



VARIABLE FREQUENCY DRIVE AND ELECTRIC MOTOR EXPERT



MARINE PROPULSION & TERMINAL MATERIAL HANDLING APPLICATION MANUAL

✉ Web: www.ccs-motors.com

✉ E-mail: info@ccs-motor.com

🏠 China HD Office: 3138 Shiji Avenue, Huangdao District, Qingdao, Shandong, China 266400

Australia Office: Level 7/201 Charlotte Street, Brisbane City, QLD, 4000

Singapore Office: VIR ELECTRIC, 346C King George's Avenue, King George's Building, 208577



QINGDAO CCS ELECTRIC CORPORATION

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01 | About CCS ELECTRIC

Qingdao CCS Electric Corporation specializes in electrical transmission and control equipment for industrial automation. Its products are widely used in sectors including marine, coal mining, oil and gas, metallurgy, and construction machinery.

Our core products, integrated VFD motors and permanent magnet motors, combine and replace transformer, converter, motor, liquid coupling and gearbox, greatly improve the efficiency of the transmission system.

500+

Obtained 500+ patents

200+

200+ R&D Engineers

6000+

6000+ Onsite Application Cases

Green Factory

Our company builds an energy management platform, which can conduct real-time energy monitoring, usage&cost analysis, predictive management and carbon emission management.

Main power source within the factory comes from internal photovoltaic power generation, with a power supply ratio exceeding 50%.



