



卧龙电气驱动集团股份有限公司  
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卧龙电气驱动集团股份有限公司  
WOLONG ELECTRIC GROUP CO., LTD.

**WOLONG**  
*Power your future*

# MARINE MOTOR SELECTION MANUAL

## 船舶电机选型手册

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# 01 ABOUT WOLONG

## 关于卧龙

作为全球知名的电机及驱动解决方案的制造商，卧龙集团创建于1984年，经过三十多年的创新发展，已在中国、越南、英国、德国、奥地利、意大利、波兰、塞尔维亚、墨西哥、印度拥有39个制造工厂和5个研发中心，员工18000余人。公司主要生产各类电动机、发电机、控制驱动及工业自动化等产品，在船舶、油气、石化、电力、采矿、轨道交通、建筑楼宇、环保及水处理、设备自动化、新能源汽车等领域，为客户提供最佳的解决方案和服务。

As a world-renowned manufacturer of motor and drive solutions, Wolong Group was founded in 1984. After more than 30 years of innovation and development, Wolong Group has 39 manufacturing plants and 5 R&D centers in China, Vietnam, UK, Germany, Austria, Italy, Poland, Serbia, Mexico and India, employing more than 18,000 people. The company mainly produces all kinds of motor, generator, control drive and industrial automation products, in the Marine, oil and gas, petrochemical, electric power, mining, rail transit, building, environmental protection and water treatment, equipment automation, new energy vehicles and other fields, to provide customers with the best solutions and services.



## 卧龙集团业务介绍 Business introduction of wolong

卧龙集电机与控制、输变电、电源电池三大产品链，产品涵盖各类微特电机及控制、低压电机及控制、高压电机及控制、电源电池及输变电设备等40大系列3000多个品种，主导产品引领国际国内主流市场并配套诸多国家重点工程项目。

Wolong has three product chains: motor and control, power transmission and transformation, and power battery. The products cover more than 3,000 varieties of 40 series, including various micro special motors and control, low-voltage motors and control, high-voltage motors and control, power batteries and transmission equipments, etc. The leading products lead the international and domestic mainstream markets and support many national key projects.

全球 **5** 大研发中心  
Global R&D Center

全球中央研究院(上海) Global Central Research Institute (Shanghai)  
 美国研发中心 US R&D Center | 德国研发中心 German R&D Center  
 日本研发中心 Japan R&D Center | 印度研发中心 Indian R&D Center

全球 **3** 大运营中心  
Global Operations Center

**39** 个制造工厂  
Manufacturing factories

亚洲(中国、越南) Asia (China, Vietnam)  
 美洲(墨西哥) America (Mexico)  
 欧洲(英国、德国、意大利、波兰、塞尔维亚)  
 Europe (UK, Germany, Italy, Poland, Serbia)

## 02 PRODUCT OVERVIEW

### 产品概述

卧龙积极布局船舶业务发展，旗下有丰富的船舶电机产品系列，包含国际知名Schorch品牌电机，南阳防爆全系列高低压船舶电机以及根据特殊船舶要求开发的专业电机等。并可满足船级社认证要求，在船舶电机领域有丰富的经验，得到客户极大的认可。

Wolong actively plans the development of Marine business, and has a rich series of Marine motor products, including the internationally renowned Schorch brand motor, Nanyang explosion-proof full series of high and low voltage Marine motors and professional motors developed according to special ship requirements. And can meet the requirements of classification society certification, has rich experience in the field of Marine motors, has been greatly recognized by customers.

