6000Y/3000Y/190Y, KDN-5000/50Y, KDN-10000/100Y, KDN-15000/120Y, KDN-20000/200Y, KDN-30000/250Y, KDN-50000/300Y

Certificate Number : M.2024.204.C108177
Initial Assesment Date : 15.10.2024
Registration Date : 16.10.2024
Reissue Date/No : -
Expiry Date : 15.10.2029

UDEM International Certification Auditing Training Centre Industry and Trade Inc. Co. General Manager

UDEM

Address: Muhtarlerit Mahallesi 2073 Sokak (Eski 93 Sokak) No:10 Çankaya Ankara - TÜRKİYE
Phone: +90 0312 443 03 90
E-mail: info@udem.com.tr www.udem.com.tr



EAC

ЕВРАЗИЙСКИЙ ЭКОНОМИЧЕСКИЙ СОЮЗ
ДЕКЛАРАЦИЯ О СООТВЕТСТВИИ

Заявитель ОБЩЕСТВО С ОГРАНИЧЕННОЙ ОТВЕТСТВЕННОСТЬЮ "РЭДИ КОНСАЛТ"
Место нахождения (адрес юридического лица) и адрес места осуществления деятельности: 127299, Россия, г.Москва, Муниципальный округ Войковский вн. тер. г., ул Космонавта Волкова, д. 10, стр. 1, Этаж/помещ./кабинет 6/ком/17
Основной государственный регистрационный номер 1187746969981.
Телефон: +7 (495) 488-69-98 Адрес электронной почты: info@redico.ru
в лице Генерального директора Племянникова Максима Петровича
заявляет, что Установки для разделения воздуха, модели: KDON-1500/3000, KDON-3000/6000/90, KDON-5000/10000/150, KDON-10000/20000/300, KDON-20000/40000/600, KDON-30000/60000/900, KZO-100, KZO-350, KDONAr-1500Y/1500Y/40Y, KDONAr-3000Y/3000Y/90Y, KDONAr-4000Y/4000Y/125Y, KDONAr-6000Y/3000Y/190Y, KDN-5000/50Y, KDN-10000/100Y, KDN-15000/120Y, KDN-20000/200Y, KDN-30000/250Y, KDN-50000/300Y.
Изготовитель Zhejiang Tewincryo Liquefy Equipment Co.,Ltd
Место нахождения (адрес юридического лица): Kerrak, Building2, 103# Donggang Second Rd., Quzhou, Zhejiang, 324000, PRC
Адрес места осуществления деятельности по изготовлению продукции: Kerrak, 12F, Jindi Viseen Science and Technology Park(T1(Building 16), Gongshu Dist, Hangzhou, 310015, PRC
Код (коды) ТН ВЭД ЕАЭС: 8419600000, 8479899707
Серийный выпуск
соответствует требованиям
Технического регламента Таможенного союза "О безопасности машин и оборудования" (ТР ТС 010/2011)
Декларация о соответствии принята на основании
Протоколы испытаний № ИЛ11-49748 от 28.10.2024 года, выданного Испытательной лабораторией «Промснаб» (регистрационный номер аттестата аккредитации РОСС RU.32623.ИЛ11).
Схема декларирования соответствия: 1а
Дополнительная информация
Условия хранения продукции в соответствии с ГОСТ 15150-69. Срок хранения (службы, годности) указан в прилагаемой к продукции товаросопроводительной и/или эксплуатационной документации.
Декларация соответствия распространяется на продукцию, изготовленную с даты изготовления отобранных образцов (проб) продукции, проходящих исследования (испытания) и измерения, указанную в акте(ах) отбора.
Декларация о соответствии действительна с даты регистрации по 27.10.2029 включительно.
Племянников Максим Петрович
Регистрационный номер декларации о соответствии: ЕАЭС N RU Д-CN.PA09.B.90272/24
Дата регистрации декларации о соответствии: 28.10.2024

ASME U

CERTIFICATE OF AUTHORIZATION

The named company is authorized by The American Society of Mechanical Engineers (ASME) for the scope of activity shown below in accordance with the applicable rules of the ASME Boiler and Pressure Vessel Code. The use of the ASME Single Certification Mark and the authority granted by this Certificate of Authorization are subject to the provisions of the agreement set forth in the application. Any construction stamped with the ASME Single Certification Mark shall have been built strictly in accordance with the provisions of the ASME Boiler and Pressure Vessel Code.

COMPANY:

ZHEJIANG TEWINCRYO LIQUEFY EQUIPMENT CO., LTD.
No. 103, Donggang Second Rd., Quzhou,
Zhejiang 324022
People's Republic of China

SCOPE:

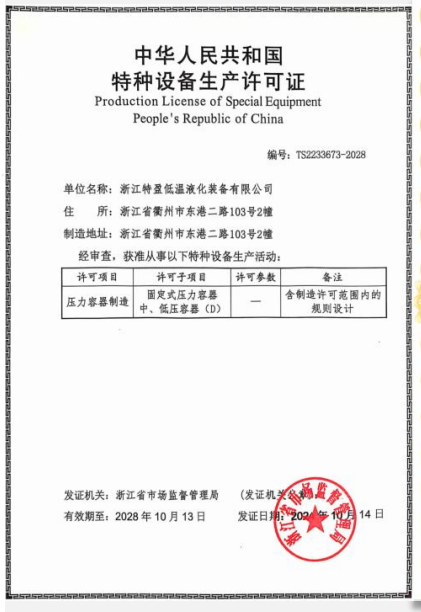
Manufacture of pressure vessels at the above location only

AUTHORIZED: **December 16, 2021**
EXPIRES: **December 16, 2024**
CERTIFICATE NUMBER: **59878**

Board Chair, Conformity Assessment

Managing Director, Conformity Assessment

The American Society of Mechanical Engineers



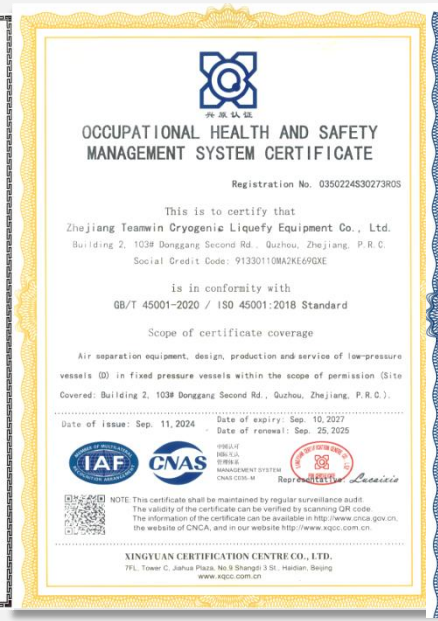
中华人民共和国
特种设备生产许可证
Production License of Special Equipment
People's Republic of China