Product Certifications



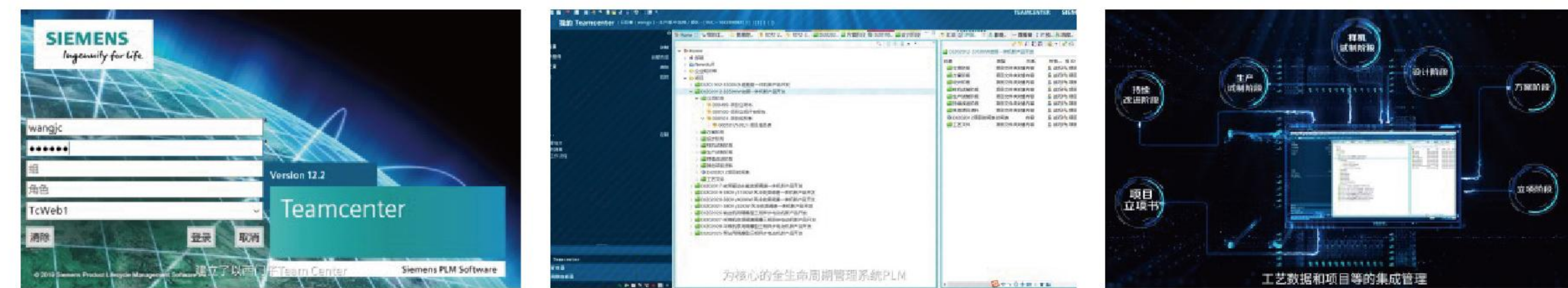
02 | Intelligent Manufacturing

R&D CAPABILITY

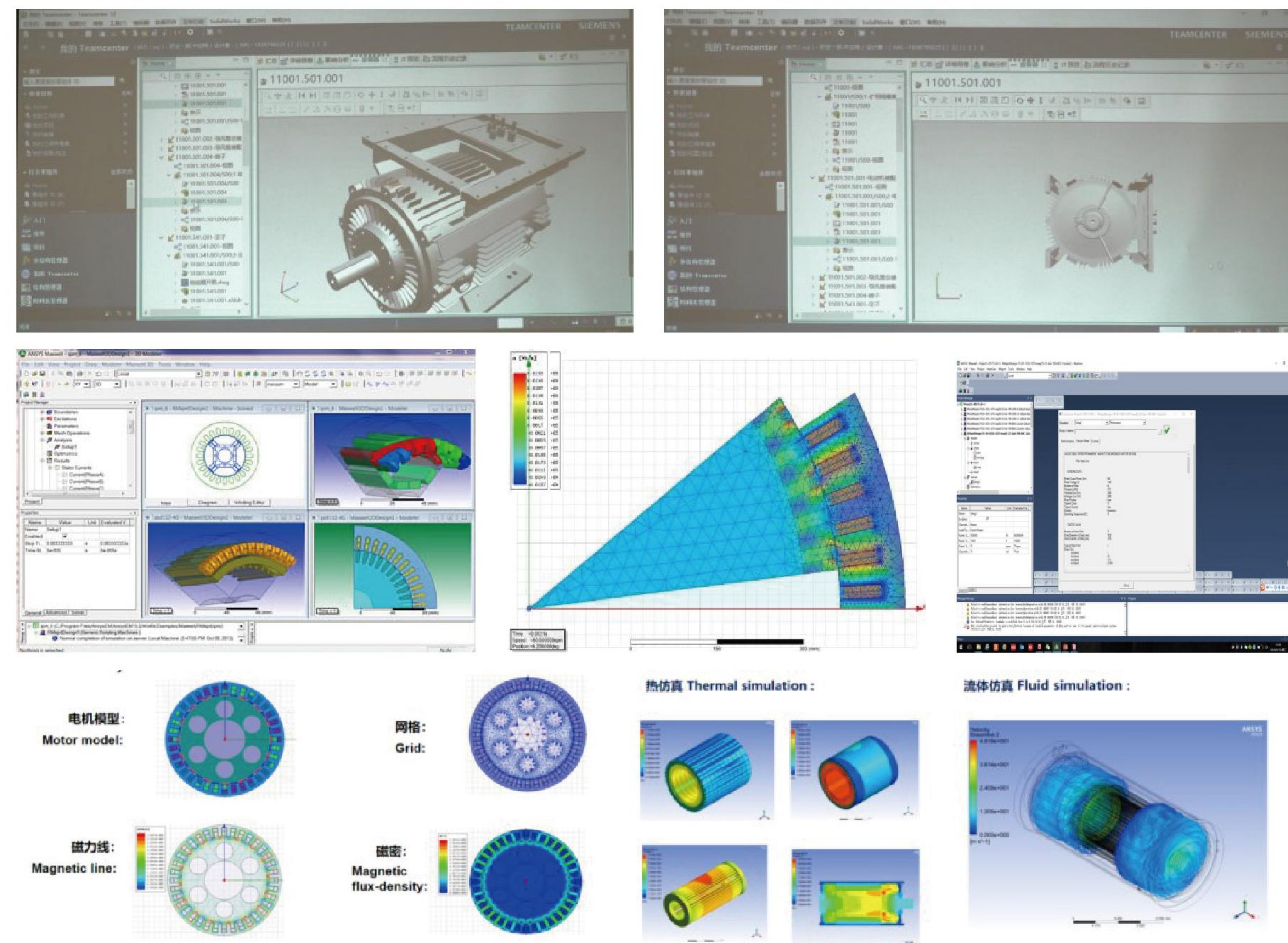
Obtained 500+ patents



PLM: The company implemented Siemens PLM product lifecycle management system- Team Center, which takes BOM, drawings as the center to organize all product data.



Modeling and simulation: The company implemented Siemens NX 3D design and development system, ANSYS Maxwell electromagnetic field design and simulation software.



INTELLIGENT FACTORY

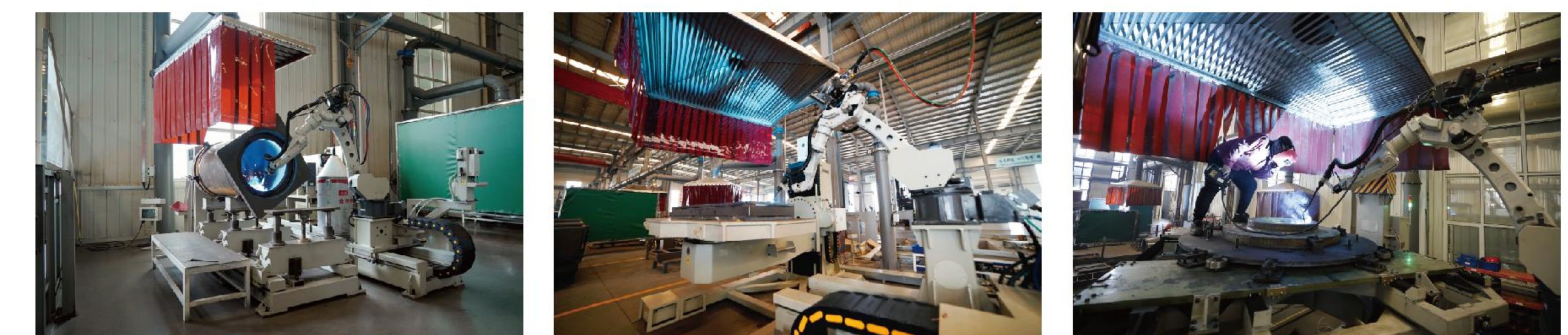
Our company has implemented 5G digital factory management and established multiple digital workshops, thereby enhancing both product quality and production efficiency.



SCHUMANN Automatic Coil Production Line: coil looping, taping, transferring and stretching.



