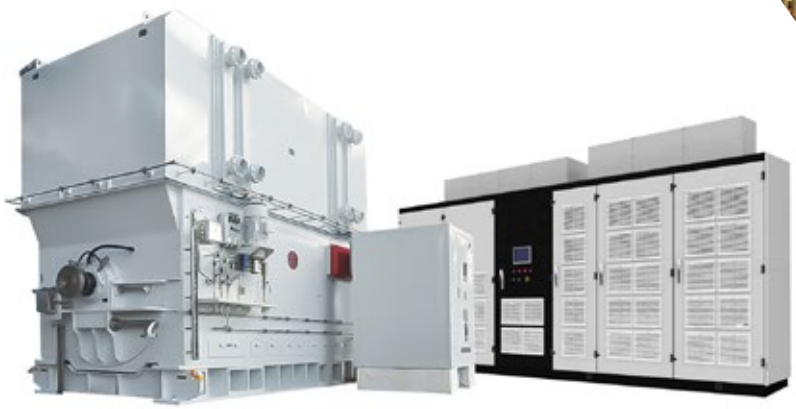
WOLONG

Power your future



POWER SOLUTIONS

for Petroleum & Chemical Applications

Wolong Electric Group
Company Introduction

The Wolong Electric Group includes heavy rotating machine companies, services, engineering, and research teams around the globe. Business units such as Nanyang ATB, Wuhan ATB, Anshan Rongxin, SCHORCH, MORLEY, SP, LAURENCE SCOTT, SEVER, FOD and others, deliver innovations in rotating machine and drive technologies.

Through enterprise technology centers and laboratories, staffed with our highly experienced and accomplished engineering teams, Wolong has producing high quality equipment and solutions for the Oil & Gas, petroleum, and chemical industries.

LV/MV Severe Duty and EXP Motors
LV/MV Variable Frequency Drives
Synchronous / Asynchronous Generators
LV/HV EXP Inverters
HV Soft Starters
Transformers
Special Power Supplies
DC Power Transmission
Control Systems
Power Electronic Components
Instrumentation

Wolong offers rotating machines and drives for most upstream, midstream and downstream applications. From a deep offshore production facility, to a Gas to Liquid (GTL) facility in Saudi Arabia or the extreme cold environments of the Canadian Oil Sand fields, our durable and efficient motors provide a reliable lifeline to critical production equipment. Strict adherence to industry and application specifications also help ensure less downtime.

1984
Company Established

$5.2B
Total Assets

70
Product Series

5
Global R&D Centers

18k+
Employees

$7.15B
Group Revernue

18
Industries

42
Global Mfg Plants

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Our products have complete certifications from many international authorities such as UL and CC in the US, CSA in Canada, IEC Ex in Europe, ATEX and CE in the European Union, SABS in South Africa and TESTSAFE in Australia.

Our manufacturing sites are quality certified for the latest ISO9001, ISO10012, OHS18000, and ISO14001 requirements.

Wolong plays a leading role in technology globally. It is a world leader in vibration, low starting current, and HV EXP motors. And the company is the third largest MV/HV motor supplier in the world.

Our company has provided high performance solutions globally for a wide range of petrochemical applications, such as inverter motors for oil platforms, high power bipolar compressor motors, and low starting current motors.

- The minimum starting current of motors with low starting current can reach 240% FLC. Wolong has provided more than 500 units running reliably and safely for users all over the world.
- Wolong supplied the first large-scale offshore oil platform gas turbine generator set in China.
- Wolong supplied the largest low-speed and large-capacity positive voltage explosion-proof motor ever built in China (11kW) presently being used in the Iranian Abbas Refinery.
- PDS Frequency converter drive system of the Jining Line of PetroChina Gas Pipeline is the first frequency converter used in a petroleum application from a Chinese manufacturer.
- Fukui mine ATP furnace shale oil double pinion drive and frequency conversion systems, utilizing the world's latest oil shale refining technology, is the second set in the world.