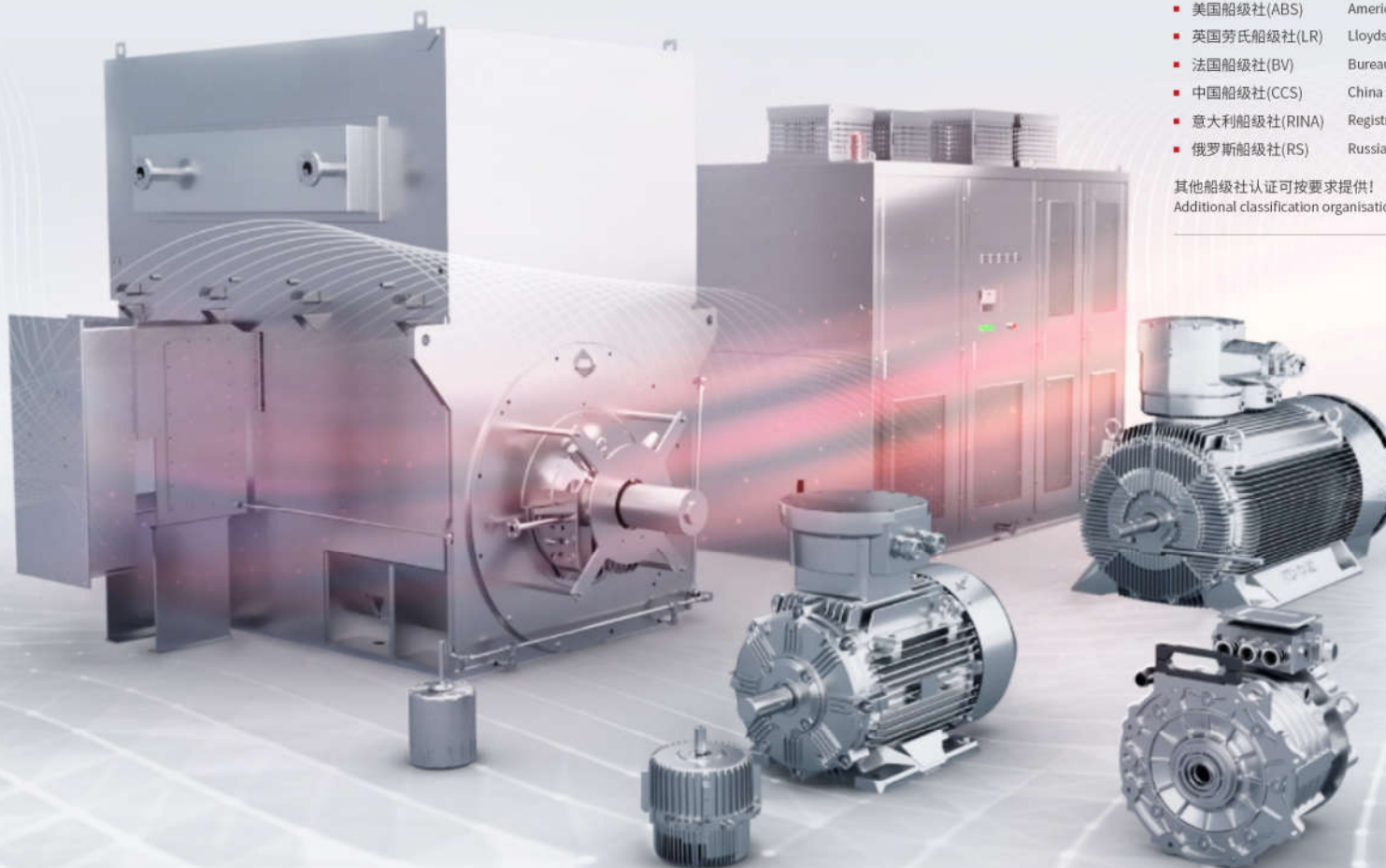
### 船舶电机应用领域 Application field of marine motors

- 异步主推进电机 Asynchronous propulsion motors
- 同步主推进电机 Synchronous propulsion motors
- 侧推电机 Transverse thruster motors
- 辅助驱动电机 Auxiliary drives
- 同步发电机 Synchronous generators

### 卧龙有以下船级社认证 We at wolong have the following marine engineering certifications

- 挪威船级社(DNV) Det Norske Veritas (DNV)
- 美国船级社(ABS) American Bureau of Shipping (ABS)
- 英国劳氏船级社(LR) Lloyds Register of Shipping (LR)
- 法国船级社(BV) Bureau Veritas (BV)
- 中国船级社(CCS) China Classification Society (CCS)
- 意大利船级社(RINA) Registro Italiano Navale (RINA)
- 俄罗斯船级社(RS) Russian Maritime Register of Shipping (RS)

其他船级社认证可按要求提供!  
Additional classification organisations available on request!