编号：TS2233673-2028

单位名称：浙江特显低温液化装备有限公司
住　　所：浙江省衢州市东港二路103号2幢
制造地址：浙江省衢州市东港二路103号2幢
经审查，获准从事以下特种设备生产活动：

许可项目	许可子项目	许可参数	备注
压力容器制造	固定式压力容器中、低压容器（D）	—	含制造许可范围内的规则设计

发证机关：浙江省市场监督管理局　（发证机关盖章）
有效期至：2028 年 10 月 13 日　发证日期：2023 年 10 月 14 日



OCCUPATIONAL HEALTH AND SAFETY MANAGEMENT SYSTEM CERTIFICATE

Registration No. 0350224S30273ROS

This is to certify that
Zhejiang Teamwin Cryogenic Liquefy Equipment Co., Ltd.
Building 2, 103# Donggang Second Rd., Quzhou, Zhejiang, P.R.C.
Social Credit Code: 91330110MA2KE69GXE
is in conformity with
GB/T 45001-2020 / ISO 45001:2018 Standard

Scope of certificate coverage
Air separation equipment, design, production and service of low-pressure vessels (D) in fixed pressure vessels within the scope of permission (Site Covered: Building 2, 103# Donggang Second Rd., Quzhou, Zhejiang, P.R.C.).

Date of issue: Sep. 11, 2024 Date of expiry: Sep. 10, 2027 Date of renewal: Sep. 25, 2025

IAF CNAS

NOTE: This certificate shall be maintained by regular surveillance audit. The validity of the certificate can be verified by scanning QR code. The information of the certificate can be available in http://www.cnca.gov.cn, the website of CNCA, and in our website http://www.xqcc.com.cn.

XINGYUAN CERTIFICATION CENTRE CO., LTD.
7FL, Tower C, Jiahua Plaza, No.9 Shangdi 3 St., Haidian, Beijing
www.xqcc.com.cn



QUALITY MANAGEMENT SYSTEM CERTIFICATE

Registration No. 0350224Q30473ROS

This is to certify that
Zhejiang Teamwin Cryogenic Liquefy Equipment Co., Ltd.
Building 2, 103# Donggang Second Rd., Quzhou, Zhejiang, P.R.C.
Social Credit Code: 91330110MA2KE69GXE
is in conformity with
GB/T 19001-2016 / ISO 9001:2015 Standard

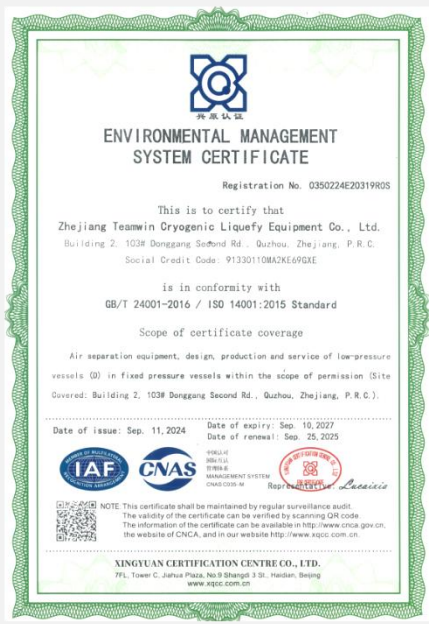
Scope of certificate coverage
Air separation equipment, design, production and service of low-pressure vessels (D) in fixed pressure vessels within the scope of permission (Site Covered: Building 2, 103# Donggang Second Rd., Quzhou, Zhejiang, P.R.C.).

Date of issue: Sep. 11, 2024 Date of expiry: Sep. 10, 2027 Date of renewal: Sep. 25, 2025

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XINGYUAN CERTIFICATION CENTRE CO., LTD.
7FL, Tower C, Jiahua Plaza, No.9 Shangdi 3 St., Haidian, Beijing
www.xqcc.com.cn



ENVIRONMENTAL MANAGEMENT SYSTEM CERTIFICATE

Registration No. 0350224E20319ROS

This is to certify that
Zhejiang Teamwin Cryogenic Liquefy Equipment Co., Ltd.
Building 2, 103# Donggang Second Rd., Quzhou, Zhejiang, P.R.C.
Social Credit Code: 91330110MA2KE69GXE
is in conformity with
GB/T 24001-2016 / ISO 14001:2015 Standard

Scope of certificate coverage
Air separation equipment, design, production and service of low-pressure vessels (D) in fixed pressure vessels within the scope of permission (Site Covered: Building 2, 103# Donggang Second Rd., Quzhou, Zhejiang, P.R.C.).

Date of issue: Sep. 11, 2024 Date of expiry: Sep. 10, 2027 Date of renewal: Sep. 25, 2025