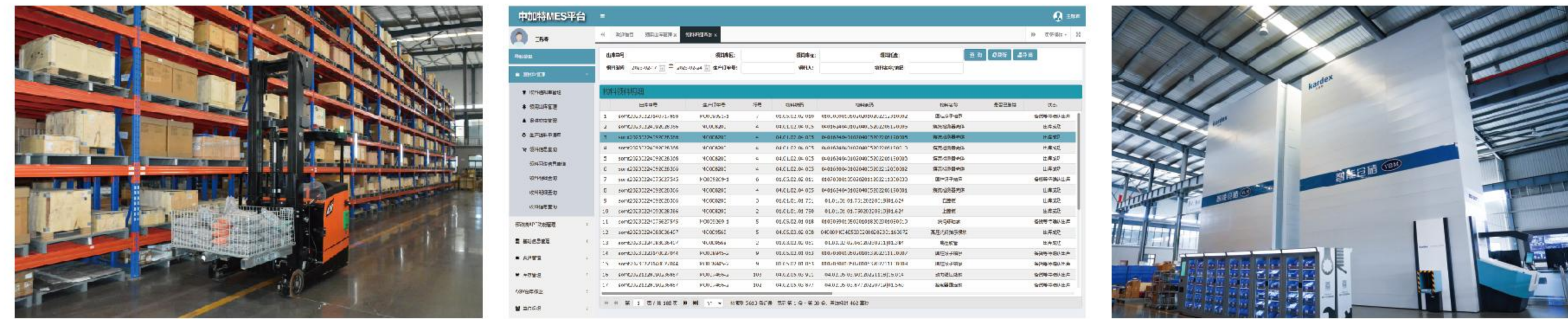
Welding Robot Production Line: welding of Motor housing, VFD housing and water-cooling Plate



CNC Machining Production Line

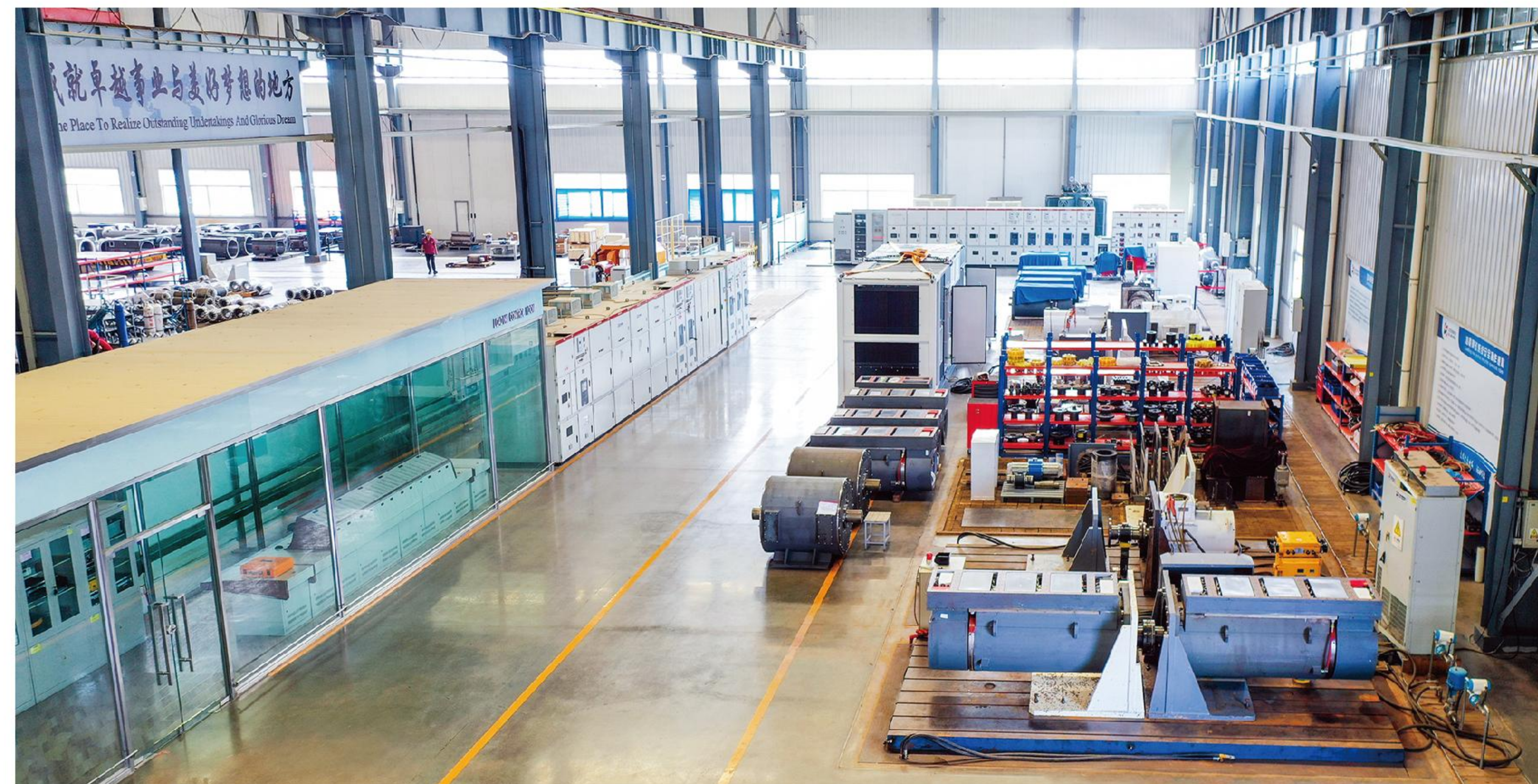


Intelligent Warehouse and Logistic Center: AGV + WMS + Kardex



QUALITY TESTING CAPABILITY

Load test center: Electrical energy feedback load test bench, with the load test capability for 12MW converter and motor, can conduct testing such as electromagnetic interference, power quality, temperature rise, torque performance.