## 03 MARINE MOTORS

### 船舶电机

- ▼ 3.1 异步主推进电机  
Asynchronous propulsion motors
- ▼ 3.2 同步主推进电机  
Synchronous propulsion motors
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Transverse thruster motors
- ▼ 3.4 辅助驱动电机  
Auxiliary drives
- ▼ 3.5 同步发电机  
Synchronous generators

# ASYNCHRONOUS PROPULSION MOTORS

## 异步主推进电机

### 基本特征 Basic feature

该系列电动机高效、节能、环保，具有中心高更低、功率更大、效率更高、噪声更低，运行安全可靠、使用维护方便等特点。

This series of motor is high efficiency, energy-saving and environmentally friendly, with lower center height, greater power, higher efficiency, lower noise, safe and reliable operation, easy to use and maintain.

#### 性能优越 Superior performance

高功率质量比，结构紧凑，轻量化设计。  
高效节能，降低电能消耗，符合绿色生态理念。  
模块化设计，结构灵活，应用广泛。  
启动电流低，对电网冲击小。  
优良的电气性能，满足更广泛的运行范围。  
先进的环氧酸酐绝缘体系。  
高效的通风散热系统。  
低噪声等级。

High power to mass ratio, compact structure, lightweight design.  
Efficient and energy-saving, reducing electricity consumption, in line with the concept of green ecology.  
Modular design, flexible structure, and wide application.  
Low starting current and low impact on the power grid.  
Excellent electrical performance, meeting a wider operating range.  
Advanced epoxy anhydride insulation system.  
Efficient ventilation and heat dissipation system.  
Low noise level.

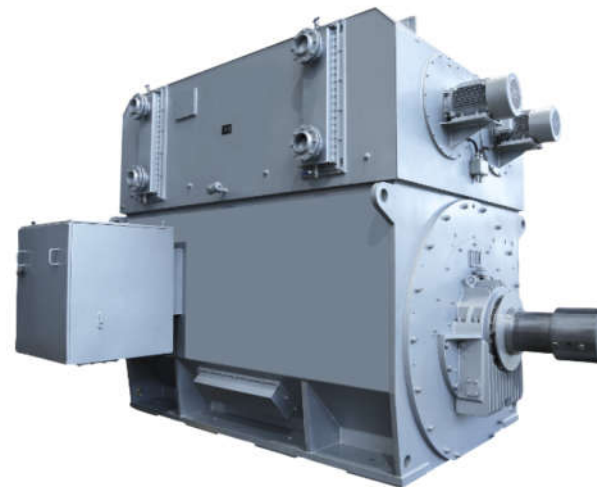
#### 可靠性高 High reliability

低运行温度。  
高可靠性的接线盒。  
低振动等级。  
更长的润滑间隔和维护间隔。  
智能化，可持续的状态监测。

Low operating temperature.  
High reliability junction box.  
Low vibration level.  
Longer lubrication and maintenance intervals.  
Intelligent and sustainable status monitoring.

- 根据客户的要求，我们可以提供一个优化的解决方案。
- 有丰富的船舶电机经验，可提供多种船级社认证。
- According to the customer's requirements, we can provide an optimized solution.
- Having rich experience in marine motors, we can provide various classification society certifications.

### 技术数据 Technical specifications



项目 Items	详细信息 Details
功率范围 Output range	450—20,000kW
机座号 Frame sizes	355—1,120
电压范围 Voltage range	400—11,000V直接驱动 400—11,000V for direct drive 500—6,600V变频器驱动 500—6,600V for converter operation
极数 Poles	4—16
转速范围 Speed range	125—1,800rpm
安装方式 Mounting type	B3, V1
冷却方式 Cooling	IC616, IC81W, IC86W
绝缘等级 Insulation	F级 Class F; H级可选 Class H optional
防护等级 IP	IP55; 其他可选, Other options

## SYNCHRONOUS PROPULSION MOTORS

### 同步主推进电机

#### 基本特征 Basic feature

- 轴承采用端盖式轴承装置或座式轴承装置，具有负荷能力强，检修及装配方便等优点。
- 结构更紧凑。重量轻、刚度好、核级绝缘体系、完备检测手段，实时在线监控。
- 根据客户的要求，我们可以提供一个优化的解决方案。
- 可提供多种船级社认证。
- The bearing adopts cover type or pedestal bearing device, which has the advantages of strong load capacity, convenient maintenance and assembly.
- More compact structure. Light weight, good stiffness, nuclear insulation system, complete detection methods, real-time online monitoring.
- According to the customer's requirements, we can provide an optimized solution.
- A variety of classification society certifications are available.