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Wolong Large Drives
Meeting Application Requirements

Global petroleum and chemical industries deliver crude oil, natural gas, and byproducts for everyday use. The production stream is broad covering a wide range of processes, including exploration, field development, drilling, production, refining, gathering, storage, transportation, and sales. Many of the applications in these processes involve flammable, explosive and toxic materials and vapors. The risks, complexities, and scales are higher than that of other industries. Because of this, the equipment involved must meet rigorous safety and operational standards and requirements.

Application	Type	Requirements
Blowers	Cooling Ventilation	Starting restrictions ASD applied IEEE-841, API 541, 546, 547
Heat Exchangers	Air Cooling	Belt load specifications IEEE-841, API 661
Pumps	Booster Liquid Cooling Jockey Pipeline Seawater Lift Water Injection Transfer	Starting restrictions ASD applied Vertical thrust loads Low inrush IEEE-841, API 541, 546, 547
Compressors	Centrifugal Axial Pipeline Reciprocating	Starting restrictions / ASD applied / Low inrush / Special shaft and load designs / Torque pulsation / High rotor inertia / API 541, 546, 547, 618

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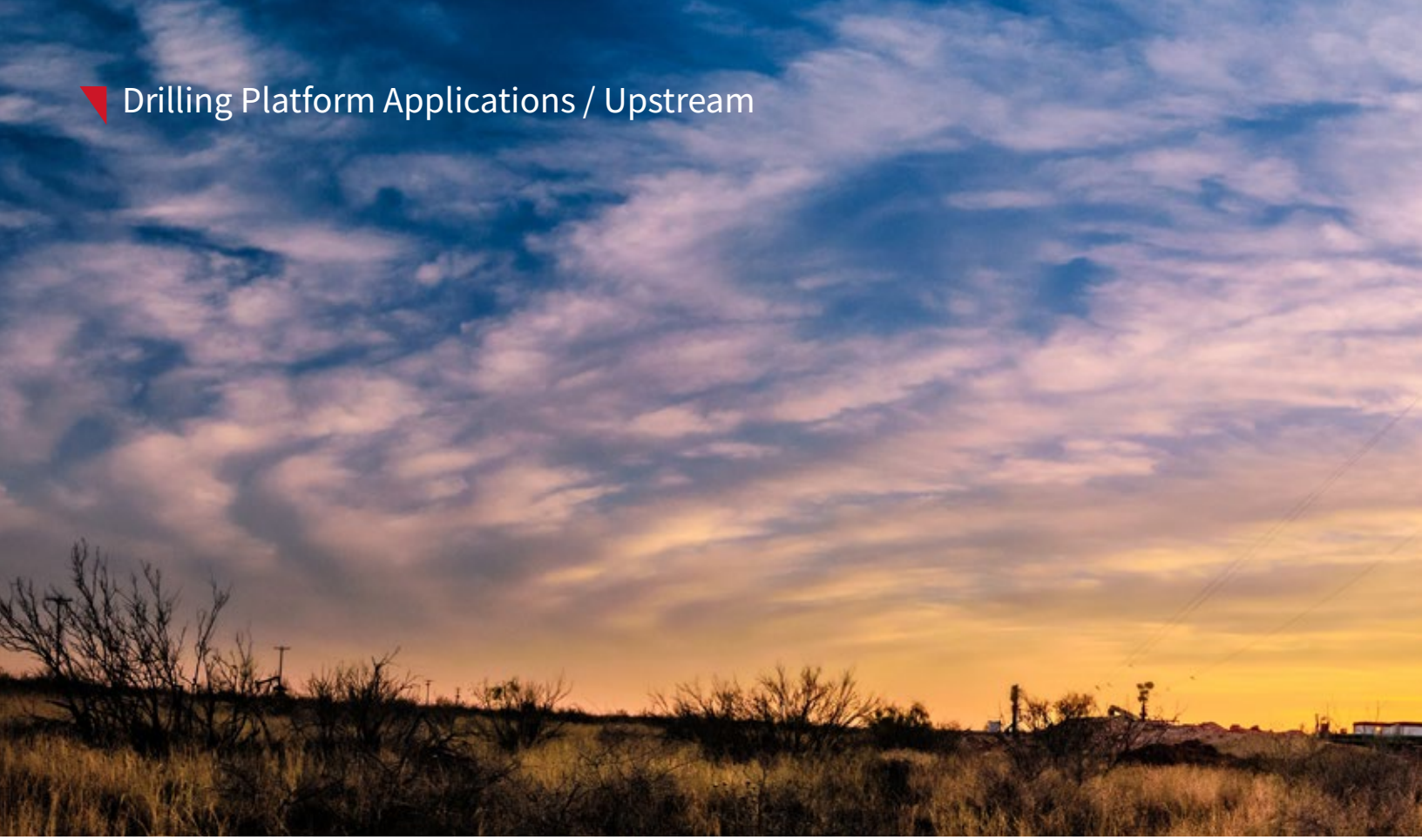
Drilling Platform Applications / Upstream