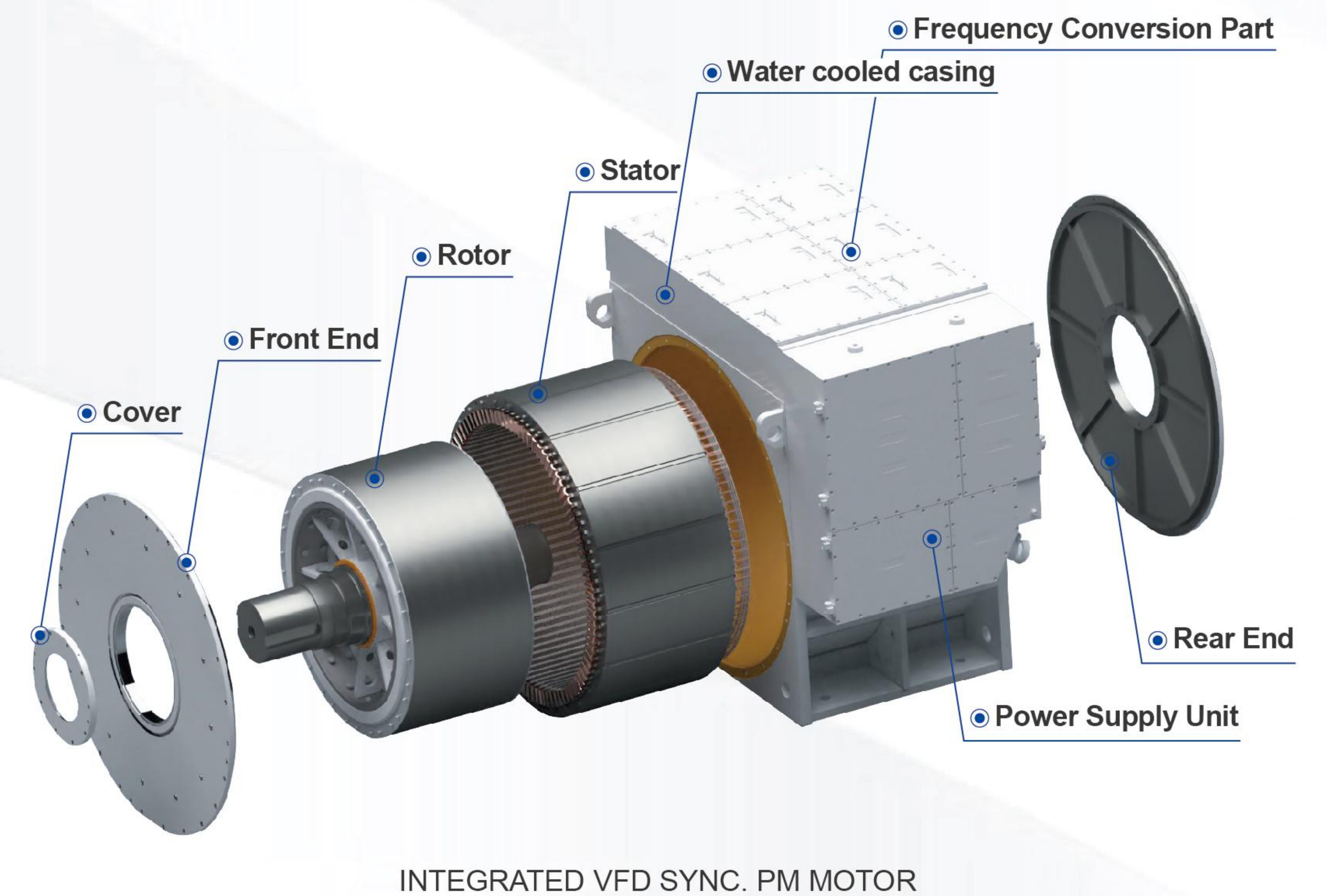
