



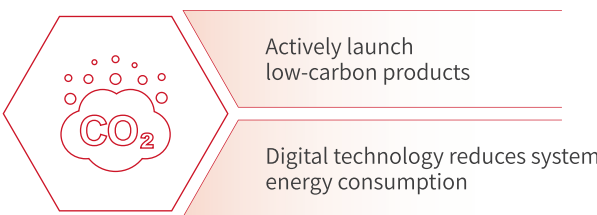
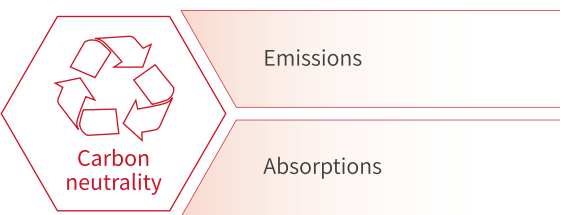
Wolong Renewable Energy

WOLONG
Power your future

Company Profile

Sustainable development idea and actions of Wolong

At present, all major economies in the world subscribe to the goal of "carbon neutrality". As a leading global industrial company in electric motors and drive control solutions, Wolong is taking proactive action to help its global customers achieve carbon neutrality through efficient electric drive solutions, electrification technology innovation, renewable energy and full life cycle services.



- **Improved energy efficiency**
Ultra-efficient asynchronous and permanent magnet synchronous motors
Ultra-efficient drive control system solutions
- **Electric drive systems of E-mobility**
Photovoltaic and energy storage system solutions
IGBT efficient hydrogen production solutions
Permanent magnet wind turbine and drive control system solutions
- **Innovation in electrification technology**
Electric drive systems in E-mobility
Steam turbine shifting to electric motor drive using high-speed permanent magnet system
- **Full-life cycle services**
System energy saving solutions
iMotor full-life cycle service solutions

Mission and Vision

- **Mission - Drive the future with science and technology, provide inexhaustible power for the world**

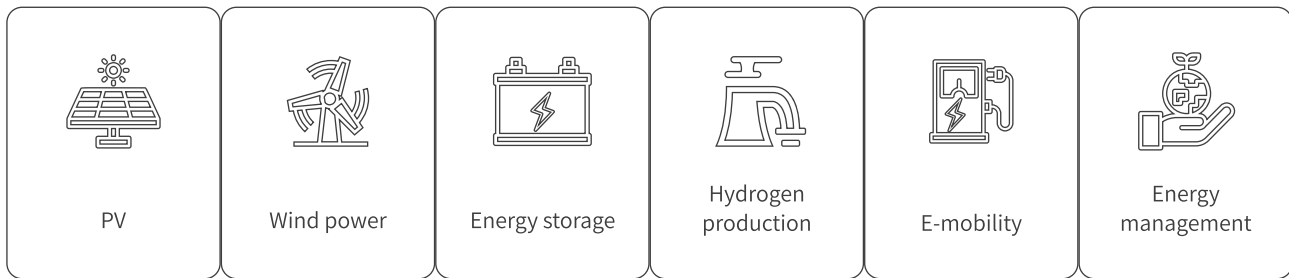
Wolong is committed to provide green, energy-saving and efficient power to the world, makes better living and contribute to the goals of reducing CO₂ emissions and carbon neutrality.

- **Vision - Global No.1 of the Motor Industry**

Wolong's vision is to become global No.1 of the motor industry, not only in terms of scale and performance, but also leadership in R&D capability and management level.



Business scope



History of development

A new journey
Towards carbon neutrality and digitalization

Leaping
Rapid development



Future enterprise growth curve

Stable growth in motor business
Rapidly expand renewable energy
Vigorously develop system solutions
Develop full-life cycle services

Globalization

Targeting to be Global No.1 motor manufacturer

Starting up

Setting trends for growth

Scope of business

01 PV

Centralized and distributed power station business
Construction and operation integrated service
Photovoltaic industry chain equipment

02 Wind power

Permanent magnet direct drive wind generators
Permanent magnet half-direct drive wind generators
Yaw motors
Pitch motors
Wind power converters

03 Energy storage

Full range segment energy storage system solutions
New energy consumption, industrial and commercial side and other customized system solutions
UPS system batteries

04 Hydrogen production

Hydrogen production power supply
Electrolyser

05 E-mobility

Electric aviation
Electric boat
Electric vehicle
Electric-assisted bicycle

06 Energy management

Transformers



Scene



▼ PV

PV Business has been established since 2013, it has been operating distributed commercial and industrial photovoltaic systems for 10 years. In addition, it has complete qualifications of Class B of new energy design, level 3 for general contracting of power engineering, and Level 4 qualification for undertaking installation, repair and test of power facilities including 18 invention patents. In BIPV, it has extensive experience in Agro-PV, AH-PV and Fishing-PV complementary projects, and have served more than 20 listed companies at home and abroad.



● Professional design team

A believer of people-oriented team concept, we focus on cultivating the company's own design talents. and continuously enhancing the strength of the design team. Adhering to the design concept of excellence, the company established the PV Technology Department and the ES Technology Department to tailor the best PV-ES project design scheme for customers to ensure that the project is safe, reliable and costs effective.



● Professional construction team

We have a construction and installation team with excellent technology, strong professionalism, and high level of quality. They strictly follow the national standards of the electric power industry and the company's internal construction management system, to provide professional and standardized power station construction services for owners, earning a good reputation in the industry.

