

Bridge to the ultimate energy

SUNGROW
Hydrogen



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PART 01

Brand

About Sungrow Hydrogen

Sungrow Hydrogen, a subsidiary of Sungrow, specializes in water electrolysis hydrogen production technology. As a national high-tech enterprise focused on the R&D, production, and sales of hydrogen production systems, its product portfolio includes alkaline electrolyzers, PEM electrolyzers, PWM hydrogen production power supplies, BOP systems, and intelligent hydrogen management systems. The company is committed to providing global clients with “efficient, intelligent, and safe” flexible green hydrogen production system solutions.

Sungrow Hydrogen has established a market demand-driven and technology-innovation-oriented R&D system, supported by an experienced and highly innovative R&D team. The company also has built internationally advanced facilities including the Hydrogen Technology Laboratory in Munich, a 30MW Water Electrolysis Hydrogen Production Empirical Platform, and multiple specialized research centers. The Empirical Platform is accredited by CNAS and authorized as a TÜV Rheinland witness laboratory, ensuring internationally recognized testing credibility and providing strong support for innovation and product quality. Backed by a globally leading automated hydrogen equipment manufacturing center, the company excels in production efficiency and large-scale delivery capability. Its core products, certified by authoritative international institutions such as Bureau Veritas, TÜV Rheinland and SGS, are sold in multiple countries worldwide. They are widely applied in large scale wind-solar hydrogen demonstration projects, covering diverse scenarios including chemical industry, industrial applications, and transportation.

In the future, Sungrow Hydrogen will uphold its value proposition of “Bridge to the ultimate energy,” continuously driving the development of digital-intelligent flexible green hydrogen production technology and contributing to the global energy transition and the achievement of carbon neutrality goals.



Note: All the data mentioned below are as of December 2025.

Milestones



2016

Hydrogen Research Team established



2021

Sungrow Hydrogen established

Successfully achieved hydrogen production with the 1000Nm³/h ALK electrolyzer

First PEM electrolyzer launched



2023

Flexible green hydrogen production solutions released

Series A funding round completed



2024

The first automated assembly production line was put into operation

300Nm³/h PEM electrolyzer and 2000Nm³/h ALK electrolyzer released



2025

Hydrogen Production Empirical Platform upgraded to 30MW and certified by CNAS & TÜV Rheinland

Launched a turnkey green hydrogen solution while accelerating global growth

Global Presence



3

R&D Centers
Hefei, Munich



1

Intelligent Manufacturing Center



1

30MW Water Electrolysis
Hydrogen Production Empirical Platform



20+

International Subsidiaries



Innovation and R&D

Based on the technical strengths of Sungrow Group, Sungrow Hydrogen devotes itself to becoming the global leader in flexible green hydrogen production, and has contributed to the establishment of related regulations and standards. By December 2025, Sungrow Hydrogen had applied for 650+ patents and had been granted 260+ patents.

Intellectual Property

650+
Patents Applied

260+
Patents Awarded

30+
Overseas Patents

10+
Product certificates

Safety certification of hydrogen production system by TÜV Rheinland

TÜV Rheinland Authorized Hydrogen Production Empirical Platform

CE-PED certificate of 250 Nm³/h PEM electrolyzer

CE-PED certificate of 1000Nm³/h ALK electrolyzer

ISO9001 Quality Management System Certification

ISO14001 Environmental Management System Certification

ISO45001 Occupational Health and Safety Management System Certification

Manufacture of pressure vessels certification by ASME (114908-BPV CERT-8.16.23 CD)



Innovation and R&D

Key Materials Research Center & Product Research Center

Hefei, China

Focus on the product R&D of flexible hydrogen production core equipment based on the IPD product development process.

The Key Materials Research Center focuses on the performance research, design innovation, and advanced technology tracking of the core materials of electrolyzers. It closely collaborates with scientific research institutions such as the Chinese Academy of Sciences and Soochow University to promote the innovation and application of hydrogen technologies.

Sungrow European Institute Hydrogen Technology Laboratory

Munich, Germany

Focused on cutting-edge water electrolysis and Power-to-X (P2X) technologies, the lab features advanced electrolysis testing platform, material processing and characterization equipment, and digital simulation systems, supporting full-cycle R&D from material development to commercial stack validation. The lab is committed to advancing hydrogen technology innovation and driving global energy transition.

Innovation and R&D

30MW Water Electrolysis Hydrogen Production Empirical Platform

The earliest water electrolysis hydrogen production empirical platform in China, having the largest scale and the most comprehensive functions.