MVE Screen Vibrators

ideal for application on dryer vibrating screens and medium-sized vibrating machines.

Centrifugal Force: 3,500 - 8,000 kg
220V - 575V, 4 Pole
VPI Class F Insulation

Standards	ATEX Ex 112 D, GD ETL Class II, Div 2 Class II, Div 1

MVE Explosion Proof Vibrators

Used in double or triple vibrating screen for drilling fluid purification, and dry vibrating screen for drilling waste treatment, mud cleaner, etc.

Centrifugal Force: 800 - 5,500 kg
220V - 575V, 2-8 Pole
VPI Class F Insulation

Standards	ATEX Ex 112 D, GD Class II, Div 1

AC Variable Frequency Speed Control Drill Motor

Strong overload capability and high performance in extreme ambient temperatures (-50 °C to 55 °C) and corrosive environments like offshore oil platforms.

Power	15 - 1800 kW
Frequency	0 - 153 Hz

Low Starting Current Motor

Eliminates need for additional starters, controllers and switchgear requiring less maintenance, and a low impact on the power supply line.

Power 250 - 1800 kW

Voltage 2750 V - 13.8 kV

Poles 2 - 20

Oil Platform Motor

High efficient, low vibration, anti-rolling, on a stable structure, with resistance to salt spray corrosion.

Power 15 - 1500 kW

Voltage 400 - 690 V

Poles 2 - 6

HV Solid State Soft Start

Has a broad application range delivering flexible control with small impact on the power grid. They help extend equipment life and reduce maintenance.

Power 100 kW - 50 MW

Voltage 3 - 13.8 kV

WOLONG

Production, Gathering, Transportation / Midstream

Flameproof Pipeline Motor

Large capacity, high speed, sliding bearing self-slip ideal for pipeline applications.

Power	200 - 2800 kW
Voltage	6 kV, 10 kV
Poles	2, 4

High Speed Induction Motor

Drives centrifugal compressors with inverter controls in a highly efficient and integrated design.

Power	1000 - 3000 kW
Voltage	6 kV, 10 kV
Speed	3000 - 12,000 RPM
Frequency	0 - 200 Hz

HV EXP Asynchronous Motor

Highly efficient, low noise motor that is safe and reliable in explosive environments.

Power	200 kW - 50 MW
Voltage	6 - 10 kV
Poles	2, 4

Reciprocating Compressor Motor

Keyless shaft machines designed to help control any fluctuations and torque oscillations, minimize fatigue and increase compressor reliability.

Power 150 - 5000 HP

Voltage 460 V - 6.6 kV

Poles 4 - 8

WEX3 Series Motors

VFD-duty explosion proof motors with a highly flexible design to match a wide variety of application environments and requirements.

Power 0.37 - 375 kW

Voltage 400 V

Poles 2 - 16

Flameproof Generator

Can be utilized in explosive environments. Compact footprint can replace other common equipment.

Power 80 - 1500 kW

Voltage 400 V - 10.5 kV

Poles 2, 4

Oil Well Pump Motor

Designed with high slip (5-8%) and high torque (NEMA D) to meet the requirements of oil beam pumping units.