#### 技术数据 Technical specifications

项目 Items	详细信息 Details
功率范围 Output range	5,000kW—30,000kW
电压范围 Voltage range	690—4,500 V变频驱动; 690—4,500 V for converter operation
极数 Poles	16 (6 to 24 可选, available on request)
转速范围 Speed range	120—200 rpm (1,200 rpm)
防护等级 IP	IP55; 其他可选, Other options

## TRANSVERSE THRUSTER MOTORS

### 侧推电机

#### 基本特征 Basic feature

- 电机具有外形美观、低损耗、低噪音、低振动、安全可靠、维护方便等特点。
- 根据客户的要求，我们可以提供一个优化的解决方案。
- 可提供多种船级社认证。
- The motor has the characteristics of beautiful appearance, low loss, low noise, low vibration, safe and reliable, easy maintenance, etc.
- According to the customer's requirements, we can provide an optimized solution.
- A variety of classification society certifications are available.



#### 技术数据 Technical specifications

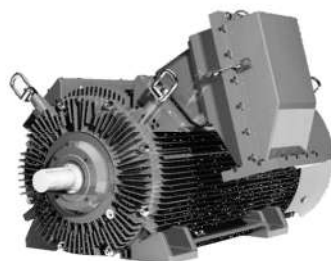
项目 Items	详细信息 Details
功率范围 Output range	500kW—5,000kW
电压范围 Voltage range	400—11,000V
极数 Poles	4—8
转速范围 Speed range	750—1,800rpm
绝缘等级 Insulation	F级 Class F; H级可选 Class H optional
防护等级 IP	IP55; 其他可选, Other options

## AUXILIARY DRIVE MOTORS

### 辅助驱动电机

#### 基本特征 Basic feature

- 该系列船用异步电动机是船舶驱动泵类、通风机械、分离器、液压机械及其他辅助设备用的理想动力。
  - 电机结构合理，外形新颖美观，安装尺寸及功率等级符合IEC标准和DIN42673标准。
  - 根据客户的要求，我们可以提供一个优化的解决方案。
  - 可提供多种船级社认证。
- This series of Marine asynchronous motor is the ideal power for Marine driving pumps, ventilation machinery, separators, hydraulic machinery and other auxiliary equipment.
  - The structure of the motor is reasonable, the appearance is novel and beautiful, and the installation size and power level meet the IEC standard and DIN42673 standard.
  - According to the customer's requirements, we can provide an optimized solution.
  - A variety of classification society certifications are available.



#### 技术数据 Technical specifications

项目 Items	详细信息 Details
功率范围 Output range	500kW—5,000kW
电压范围 Voltage range	400—11,000V
转速范围 Speed range	500—1,800rpm
极数 Poles	4—12
绝缘等级 Insulation	F级 Class F; H级可选 Class H optional
防护等级 IP	IP55; 其他可选, Other options

## SYNCHRONOUS GENERATORS

### 同步发电机

#### 基本特征 Basic feature

- 上水冷，端盖式轴承的结构型式。
  - 外形美观，结构紧凑，体积小、重量轻、环境适应性强等特点。
  - 效率高、噪声低、振动小、大修周期长。
  - 根据客户的要求，我们可以提供一个优化的解决方案。
  - 可提供多种船级社认证。
- Structure type of water-cooled, end cap bearing.
  - Beautiful appearance, compact structure, small size, light weight, strong environmental adaptability and so on.
  - High efficiency, low noise, low vibration, long overhaul cycle.
  - According to the customer's requirements, we can provide an optimized solution.
  - A variety of classification society certifications are available.



#### 技术数据 Technical specifications

项目 Items	详细信息 Details
功率范围 Output range	500—30,000kVA
电压范围 Voltage range	400—11,000V
转速范围 Speed range	500—1,800rpm
极数 Poles	4—14
冷却方式 Cooling	IC81W





## 04 PERFORMANCE PRESENTATION

### 业绩展示

- ▼ 4.1 低压推进电机  
Low voltage propulsion motor
- ▼ 4.2 中压推进电机  
Medium voltage propulsion motor
- ▼ 4.3 船舶辅助设备电机  
Marine auxiliary equipment motors
- ▼ 4.4 同步发电机  
Synchronous generator

## LOW VOLTAGE PROPULSION MOTOR

### 低压推进电机



**15米级电动航道养护管理艇**  
15 meter electric waterway  
maintenance and management boat

船只类型: 新能源船	Type of vessel: New energy vessel
供货范围: 推进电机	Scope of supply: Propulsion motor
电机功率: 2×30kW	Motor power: 2×30kW
电压等级: 380V	Voltage level: 380V