22000+

Operating hours



Intelligent Manufacturing

3GW

Intelligent Manufacturing Center 3GW annual production capacity

Being capable of producing both ALK and PEM electrolyzers

60%+

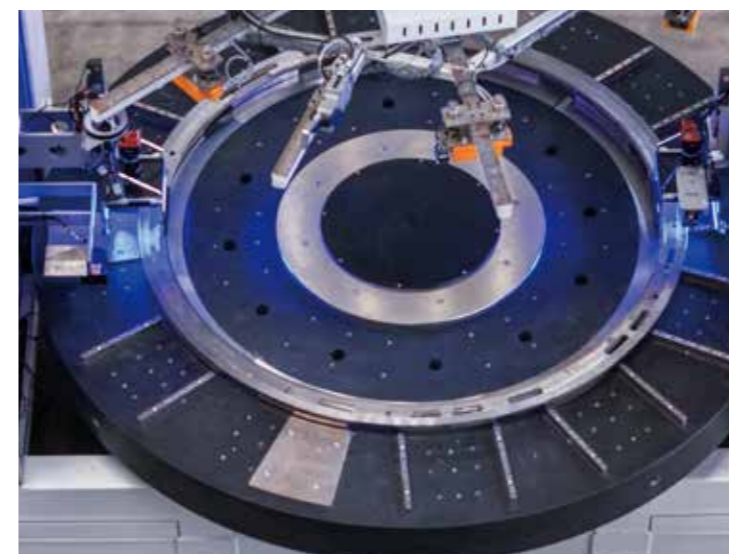
The first automated assembly production line for ALK electrolyzer stack in China

Production efficiency increased by more than 60%

100%

100% whole system testing to guarantee core technical indicators

Whole production process visualization, 100% traceability



PART 02

Products

Flexible Green Hydrogen Production System Solutions

Sungrow Hydrogen provides “efficient, intelligent, and safe” flexible green hydrogen production system solutions, which include alkaline electrolyzers, PEM electrolyzers, PWM hydrogen production power supplies, BOP systems, and intelligent hydrogen management systems. They perfectly match the rapid and volatile nature of renewable energy and are suitable for power, industrial, transportation and other applications.



Safe & Reliable

Reliability Design, Status Analysis, Multi-layer Security Prevention



Flexible & Efficient

Rapid Response, Wide-Range Operating, High Efficiency



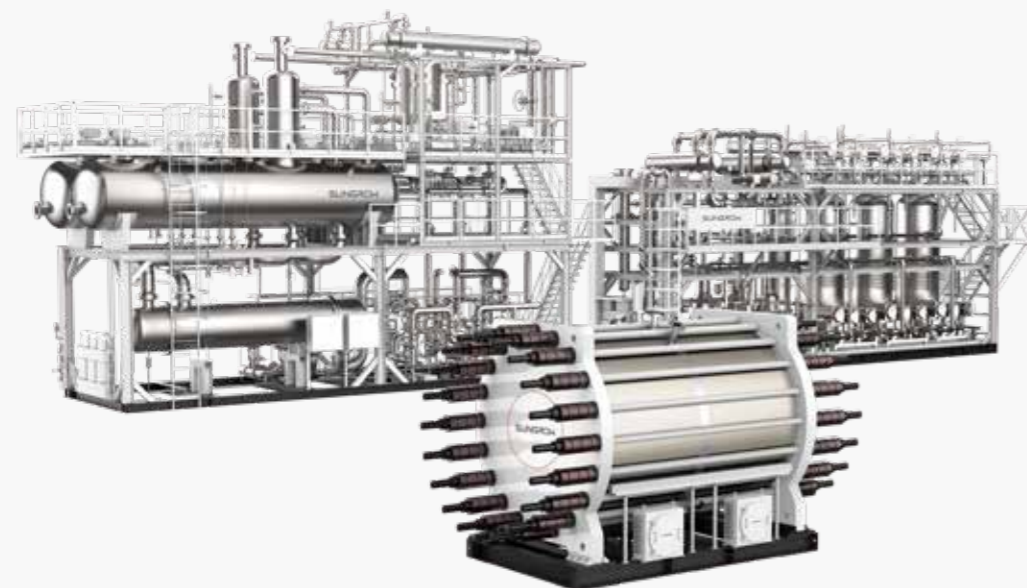
Smart & Friendly

Intelligent Start/Stop, Grid-Friendly, User-Friendly



ALK Water Electrolysis Equipment

Consisting of alkaline electrolyzer(s) and BOP system(s).