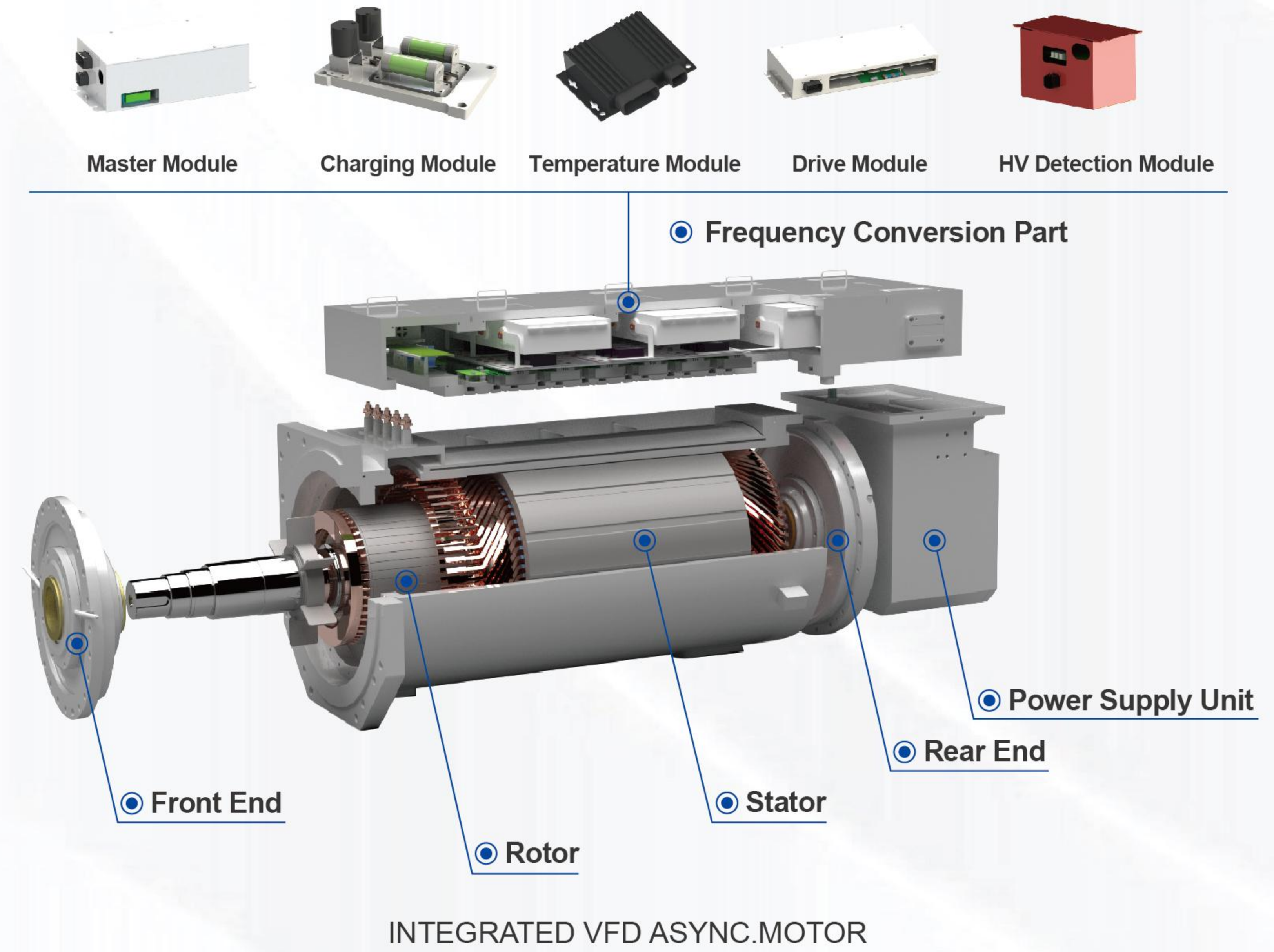