**120/150客位内河游船**  
120/150 seat inland river cruise ship

船只类型: 新能源船	Type of vessel: New energy vessel
供货范围: 推进电机	Scope of supply: Propulsion motor
电机功率: 4×100kW+12×50kW	Motor power: 4×100kW+12×50kW
电压等级: 380V	Voltage level: 380V



**长飞宝胜4000T起重船**  
Changfei Baosheng 4000T crane vessel

供货范围: 推进电机	Scope of supply: Propulsion motor
电机功率: 2×2000kW+2×3000kW	Motor power: 2×2000kW+2×3000kW
电压等级: 690V	Voltage level: 690V
船级社认证: CCS	Classification Society Certification: CCS



**大型邮轮**  
Large cruise ships

船厂: TFDS-Hurtigruten	Shipyard: TFDS Hurtigruten
船号: "M/S Midnatsol"	Ship number: "M/S Midnatsol"
供货范围: 主推电机	Scope of supply: Main thrust motor
推进功率: 2×2000kW	Propulsion power: 2×2000kW
电压等级: 690V	Voltage level: 690V
船级社认证: DNV	Classification Society Certification: DNV



**小型邮轮**  
Small cruise ships

船厂: TFDS-Hurtigruten  
船号: "M/S TROLLFJORD"  
供货范围: 主推电机  
推进功率: 2×2000kW  
电压等级: 690V  
船级社认证: DNV



Shipyard: TFDS Hurtigruten  
Ship number: "M/S TROLLFJORD"  
Scope of supply: Main propulsion motor  
Propulsion power: 2×2000kW  
Voltage level: 690V  
Classification Society Certification: DNV



**地震考察船**  
Earthquake investigation vessel

船厂: Sanco Shipping AS  
船号: "M/S Sanco Star"  
供货范围: 主侧推电机  
主推功率: 2×2500kW  
电压等级: 690V  
侧推功率: 2×700kW  
电压等级: 690V  
船级社认证: DNV

Shipyard: Sanco Shipping AS  
Ship number: "M/S Sanco Star"  
Scope of supply: Main side push motor  
Main power: 2×2500kW  
Voltage level: 690V  
Side thrust power: 2×700kW  
Voltage level: 690V  
Classification Society Certification: DNV



## MEDIUM VOLTAGE PROPULSION MOTOR

### 中压推进电机



#### 大型邮轮 Large cruise ships

船厂: Princess Cruises  
船号: "Caribbean Princess"  
供货范围: 侧推电机  
推进功率:  $3 \times 2200\text{kW} + 1 \times 1720\text{kW}$   
电压等级: 6600V  
船级社认证: LR

Shipyard: Princess Cruises  
Ship number: "Caribbean Princess"  
Scope of supply: Side push motor  
Propulsion power:  $3 \times 2200\text{kW} + 1 \times 1720\text{kW}$   
Voltage level: 6600V  
Classification Society Certification: LR



#### 186m甲板运输船 186m deck transport vessel

供货范围: 主侧推电机  
主推功率:  $2 \times 5000\text{kW}$   
电压等级: 2300V  
侧推功率:  $2 \times 1800\text{kW} + 2 \times 1300\text{kW}$   
电压等级: 690V  
船级社认证: CCS

Scope of supply: Main side push motor  
Main thrust power:  $2 \times 5000\text{kW}$   
Voltage level: 2300V  
Side thrust power:  $2 \times 1800\text{kW} + 2 \times 1300\text{kW}$   
Voltage level: 690V  
Classification Society Certification: CCS



## MARINE AUXILIARY EQUIPMENT MOTORS

### 船舶辅助设备电机



#### 大型邮轮 Large cruise ships

船厂: Royal Caribbean Cruise Line  
船号: "Freedom of the Seas"  
供货范围: 船用辅助电机—压缩机设备驱动  
电机功率:  $3 \times 280\text{kW}$   
电压等级: 440V  
船级社认证: LR

Shipyard: Royal Caribbean Cruise Line  
Ship number: "Freedom of the Seas"  
Scope of supply: Marine auxiliary motor - compressor equipment drive  
Motor power:  $3 \times 280\text{kW}$   
Voltage level: 440V  
Classification Society Certification: LR



