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**John
Cockerill**

考克利尔竞立

**考克利尔竞立（苏州）氢能科技有限公司
Cockerill Jingli Hydrogen**

公司简介 Company info

考克利尔竞立（苏州）氢能科技有限公司（Cockerill Jingli Hydrogen, 简称CJH）是John Cockerill集团承接了苏州竞立制氢设备有限公司所有人员和知识产权的基础上，增加研发力量、更新生产设备，扩大产能，提升质量标准建立的，专注于碱性电解水制氢设备的设计、研发、制造和销售等，定位为John Cockerill集团氢能业务在中国区的总部。

引领绿氢行业30年，考克利尔竞立为行业提供了多个示范案例。2019年，考克利尔竞立为国内首个液态阳光燃料合成示范项目提供了2套单机产氢量1000Nm³/h水电解制氢设备；2020年为法国液化空气集团定制5台大型加压水电解制氢设备；2021年为宝丰能源提供了22台1000Nm³/h加压水电解制氢设备，支持“国家级太阳能电解水制氢综合示范项目”；同年研制出全球首台单体产氢量1200Nm³/h、1300Nm³/h的水电解制氢设备，以生产超大型电解水制氢设备的技术和能力为我国乃至世界能源转型助力。2022年，考克利尔竞立又以排名第一的好成绩入围中石化新疆库车项目，中标50%，支持国家对新能源开发和节能减排的战略愿景，为世界的节能减排的工作做出贡献。

另外，考克利尔竞立在2022年的产能达到1GW，专利技术70多项，设备拥有IOS9001、欧盟CE等专业认证，荣获“十三五”中国气体行业50强企业、江苏省工程技术中心等实力称号。2021年，考克利尔竞立出货量达160MW，占全球碱性电解槽出货量的50%（彭博财经数据）。

目前，考克利尔竞立拥有成熟的0.3到1300Nm³/h碱性电解水制氢设备的生产线，产品被广泛应用于加氢站、新能源、化工、有色金属、电力、钢铁、航空等行业，并远销美国、韩国、白俄罗斯、印度等三十多个国家和地区。

Cockerill Jingli Hydrogen (hereinafter referred to as CJH) is the headquarter of Hydrogen BU of John Cockerill Group in China. CJH is focused on design, research and develop, manufacture and sales of ALK electrolyzers equipment. Based on intellectual property and rich experience of developing and manufacturing the hydrogen production equipment of Suzhou Jingli, John Cockerill Group continue to make efforts to strengthen its technology development, upgrading production line and expanding manufacturing capacity and improve quality to adapt to the rapid growth of the market.

As leader in the green hydrogen industry for 30 years, CJH's ALK electrolyzers equipment are widely used and demonstrated in various fields. In 2019, CJH provided 2 sets of 1000m³/h pressurized alkaline electrolytic water hydrogen production equipment for the first demonstration project of synthetic liquid solar fuel in China. In 2020, CJH supplied Air Liquide with 5 sets of customized large-scale pressurized alkaline electrolytic water hydrogen production equipment. In 2021, 22 sets of DQ1000/1.6 pressurized alkaline electrolytic water hydrogen production equipment supplied by CJH was successfully delivered to Baofeng Energy Group for the national comprehensive demonstration project of hydrogen production by solar energy. In the same year, CJH developed the world's first set of 1200Nm³/h and 1300Nm³/h pressurized alkaline electrolytic water hydrogen production equipment. In 2022, CJH is awarded 24 sets of pressurized alkaline electrolytic water hydrogen production equipment (50% of the total share) to support Sinopec Xinjiang Kuqa 20000 tons photovoltaic green hydrogen demonstration project.

Additionally, the capacity of CJH has reached to 1GW in 2022. With more than 70 patented technologies, and ISO9001, CE and ASME Certification on products, CJH is awarded many honored titles such as 13th Five Year Plan title of China's Top 50 Gas Industry Enterprises and Jiangsu Engineering Technology Center. In 2021, CJH's delivery has reached to 160MW which takes up 50% share of global total ALK electrolyzers' delivery. (From Bloomberg data).

At present, CJH can provide 0.3–1300 Nm³/h pressurized alkaline electrolytic water hydrogen production equipment and its products are widely used in hydrogenation refueling stations, new energy, chemical, non-ferrous metals, electricity, steel, aviation and other industries. CJH's customers are in over 30 countries in the world, such as USA, South Korea, Belarus, India, etc.



考克利尔竞立(苏州)氢能科技有限公司
Cockerill Jingli Hydrogen

企业文化 Corporate culture



以人为本

People Oriented

质量领先

Quality Leading

客户至上

Customer Focus

创新求精

Innovate Excellence

企业发展历程 Enterprise history

1992.5

苏州市吴县水电解制氢设备公司成立。

Suzhou Wuxian water electrolysis hydrogen production equipment Co., was established.

1992.10

公司研制的第一台20Nm³/h加压水电解制氢设备通过鉴定，出口印度。

The first 20Nm³/h pressurized water electrolysis hydrogen production equipment developed by the company passed the appraisal and was exported to India.

1993.5

苏州竞立制氢设备有限公司成立(中港合资)。

Suzhou Jingli hydrogen production equipment Co., Ltd. (Sino Hong Kong Joint Venture) was established.

1995.10

国内最大的第一台200Nm³/h微机控制加压水电解制氢设备研制成功，通过部级鉴定，交付用户，获得“中华之最”荣誉称号。

The first 200Nm³/h microcomputer controlled pressurized water electrolysis hydrogen production equipment in China has been successfully developed. It has passed the ministry level appraisal and delivered to users, and won the honorary title of "Top in China".

2004.10

国内最大的第一套3000Nm³/h大型氢气回收净化设备研制成功，通过省级鉴定，交付用户。

The first 3000Nm³/h large-scale hydrogen recovery and purification equipment in China has been successfully developed, passed the provincial appraisal and delivered to users.