Main detection tools



03 | Technical Advantages

I STRUCTURAL SECTIONAL VIEW



I PRODUCT STRUCTURE

Greatly improve the efficiency of the transmission system.



I PRODUCT ADVANTAGES

- Integrate frequency converter and motor as one, convenient for installation;
- High reliability, automatic insulation recovery type film capacitor, motor H-class insulation;
- High protection level (IP55 and above), can be used directly outdoors and is suitable for complex and harsh environments;
- High efficiency and energy saving: eliminate liquid coupling and reducer, enabling intelligent control and high transmission efficiency;
- Intelligent operation and maintenance: operation data collection and analysis, as well as preventive maintenance, APP online monitoring;
- Modular design for easy maintenance: adopt modular design which is composed of frequency conversion unit, motor unit, filter unit, power supply unit, main control unit;
- Realize long-distance power supply: unrestricted distance between the power supply and the motor.

04 | Product Overview and Typical Application Cases

I MARINE PROPULSION&POWER

MOTORS, GENERATORS&FREQUENCY CONVERTERS FOR MAIN AND SIDE THRUSTERS



● INTEGRATED VFD ASYNC.MOTOR

voltage: 380V-11kV
power: 190kW-2500kW



● INTEGRATED VFD SYNC. PM MOTOR

voltage: 380V-11kV
power: 190kW-2500kW



● PERMANENT MAGNET DIRECT-DRIVE MOTOR

voltage: 380V-11kV
power: 190kW-2500kW



● FREQUENCY CONVERTER

voltage: 690V
power: 200kW-2500kW

Applications & Affiliated Equipments



Engineering ships

Cruise ship

Applications:

Engineering vessels, cruise ships,

Affiliated Equipments:

Ship thrusters

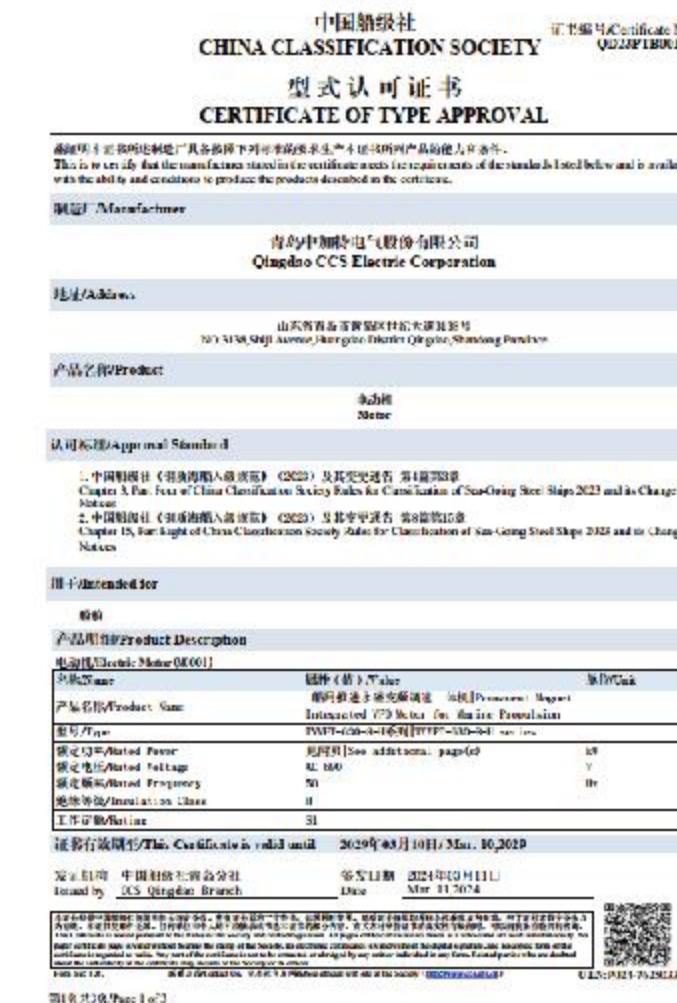
2000kW and 800kW PM integrated VFD motors for the Propulsion and side thrust of the 5,500-ton crane vessel.



2000kW/690V for Propulsion



800kW/690V for Side Thrust



2500kW/560V PM motors and frequency converters for Propulsion and side thrust of cruise ships.



PERMANENT MAGNET DIRECT-DRIVE MOTORS
2500kW/560V



FREQUENCY CONVERTERS
2500kW/560V

Type Chart of Motors & PM Generators

Model	Rated Voltage (V)	Rated Power (kW)	Rated Current (A)	Rated Speed (rpm)	Efficiency (%)	Power Factor	Insulation class	Cooling
TYVF-315-10H (190/690)	690	190	167	745	98	0.97	H	Water
TYVF-344-10H (313/690)	690	313	298	2200	98	0.97	H	Water
TYVFT-315-10H (350/690)	690	350	315	1400	98.2	0.95	H	Water
TYVF-315-10H (375/690)	690	375	330	1300	98	0.97	H	Water
TYVF-315-10H (400/470)	470	400	520	900	98	0.97	H	Water
TYVF-315-10H (450/440)	440	450	634	1500	98	0.95	H	Water
TYVF-315-10H (525/690)	690	525	463	1900	98	0.97	H	Water
TYVF-315-10H (620/690)	690	620	546	2400	98	0.97	H	Water
TYVF-315-10H (749/690)	690	749	660	1900	98	0.97	H	Water
TYVF-315-10H (749/690)	690	749	660	2200	98	0.97	H	Water
TYVF-315-10H (800/690)	690	800	704	2200	98.2	0.97	H	Water
TYVF-315-10H (900/690)	690	900	820	1200	98	0.95	H	Water
TYVF-344-10H (1100/690)	690	1100	977	1833	98.2	0.96	H	Water
TYVF-450-6H (400/690)	690	400	361	750	97.5	0.95	H	Air
TYVF-450-6H (500/690)	690	500	451	1000	97.5	0.95	H	Air
TYVF-450-6H (560/690)	690	560	505	1000	97.5	0.95	H	Air
TYVF-450-6H (650/690)	690	650	587	750	97.5	0.95	H	Air
TYVF-600-18H (500/500)	500	500	624	245	97.5	0.95	H	Water
TYVF-800-24H (2500/560)	560	2500	2690	285	98	0.98	H	Water