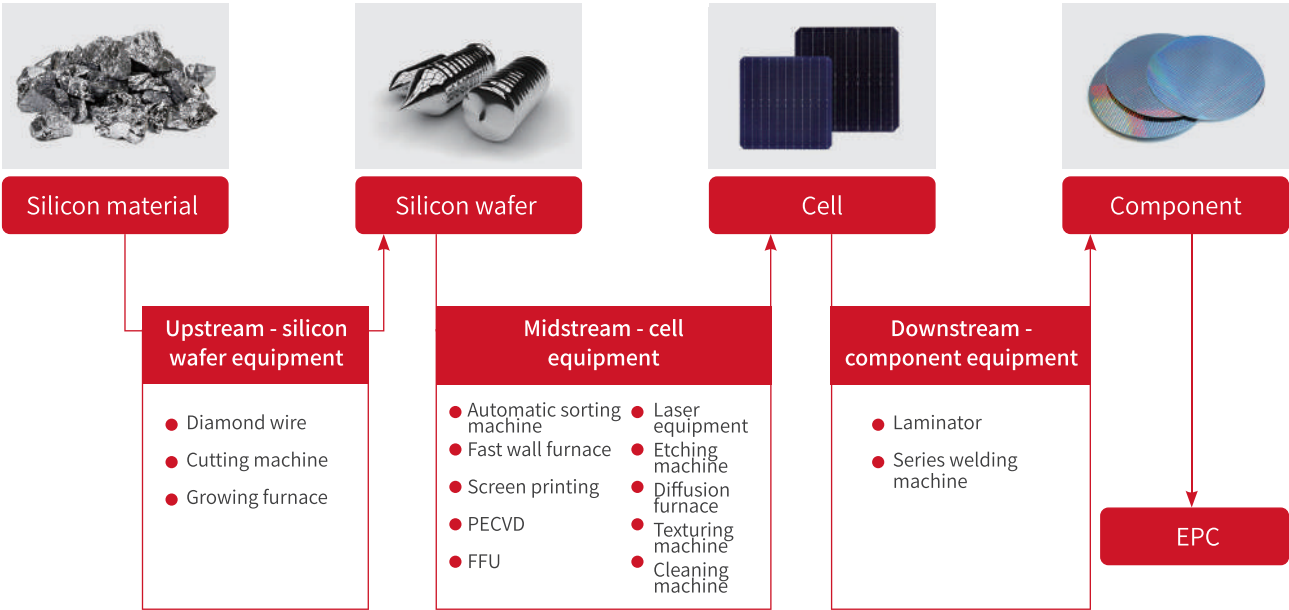


● Professional operation and maintenance team

The employees of th O&M Department of the company's power station are all well certified, They have professional knowledge with years of experience in PV power station's operation and maintenance. The company carried out operation and maintenance by zones and conducts regular inspections and maintenance. The operation and maintenance services of Longneng Power can ensure the maximum operating benefits of projects.

▼ Polysilicon equipment manufacturing process industry chain

As an important raw material in the PV industry chain and semiconductor industry chain, polysilicon plays a huge role in the development of solar energy utilization, integrated circuits, and semiconductor discrete components. Wolong provides explosion-proof and general industrial motors with different power ranges for multiple sets of equipment such as exhaust gas recovery, refrigeration units, circulating water pumps, and cooling towers in the polysilicon manufacturing process, offering safe and efficient drives for units, and guaranteeing stable supply of raw materials for new energy and semiconductor industries.