Flexible
25%-110% operating range, 5%/s ramp up/down

Efficient
Adopts high performance electrode, late-model structure and optimized fluid channel design, DC power consumption can be lower than 4.5kWh/Nm³ H₂

Reliable
Stack management system integrated
Repeated on/off cycles and continuous accelerated aging tests, longer lifespan

Product parameters

H ₂ nominal flow rate	1000Nm ³ /h	500Nm ³ /h
H ₂ delivery pressure	16barg	16barg
H ₂ purity	99.8%(@outlet separation)	99.8%(@outlet separation)
	99.999%(@outlet purification)	99.999%(@outlet purification)
H ₂ outlet temperature	≤45℃	≤45℃
H ₂ dew point	-70℃	-70℃
O ₂ nominal flow rate	500Nm ³ /h	250Nm ³ /h
Stack DC consumption, BOL	4.50kWh/Nm ³ @nominal load	4.50kWh/Nm ³ @nominal load
System AC consumption ^[1] , BOL	4.60kWh/Nm ³ @nominal load	4.65kWh/Nm ³ @nominal load
Operating range ^[2]	25%-110%	25%-110%
Ramp up/down	5%/s	5%/s
Electrolyte	30% KOH	30% KOH
Demineralized water consumption	0.90L/Nm ³ H ₂	0.90L/Nm ³ H ₂
Demineralized water quality	Conductivity<5μs/cm	Conductivity<5μs/cm
	Chloridion<0.5mg/L	Chloridion<0.5mg/L
Cooling water requirement	140m ³ /h	75m ³ /h
Ambient operating temperature	5-45℃	5-45℃
Dimensions (W×D×H)	Separiton:5400×3200×5850mm	Separiton:4500×3000×5350mm
	Purification:5200×2760×3630mm	Purification:4300×2700×3580mm
Compliance	CE-PED/ATEX/MD/LVD/EMC, ISO22734	CE-PED/ATEX/MD/LVD/EMC, ISO22734

[1]Electrolyzer, gas-liquid separation and hydrogen purification equipment included

[2]Based on the nominal hydrogen production rate

PEM Water Electrolysis Equipment

Consisting of PEM electrolyzer(s) and BOP system(s).



Flexible

5%-110% operating range, 10%/s ramp up/down



Efficient

Adopts high performance electrode, late-model structure and optimized fluid channel design, DC power consumption can be lower than 4.3kWh/Nm³ H₂



Reliable

Stack management system integrated

Repeated on/off cycles and continuous accelerated aging tests, longer lifespan

Product parameters

H ₂ nominal flow rate	500 Nm ³ /h	200Nm ³ /h
H ₂ delivery pressure	30barg	30barg
H ₂ purity	99.9%(@outlet separation)	99.9%(@outlet separation)
	99.999%(@outlet purification)	99.999%(@outlet purification)
H ₂ outlet temperature	≤45°C	≤45°C
H ₂ dew point	-70°C	-70°C
O ₂ nominal flow rate	250Nm ³ /h	100Nm ³ /h
Stack DC consumption, BOL	4.30kWh/Nm ³ @nominal load	4.30kWh/Nm ³ @nominal load
System AC consumption ^[1] , BOL	4.50kWh/Nm ³ @nominal load	4.50kWh/Nm ³ @nominal load
Operating range ^[2]	5%-110%	5%-110%
Ramp up/down	10%/s	10%/s
Electrolyte	PEM	PEM
Demineralized water consumption	0.90L/Nm ³ H ₂	0.90L/Nm ³ H ₂
Demineralized water quality	Conductivity<1μs/cm	Conductivity<1μs/cm
	Chloridion<0.1mg/L	Chloridion<0.1mg/L
	Soluble silicon<0.02mg/L	Soluble silicon<0.02mg/L
Cooling water requirement	55m ³ /h	35m ³ /h
Ambient operating temperature	5-45°C	5-45°C
Dimensions (W×D×H)	12192×2438×5792mm	12192×2438×2896mm
Compliance	CE-PED/ATEX/MD/LVD/EMC, ISO22734	CE-PED/ATEX/MD/LVD/EMC, ISO22734

[1]Electrolyzer, gas-liquid separation and hydrogen purification equipment included