Motors



800kW/690V



375kW/690V



620kW/690V

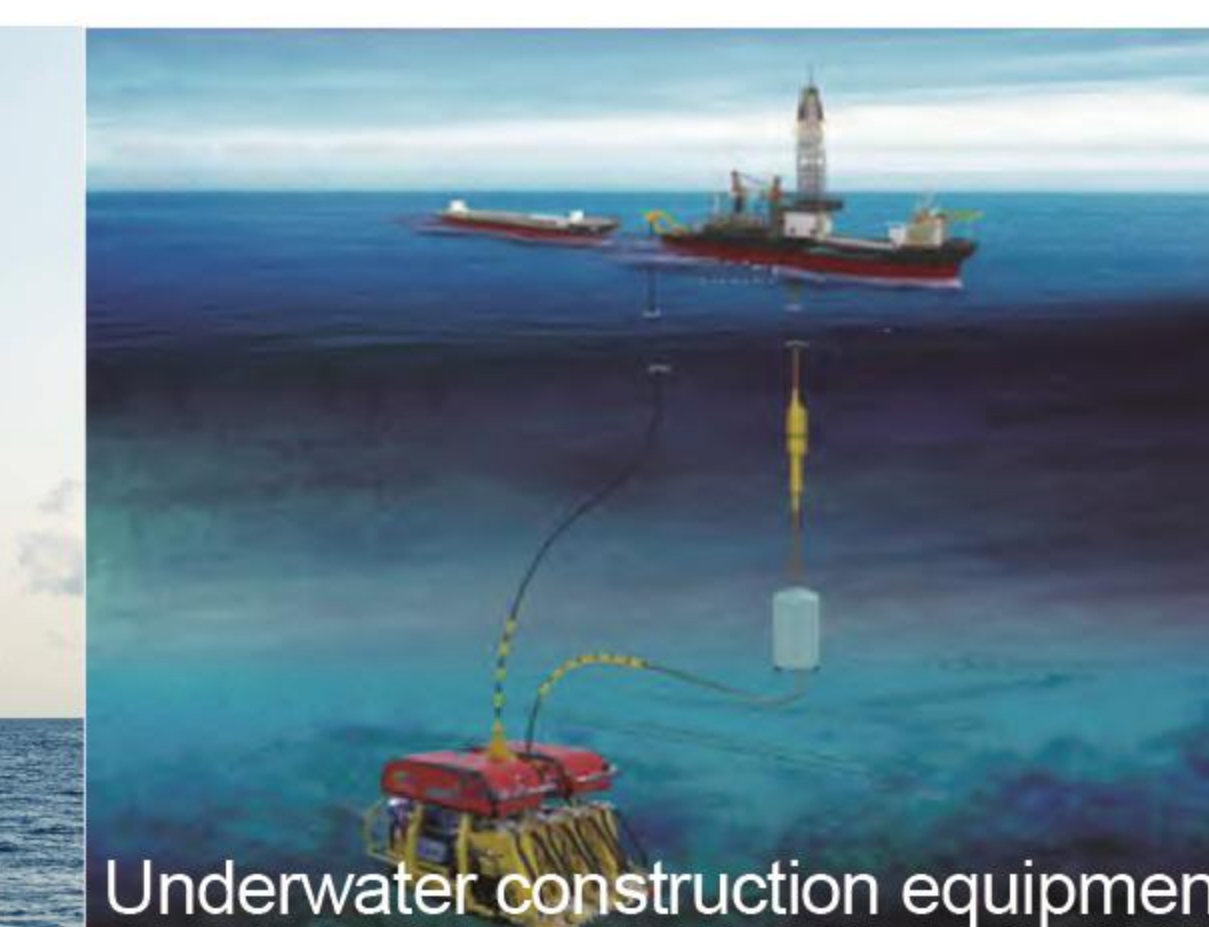
PM Generators

PROPULSION MOTORS & FREQUENCY CONVERTERS FOR SPECIAL MARINE ENGINEERING

Applications & Affiliated Equipments



Marine Oil and Gas Engineering



Underwater construction equipment

Applications:

offshore oil and gas, and subsea construction equipment.

Affiliated Equipments:

winches, mud pumps.

■ Deep-Sea Construction Equipment: Underwater Driving System

This system includes deck power supply, 150kW/1140V PM Sync. motor and 200kW/1140V underwater frequency converter, meeting the usage requirements at a water depth of 300m, small in size, light in weight, high pressure resistance, strong corrosion resistance, and stable performance, providing a stable and reliable underwater power source for Marine engineering equipment.