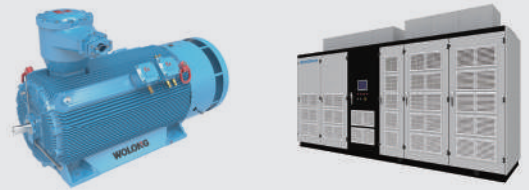
● EC motors and EC fans



● LV motors and drives

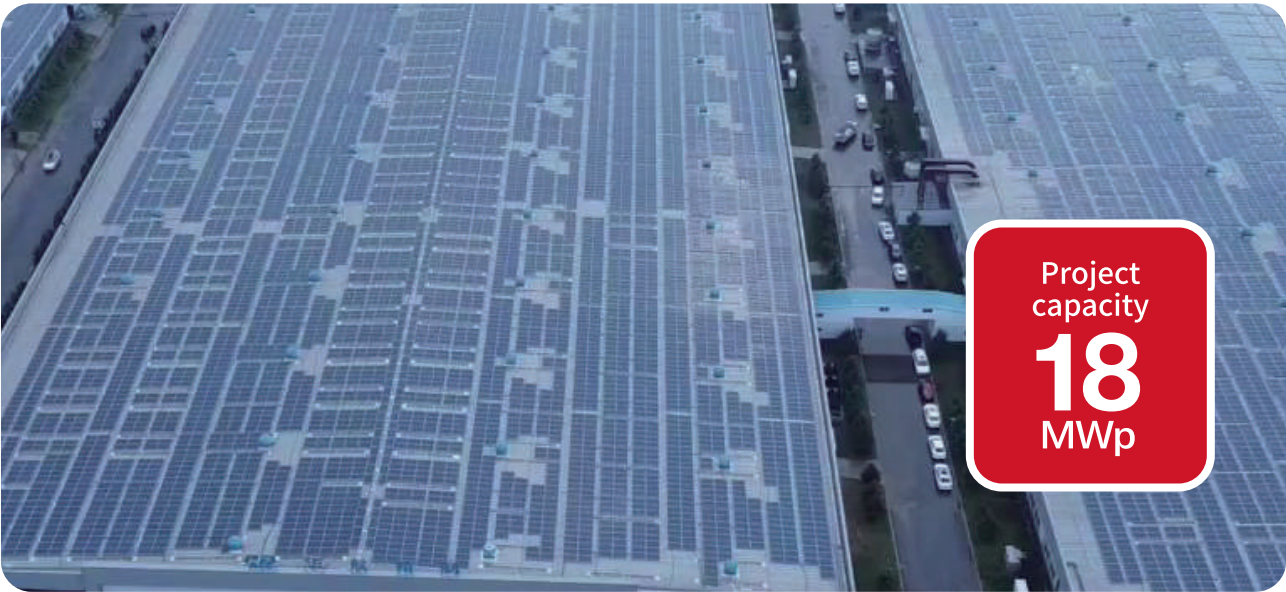



● HV motors and drives




▼ References

- Supor Group
BIPV distributed power station project

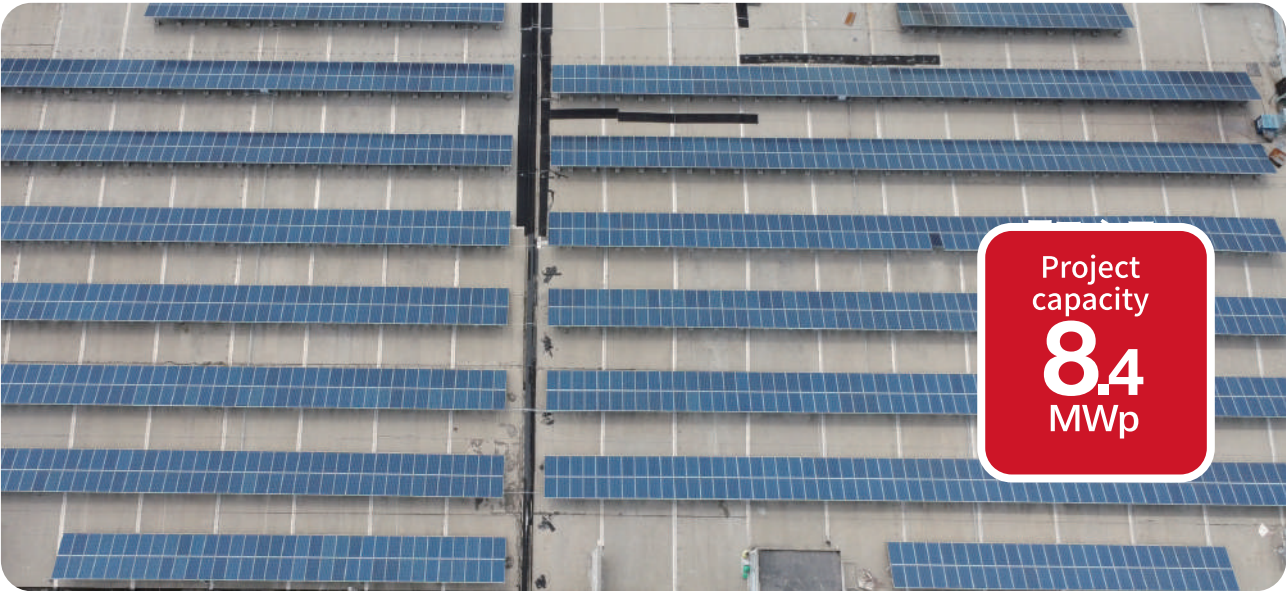


 Roof type
Color steel tile roof


 Average annual power generated
18 million kWh

Shenyang, Liaoning

- Sanhua Intelligent Controls
BIPV distributed power station project



 Roof type
Color steel tile roof

 Average annual power generated
8.86 million kWh

Shaoxing, Zhejiang

- Inner Mongolia Tongwei
Polysilicon project phase II



 All series of motors

 Explosion proof &
non-explosion proof

Baotou, Inner Mongolia

- Hoshine Silicon Industry
Polysilicon project



 All series of motors

 Explosion proof &
non-explosion proof

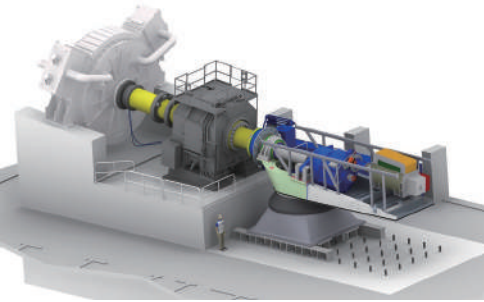
Shanshan, Xinjiang

▼ Wind power



● Permanent magnet direct drive wind generators

Model	GW 3.XMW-TFY	Rated power factor	0.73
Maximum power	3.1MW	Rated speed	11rpm
Rated voltage	760V	Cooling mode	Direct cooling
Rated current	1640A		



● Permanent magnet half-direct drive wind generators

Model	EW-MPMG90-01	Rated power factor	0.9
Maximum power	6.6MW	Rated speed	686rpm
Rated voltage	1140V	Cooling mode	Direct cooling
Rated current	3716A		



● Yaw motors

Model	YEJ112M-6G 2.2/2.5	Rated frequency	50Hz
Maximum power	2.2kW/2.5kW	Insulation grade	Class H
Rated voltage	400/690VAC	Degree of protection	IP55
Rated current	940rpm	Design life	25 years



● Pitch motors

Model	5BT1336/1356/1369	Insulation grade	Class H
Applications	1.5 MW/2.5 MW/4 MW units	Temperature range	-30°C /50°C
Rated voltage	80VDC, 100VDC	Altitude	1500m
Degree of protection	Maximum IP54	Conforms to UL1004-1, UL1446, CE and CSA	

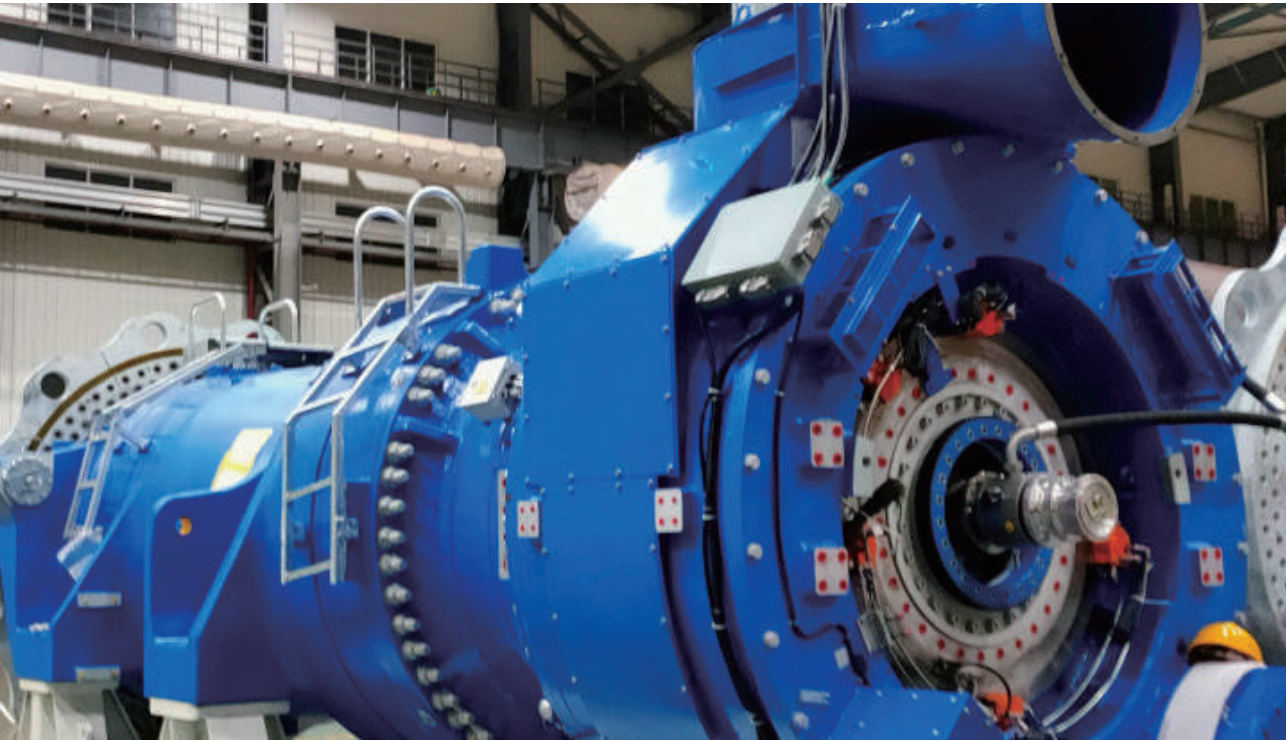


● Wind power converters

Output	1500kW/2000kW/2500kW/3200kW/5000kW/3.XMW		
Storage temperature	-40°C ~70 °C	Efficiency	>97%
Working temperature	-30°C ~45°C (Derating operation above 45°C)	Power Factor	-0.9(capacitive) ~+0.9(inductive)