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www.xqcc.com.cn

Innovation & Honor

TewinCryo®

More than 100 patents and software copyright









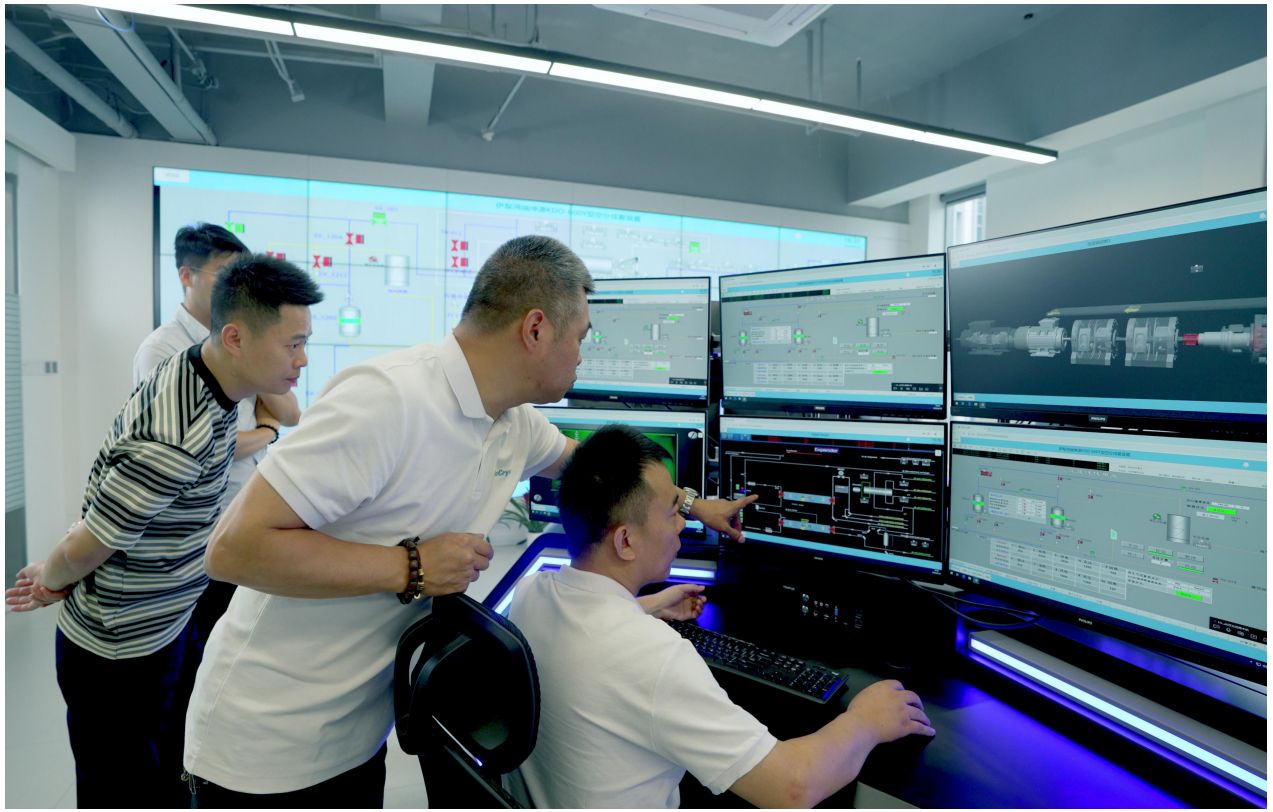






Innovation & Honor

TewinCryo®



Alita®

provide **24/7** service for your plant!

01 Remote Training

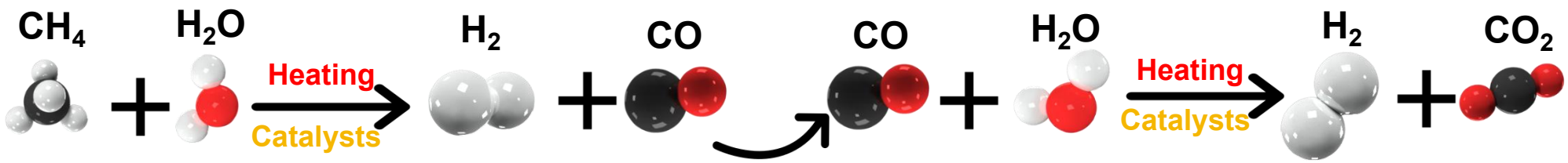
02 Remote diagnosis

03 Remote guidance & operation

Natural Gas - H_2 Production

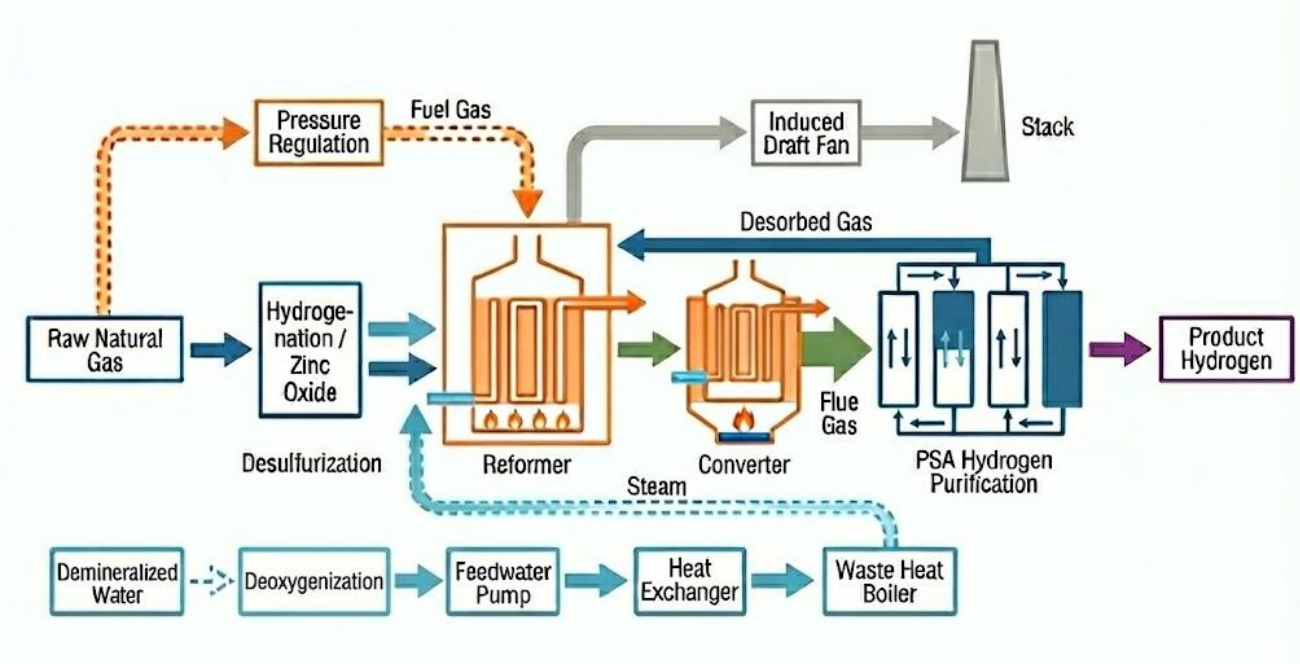
TewinCryo®

Key Reaction Equation:

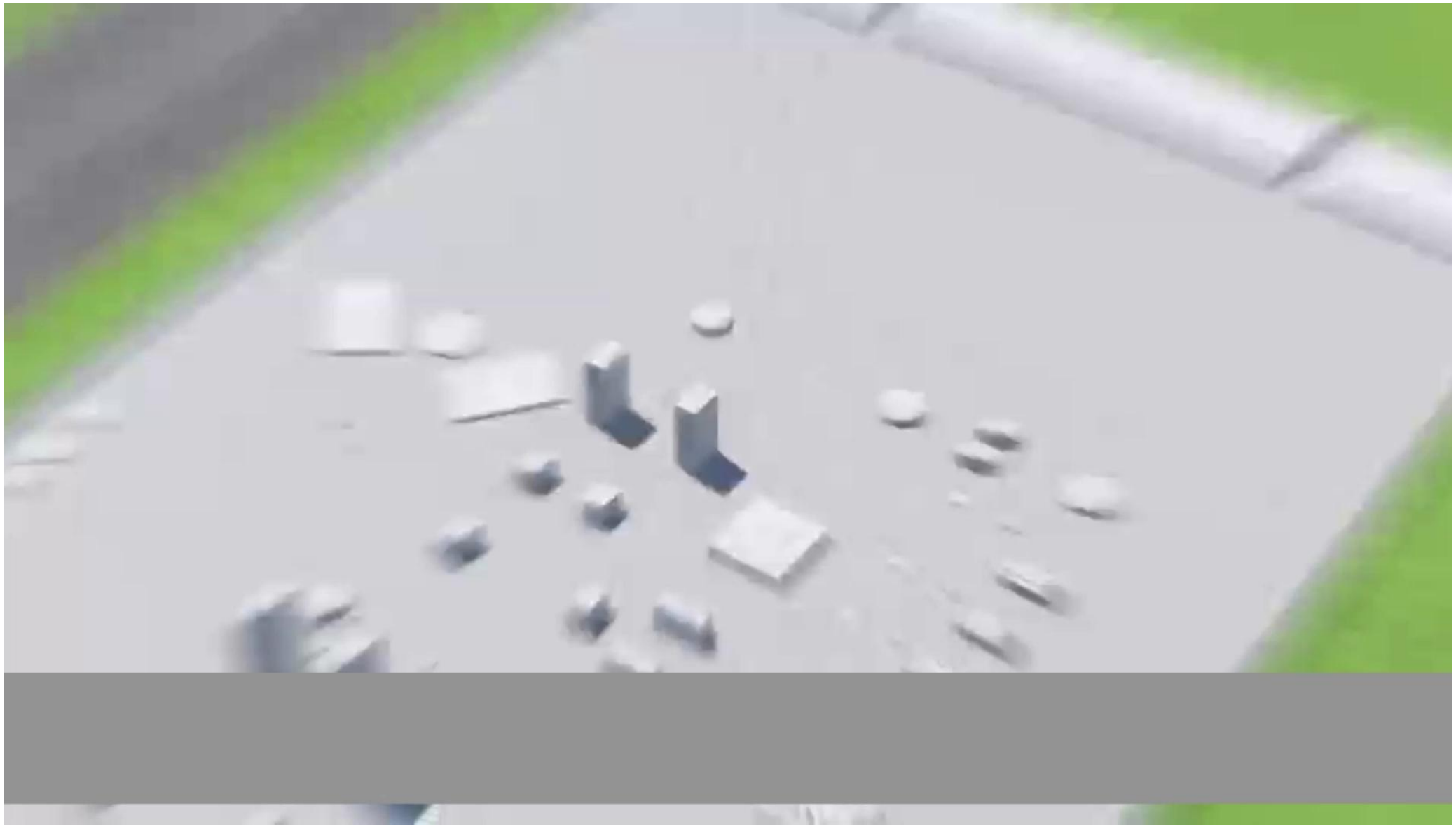


Technical Characteristics:

- The production technology is mature and the operation is safe and reliable
- High degree of automation and low cost
- The recovery of PSA gas and waste heat reduces energy consumption and exhaust emissions



Natural Gas - H_2 Production TewinCryo®



NG - H_2 Project Site

TewinCryo®



Location	Capacity	Client
Tianjing China	2000Nm³/h	Tianjin Xinyu Color Plate Co., Ltd.
Shanxi China	700Nm³/h	Shanxi Jianlong Industrial Co., Ltd.
Chongqing China	1000Nm3/h	Chongqing Wanda Steel Strip Co., Ltd.
Zhejiang China	1000Nm³/h	Hangzhou BestGas Co., Ltd.
Hebei China	1200Nm³/h	Bazhou Sangang Technology Co., Ltd.

Shandong Huidong 12500Nm³/h NG-H2 Production Project

Methanol - H_2 Production

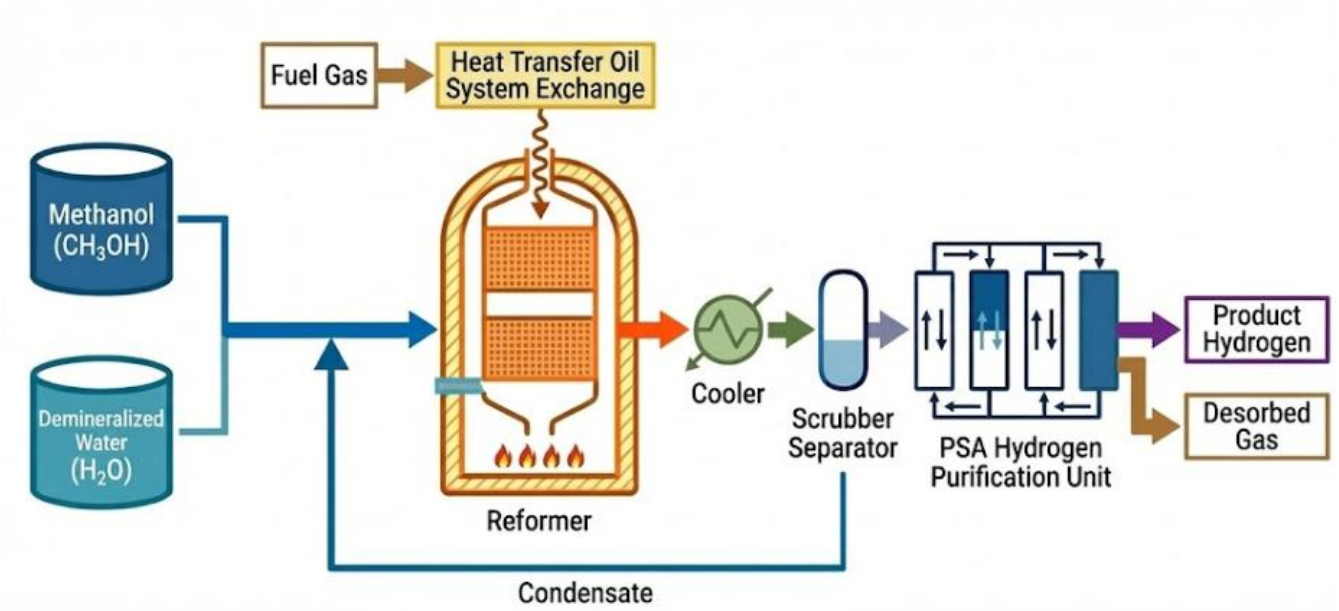
TewinCryo®

Key Reaction Equation:



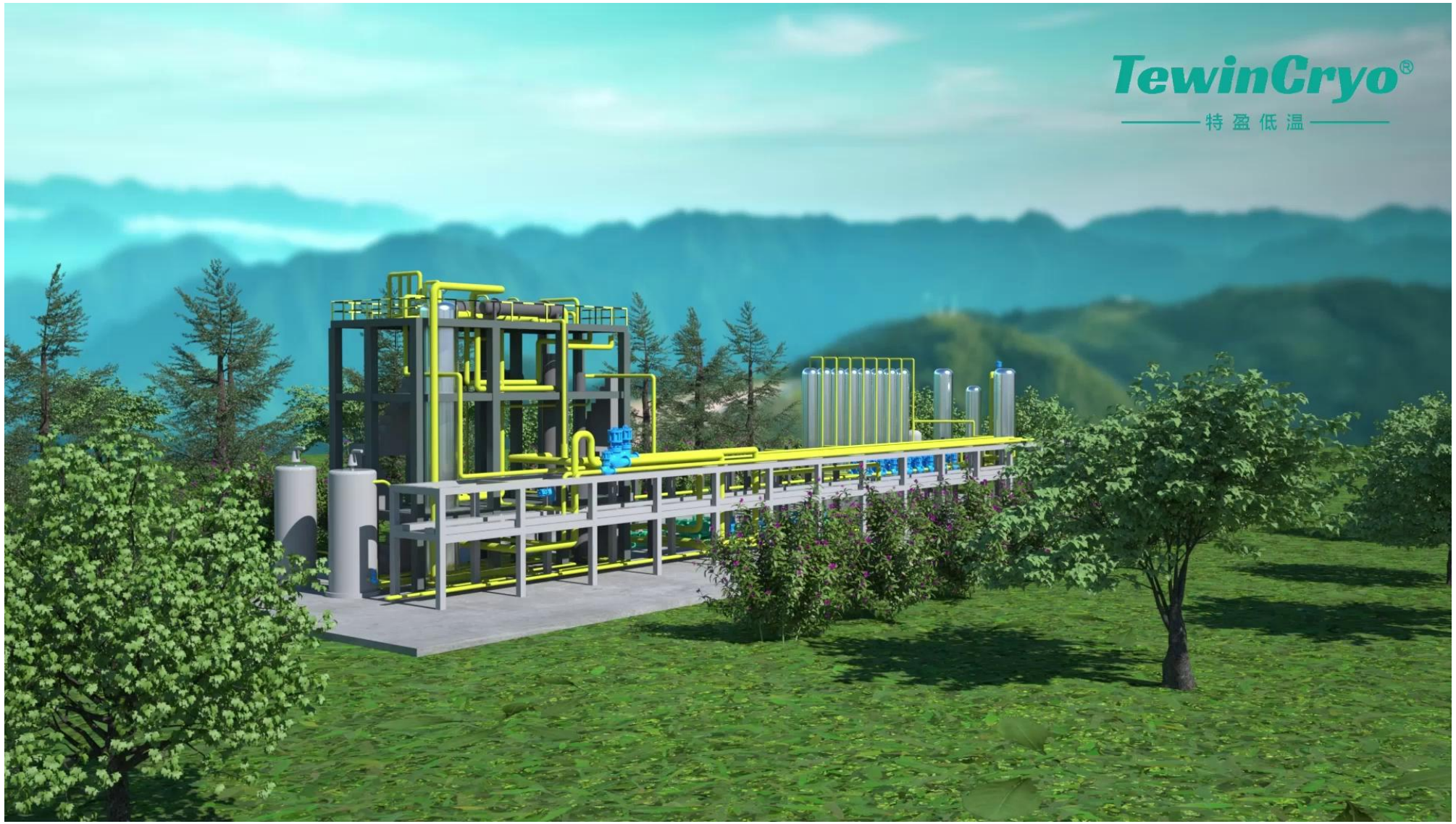
Technical Characteristics:

- The production technology is mature and the operation is safe and reliable
- High degree of Convenient transportation of raw materials
- Small footprint and low investment



Methanol - H_2 Production

TewinCryo®



Methanol - H_2 Project Site

TewinCryo®



Inner Mongolia Qinghua 35000Nm³/h
Methanol Cracking H_2 Project



Shandong Huanghel 6000Nm3/h
Methanol Cracking to Hydrogen Plant

Methanol - H_2 Project Site

TewinCryo®



Shandong Tianyuan 10000Nm3/h
Methanol Cracking to Hydrogen Plant

Location	Capacity	Client
Inner Mongolia China	35000Nm³/h	Inner Mongolia Qinghua Group Wusitai Fine Chemical Co., Ltd.
Shandong China	8000Nm³/h	No. 13 Construction Co., Ltd. of China National Chemical Engineering Group
Zhejiang China	5000Nm3/h	Zhoushan Huakang Biotechnology Co., Ltd
Heibei China	350Nm³/h	Tangshan Reafon Steel (Group) Co., Ltd.
Hunan China	250Nm³/h	Central South University

Air Separation Plant

TewinCryo®



Air Separation Plants:

- O_2/N_2/Ar ASU (Internal/external compression)
    a. High purity nitrogen plant (single/two column)
    b. High puirty oxygen plant
- O_2/N_2/Ar Liquid ASU
    a. LO_2 (LAr) plant
    b. LN_2 plant
    c. LO_2, LN_2 (LAr) plant

ASU Key Components

TewinCryo®



Rectification Column

- AL alloy cylinder
- Column
- Regular packing

Key Components

Coldbox

- Steel structure
- Pipeline
- Equipment installation
- Pipeline installation
- Pressure leakage test
- Instrument installation