2005.10

国内最大的第一台375Nm³/h加压水电解制氢设备研制成功，通过省级鉴定，交付用户。

The first 375Nm³/h large-scale water electrolysis hydrogen production equipment in China has been successfully developed, passed the provincial appraisal and delivered to users.

2007.10

公司与北京飞驰绿能电源技术公司合作建设的中国第一座“现场制氢加氢站”在北京中关村永丰基地投运，为“2008北京奥运会”提供了加氢服务。

China's first "on-site hydrogen generation and refueling station" jointly constructed by the company and Beijing Feichi Green Energy Power Technology Co., Ltd. was put into operation in Yongfeng base, Zhongguancun, Beijing, Providing hydrogen refueling services for the "2008 Beijing Olympic Games."

2011.10

公司研制的高效节能型TDQ35/0.8新型水电解制氢设备被列为省首台套产品，通过验收投放市场。

The high efficiency and energy saving TDQ35 / 0.8 new water electrolysis hydrogen production equipment developed by the company was listed as the first set of products in the province and put into the market with acceptance.

2015.10

公司研制出国内第一台QGZ-6000大型氢气干燥净化设备，交付用户。

The first QGZ-6000 large-scale hydrogen drying and purification equipment in China was successfully developed by the company and was delivered to the users.

2016.5

公司研制的可移动集装箱式为加氢站现场制氢服务的SDQ-25/3.2水电解制氢设备在大连新源加氢站投运。

The SDQ-25 / 3.2 water electrolysis hydrogen production equipment developed by the company, which can be used in the hydrogen refueling station, was put into operation in Dalian Xinyuan hydrogen refueling station.



2017.12

公司研制的全球最大的1000Nm³/h加压水电解制氢设备交付用户投入运行。

The world's largest 1000Nm³/h pressurized water electrolysis hydrogen production equipment developed by the company was delivered to users for operation.

2018.10

壳牌能源与中国华能委托生产的可再生(风、光)能源制氢项目DQ50/1.6加压水电解制氢设备在吉林白山风电场投入运行。

The DQ50/1.6 pressurized water electrolysis hydrogen production equipment of the renewable (wind, Solar) energy hydrogen production project sub-contracted by Shell Energy and China Huaneng was put into operation in Jilin Baishan wind power farm.

2018.12

公司承接的国家科技部重大专项——“宽功率波动电解水制氢关键技术和设备研制”正式获批，作为全球首创的单体产氢量1200Nm³/h的水电解制氢设备，它将为2022年北京冬奥会提供氢能服务。

The major project undertaken by the company by the Ministry of science and technology of the people's Republic of China: "research and development of key technologies and equipment for water electrolysis hydrogen production by wide power fluctuation" was officially approved. As the world's first 1200Nm³/h pressurized water electrolysis hydrogen production equipment, it will provide hydrogen energy services for "The 2022 winter Olympics in Beijing & Zhangjiakou".

2019.4

考克利尔竞立(苏州)氢能科技有限公司成立，这一由比利时考克利尔基团和苏州竞立合资成立的公司，将抓紧研制2000-3000Nm³/h超大型加压水电解制氢设备，打造成制氢装备国际化、适应全球氢能大发展的大型骨干企业。

The company is a joint venture established by Belgium John Cockerill Group and Suzhou Jingli Hydrogen Production Equipment Co., Ltd. It will speed up the development of 2000-3000Nm³/h super large pressurized water electrolysis hydrogen production equipment, and become a large-scale backbone enterprise for the internationalization of hydrogen production equipment and the rapid development of global hydrogen energy.

2019.8

公司为国内首个液态阳光燃料合成示范项目提供了2套单机产氢量1000Nm³/h水电解制氢设备，为推进低碳、清洁的能源革命提供了创新的技术路径。

The company provided 2 sets of 1000Nm³/h pressurized water electrolysis hydrogen production equipment for the first demonstration project of synthetic liquid solar fuel in China, providing an innovative technical route for promoting the low-carbon and clean energy revolution.

2020.7

为支持“国家级太阳能电解水制氢综合示范项目”，公司向宝丰能源提供了22台1000Nm³/h加压水电解制氢设备，2021年底该项目将全部建成投产。

22 sets of the DQ1000/1.6 pressurized water electrolysis hydrogen production equipment developed by the company was delivered to Baofeng Energy for the national comprehensive demonstration project of solar energy hydrogen production project. The project will be completed and put into operation by the end of 2021.

2020.11

公司为法国液化空气集团定制5台大型加压水电解制氢设备。未来，公司的个性化定制设备将满足全球客户的多样需求。

The company provided Air Liquide with 5 sets of customized large-scale pressurized water electrolysis hydrogen production equipment. In the future, the customized equipment will meet the diverse needs of customers from all over the world.

2021.8

公司首创全球单体产氢量1300Nm³/h的水电解制氢设备，再次刷新世界记录，并中标华能彭州水电解制氢科技创新示范项目。

The company developed the world's first pressurized water electrolysis hydrogen production equipment with a monomer hydrogen production capacity of 1300Nm³/h, breaking the world record again, and won the bid for Huaneng Pengzhou pressurized water electrolysis hydrogen production technology innovation demonstration project.

2021.9

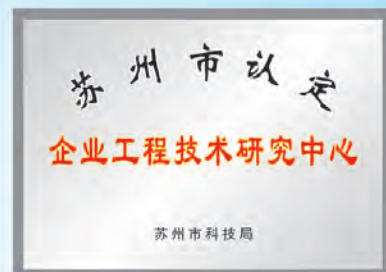
公司完成清华大学四合一模块化碱液水电解制氢测试平台的调试，创造了行业内首个多对一智能化控制检测一体化系统。

The commissioning of Tsinghua University's four-in-one modular test platform for lye pressurized water electrolysis hydrogen production equipment has been completed by the company. This project created the industry's first multi-to-one intelligent control and detection integrated system.