▼ References

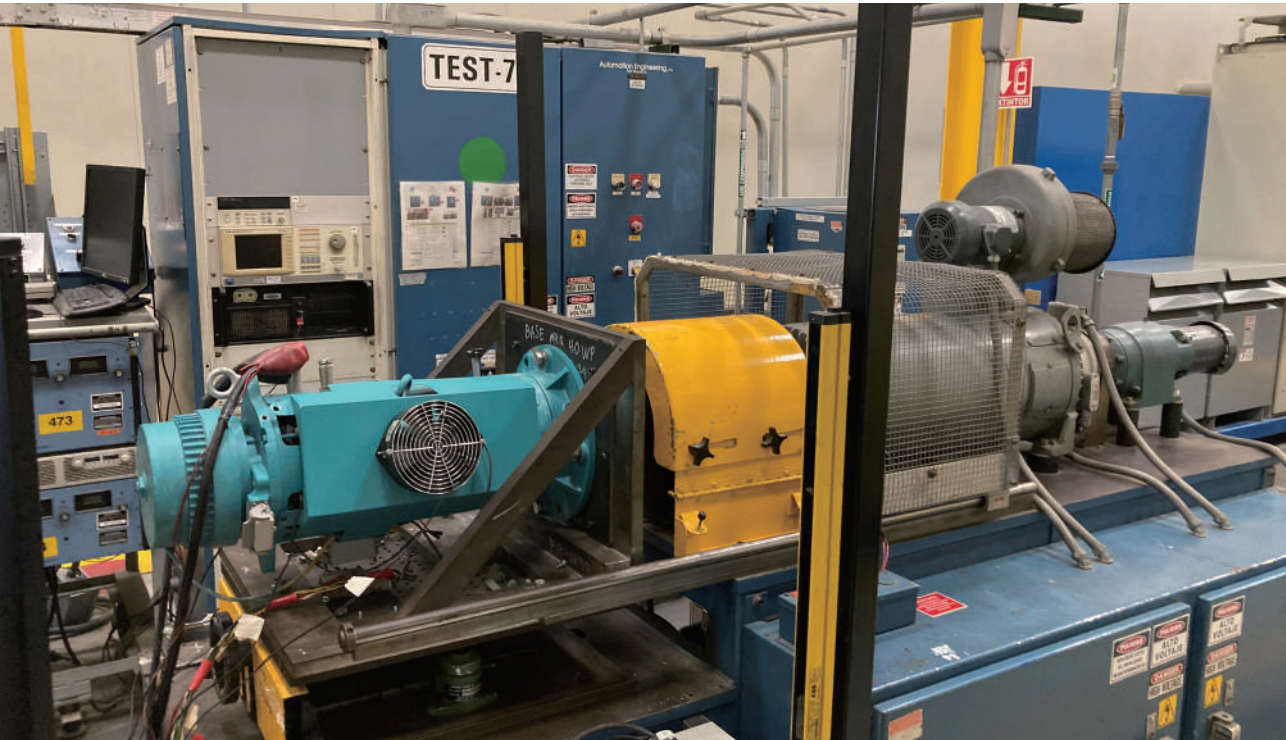
- Wolong provides mass production of 6.6MW customized permanent magnets half direct drive wind generators for domestically well-known wind turbine manufacturers



- Wolong developed 3 MW permanent magnet direct drive wind turbines for domestically well-known wind turbine manufacturers



- Wolong provides pitch motors for GE wind mills



- Wolong provides pitch motors for GE wind mills



▼ Energy storage

• SVG HV reactive compensation products

Model	WDSVG series
Form	Indoor cabinet/ Outdoor container
Specifications	200kVar~20MVar



• Utility-Scale ESS/Liquid-cooled

Model	WLCN series
Form	Outdoor cabinet
Specifications	2752kWh/5016kWh /7524kWh



• Utility-Scale ESS/Wind-cooled

Model	WLCN series
Form	Outdoor cabinet
Specifications	6144kWh/6430kWh



• Integrated optical storage ESS

Model	WL-GC-100kW
Form	Outdoor cabinet
Specifications	215kWh



• Portable energy storage

Model	iSite Power-WLmini
Form	Portable
Specifications	0.5 kWh/1 kWh



• Residential Single-phase ESS

Model	ELSS3680~6000 -5~30H-P-LCB
Form	Outdoor cabinet
Specifications	5.12~30.72kWh



• UPS System batteries

Model	6-GFM series
Form	Indoor, below 20-25 °C
Specifications	12V38-250Ah



• Commercial &Industrial ESS

Model	WL-FB-100kW
Form	Outdoor cabinet
Specifications	211kWh/215kWh



References

- A power grid-side energy storage project in Zhejiang
- A new energy-supporting energy storage project in Shanxi



- A user-side energy storage project in Guangdong
- A countryside villa household energy storage project



- Communication power supply function verification and flexible DC system integration
- PV-ES-EVCS system integration

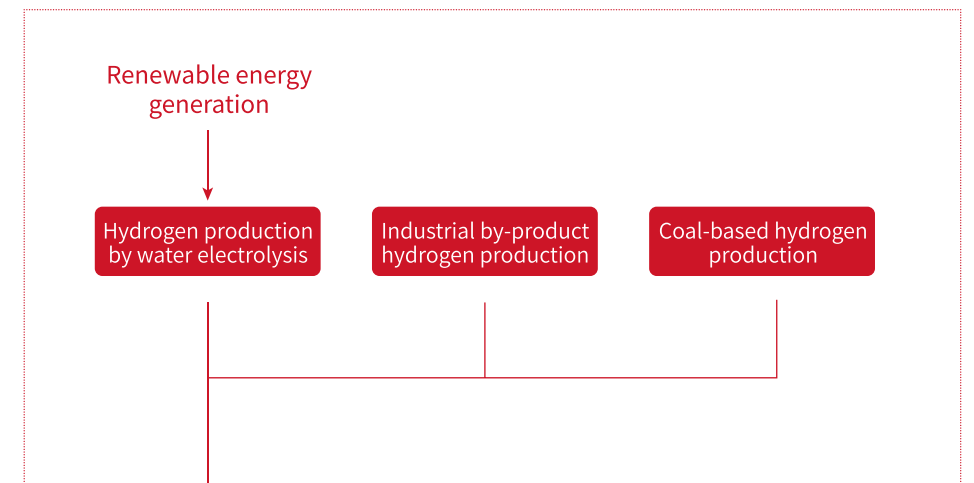


Hydrogen production

In response to the development trends of green hydrogen production with a comprehensive understanding of industry needs and years of accumulated experience in technology and product iterations, Wolong has launched complete system solutions from production and storage of green electricity, electrolytic preparation of green hydrogen, process control to hydrogen storage and transportation.