ASU Key Components

TewinCryo®

Skid-mounted Design of Air Purification System

Guardrail

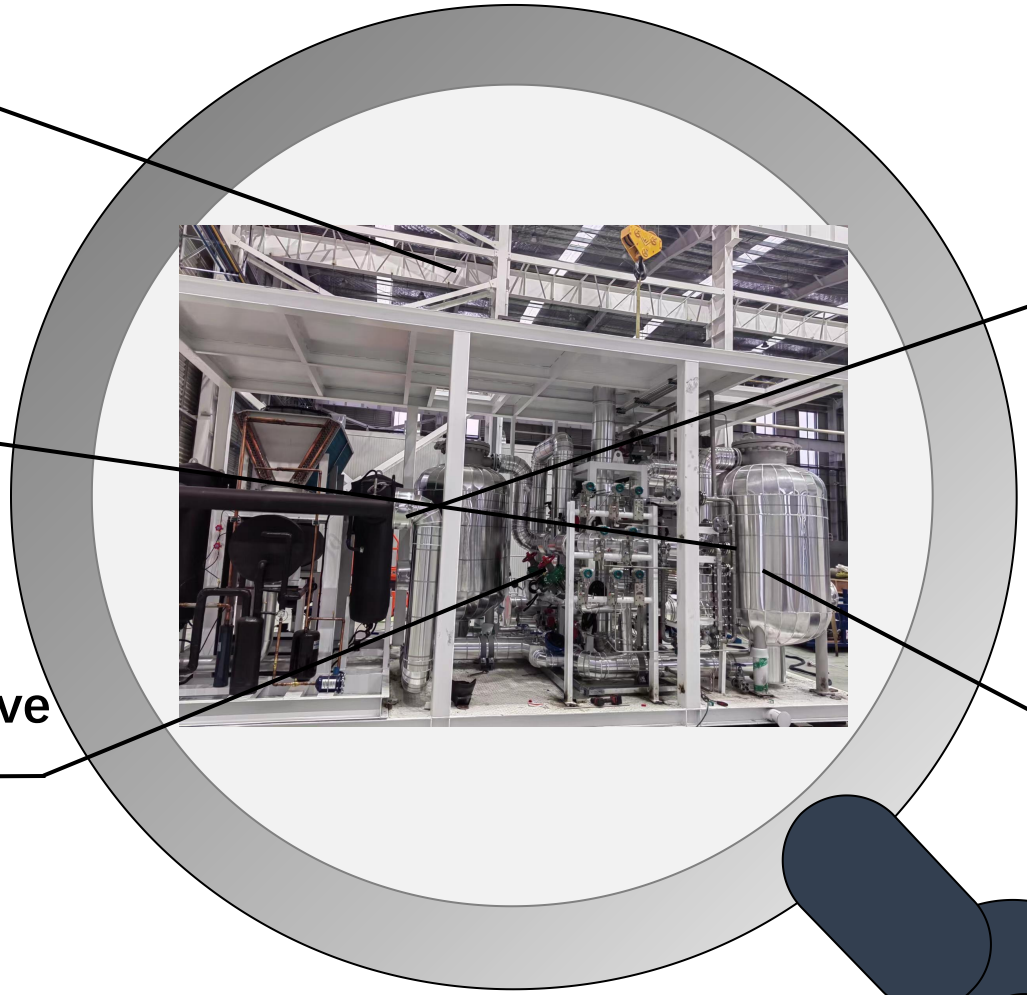
International standard structure,
user-friendly design,
safer and more conducive in
maintenance.

Adsorbent

13X molecular sieve and activated alumina (Al_2O_3) efficiently adsorb moisture, carbon dioxide, acetylene, and other hydrocarbons in the feed gas.

US Bray/German GEMÜ valve

Reliable and durable,
withstanding 200 thousand times
of open and close
without risk of leakage.



Electric control cabinet

Modular skid mounted, instrument &
electric control display,
fully prefabricated instrument.

Aluminum skin insulation

High quality aluminum skin insulation is used in ex-factory pipelines with high-quality slag cotton interior; all insulation work are done in workshop with no ex-factory insulation work required.

ASU Business & Market

TewinCryo®

Asia

Philippines, Bangladesh, Indonesia, India, Pakistan, Laos, Malaysia, Kazakhstan, Vietnam, Cambodia, Tajikistan etc.

America

Argentina, Peru etc.

Africa

Democratic Republic of Congo, Zimbabwe, Egypt, Ethiopia, Angola, Nigeria, Zambia, Uganda, Mauritania, Malawi, Ghana, Benin etc.



We've prodly provided over 500 sets of plants to clients globely!

ASU Sites

TewinCryo®





KDONAr-12000 (3500Y)/4000Y/500Y
Hunan Silver (Fullcryo) ASU

ASU Sites

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KDONAr-3000Y/3000Y/125Y/50Y
Jiangsu Yangzhou Yingde Gases
Liquid ASU (With high purity oxygen)