Power 3 - 150 HP

Voltage 460 V

Poles 6 (1200RPM)

MV Variable Frequency Drives

Highly reliable and safe multiple rectification technology through fan and control system redundancies and an optional unit bypass.

Output Power 1000 - 5500 HP

Frequency 50/60 Hz

Input Voltage (optionally) 4160 V
3.3 - 13.8kV

HV Solid State Soft Start

Has a broad application range delivering flexible control with small impact on the power grid. They help extend equipment life and reduce maintenance.

Power 100 kW - 50 MW

Voltage 3 - 13.8 kV

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Production, Gathering, Transportation / Midstream

Pipeline Valves

Processing Sites

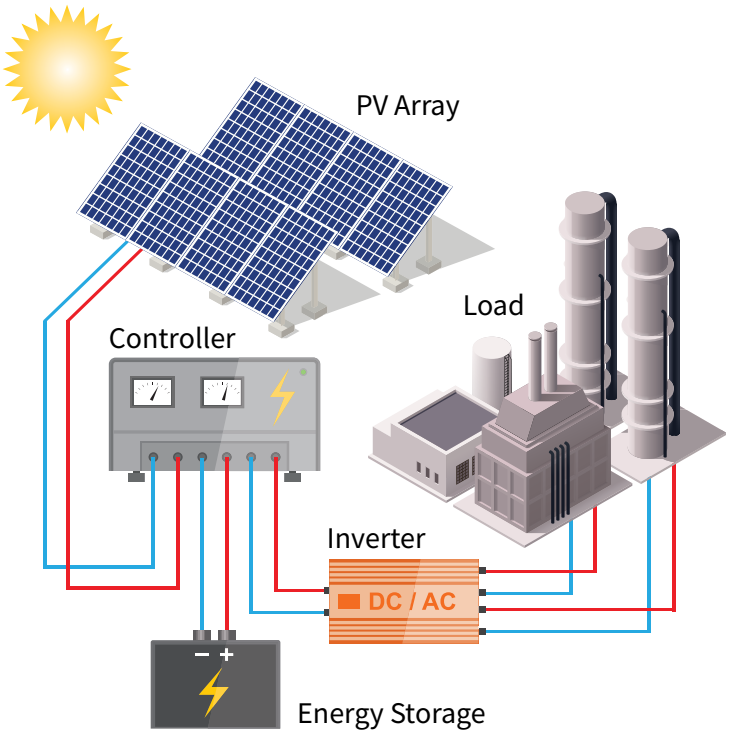
Remote Equipment

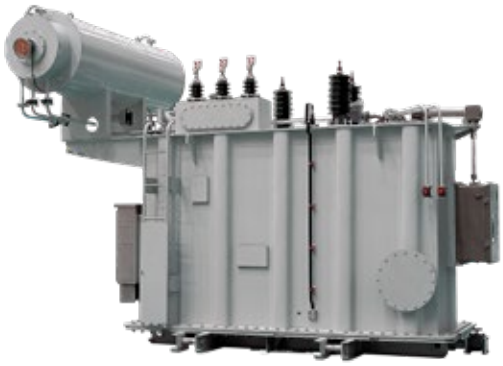
Off-Grid PV System

These power systems are widely used in remote areas, islands, communication stations, streetlights, etc. It is used to solve the needs of users in areas without an electrical utility grid and unstable power supplies for production.

PV system technology is sufficiently advanced to be widely used in the global petrochemical industry, which supplies power for oil and gas pipeline valves, cathodic protection of oil and gas facilities, electric heating and automatic control systems for oil pipelines, lighting of offshore platforms, streetlights, power supply systems of remote oil wells, road inspection systems, and electricity demands of oil well production equipment.

A typical solar power system consists of a PV array, solar controller, inverter, and storage batteries. The PV array converts photons into electricity, and supplies power to a load through a solar controller and inverter. It also charges a power storage system at the same time which then supplies the load during periods of darkness.





35 kV Power Transformer

Primary Voltage	35/110 kV
Secondary Voltage	10.5/35 kV

Typical characteristics are low local discharge, low loss, low noise, and strong short circuit resistance.