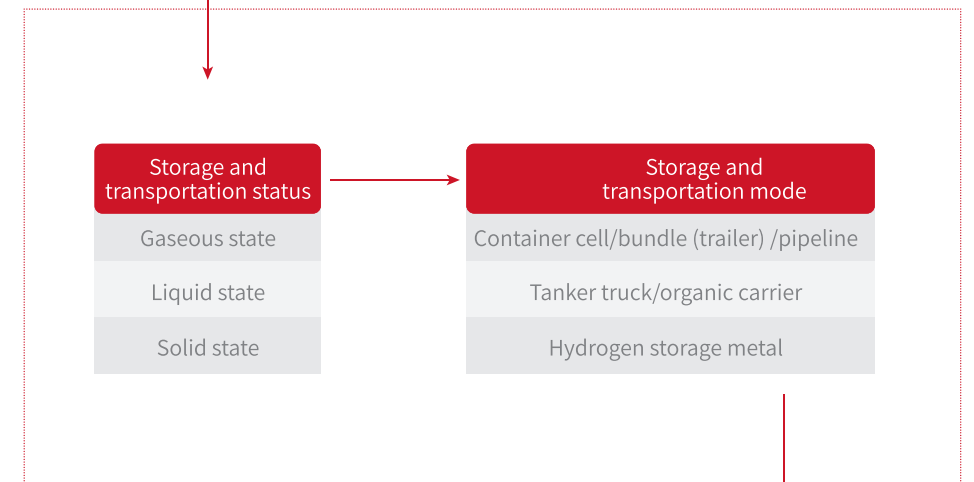
Upstream hydrogen production

Upstream: The technical routes for hydrogen production are diversified, and there is no single optimal mode. Based on carbon emissions and sustainable development considerations, hydrogen production from electrolyzed water is expected to become the mainstream of hydrogen production in future.



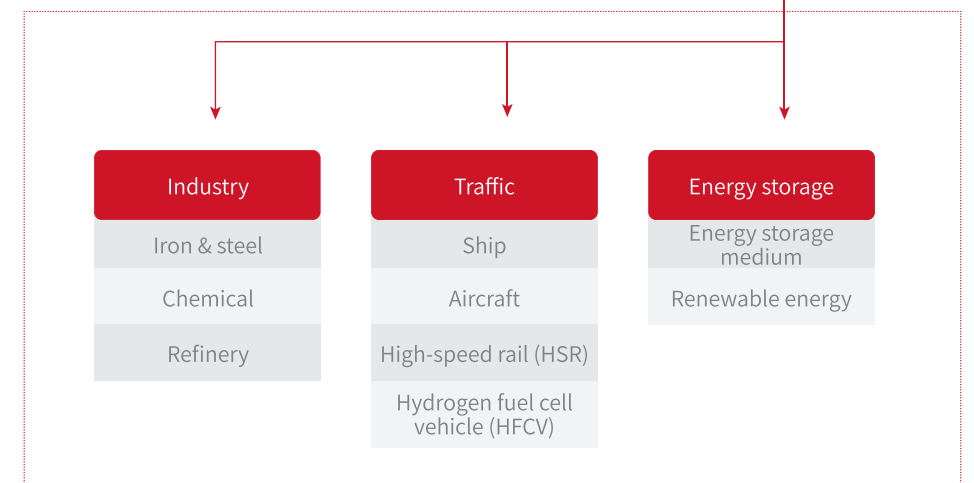
Midstream storage and transportation

Midstream: Hydrogen belongs to Class I dangerous goods, which is relatively safe for transportation. Liquid hydrogen and pipeline transportation are expected to become the most important and mature hydrogen storage and transportation methods in future.



Downstream application

Downstream: Fuel cell vehicles fitted with hydrogen fuel cell systems are the main development direction of the chlorine energy industry chain in future.