KDONAr-3000Y-1400Y-100Y
Jiangsu Haian Jianrong Liquid ASU



KDONAr-3000Y/1300Y/100Y
Zhejiang Hangzhou Electrochemical Liquid ASU



KDON-3000/1500
Zhejiang Tianneng ASU

ASU Sites

TewinCryo®



GAN-22000
Quzhou Geely Jidian Nitrogen Plant



KDNO-10000/360 Shanxi Xinzhou Dasolar
High-purity oxygen and nitrogen ASU



KDONAr-6500/10000/200
Zhuzhou Yingde Gases ASU with Argon



KDN-10000/100Y
Jilin Guoxing Nitrogen Plant

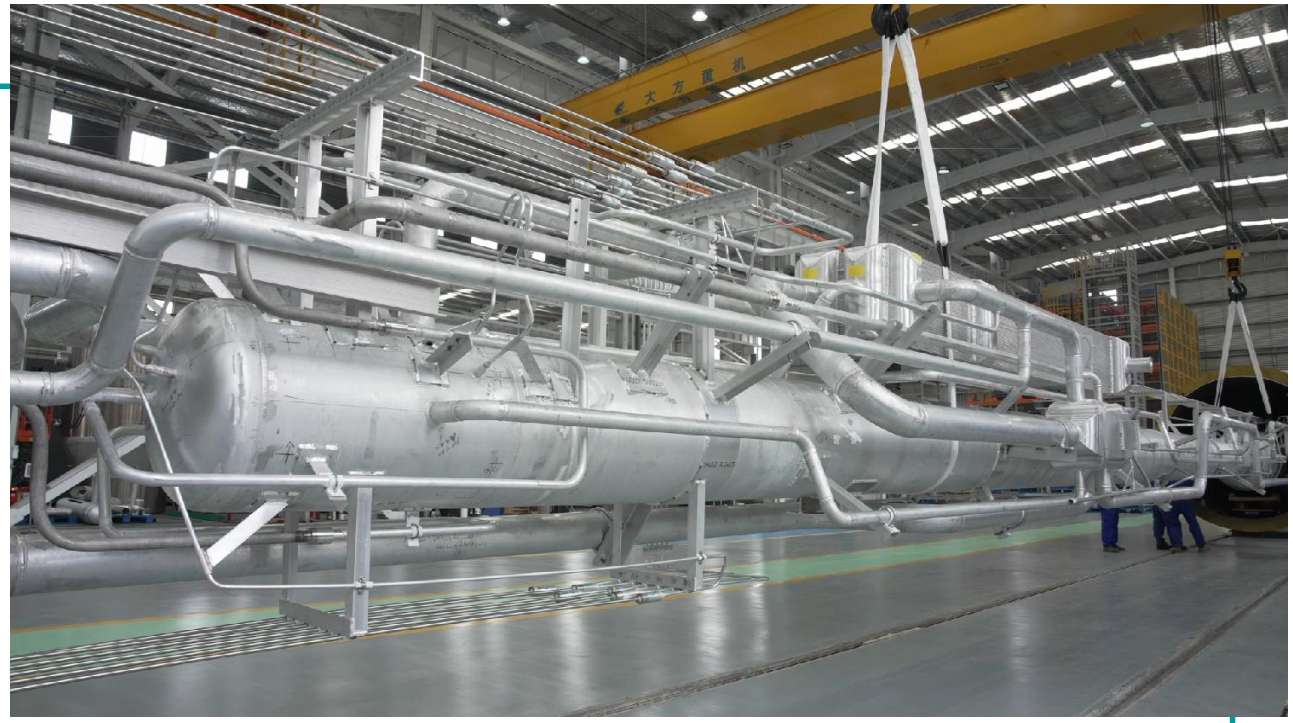


KDN-6000/30Y&KDN-3000/100Y
Nanjing Huatian Nitrogen Plant

ASU Site - Modulization

TewinCryo®

Alita®-1200 Lishui Zhongxin Project
Column Installation & Coldbox Lifting





Liquefaction Plant

TewinCryo®



YPON-6000Y/5500Y
Liquefaction Plant to Produce Oxygen and Nitrogen



Liquefaction Codbox

Argon Recovery Plant

TewinCryo®



Argon Recovery Plant Coldbox ARR-4300

CO_2 Recovery Plant

TewinCryo®

➢ Technical Characteristics

Advantages:

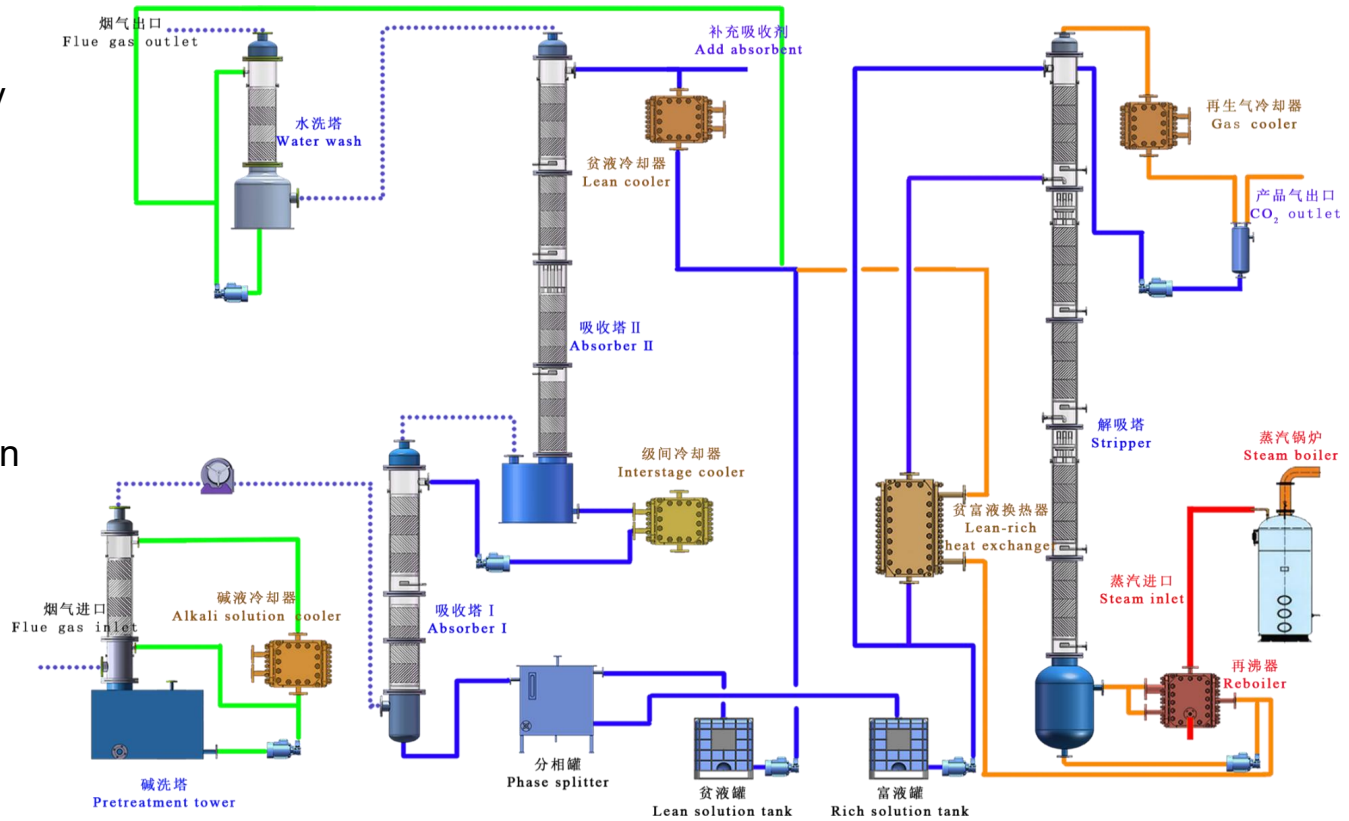
- Well-established and mature process technology with simple equipment
- Fast absorption rate, high selectivity, and high efficiency
- Low overall energy consumption and relatively low investment costs

Disadvantages:

- Large absorbent consumption, requiring continuous replenishment during the recycling process
- High energy demand for absorbent regeneration
- Absorbent is prone to leakage and volatilization, and can cause equipment corrosion



➢ Process Flow Chart



CO_2 Recovery Plant Sites

TewinCryo®



150kT/Year Shennxi Guohua Jinjie Carbon Capture Unit



1500kT Zhengning Power Plant Carbon Capture Unit (in construction)