2022.5

公司以排名第一的优异成绩中标中石化新星石油公司新疆库车绿氢示范项目，共计24台单机产氢量1000Nm³/h的碱性电解槽——数量约占总订单量的50%，为推动我国能源结构转型和实现双碳战略目标作出重大贡献。

The company ranked first and won the bid for 24 units of Alkaline electrolytic cells with a single hydrogen production capacity of 1000Nm³/h, accounting for about 50% of the total in Xinjiang Kuqa Green Hydrogen Demonstration Project, making a significant contribution to promoting the transformation of China's energy structure and realizing carbon peaking and carbon neutrality goals.



专利70+项 实力铸就辉煌



Strength of the brilliant cast



企业荣誉 Enterprise honor



T 技术优势 Technological advantages

技术优势-电解槽部分

Advantage-Electrolyzer

- 最高电流密度可达 $6000\text{A}/\text{m}^2$
The maximum current density can reach $6000\text{A}/\text{m}^2$
- 结构紧凑外形美观;
Compact structure, excellent appearance
- 副电极超大的比表面积
Large surface of the negative electrode
- 优异的“软连接”结构
Perfect soft connection
- 使用寿命长久
Longer service life
- 全厂无石棉车间
Asbestos free workshop



高分子材料隔膜
Polymer membrane



自动焊接成型、超厚电镀层的电极板
Automatic welding for electrode plate



技术优势-特殊防腐技术

Advantage-Special corrosion prevented technology

氢、氧分离器等采用“覆镍合金”专利技术制造，可以保证该容器在碱液和初生态氧作用下不发生晶间腐蚀和应力腐蚀，保证设备连续、稳定运行。

Hydrogen and oxygen separator are made of "nickel alloy" patent technology to ensure that the vessel will not be damaged under the action of lye and primary ecological oxygen, and ensure the continuous and stable operation.

产品主要专利一览表
Patents Code

序号 NO	专利名称 Patent Title	专利号 Patent Code
1	一种双系统平衡阀 A double system balance valve	ZL 201310472079.3
2	用于水电解制氢的氢气洗涤器 Hydrogen scrubber for water electrolysis for hydrogen production	ZL 201320625872.8
3	一种水电解制氢的电解单元 An electrolytic unit for water electrolysis for hydrogen production	ZL 201420736897.X
4	一种氢中氧分析仪 An analyzer for analyzing oxygen content in hydrogen	ZL 201420742544.0
5	一种无接触电阻电极 A contactless resistance electrode	ZL 201510174197.5
6	一种隔板式气液分离器 A diaphragm type gas-liquid separator	ZL 201921845220.9
7	一种水电解槽极板 A polar plate of electrolyzer	ZL 201921845219.6
8	一种新型流道流畅结构水电解槽 A new type of electrolyzer with smooth flow channel structure	ZL 202020612899.3
9	一种检测电解槽氢气泄漏率的试验装置 A test device for leakage rate of detecting hydrogen of electrolyzer	ZL 202020862276.1
10	一种水电解制氢的隔离保护装置 An isolation protection device for water electrolysis for hydrogen production	ZL 202020867438.0
11	一种水电解槽电解液分配、汇流结构 A distribution and confluence structure of electrolyte in electrolyzer	ZL 202020863455.7
12	一种电解制氢过程中循环水利用装置 A device for circulating water in the process of electrolytic hydrogen production	ZL 202020867974.0
13	一种碱性水电解槽防气蚀结构 An anti-cavitation structure for lye pressurized water electrolyzer	ZL 202020863488.1
14	气动流量自动调控装置和制氢设备 Automatic control device of pneumatic flow and hydrogen production equipment	ZL 202120442289.8
15	一种制氢装置循环水综合热处理系统 A comprehensive heat treatment system for circulating water of hydrogen production equipment	ZL 202020868400.5

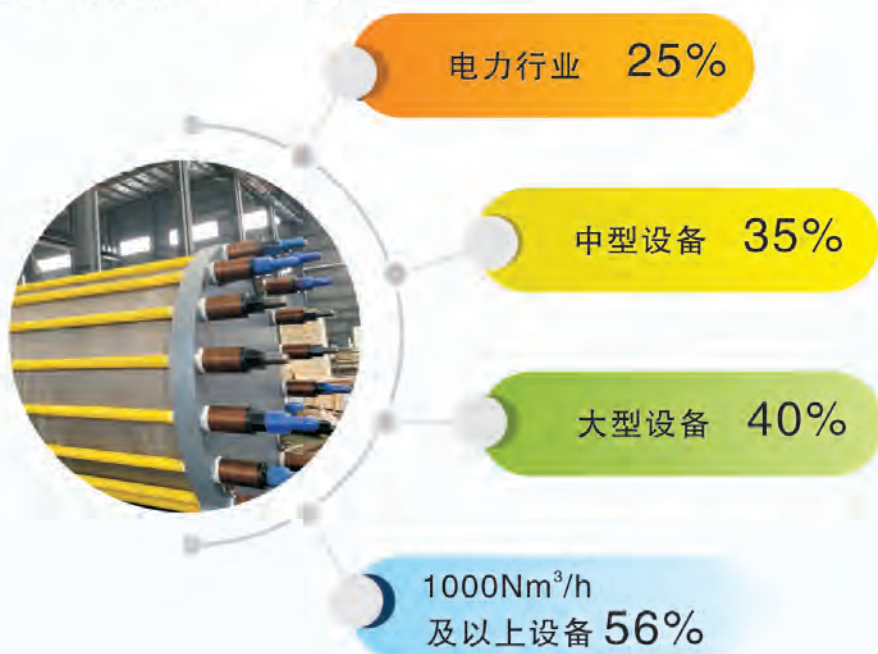
参与制定制氢标准

Participate in the formulation of Hydrogen production standards

- ✓ GB/T 37562-2019 压力型水电解制氢系统技术条件
Technical conditions of pressurized water electrolysis hydrogen production system
- ✓ GB/T 37563-2019 压力型水电解制氢系统安全要求
Safety requirements for pressurized water electrolysis hydrogen production system
- ✓ GB/T 37244-2018 质子交换膜燃料电池汽车用燃料氢气
Hydrogen fuel for proton exchange membrane fuel cell
- ✓ GB/T 34537-2017 车用压缩氢气天然气混合燃气
Compressed hydrogen gas mixture for vehicles
- ✓ GB/T 34584-2017 加氢站安全技术规范
Safety technical specification for hydrogenation station
- ✓ GB 32311-2015 水电解制氢系统能效限定值及能效等级
Energy efficiency limited value and energy efficiency grade of water electrolysis hydrogen.
- ✓ GB/T 26916-2011 小型氢能综合能源系统性能评价方法
Evaluation method of performance of small hydrogen energy integrated energy system