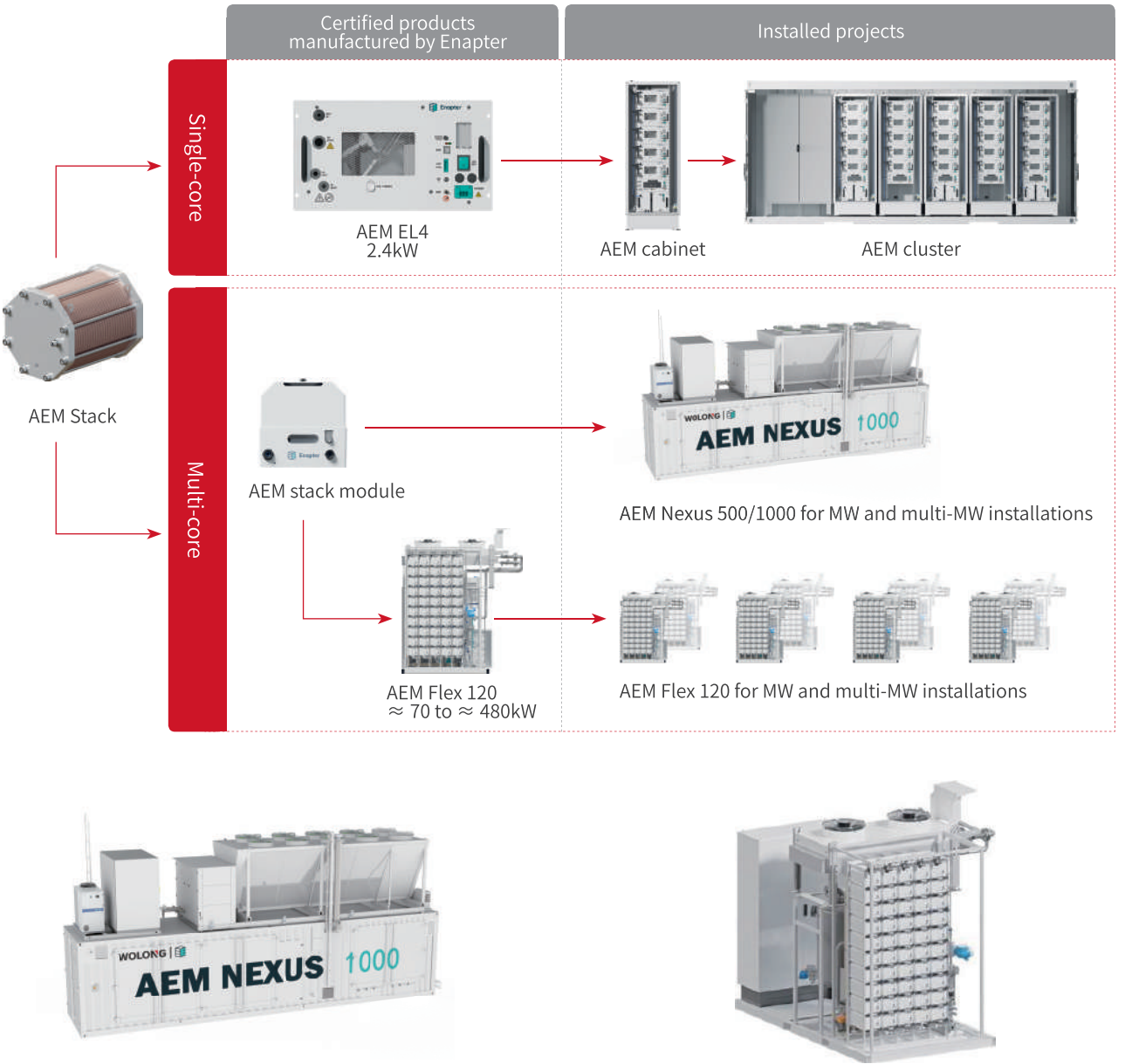


• Product parameters



WD1000 series Hydrogen production power supply	
Rated power	50kW—10MW
Input voltage	AC-DC type: 35kV/10kV, customized according to customers' requirements DC-DC type: DC750V/DC1500V/DC10kV, customized according to customers' requirements
Input frequency	50 Hz/60 Hz/DC, customized according to customers' requirements
Output voltage	0 V-1000 V, customized according to customers' requirements
Output current	0-20000A
Total current distortion rate	Thyristor type AC-DC hydrogen production power supply: 3%~8% IGBT type AC-DC hydrogen production power supply: < 3%
Power factor	Thyristor type AC-DC hydrogen production power supply: > 0.9 IGBT type AC-DC hydrogen production power supply: ≥ 0.99
Output current accuracy	≤ 0.50% of maximum output current
Output current ripples	Thyristor type AC-DC hydrogen production power supply: ≤ 2% IGBT type AC-DC hydrogen production power supply: ≤ 0.5% DC-DC hydrogen production power supply: ≤ 0.5%
Communication interface	RS485, Ethernet
Structural form	Cabinet/Rigid container/Movable container
IP rating	IP54, customized according to customers' requirements
Cooling mode	Intelligent air-cooling/water-cooling

• AEM product platform

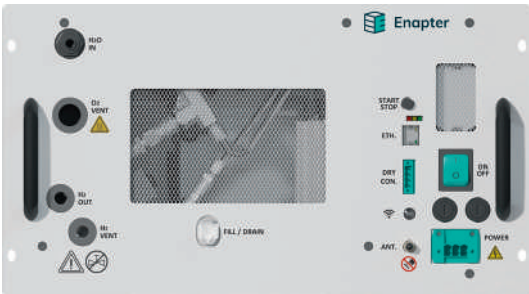


• AEM Nexus 1000

Production rate	≈ 450kg/24h
Nominal power	≈ 1MW(BOL)
Hydrogen purity	99.999%(with optional dryer)
Outlet pressure: up to 35 barg	
Largely pre-assembled for fast commissioning	
Rapid reaction time to intermittent renewables	

• AEM Flex 120

Production rate	≈ 50kg/24h
Nominal power	120kW(BOL)
Hydrogen purity	99.999%(with optional dryer)
Outlet pressure: up to 35 barg	
Low maintenance requirements	
Rapid reaction time to intermittent renewables	



• AEM EL4

Production rate	≈ 1kg/24h
Nominal power	≈ 2.4kW(BOL)
Hydrogen purity	99.999%(with optional dryer)
Outlet pressure: up to 35 barg	
Stackable up to required needs	
Rapid reaction time to intermittent renewables	



• 10kW/60kWh Distributed hydrogen energy storage product

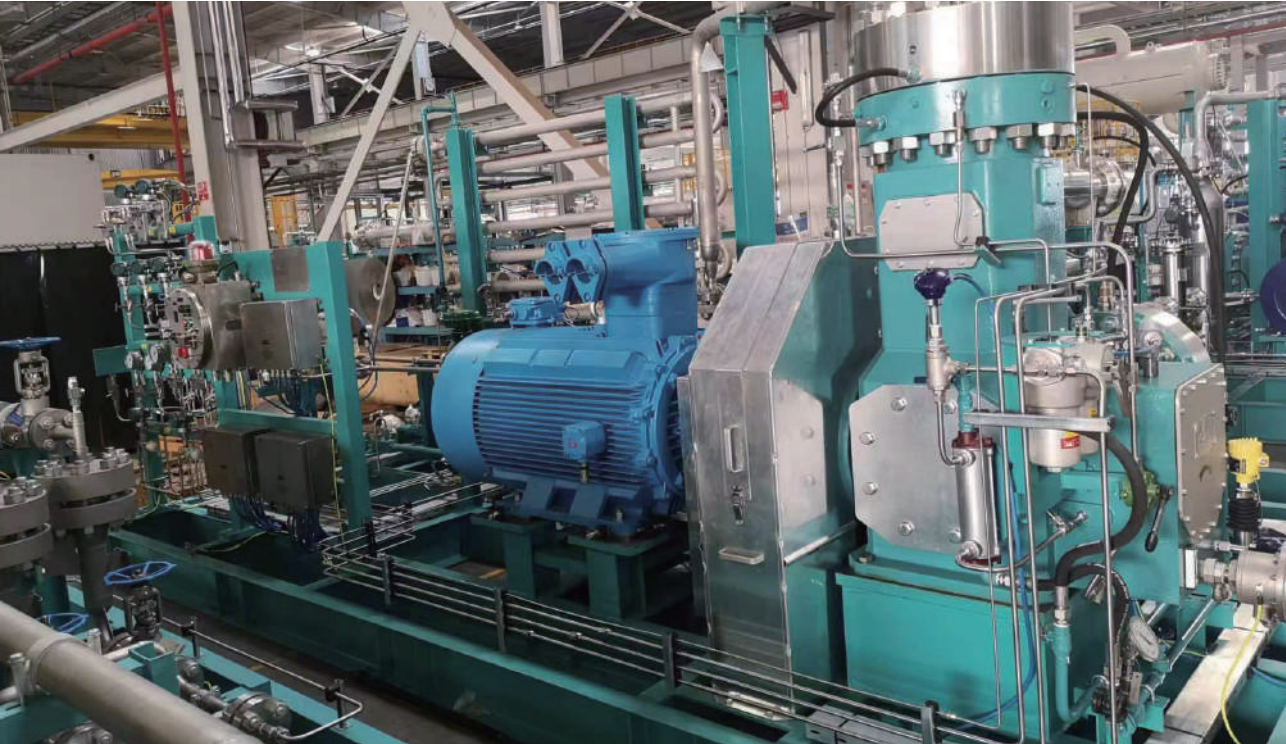
Hydrogen storage/power generation	on-demand configuration(1kgH2 generates 15kWh)
Power range	1kW-200kW
Power supply mode	connected grid / off grid power supply hydrogen storage, and power generation systems for convenient operation and maintenance
Hot water temperature	≥ 50℃
Highest comprehensive efficiency	about 90%
"All In One"	Integrated design of hydrogen production,
Excellent low-temperature characteristics	Hydrogen energy storage efficiency is stable in the range of -40 ℃ to 45 ℃
Long life	a long service life of up to 15 years,which is better than lithium batteries
Low cost	The energy storage cost of hydrogen bottle is only one-fifth of that of lithium batteries