Decarbonization and CNG Production System at Hangzhou Waste-to-Energy Plant



500kT/Year Taizhou Power Plant Carbon Capture Unit



15kT/Year Zheneng Lanxi Power Plant Carbon Capture Unit

PSA N_2 and O_2 Plants

TewinCryo®



22000Nm³/h VPSA Oxygen Plant



10000Nm³/h VPSA Oxygen Plant



36000Nm³/h VPSA Oxygen Plant

Main Gas Investment Partners

TewinCryo®

盈德气体 YINGDE GASES

华特气体 HUATE GAS

侨源气体 QIAO YUAN GAS

海格金谷 THRESHOLD

中科富海 FULLCRYO

G-gas

广钢气体

PROCHIP GROUP

宏芯气体

CATIC

中航技

Other Key Partners

TewinCryo®

GEELY

BAOWU

吉林化纤

华天科技 HUA TIAN

Trinasolar 天合光能

LBM 锂源

risen 东方日升

协鑫 GCL

BTR 贝特瑞

璞泰来 PUTAILAI

杉杉企业 Shanshan Corporation

SHINZOM

DASOLAR 一道新能

中国 · 晶龙 China · Jinglong

JA SOLAR 晶澳太阳能

中核集团 CNNC

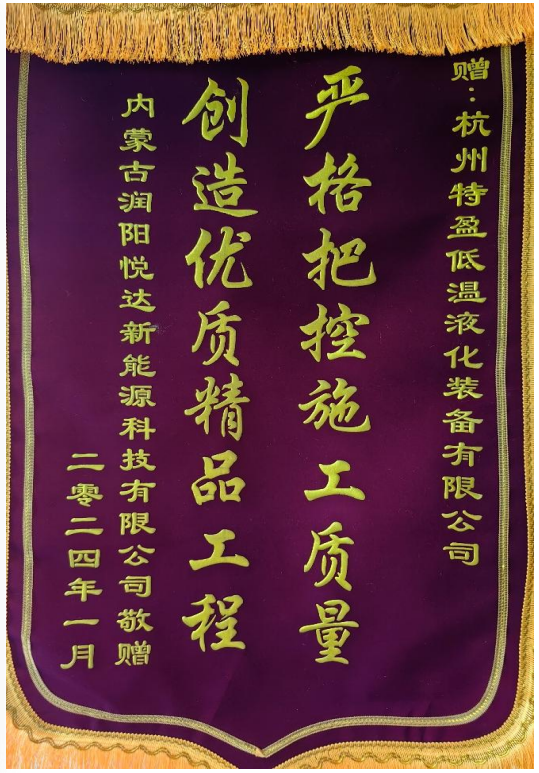
Customer Recognition

TewinCryo®



Customer Recognition：

Customer Pingxiang Chuangpusi and Inner Mongolia Runergy recognized the professional performance of Zhejiang Tewincryo in project execution!





Customer Recognition

TewinCryo®



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杭州特盈低温液化装备有限公司

空分设备

考核测试结果表

Evaluation & test inspection report about air separation unit

用户单位 Organization		湖北锂源新能源科技有限公司			
空分设备型号 Model		KDN-18000/150Y （全工况）		文档编号 No.	
考核内容 Evaluation items	工况 Conditions	项目 Name	单位 Unit	合同规定指标或设计值 Indexes &design values	实测值 Measured values
	工况 1	氮气产量	Nm³/h	9000	9000
		氮气纯度	ppm	≤3ppm 02	1ppm

注：1、液体为折合气态后的数据。
2、产量和纯度为出冷箱的参数，液体压力以冷箱 0 标高处计算。
3、Nm3/h 系指 0℃、101.3KPa 状态。

考核时间 Evaluation time	2023 年 3 月 10 日 05 时至 2023 年 3 月 11 日 11 时，累计时间共 30 小时			
考核结果 Evaluation results	一期现场目前只配套了一台空压机（设计全气量两台空压机），空压机压缩气量只有设计气量一半的工况条件下，产品氮气产量达到设计数值（9000Nm³/h），产品氮气纯度达到设计数值（≤3ppm），设备性能考核合格。			
参加考核测试人员签名 Signature	甲方 Customer		日期 Date	2023.3.13
	乙方 Cando		日期 Date	

注意：
1） 考核期间每小时记录一次（运行记录表作为考核附件），最终取平均值作为考核测试结果值。
2） 该考核测试结果表与空分设备调试考核验收报告一并带回归档。

Hubei Liyuan Nitrogen Plant
KDN-18000/150Y



浙江特盈低温液化装备有限公司

TewinCryo Zhe Jiang Teamwin cryogenic liquefy equipment Co.,Ltd

空分设备

调试考核验收报告

Commissioning & evaluation
inspection report about air separation unit

空分设备型号 Model	KDON-820Y/1150 成套空分设备	文档编号 No.	

Roberto Salinas e Hijos S.A(CASCIA NOMBRE de Fantasia)(以下简称甲方)与杭州特盈低温液化装备有限公司(以下简称乙方)于 2021 年 4 月 23 日签订的 KDON-820Y/1150 设备供货合同(以下简称合同)。

根据“合同”规定的要求，经双方共同努力，整个工程于 2024 年 5 月 5 日 8 时，生产出合格的产品，经连续稳定的运行后，各项指标均已经达到合同的规定。测试结果符合合同规定指标，设备运行正常。甲方同意对成套设备予以合格验收，并经双方代表签字盖章。

甲方签名盖章 Customer Signature & official seal		日期 Date	
乙方签名盖章 Cando Signature & official seal	Liupaoxin	日期 Date	2024.5.20

注意：
该调试考核验收报告与空分设备考核测试结果表、空分设备用户意见反馈表一并带回归档。

Argentina Liquid ASU
KDON-820Y-1150



杭州特盈低温液化装备有限公司
Hangzhou Teamwin cryogenic liquefy equipment Co.,Ltd

空分设备

调试考核验收报告

Commissioning & evaluation
inspection report about air separation unit

空分设备型号 Model	KDO-1500Y	文档编号 No.	TY20230609

PT Surysa Biru Murni Acetylene, Tbk. Industrial Gas Manufacturer(以下简称甲方)与杭州特盈低温液化装备有限公司(以下简称乙方)于 202 年 月 日签订 KDO-1500Y 成套空分 设备供货合同(以下简称合同)。根据“合同”规定的要求，经双方共同努力，整个工程于 2023 年 6 月 10 日 0 时，生产出合格的氮产品，经连续稳定的运行后，各项指标均已经达到合同的规定。测试结果符合合同规定指标，设备运行正常。甲方同意对成套设备予以合格验收，并经双方代表签字或盖章。

甲方签名或盖章 Customer Signature & official seal （请留下电话和邮箱以便联系）	SBM PT SURYSA BIRU MURNI ACETYLENE Tbk.	日期 Date	12/2023
乙方签名或盖章 Cando Signature & official seal		日期 Date	2023.6.12

注意：
该调试考核验收报告与空分设备考核测试结果表、空分设备用户意见反馈表一并带回归档。

Indonesia Liquid ASU
KDO-1500Y



TewinCryo®

谢 谢!

Thank you