[2]Based on the nominal hydrogen production rate

PWM Hydrogen Production Power Supply

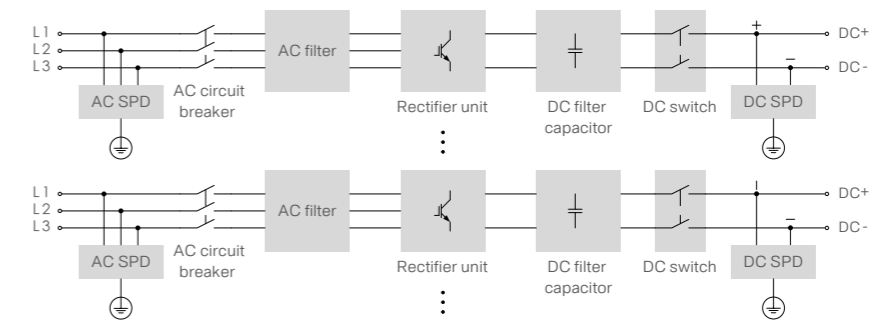
AC/DC rectifier

IGBT rectifier power supply utilizes PWM fully controlled type power device and PWM control technology to convert power from AC to DC for the electrolyzer, which is suitable for the scenario of large-scale grid coupling hydrogen production.



- 
Flexible
 THDi < 3%, PF>0.99, Q>40%, more friendly to grid
 Dynamic response time < 100ms, more friendly to RE
- 
Efficient
 Conversion efficiency > 97.5%
- 
Reliable
 Intelligent air/liquid cooling, IP55 and above, Modular design

Topological Block Diagram



Product parameters

Product model	SHR5700	SHR6000
Input (AC)		
Rated grid voltage	530V	500V
Grid voltage range	477~583V	450~550V
Maximum input current	4*1765A	7900A
Rated grid frequency	50Hz	
Grid frequency range	45 Hz ~55Hz	
Total current distortion rate	<3% (at maximum power)	
Power factor	>0.99	
Output (DC)		
Maximum output power	5700kW	6000kW
Maximum output voltage	820V	780V
Maximum output current	4*2200A	12500A
Operating voltage range	0~820V	0~780V
Output current accuracy	≤0.50% maximum output current	
Dynamic response time	<0.1s	
Output control mode	Voltage control, current control, power control	
Protection		
Fault interlock protection	Yes	
AC insulation test	Yes	
Other functions		
Reactive power compensation function	Yes	
Automatic recognition of AC phase sequence	Yes	
General parameters		
Protection grade	IP65	IP55
Cooling	Temperature controlled forced air cooling	Liquid cooling
Operating temperature range	-30℃~+60℃ (>45℃ derating)	-30℃~+50℃
Compliance	IEC 62477-1:2012+A1:2016/EN, IEC 61000-6-2:2019/EN, IEC 61000-6-4:2019, IEC 61000-6-2:2018, IEC 61000-6-4:2018	

PWM Hydrogen Production Power Supply

DC/DC converter

IGBT DC conversion power supply utilizes PWM fully controlled type power device and PWM control technology to convert the unstable wind and PV energy to DC required by the electrolyzer, which is suitable for wind and PV off-grid direct hydrogen production scenario.