国内市场占比

Market share in china



*2021年公司出货量216MW，占全球碱性电解槽出货量的50%（彭博财经数据）。
In 2021, shipment volume of CJH reached to 216MW, accounting for 50% of the global alkaline electrolytic cell shipment (Bloomberg data).

*2022年公司产能已达1GW。
In 2022, production capacity of CJH has reached to 1GW.

宽功率波动电解水制氢关键技术和设备研制

Development of key technology and equipment for hydrogen production
by water electrolysis with wide power fluctuation



左起：王景泉、倪维斗、黄其励、杨裕生四位院士，国务院参事、国家可再生能源学会理事长、石定环参事来我公司考察，并在设备前合影



2018年承担国家重点研发计划，“可再生能源与氢能技术”重点专项中由国家能源集团有限责任公司牵头的《大规模风光互补制氢关键技术研究及示范》项目中的《宽功率波动电解水制氢关键技术和设备研制》课题。

在2010年，国家启动“973计划”——大规模非并网风电制氢项目，非并网风电结合水电解制氢，将这些电能进行转化、储存。我公司成为该计划的合作单位，并参与产业化试验。为电解水制氢设备适应风电特性积累了技术经验。

In 2018, SJH undertook "Research and development of key technologies and equipment for wide power fluctuation electrolysis water to produce hydrogen" in the research and demonstration of "Large-scale wind-solar complementary key technologies for hydrogen production" led by the National Energy Group.

In 2010, China launched the "973 plan", a large-scale off-grid wind power hydrogen production project. Off-grid wind power is combined with water electrolysis to produce hydrogen, and the electricity is converted and stored. SJH became the cooperative unit of the program and participated in the industrialization experiment. For the electrolytic water hydrogen production equipment to adapt to the characteristics of wind power has accumulated technical experience.

中压水电解制氢装置基本配置

The Basic Configuration for Middle-pressure Water Electrolysis Hydrogen Generating Plant



电解槽
Electrolyzer



附属设备框架
Auxiliary equipment frame



碱液箱、原料水箱
Alkali solution & feed water tank



变压器
Transformer



整流柜
Rectifier cabinet



控制柜
Control cabinet

▶ 产品简介

- 1、设备组成：主体设备，辅助设备及电控设备。
- 2、主体设备组成：电解槽，附属设备框架。
- 3、辅助设备组成：水箱，碱箱及补水泵等。
- 4、电控设备组成：整流柜，控制柜，变压器等。
- 5、电解槽结构型式：双极性压滤式。
- 6、设备特点：结构紧凑，操作方便，设计先进，性能可靠；品质优良，产量可调；开停自由，耗电量小；安装方便，控制先进；维护简便，寿命长久；操作友好，污染为零。其中2-30m³/h制氢设备的电解槽、附属框架及纯化框架可一体化设计；
- 7、用途广泛：电力，电子，冶金，建材，化工，气象，航天及新能源等。

▶ Product Introduction

1. The parts of the plant: main equipment, auxiliary equipment and electric control equipment.
2. The parts of the main equipment: electrolyzer, auxiliary equipments frame.
3. The parts of the auxiliary equipment: water supply tank, lye tank and water supply pump.
4. The parts of the electric control equipment: rectifier cabinet, control cabinet, distribution cabinet and transformer.
5. The type of electrolyzer: Pressed filter bi-polar filter.
6. Features: compact construction, operation convenient, advanced design, performance reliability, ultra pure gas, adjustable output, on-off free, lower power consumption, easy installation, advanced control, simple maintenance, longer life, easy operation, no pollution. It can be designed in a unit for 2-30m³/h hydrogen generating plants with the electrolyzer, auxiliary equipment frame and purification frame.
7. Applications: electric power, electronic, metallurgy, architectural material, chemical industry, meteorology, astronavigation, renewable energy, etc.

2-1500m³/h 中压水电解制氢装置

2-1500m³/h Medium-pressure Water Electrolysis Hydrogen Generations Plant



▶ 产品简介

- 1、全自动控制，可实现无人值守。
- 2、满足GB50177《氢气站设计规范》要求。
- 3、产气压力高，常规按1.6MPa和3.2MPa设计，可根据客户要求定制。
- 4、可根据客户要求，按设备EPC供货。
提供成套设备设计、供货、安装、调试等服务。
- 5、控制系统设置防误差操作，即使误操作，也不至于发生安全事故，杜绝安全隐患。

▶ Product introduction

- 1、Fully automatic control, unattended.
- 2、Meet the requirements of GB50177 code for 《Hydrogen station design specification》.
- 3、The gas production pressure is high. It is usually designed as per 1.6Mpa and 3.2Mpa. It can be customized according to the customer's requirements.
- 4、According to the customer's requirements, according to EPC supply.
Provide complete equipment design, supply, installation, commissioning and other services.
- 5、The control system is equipped with error proof operation. Even if it is operated by mistake, it will not cause safety accidents and eliminate potential safety hazards.