References

- Green hydrogen production project in Kuche, Xinjiang

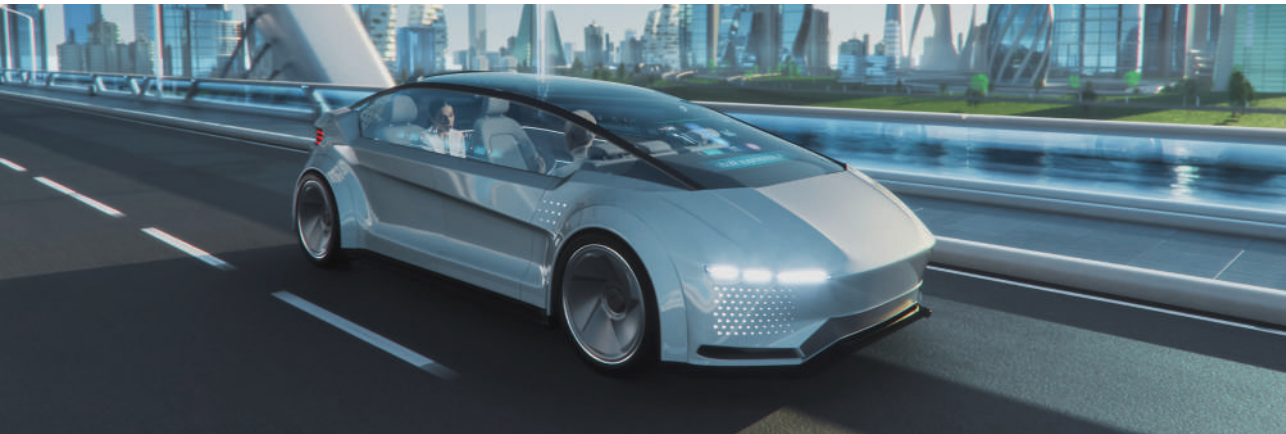


- Wolong supplies motors in Hydrogen filling compressor by Howden



▼ E-mobility

Wolong is committed to the conversion development from traditional fuel to clean energy in the global transportation power drive system. Wolong provides three-dimensional electric drive solutions for sea, land, and air, including new energy vehicle power systems, electric propulsion ships, shore-based power supplies, electric aircrafts, and electrified railway power systems.




● Electric Vehicles - EV motor and drive control



Logistics vehicle
-2.5 T model motor

Model	TZ185XS022
Rated power	30kW
Rated voltage	290VDC
Rated torque	100Nm
Cooling mode	Water-cooled
Peak power	70kW
Counter electromotive force	515V
Peak torque	200Nm



Passenger car
-B model motor Hairpin motor stator

Model	TZ184
Rated power	70kW
Rated voltage	350VDC
Rated torque	190Nm
Cooling mode	Oil cooling
Peak power	156kW
Counter electromotive force	32V@1000rpm
Peak torque	290Nm



**Muck truck/
mining car motor**

Model	TZ390XS250
Rated power	50kW
Rated voltage	640VDC
Rated torque	1200Nm
Cooling mode	Liquid cooling
Peak power	480(70s)kW
Counter electromotive force	748 V peak
Peak torque	2550(70s)Nm



Passenger car/Heavy-duty truck motor

Model	TZ380XS280
Rated power	120kW
Rated voltage	520VDC
Rated torque	1400Nm
Cooling mode	Water-cooled
Peak power	260(70s)kW
Counter electromotive force	1050 V peak
Peak torque	2800(70s)Nm

● Mining Truck 3MW Charging Solution

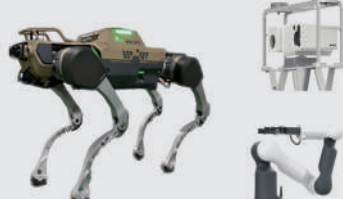


01



Wolong transformer and rectifying device

02



Wolong robot joint electric drive control

03



Wolong robot and charging control

Accurate

Self charging by robot
Deviation within 0.5mm

Tremendous

Truck height 9m, width 9m, length 18m
Charging: 3000kW, 2000A

Intelligent

M-sec match and auto charging
operation within 3 mins





● Electric Ships - shore-based variable frequency power supply

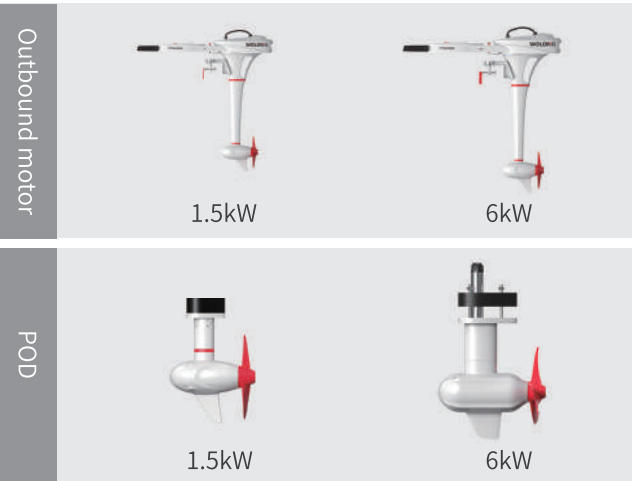
Model	RHVC5000
Rated capacity	80kVA ~ 20MVA
Input frequency	50 Hz, customized according to customers' requirements
Input voltage	400 V/6 kV/10 kV, customized according to customers' requirements
Output voltage	440 V/6.6 kV/11 kV, customized according to customers' requirements
Output frequency	50Hz/60Hz
Structural form	Cabinet/Rigid container/Movable container
Cooling mode	Air cooling/air conditioning cooling/ water cooling



OnShore power supply convert HV and LV power frequency mains power provided by the grid into 440 V, 6.6 kV, 11 kV or 50 Hz/60 Hz special power of other voltage levels required by ships. It also provide metering, monitoring and other supporting devices on demand. Ships will stop using their own power generation system during berthing but get power supply through the shore-based power supply system, thereby reducing air pollution with emission of such harmful substances as NOX, SOX, and PM10 during the berthing. At the same time achieving energy conservation and responding to the requirements of the international community to develop green and low-carbon economy.