220 kV Power Transformer

Primary Voltage	230 kV
Secondary Voltage	69/110 kV
Tertiary Voltage	6.6/10.5/35 kV

These are widely used in primary utility grids with a large installed base globally. They are characterized by a reliable structure, low loss, low noise, and superior performance.

Rectifier Transformer

Primary Voltage	10/35 kV
Secondary Voltage	0.3 - 10 kV

Provides power for electrochemical industrial rectifier devices. It is widely used in various fields. Typical characteristics are a small footprint, convenient maintenance, and durable construction.

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Refining / Downstream

LV Flameproof Motor

Highly efficient and reliable motor for explosive environments. Designed for ease of maintenance and safety.

Power 18.5 kW - 1200 kW

Voltage 230 - 690 V

Poles 2 - 8

Synchronous Motor

Reliably and efficiently drives slow speed and high torque reciprocating compressors.

Power 450 kW - 50 MW

Poles 4 - 40

HV EXP Water Cooled Motor

Highly efficient, low noise and vibration motor designed to safely operate in high ambient explosive environments.

Power 315 kW - 10 MW

Voltage 3 - 10.5 kV

Poles 2 - 18

HV EXD Air-Cooled Motor

Highly efficient, low vibration motor designed to safely operate in high power applications in explosive environments.

Power	185 kW - 10 MW
Voltage	3000 V - 13.8 kV
Poles	2 - 20

HV EXP Inverter Motor

Highly efficient, low vibration motor designed to safely operate in high power VFD applications in explosive environments.

Power	185 kW - 8 MW
Voltage	3000 V - 10.5 kV
Poles	2 - 20
Frequency	5 - 100 Hz

HV Asynchronous Motor

Has a broad application range excelling in severe environments.

Power	220 kW - 31.5 MW
Voltage	6 kV, 10 kV
Poles	2 - 12

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Refining / Downstream

Large Extra Severe-Duty Motor

This versatile and robust design is ideal for a wide range of challenging industrial applications and environments.

Power	150 - 2500 HP
Voltage	460 - 4000 V
Poles	2 - 6
Frequency	60 Hz

Compact HV EXP Motor

High power in a very high efficient small TEFC frame. Designed to save operational costs for users.

Power	160 - 2240 kW
Voltage	3 - 10.5 kV
Poles	2 - 12

Compact HV EXP Variable Frequency Motor

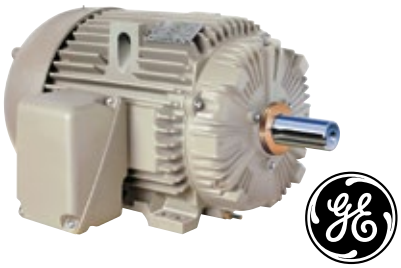
High power in a very high efficient small TEFC frame. Designed to save operational costs in VFD applications.

Power	160 - 2240 kW
Voltage	3 - 10.5 kV
Poles	2 - 12

Box-Type Synchronous Generator

High power in a durable, protective frame with brushless excitation, fast loading and delivery.

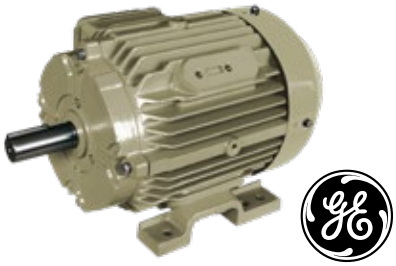
Power	1.6 - 65 MW
Voltage	3.3 - 13.8 kV
Poles	2 - 6



LV Extra Severe-Duty Motor

This versatile and robust design is ideal for a wide range of challenging industrial applications and environments. Versions available to meet IEEE 841 and 661 requirements.

Power	0.75 - 300 HP
Voltage	230/460, 460 V
Poles	4 - 8
Frequency	60 Hz



LV Severe Duty Motor

Non-contact mechanical seal, excellent performance, reliable operation.

Power	1 - 250 HP
Voltage	230 - 575 V
Poles	2 - 8
Frequency	60 Hz

LV/MV Vertical Pump Motor

Combines extra severe duty engineering with advanced thrust and cooling technologies.