2-1500m³/h电解槽的技术参数

The Parameter For 2-1500m³/h Electrolyzer

产氢量 (Nm ³ /h) Hydrogen output	额定直流电流 (A) DC current	额定直流电压 (V) DC voltage	可选能效等级 Energy efficiency grade	外形尺寸 (参考) Φ × L × W Dimension	重量 (参考) (kg) Weight
2	500	24	-	Φ 664 × 900 × 684	1000
5	500	48	I / II / III	Φ 664 × 1050 × 684	1100
10	920	52	I / II / III	Φ 664 × 1500 × 684	1500
20	1670	58	I / II / III	Φ 1048 × 1900 × 1078	3800
30	1670	86	I / II / III	Φ 1048 × 2270 × 1078	4500
40	2480	78	I / II / III	Φ 1240 × 2170 × 1274	6000
50	2480	98	I / II / III	Φ 1240 × 2450 × 1274	6500
60	2480	116	I / II / III	Φ 1240 × 2700 × 1274	7000
80	4600	84	I / II / III	Φ 1560 × 2250 × 1615	9500
100	4600	104	I / II / III	Φ 1560 × 2520 × 1615	11000
150	4600	156	I / II / III	Φ 1560 × 3230 × 1615	13000
200	6600	146	I / II / III	Φ 1780 × 3140 × 1837	16500
250	6600	182	I / II / III	Φ 1780 × 3600 × 1837	18500
300	6600 (8200)	218 (176)	I / II / III	Φ 1830 × 4250 × 1857 Φ 1830 × 3700 × 1857	24500 21500
350	6600 (8200)	254 (206)	I / II / III	Φ 1830 × 4760 × 1857 Φ 1830 × 4100 × 1857	27000 23500
400	6600 (8200)	290 (234)	I / II / III	Φ 1830 × 5250 × 1857 Φ 1830 × 4500 × 1857	29500 25500
500	8200	294	I / II / III	Φ 2040 × 5500 × 2070	34000
800	8200	468	I / II / III	Φ 2040 × 5500 × 2070	40000
1000	8200	584	I / II / III	Φ 2240 × 5500 × 2281	46500
1200	10500	548	I / II / III	Φ 2240 × 5200 × 2281	44500
1500	10500	684	I / II / III	Φ 2240 × 6100 × 2281	51500

注：能效等级按GB32311-2015《水电解制氢系统限定值及能效等级》
产量 < 5m³/h小型制氢装置不适用于能效等级标准

※ The energy efficiency grade shall be in accordance with GB32311-2015 limited values and energy efficiency grades of water electrolysis hydrogen production system. The small hydrogen production equipment whose output is less than 5m³/h is not applicable to the energy efficiency grades.

水电解制氢设备主要技术指标

Main Technical Parameter For Water Electrolysis Hydrogen Generation Equipment

制氢设备型号 Model	产氢量 m ³ /h Hydrogen Output	产氧量 m ³ /h Oxygen Output	操作压力 MPa Operating Pressure	氢气纯度% Hydrogen purity	气液处理框架外形尺寸 L × W × H (mm) Dimension	占地面积 (m ²) Area
DQ-2/3.2	2	1	3.2	≥99.8	2000 × 1500 × 2600	15
DQ-5/3.2	5	2.5	3.2	≥99.8	2000 × 1500 × 2600	60
DQ-10/3.2	10	5	3.2	≥99.8	2000 × 1500 × 2600	60
DQ-20/3.2	20	10	1.6/3.2	≥99.8	2000 × 1500 × 2600	75
DQ-30/3.2	30	15	1.6/3.2	≥99.8	2000 × 1500 × 2600	80
DQ-40/3.2	40	20	1.6/3.2	≥99.8	2500 × 1500 × 2600	90
DQ-50/3.2	50	25	1.6/3.2	≥99.8	2500 × 1500 × 2600	95
DQ-60/3.2	60	30	1.6/3.2	≥99.8	2500 × 1700 × 2700	180~260
DQ-80/1.6	80	40	1.6	≥99.8	3000 × 1700 × 2800	185~270
DQ-100/1.6	100	50	1.6	≥99.8	3000 × 1900 × 4200	190~270
DQ-150/1.6	150	75	1.6	≥99.8	3000 × 1900 × 4400	205~280
DQ-200/1.6	200	100	1.6	≥99.8	3000 × 2500 × 4500	210~300
DQ-250/1.6	250	125	1.6	≥99.8	3400 × 2600 × 4500	220~300
DQ-300/1.6	300	150	1.6	≥99.8	3400 × 2700 × 4600	230~315
DQ-350/1.6	350	175	1.6	≥99.8	3400 × 2800 × 4700	240~330
DQ-400/1.6	400	200	1.6	≥99.8	3500 × 2900 × 4800	250~340
DQ-500/1.6	500	250	1.6	≥99.8	3700 × 3500 × 5100	250~350
DQ-800/1.6	800	400	1.6	≥99.8	4000 × 3650 × 5100	340~480
DQ-1000/1.6	1000	500	1.6	≥99.8	4000 × 3900 × 5400	450~640
DQ-1200/1.6	1200	600	1.6	≥99.8	4200 × 4000 × 5400	460~660
DQ-1500/1.6	1500	750	1.6	≥99.8	4200 × 4200 × 5600	500~700

※本装置配套包括电解槽、框架（含附属设备）、控制柜、整流变压器、整流柜、补水泵、原料水箱、碱液箱、分析仪表。

※ I 气动单元组合仪表控制；II 电动控制；III PLC控制；IV现场总线控制。

※The plant consists of electrolyzer, frame (including auxiliary equipments) control panel, rectifier, transformer, feed water pump, feed water tank, lye tank, analysis instruments.