Flexible

Dynamic response time <100ms, more friendly to RE



Efficient

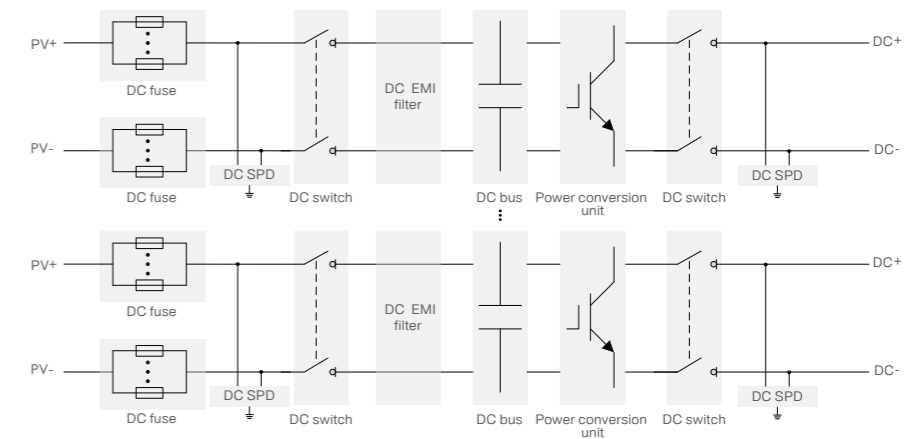
Patent topology & MPPT function



Reliable

Intelligent air/liquid cooling, IP54, Modular design

Topological Block Diagram



Product parameters

Product model	SHD1755	SHD5265
Input (DC)		
Maximum input voltage	1500V	1500V
Minimum input voltage	850V	850V
Full load MPPT voltage range	850~1300V	850~1300V
MPPT number	1	3
Maximum input current	2117A	3*2117A
Output (DC)		
Maximum output power	1755kW	5265kW
Maximum output voltage	820V	820V
Maximum output current	2700A	3*2700A
Operating voltage range	0~820V	0~820V
Output current accuracy	≤0.50% maximum output current	
Dynamic response time	<0.1s	
Output control mode	Voltage control, current control, power control	
Protection		
Fault interlock protection	Yes	
Input/output overcurrent protection	Yes	
General parameters		
Protection grade	IP54	
Cooling	Liquid cooling	
Operating temperature range	-30°C~+45°C	
Compliance	IEC 62477-1:2012+A1:2016/EN, IEC 61000-6-2:2019/EN, IEC 61000-6-4:2019, IEC 61000-6-2:2018, IEC 61000-6-4:2018	

HyBrain – Intelligent Hydrogen Management System

The intelligent hydrogen management system is the “brain” of the flexible green hydrogen production platform which consists of multiple hydrogen production systems to achieve the coordination of hydrogen production from multiple power sources. Based on four key functions of monitoring, diagnosis, coordination and operation, the intelligent hydrogen management system achieves efficiency, intelligence and safety through three cores of System Integration, Energy Management and Cluster Control.

System Integration

Integrated system management, achieving inter-system linkage
Increases operation efficiency and safety

Energy Management

Achieves the ENERGY & YIELD DISPATCH of wind, PV, ESS and grid according to PV/wind input, on/off grid and hydrogen consumption demand

Cluster Control

Reduces startup time and improves energy efficiency and operational lifespan of hydrogen production stations through online model analysis, intelligent switching, and power allocation strategies



Product parameters

Product model	HMS1000
System	
Configuration	Server, Controller, Switch, Firewall
Ports	
RS485 interface	6
Ports	16/4
Fiber port	4×1000 Mbps
Ethernet port	16×10/100 Mbps
AI	4
CAN	1
Power supply	
Power supply	100 - 240Vac, 50/60 Hz, 3200W
Ambient parameters	
Operating temperature	10°C-35°C
Operating humidity	10% RH~80% RH
Elevation	≤3000m
Protection class	IP20
Communication	
Communication medium	Optical fiber, Ethernet
Networking method	Bus / Star / Ring Network
Communication protocol	Modbus RTU, Modbus TCP, CAN2.0, IEC60870-5-104, DLT645
Compliance	
Compliance	CE
Cabinet	
Dimensions (W×H×D)	800×2200×1000mm
Operating humidity	10% RH~80% RH

HyDoc – Stack Management System

The Stack Management System integrates a variety of sensors, data acquisition systems, controllers, and intelligent analytical algorithms. It effectively enables real-time visualization of electrolyzer status, enhances operational safety, and optimizes control strategies—ensuring safe, stable, and efficient electrolyzer performance.

Status Monitoring & Analysis

Data extraction and visualization from the electrolyzer for enhanced operational awareness and control efficiency.

Multi-Layer Safety Protection

Performs in-depth data analysis to identify key features and predict failures, ensuring operational safety and stability.

Five-Dimensional Health Assessment

Provides a clear view of cell-level and stack-level status, evaluates health throughout the lifecycle, and precisely optimizes production efficiency.



Product parameters

Product model	SMS 1000
System	
Configuration	Controller, Insulation Monitoring Sensor, Switch, etc.
Ports	
RS485 interface	6
DI/DO	16/4
Fiber port	4×1000 Mbps
Ethernet port	10×10/100 Mbps
AI	12
CAN	1
Power supply	
Power supply	220Vac±5%, 50/60 Hz, 100W
Ambient parameters	
Operating temperature	-25°C~60°C
Operating humidity	≤95%RH, Condensation-free
Elevation	≤ 3000m
Protection class	IP66
Communication	
Communication medium	Optical fiber, Ethernet
Networking method	Bus / Fiber Ring
Communication protocol	Modbus RTU, Modbus TCP, CAN2.0, IEC104, DLT645, OPC UA
Local Control Panel	
Dimensions (W×H×D)	650mm×650mm×300mm



“Plant-as-a-Product” – A Turnkey Solution for Green Hydrogen Production

Fully Outdoor

- Factory-Free Model, Lower Capex
- Enhanced Safety
- Easy Maintenance

Standardized design

- Flexible Scalability
- Faster Deployment

Modularized Delivery

- Lower Construction Cost
- Efficient Delivery
- Enhanced Safety & Mitigate Construction Risks



PART 03

Project Cases

The outstanding performance of Sungrow Hydrogen's water electrolysis equipment has been validated in multiple projects. With a total scale of over 1GW, the application scenarios of these projects cover refinery, ammonia, transportation, methanol, natural gas blending and hydrogen energy storage. Excellent product quality and strong delivery capability of Sungrow Hydrogen are key factors to ensure the success of these projects.