#### 散货船绞车驱动 Winch drive for bulk carriers

供货范围: 船用辅助电机—绞车驱动  
电机功率: 45/90/90 kW  
电机转速: 375/750/1,500 rpm  
电压等级: 380V  
船级社认证: RS

Scope of supply: Marine auxiliary motor - winch drive  
Motor power: 45/90/90 kW  
Motor speed: 375/750/1500 rpm  
Voltage level: 380V  
Classification Society Certification: RS



## MARINE AUXILIARY EQUIPMENT MOTORS

### 船舶辅助设备电机



#### 运输船起重设备驱动 Transport vessel lifting equipment drive

供货范围: 船用辅助电机—起重设备驱动  
电机功率: 190 kW  
电机转速: 1780 rpm  
电压等级: 440V  
船级社认证: GL

Scope of supply: Marine auxiliary motors - Driving of lifting equipment  
Motor power: 190 kW  
Motor speed: 1780 rpm  
Voltage level: 440V  
Classification Society Certification: GL



#### 邮轮压缩机设备驱动 Cruise compressor equipment drive

船厂: Carnival Cruise Line  
船号: "Emerald Princess"  
供货范围: 船用辅助电机—压缩机设备驱动  
电机功率: 4×1575 kW  
电机转速: 3572 rpm  
电压等级: 11000V  
船级社认证: RINA

Shipyard: Carnival Cruise Line  
Ship number: "Emerald Princess"  
Scope of supply: Marine auxiliary motor - compressor equipment drive  
Motor power: 4×1575 kW  
Motor speed: 3572 rpm  
Voltage level: 11000V  
Classification Society Certification: RINA



项 目: Total Kaombo FPSO's	Project: Total Kaombo FPSO's
应 用: 12台气体压缩机电机; 14台输油泵电机	Application: 12 gas compressor motors; 14 oil pump motors
电机功率: 12×8000 kW+7×3800kW+7×1860kW	Motor power: 12×8000 kW+7×3800kW+7×1860kW
电压等级: 11000V	Voltage level: 11000V



项 目: Liza Unity FPSO	Project: Liza Unity FPSO
应 用: 注水、原油循环、高压给水泵、闪蒸气压缩机	Application: water injection, crude oil circulation, high-pressure water supply pump, flash steam compressor
电机功率: 4×7MW+3×3.5MW+4×950kW	Motor power: 4×7MW+3×3.5MW+4×950kW
电压等级: 11000V	Voltage level: 11000V

# SYNCHRONOUS GENERATOR

## 同步发电机



### 中海油蓬莱海上采油平台项目 CNOOC Penglai Offshore Oil Production Platform Project

信 息: 国家能源局国产化首套海洋平台无刷励磁同步发电机

供货范围: 同步发电机  
产品型号: QFRW-25-2P  
额定功率: 25000kW  
额定电压: 10500V

Information: The first domestically produced offshore platform brushless excitation synchronous generator by the National energy administration

Scope of supply: Synchronous generator  
Product model: QFRW-25-2P  
Rated power: 25000kW  
Rated voltage: 10500V



### 中海油西湖平台项目 CNOOC Penglai Offshore Oil Production Platform Project

供货范围: 同步发电机  
额定功率: 2×9000kW  
额定电压: 10000V

Scope of supply: Synchronous generator  
Rated power: 2×9000kW  
Rated voltage: 10000V



## 05 PERFORMANCE CHECKLIST

### 业绩清单

- ▼ 5.1 低压推进电机  
Low voltage propulsion motor
- ▼ 5.2 中压推进电机  
Medium voltage propulsion motor
- ▼ 5.3 船舶辅助设备电机  
Marine auxiliary equipment motors
- ▼ 5.4 同步发电机  
Synchronous generator