※ I pneumatic combined instruments control; II electric instruments control; III PLC control; IVFCS (Field Bus Control System)

QCZ10-6000/1.6型氢气纯化装置

Series QCZ10-6000/1.6 Hydrogen Purification Plant



▶ 产品简介

QCZ10-6000/1.6系列中压氢气纯化装置是DQ5-1500系列中压水电解制氢装置配套的专用设备。设有产品氢气、空分氮气再生方式和不消耗原料气的三塔式再生方式等多种流程。装置以水电解氢气为原料气，经过催化除氧、冷却冷凝、吸附二级干燥和烧结镍管高效过滤后获得高纯氢气。广泛用于电子、冶金、化工、玻璃、新能源等行业。

▶ Product introduction

Series QCZ10-6000/1.6 middle pressure hydrogen purification plants are reserved for series DQ5-1500 middle pressure hydrogen generators, it is designed to regenerating process for hydrogen product, air-separation nitrogen and raw hydrogen without consumption and is also designed to many processes such as three-tower regenerating methods etc. The plant uses hydrogen as raw gas, which is treated by hydrogen catalytic, cooling, condensation and adsorption, two-level drying and efficient filter by sintered nickel tube, thus can obtain the high pure hydrogen. It is widely used in fields, such as electronic, metallurgy, chemical industry, glass and renewable energy etc.

QCZ10-6000/1.6型氢气纯化装置主要技术指标
Main Technical Parameter For Series QCZ10-6000/1.6 Hydrogen Purification Plant

规格型号 Model		QCZ10	QCZ50	QCZ100	QCZ200	QCZ500	QCZ1500	QCZ3000	QCZ6000
处理量m ³ /h Capacity m ³ /h		10	50	100	200	500	1500	3000	6000
工作压力MPa Working pressure Mpa		1.6-3.2	0.8-1.6	0.8-1.6	0.8-1.6	0.8-1.6	0.8-1.6	0.8-1.6	0.8-1.6
工作温度 Working temp. ℃	脱氧 Deoxidization	80-100	80-100	80-100	80-100	80-100	80-100	80-100	80-100
	干燥 Drying	10	10	10	10	10	10	10	10
	再生 Regenerating	250	250	250	250	250	250	250	250
冷却水用量t/h Cooling water consumption t/h		1.5	1.5	3.0	4.0	6.0	18.0	35.0	70.0
耗电KW Power consumption KW		3	6	9	18	24	72	120	210
仪表气用量m ³ /h Instrument gas consumption m ³ /h		2	2	3	3	3	5	8	10
产品气 Product gas	含湿量(露点) Dew point ℃	≤-70℃	≤-70℃	≤-70℃	≤-70℃	≤-70℃	≤-70℃	≤-70℃	≤-70℃
	含氧量(ppm) Oxygen Content premium	≤2	≤2	≤2	≤2	≤2	≤2	≤2	≤2
控制方式 Control method		PLC全自动 PLC fully automatic	PLC全自动 PLC fully automatic	PLC全自动 PLC fully automatic	PLC全自动 PLC fully automatic	PLC全自动 PLC fully automatic	PLC全自动 PLC fully automatic	PLC全自动 PLC fully automatic	PLC全自动 PLC fully automatic
外型尺寸 Overall dimension 长×宽×高L×W×H(m)		2×1×2.5	2×1.5×2.5	2.8×1.8×2.8	3.2×1.8×2.8	3.7×1.8×2.8	4.8×2.2×3.2	4.8×2.2×3.2	6.0×2.5×3.5
装置重量(t) Total weight (t)		1.0	2.0	3.0	3.5	4.5	6.0	6.5	10
备注 Remark		产品氢气再生式 Regenerating by product hydrogen					三塔式 Three towers regenerating		

▶ 技术特点

- ※采用钯铂双金属脱氧催化剂，脱氧效果可达含氧量≤1ppm，常压脱氧效果也可达含氧量≤5ppm
- ※采用优质分子筛，装填系数大，吸附容量速率高，产品氢气含湿量≤-70℃露点。
- ※采用高效烧结镍管过滤器，过滤效能可达99.999%，除尘后分子粒度≤0.3 μm。
- ※纯化工作压力0.8-3.2MPa可调，最大处理量可超过设计值15%。
- ※再生气用量为处理量的5%-10%，耗电为零，若采用原料气再生或三塔式流程，氢损耗为零。
- ※配套齐全，结构紧凑，维修方便。PLC+触摸屏(或工控机)全自动操作运行。DCS控制系统亦可采用。

▶ Technical Features

- ※Adopt pd-pt bimetallic deoxygenated catalyst, oxygen content can reach ≤1ppm, it could also reach ≤5ppm by atmosphere pressure deoxygenated.
- ※Adopt better quality molecular sieve, adsorption capacity and rate are large. The dew point of hydrogen after dehumidity ≤-70℃.
- ※Adopt efficient sinter nickel tube filter, the filtered efficiency can be obtained at 99.999%, the particle after removed dust ≤0.3 μm.
- ※The working pressure of purification is 0.8-3.2Mpa adjustable, and the max capacity can be 15% higher than design index.
- ※Consumption volume of the regenerating gas is 5-10% treated hydrogen, power consumption is zero, if feedstock raw gas regeneration or three-tower flow are used, hydrogen consumption is zero.
- ※Integrity mating, compact construction, maintenance convenience, PLC+touch screen or industrial process control computer can make the plant automatically operate. DCS control system could also be adopted.

电厂用制氢干燥一体化装置

The Plant integrated With Water Electrolysis Hydrogen Generating and Drying For Power Plant



▶ 产品简介

- 1、设备组成:主体设备，辅助设备及电控设备。
- 2、主体设备组成：电解槽，附属设备一体化框架。
- 3、辅助设备组成：水箱，碱箱及补水泵及气体减压分配框架等。
- 4、电控设备组成：整流柜，配电柜等。
- 5、设备特点：设备设计完全是为了电厂用户量身定做，电解槽、气液处理装置、氢气干燥框架组装为一个框架，占地面积小；产品氢气纯度高，含湿量低；自动化程度高，完全实现全自动一键启停。

▶ Product Introduction

- 1.The parts of the plant:main equipment, auxiliary equipment and electric control equipment.
- 2.The parts of the main equipment:electrolyzer,auxiliary equipment intergrated frame.
- 3.The parts of the auxiliary equipment:feed water tank,lye tank,feed water pump and the hydrogen frame for reducing pressure and distribution.
- 4.The parts of the electric control equipment: rectifier panel, control panel, distribution cabinet.
- 5.Features: The plant is designed specifically for power plant. Electrolyzer, gas-liquid treatment and hydrogen drying equipment are installed in a unit, so that occupying a smaller space. The purity of product gas is better,and the humidness is lower. It has a high level automation, and the plant could be started and shut down automatically by pressing the button.