1GW+
Project Order Volume

30+
Projects

5
Years since the first project



Global footprint:
Green hydrogen projects in 8 countries.



Oman Green Ammonia Project

- 📅 January, 2025
- 📍 Oman
- 🏗️ 600MW PV & 800MWh BESS, Off-grid
- 💧 Ammonia
- 🔗 48000Nm³/h ALK Hydrogen Production System

One of Oman's national hydrogen energy projects, a strategic project for green energy transition in the Middle East.



Brazil UTE Steel Valley Project

- 🕒 April, 2025
- 📍 Brazil
- 🏠 3.5MW PV
- 💧 Electricity generation & natural gas blending
- 🔧 400Nm³/h PEM Hydrogen Production System

The first green hydrogen demonstration project by Petrobras.



Italy “Green Hydrogen for Future” Project

- 🕒 May, 2025
- 📍 Italy
- 🏠 7MW PV & BESS, Off-grid
- 💧 Methane & hydrogen storage
- 🔧 600Nm³/h PEM Hydrogen Production System

The project is located at an industrial site, as part of a comprehensive green hydrogen production plant integrated into a Hydrogen Valley initiative.



Songyuan Hydrogen Industrial Park Project

- 🕒 June 2024
- 📍 Jilin, China
- 🏠 750MW Wind + 50MW PV
- 💧 Methanol & ammonia
- 🔗 67200Nm³/h ALK Hydrogen Production System

The world's LARGEST green hydrogen, ammonia and methanol integrated project.



Da'an Green Hydrogen and Ammonia Integration Project

- 🕒 April 2023
- 📍 Jilin, China
- 🏠 700MW Wind + 100MW PV
- 💧 Ammonia
- 🔗 36000Nm³/h ALK Hydrogen Production System

The largest green hydrogen ammonia synthesis pilot project in China.



Daye Hydrogen Energy Mining Project

- 🕒 December 2023
- 📍 Hubei, China
- 🏠 300MW PV
- 💧 Cavern hydrogen storage & transportation
- 🔗 5000Nm³/h ALK + 400Nm³/h PEM Hydrogen Production System

China's first underground hydrogen storage project,
also the first to realize the joint operation of ALK and PEM.



Ordos PV-to-hydrogen Project

- 🕒 April 2023
- 📍 Inner Mongolia, China
- 📈 250MW PV
- 💧 Transportation & Chemical industry
- 🔗 9000Nm³/h ALK Hydrogen Production System

The first batch of “Hydrogen Production by Wind & PV Power Demonstration Projects” in Inner Mongolia in 2021



Duolun Green Hydrogen Coal Chemical Project

- 🕒 August 2024
- 📍 Inner Mongolia, China
- 🏗️ 120MW Wind + 30MW PV
- 💧 Coal chemical
- 🔗 14000Nm³/h ALK Hydrogen Production System

China's first green hydrogen-coal chemical demonstration project has established an integrated cycle system of "wind-solar energy storage and hydrogen production + coal chemical industry".



Yichang Green Hydrogen Project

- 🕒 September 2022
- 📍 Hubei, China
- ⬆️ Hydro power
- 💧 Hydrogen Fuel Cell-Powered Vessel
- 🔗 200Nm³/h PEM Hydrogen Production System

The world's first inland MW-level PEM hydrogen production and refueling integration project, hydrogen-powered ship pilot project; Containerized solutions.



Coupling Tech Between Coal Chemical Industry and New Energy Demonstration Project

- 🕒 October 2023
- 📍 Shanxi, China
- 🏠 10MW PV
- 💧 Coal chemical
- 🧠 1200Nm³/h ALK Hydrogen Production System

The first demonstration project to research the coupling tech between coal chemical industry and “PV + ESS + Hydrogen + Thermal storage”. Exploring key technologies for new energy to provide raw materials and energy for coal chemical systems.