## LOW VOLTAGE PROPULSION MOTOR

### 低压推进电机

序号 Number	客户名称 Customer Name	地点/船名 Location/Ship Name	电压等级 Voltage level	推进功率 Propulsion power
1	杭州钱航船舶修造有限公司	新能源船 New energy ship	380V	2×30kW
2	/	新能源船 New energy ship	380V	4×100kW+12×50kW
3	MARINE SYSTEMS SIA	RIGA	960V	2×750kW+2×750kW
4	MARINE SYSTEMS SIA	RIGA	960V	2×1700kW
5	MARINE SYSTEMS SIA	RIGA	960V	2×2000kW
6	MARINE SYSTEMS SIA	RIGA	960V	2×2200kW
7	MARINE SYSTEMS SIA	RIGA	960V	2×2400kW
8	MARINE SYSTEMS SIA	RIGA	690V	2×3200kW+2×2500kW
9	Jastram GmbH & Co. KG	Hamburg	400V	1×250kW+2×83kW
10	Blueday Technolog	Stavanger	690V	2×750kW
11	SCHOTTEL GMBH	Spay/Rhein	690V	1×200kW
12	EMEA (Germany) GmbH	Moenchengladbach	690V	1×200kW+2×130kW
13	EMEA (Germany) GmbH	Moenchengladbach	400V	2×300kW
14	EMEA (Germany) GmbH	Moenchengladbach	440V	2×75kW
15	ATB Motors B.V.	IJsselmuiden	690V	1×1000kW+1×200kW
16	ATB Motors B.V.	IJsselmuiden	960V	2×625kW
17	Brook Crompton UK Ltd	Huddersfield, West Yorkshire	690V	1×1000kW+1×155kW

序号 Number	客户名称 Customer Name	地点/船名 Location/Ship Name	电压等级 Voltage level	推进功率 Propulsion power
18	Peter Döhle Schiffahrts KG	FFS Solea	400V	2×470kW
19	Peter Döhle Schiffahrts KG	TS Independent Pursuit	440V	1×750kW
20	Peter Döhle Schiffahrts KG	TS Keelung	440V	1×750kW
21	TFDS-Hurtigruten	M/S Trollfjord	690V	2×2000kW
22	TFDS-Hurtigruten	M/S Midnatsol	690V	2×2000kW
23	TFDS-Hurtigruten	M/S Vardehorn	690V	2×1000kW
24	TFDS-Hurtigruten	M/S Meslhorn	690V	2×1000kW
25	Geoshipping AS	M/S GeoSea	690V	2×1400kW
26	Geoshipping AS	M/S GeoSea	440V	1×925kW
27	Gunnar Stokke	M/S Stokke Senior	690V	1×1100kW
28	Torpoint Ferry	Hull 717	400V	2×250kW
29	Sanco Shipping AS	M/S Sanco Star	690V	2×2500kW+2×700kW

## MEDIUM VOLTAGE PROPULSION MOTOR

### 中压推进电机

序号 Number	船名 Ship Name	电压等级 Voltage level	推进功率 Propulsion power
1	186m甲板运输船 186m deck transport vessel	2300V	主推进功率为2×5MW The main propulsion power is 2×5MW
2	Carribean Princess	6600V	推进功率为1×1720kW+3×2200kW Propulsion power is 1×1720kW+3×2200kW
3	Sea Princess	6600V	推进功率为1×1720kW+3×2200kW Propulsion power is 1×1720kW+3×2200kW

## MARINE AUXILIARY EQUIPMENT MOTORS

### 船舶辅助设备电机

序号 Number	船名 Ship Name	船厂 Shipyard	电压等级 Voltage level	推进功率 Propulsion power
1	M/T Knock Ann	First Olsen Tankers	6600V	1×1100kW
2	M/T Borga	Shell/Rasmussen	6600V	1×1100kW
3	M/S Sanco Star	Sanco Shipping AS	690V	2×1100kW
4	Crown Princess	Princess Cruises	11000V	4×1500kW
5	Coral Princess	P&O Cruises Line	11000V	4×1350kW
6	Island Princess	P&O Cruises Line	11000V	4×1350kW
7	M/V The World	Residen Sea	6600V	3×900kW
8	Emerald Princess	Princess Cruises	11000V	4×1575kW
9	Carnival Freedom	Carnival Cruises Line	11000V	4×1575kW
10	Endeavour of the Seas	Royal Caribbean Cruises Line	440V	3×280kW
11	Freedom of the Seas	Royal Caribbean Cruises Line	440V	3×280kW
12	Carnival Miracle	Carnival Cruises Line	440V	2×185kW
13	Birka Paradise	Birka Cruises AB	690V	2×500kW

## SYNCHRONOUS GENERATOR

### 同步发电机

序号 Number	项目 Project	电压等级 Voltage level	额定功率 Rated power
1	中海油蓬莱海上采油平台项目 CNOOC Penglai Offshore Oil Production Platform Project	10500V	25000kW
2	中海油西湖平台项目 CNOOC West Lake Platform Project	10000V	2x9000kW