电厂用制氢干燥一体化装置主要设备外形尺寸

Overall Dimension Of Drying Integration Hydrogen Generating Plants For Power Plant

型号 Model	部件名称 Name of plant	长度(mm) Length(mm)	宽度(mm) Width(mm)	高度(mm) Height(mm)
DQ-5/3.2	框架 I Frame I	3000	2000	2150
	框架 II Frame II	1740	1100	270
	框架 III Frame III	1500	1100	1500
DQ-10/3.2	框架 I Frame I	3000	2000	2450
	框架 II Frame II	1800	1700	270
	框架 III Frame III	1740	1100	1360

电厂用制氢干燥一体化装置主要技术指标

Main Technical Parameter For Drying Integration Hydrogen Generating Plants For Power Plant

制氢装置型号 Model	产氢量 m ³ /h Hydrogen Output	产氧量 m ³ /h Oxygen Output	操作压力MPa Operating Pressure	氢气纯度 % Hydrogen purity	氢气露点 ℃ Hydrogen Dew Point℃	直流电耗 Kw·h/m ³ H ₂ DC Power consumption	槽体大修周期(年) Total repair for electrolyzer	控制方式 Control Method
DQ-5/3.2	5	2.5	3.2	≥99.8	≤-50	≤4.9	5~10	I II III IV
DQ-10/3.2	10	5	3.2	≥99.8	≤-50	≤4.9	5~10	I II III IV

※本装置配套包括一体化制氢装置、氢气减压分配盘、控制柜、整流柜、变压器、补水泵、原料水箱、碱液箱、分析仪表。

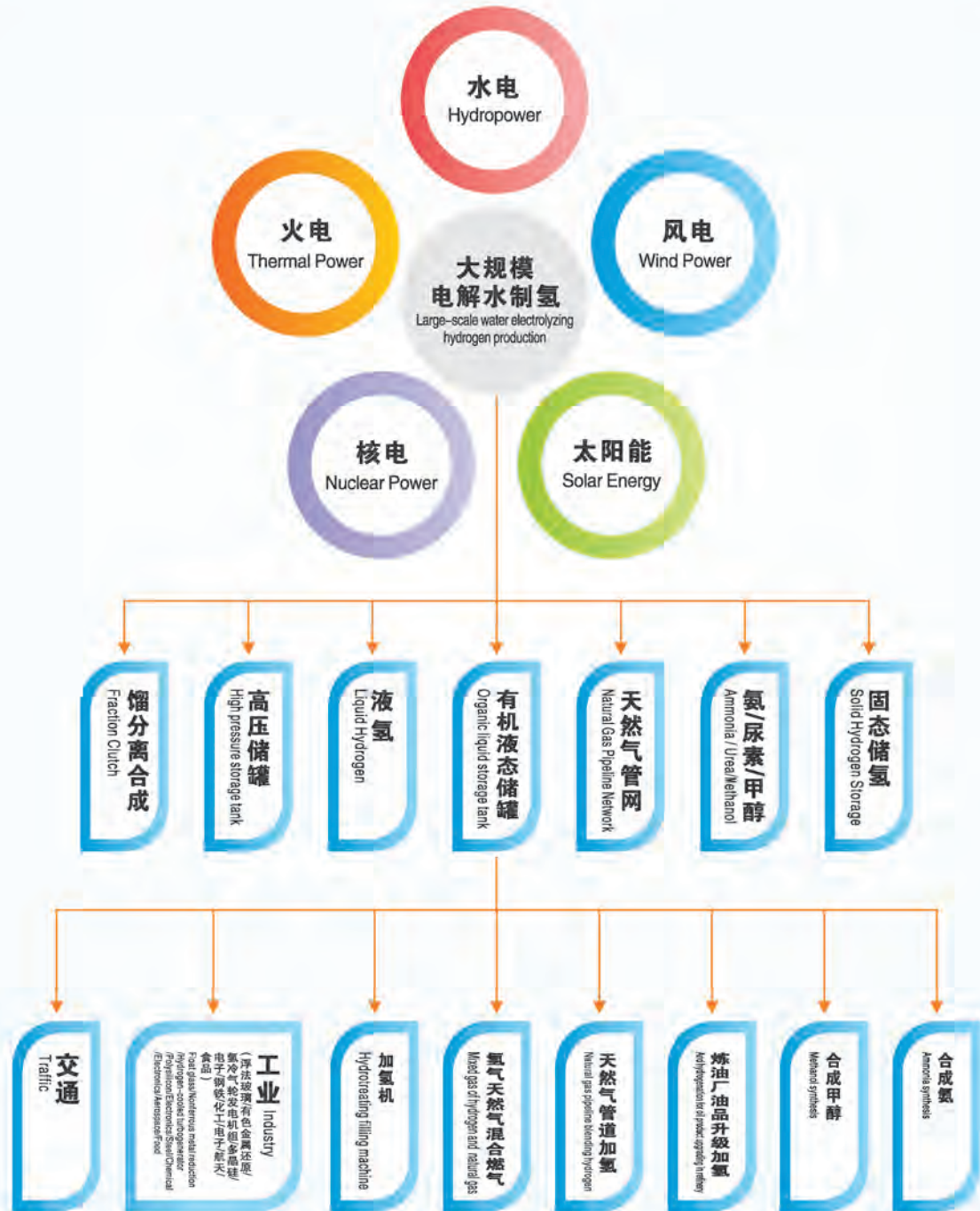
※ I 气动单元组合仪表控制；II 电动控制；III PLC控制；IV现场总线控制。

※The plant consists of one block hydrogen generating plant,the frame for hydrogen reducing pressure and distributing,control panel,rectifier,transformer,feed water pump,feed water tank,lye tank,analysis instruments.