● Electric ship - electric outboard motors

Input power	1.5kW
Rated voltage	48V
Battery capacity	936Wh
Battery weight	5.5kg
Motor weight	12kg
Propeller type selection	7.87"*6.54" inch 3-blade
Propeller speed	1800rpm



▼ E-mobility



● Electric aircraft - electric aviation motor and drive control



Electric drive system	Low-voltage platform	Medium-voltage platforms			High-voltage platforms	
	Air-cooled	Air-cooled	Air-cooled	Air-cooled	Air-cooled	Liquid cooling
Cooling mode						
Voltage level (VDC)	100	350	350	350	800	800
Rated power (kW)	4	5.4	9	17	60	175
Rated speed (RPM)	2250	2500	1500	1880	2000	1900
Rated torque (Nm)	17	20.5	57.3	86.4	286.9	880
Controller	100V platform	350V platform		800V platform		

● Electric ebikes - Oli eBike EGDE motors



Model	EDGE90BH/EDGE90SH	SPORT ONE/PLUS/350L/350H/500
Rated power	250W	250W/350W/500W
Rated voltage	36V	36V/48V
Maximum torque	90Nm	60Nm/85Nm/90Nm/110Nm
Internal gear	3	2
Weight	3.2kg/3.3kg	3.2kg/3.7kg
Communication	UART / CAN BUS	UART / CAN BUS
Fixing mode	Bosch Perf.Gen4/Shimano E8000/EP8	2x3 M8 proprietary pattern
Crank Q value	177mm	178mm



References



- Wolong's ZF flat wire motors widely used in new energy passenger cars such as Geely, Xiaopeng, LYNK, etc.



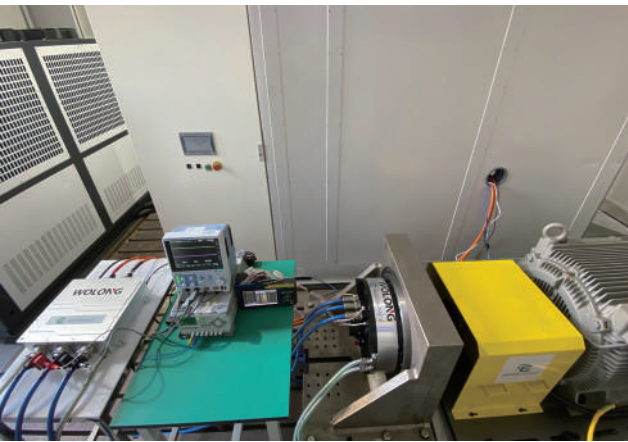
- Wolong's ZF permanent magnet synchronous electric drive system applied to Yutong's third- and fourth-generation new energy buses



- Wolong's distributed shore power system successfully connected and powered ships at East Container Terminal of SIGP



- Wolong's Flowstar 1.5 kW electric outboard motor was used in the Yangtze River Delta Intercollegiate Sailing Regatta



- Wolong's 175 kW electric drive system used in a well-known airline system as a test



- Oli eBike EDGE motors are widely used in European e-bike manufacturers such as Atala, Crussis, Bianchi, etc.

Transformer



Oil-immersed power transformer

- Product application**

Ultra-high voltage power transmission

- Product features**

Low loss, low noise, convenient installation and maintenance, energy saving and environmental protection.

- Product parameters**

Capacity 180000-300000kVA

Voltage 500kV



Oil-immersed power transformer

- Product application**

230kV transformers with high environmental protection requirements are mostly suitable for European and American countries.

- Product features**

Low loss, low partial discharge, energy saving, environmental protection, high reliability and high environmental protection vegetable oil as insulating oil.

- Product parameters**

Capacity 80000-180000kVA

Voltage 230kV



Oil-immersed power transformer

- Product application**

State grid conventional power transformer, used by large-scale production enterprises. Such as: renewable energy, metals, chemicals, etc.

- Product features**

Reliable structure, low loss, low noise and excellent performance.

- Product parameters**

Capacity 100000-300000kVA

Voltage 220kV



Oil-immersed power transformer

● Product application

Transformer for temporary mobile power supply and emergency power supply.

● Product features

Low loss and low partial discharge temporary power supply for convenient transportation.

● Product parameters

Capacity	16000-63000kVA
Voltage	110kV



Oil-immersed power transformer

● Product application

New energy series transformers are used for manufacturing new energy materials, such as hydrogen production, chemical industry, metals, etc.

● Product features

Low loss and low partial discharge of 24 pulses, convenient combination of multiple units, small floor space and easy maintenance.

● Product parameters

Capacity	5000-20000kVA
Voltage	35kV



Oil-immersed power transformer

● Product application

Conventional distribution transformers are used in all scenes of life, such as houses, schools, factories and energy sources.

● Product features

The product has high performance level and high reliability.

● Product parameters

Capacity	100-6300kVA
Voltage	10kV

▼ Dry-type transformers and integrated equipment



Distribution transformer

● Product application

Distribution terminal

● Product features

- Epoxy resin insulation and NOMEX paper insulation
- Silicon steel sheet dry transformer, amorphous alloy dry transformer

● Product parameters

Primary voltage	6kV\10kV\35kV
Secondary voltage	0.4kV



Rectifier transformer

● Product application

Traction power supply and inverter energy feedback of rail transit

● Product features

Epoxy resin insulated silicon steel sheet dry-type transformer, amorphous alloy dry-type transformer

● Product parameters

Primary voltage	6kV\10kV\35kV
Secondary voltage	590V/1180V



Pre-assembled box-type substation of power transformer

● Product application

Power transmission system, SVG system, isolated power grid

● Product features

- Epoxy resin insulation
- Suppress higher harmonics and realize balance and compensation.

● Product parameters

Primary voltage	35kV
Secondary voltage	10kV

Integrated equipment



Rectifier

- **Product application**
 - Traction DC power supply system for urban rail transit
 - Rectifier transformer and rectifier

- **Product parameters**

Grid-side voltage	AC10kV 20kV 35kV
Output voltage	DC750V 1500V



Through-type in-phase power supply device

- **Product application**
 - Single-phase AC traction power supply for rail transit and commissioning test power supply for rail transit locomotives;
 - Phase-shifting transformer, power unit group, output reactor, protection system, heat dissipation system and control system.

- **Product parameters**

Grid-side voltage	Three-phase AC 10kV, 20kV and 35kV
Output voltage	Single-phase AC25kV 27.5kV



Pre-installed box type substation

- **Product application**

Used in mines, factories, enterprises, oil and gas fields and wind power stations, it replaces the original civil power distribution room and power distribution station and becomes a new complete set of power transformation and distribution equipment.

- **Product parameters**

Primary voltage	36.75KV
Secondary voltage	0.69KV\0.8KV\1.14KV

References



- ZHSFZ-12500/35KV transformer applied in Xinjiang Kuche Green Hydrogen Demonstration project



- SFFZ11-250000/220 KV transformer applied in China Power International 500 MW photovoltaic project



- OSFPSZ-250MVA/230kV transformer applied in Kyrgyzstan State Grid Osh Project



- SZ11-15000/33KV transformer applied in Ethiopia Yaddis medium voltage transmission and distribution system upgrade project



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