■ Pile Driving Vessels' Main And Auxiliary Hooks



● 650kW/690V
PM Motor



■ Offshore Drilling Platform



670kW/600, 690V
FLP integrated VFD motors
for sewage pumps and
cementing

■ PM DIRECT-DRIVE INTEGRATED VFD MOTORS FOR
TERMINAL CARGO HANDLING

■ Applications&Affiliated Equipments



Applications: bulk cargo transportation.

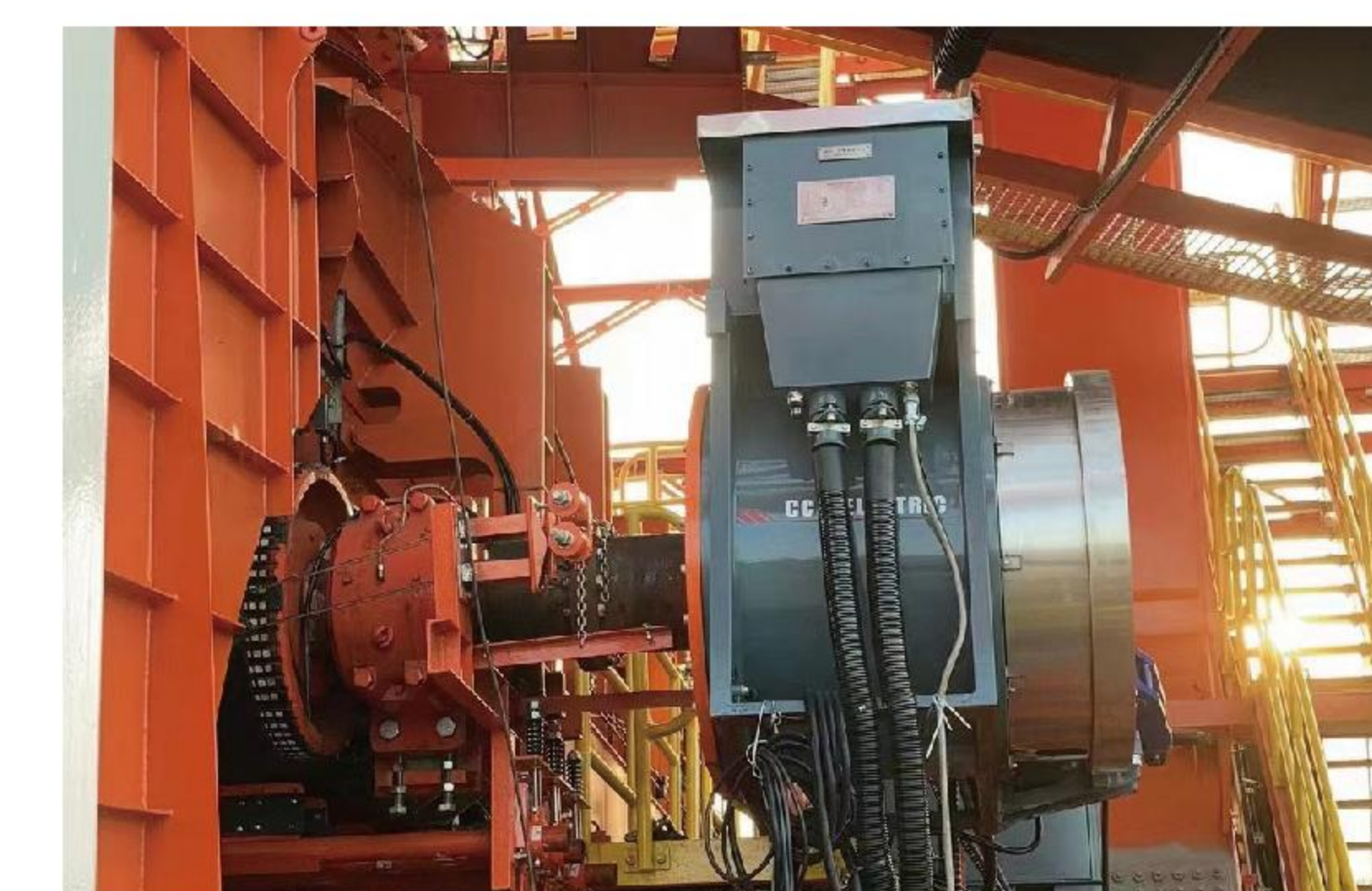
Affiliated Equipments: belt conveyor, stacker-reclaimer, bucket wheel machine, gantry crane, water pump



● Grain Belt Conveyor
560kW/10kV
Integrated VFD Direct-drive PM Motor



● Iron Ore Belt Conveyor
560kW/10kV
Integrated VFD Direct-drive PM Motor



● Stacker-Reclaimer
250kW/380V
PM Direct-drive Integrated VFD Motor



● Coal Belt Conveyor
500kW/6kV
Integrated VFD Direct-drive PM Motor