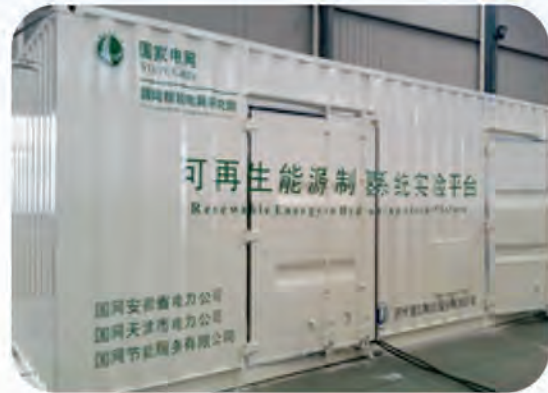
※ I pneumatic combined instruments control; II electric instruments control; III PLC control; IV FCS (Field Bus Control System)

规模化可再生能源制氢工艺流程 (氢能解决方案)

Large-scale Renewable Energy Hydrogen Production Process (Hydrogen Energy Solutions)



集装箱式水电解制氢设备 Containertype hydrogen production equipment



▶ 集装箱式制氢设备特点:

安装方便现场安装工作量小、周期短，单套集装箱设备现场安装只需要10天。集成度高，把设备部件安装在固定的有限的空间内，利用有限的空间进行合理的布置，设备占地面积小。移动方便、运输方便且灵活。建站快捷节省了建氢站投资的同时还简化了审批手续。目前单套集装箱式制氢设备可以做200m³/h。

It features convenient installation, with small workload and short period. The installation of a single set of container equipment only needs 10 days. With high integration, the equipment components are installed in a fixed limited space, and the limited space is used by rational layout, so the equipment occupies a small space. It is convenient to move, transport and more flexible. The quick construction of the station saves the investment of the hydrogen station and simplifies the examination and approval procedures. At present, a single set of container type 200m³/h hydrogen production equipment can be made .

N 新能源领域应用 New Energy



公司为“绿色奥运”建设的国内首座加氢站——飞驰氢加氢站，为氢能汽车提供氢气加注



氢气作为未来新能源，在国内外成为重点研究和发展的方向，水电解氢是最为理想的氢源



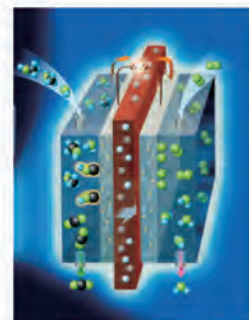
东方电气客车



氢能客车



氢能货车



氢燃料电池示意图



氢能汽车



FCV80



氢能列车

▶ 氢能源应用

除不断提升传统制氢设备综合性能和技术水平外，加大研发投入、积极探索新型氢能技术路径，并战略性地提出氢能必将成为新能源领域中重要的组成部分。基于此使命，公司联合北京一公司于2008年在北京海淀区建设并投产了中国第一座为绿色能源-氢能汽车提供加注氢气服务的制氢加氢站。该制氢加氢站已成功为2008年北京奥运会提供氢能汽车加氢服务，也为氢能汽车早日推向市场提供了设施保障。

该制氢加氢站全部为我国自主研发生产制造，拥有完全自主知识产权，并采用了大量的新技术新工艺。采用的制氢设备代表中国目前最新水平的全自动、低能耗中压水电解制氢设备。

▶ The application of hydrogen energy

The company continuously improved the overall performance and the technical level of the traditional hydrogen system, meanwhile, increased R&D investment to actively explore new technology, and strategically raised that hydrogen energy will become an important new energy. In 2008, we cooperated with a company in Haidian District, Beijing to establish Chinese first green energy station-generating & filling hydrogen for cars. This station not only offered service successfully to the hydrogen-fuel cars in the Beijing 2008 Olympic Games, but also supplied the hydrogen equipment to put forward the hydrogen cars to market.

All of the hydrogen station belongs to Chinese own R&D intellectual property rights, and also adopt a large number of new technologies. The hydrogen generating equipment is the representative manufacturer of latest technology in China for automatic middle pressure hydrogen generator by water electrolysis with low power consumption.



▶ 小型低成本氢能设备

氢能被视为21世纪最具发展潜力的清洁能源，自20世纪70年代开始，世界多国就广泛开展氢能研究。随着世界气候变化形势及我国石油对外依存度的不断上升，开发可替代能源已成为我国的紧迫性任务。鉴于此，我公司顺应形势，组织相关人员力量，研制成功小型低成本氢能设备，该设备及技术填补了国内空白。

该小型氢能设备可以广泛地应用在移动基站、海岛、渔船、部队野外作业、家庭等场所，为氢能时代的来临打下了坚实的基础。

▶ Small low-cost hydrogen energy equipment

Hydrogen is considered the most potential clean energy of 21st century, since the 1970s, hydrogen energy research was launched widely by many countries in the world. As global climate becomes worse and Chinese rising dependence on foreign oil, it is an urgent task to develop alternative energy sources. In view of this, our enterprise invested a lot and developed successfully the small low-cost hydrogen energy equipment, which filled the gap of this field.

This small hydrogen device can be widely used in mobile base stations, islands, fishing boats, military field operations, civil house and other places, and also laid a solid foundation for hydrogen energy era.

▶ 性能参数简表 Technical parameters

序号 No.	设备型号 Model	氢气产量m ³ /h Capacity m ³ /h	氢气纯度 Purity	直流电耗Kw·h/m ³ H ₂ Power consumption (DC)
1	DQX-2	2	≥99.8%	≤5.0
2	DQX-5	5	≥99.8%	≤4.9
3	MDQ	实验室用 Laboratory use		