Power	5 - 1750 HP
Voltage	200 - 4000 V
Poles	2 - 6
Frequency	60 Hz

Turbine Generator

A high efficient, reliable, low noise, low vibration machine designed for ease of maintenance.

Power	3 - 135 MW
Voltage	6.3 - 10.5 kV
Poles	2

MV Variable Frequency Drives

Highly reliable and safe multiple rectification technology through fan and control system redundancies and an optional unit bypass.

Output Power	1000 - 5500 HP
Frequency	50/60 Hz
Input Voltage (optionally)	4160 V 3.3 - 13.8kV

HV Solid State Soft Start

Has a broad application range delivering flexible control with small impact on the power grid. They help extend equipment life and reduce maintenance.

Power	100 kW - 50 MW
Voltage	3 - 13.8 kV

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iMotorlinx Digital Cloud Platform	Offline Services		Smart Services	Pay per Project	Pay per Content	Annual Account
Basic Version	Troubleshooting	Periodic Inspection	Regular Inspection		✓	✓
Advanced Version	Consulting/Training	Spare Parts	Preventive Maintenance		✓	✓
Intelligent IoT	Safety Assessment	DIagnostic Tools	24Hr System Monitoring		✓	✓
	Onsite Maintenance	Installation	Overhaul & Retrofit			✓
	EPC	Health Check	Emergent Return			✓
	Technology Retrofit	Repair	Spare Part Installation			✓
			Energy Assessment / Retrofit			✓
			SYSTEM RISK	HIGH	SHARED	LOW

iMotorlinx
Full life cycle service solutions

Reliable, efficient, convenient, and secure. Wolong has implemented a range of life cycle service solutions for customers to help them save on operational costs.

Cloud services can be customized to meet your application requirements:

- Smart Monitoring
- AI Diagnosis
- Expert Assistance
- Health Assessment

iMotorlinx System Components

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Wolong Large Drives
Global Project References

Wolong's global business units have a wide breadth of experience serving the Oil & Gas, Petroleum, and Chemical industries. They have successfully executed large projects in several continents, meeting and exceeding regional standards and user requirements. The following are just recent examples.

Mud pump 1655kW, 690V used for Wirth Maschinen-und Bohrgeräte project drilling platform

8MW inverter and motor used to drive a CNOOC oil platform compressor.

200 sets variable speed control drilling rig motor used in Uralmash-Izhora Group OMZ

3300kW, 6000V oil pump motor used for the Janaf Pipeline-Ruhr-pumpen GmbH project

Minimum low starting current reaches 240% FLC. More than 500 sets globally are running reliably and safely

HV asynchronous 5200kW, 11000V, 4P motor used in Gumusut-Kakap Oil Platform Project to drive centrifugal pumps

1655kW, 690V motor used in a Mobile oil platform project to drive a venter pump

55kW, 1140V motor used to drive Henan oilfield pumping unit

Positive voltage EXP generators - 2 pole exported to Kazakhstan and 4 pole for GE Oil & Gas passing CQST certification.

3000kW, 10kV compressor motor used in the TBAs temple Yulin natural gas project

Positive pressure HV asynchronous 7750kW, 10kV, 2P motor used in the Huasheng Energy Liquefied Natural Gas Project to drive a centrifugal compressor

2500KW 6000V high-speed, sliding bearing self-lubricating, flameproof motor for China-Myanmar oil pipeline

HV asynchronous 18MW, 10kV, 4P motor used to drive the axial flow fan of Sinopec Changling refinery

8MW inverter and motor used to drive a CNOOC oil platform compressor.

25MW-2P 60Hz gas turbine generator for the US Navy

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Global Project References

12 MW 30 pole synchronous low speed motor used in the Qilu Petrochemical LDPE project

Variable frequency drive used in Qilu Petrochemical LDPE project

11,500kW, 11kV motor used to drive the Kobelco, Japan-Borouge project agitator

HV solid state soft start device used to extend liquefied natural gas project in 2 gas field areas

3 x 2700kW, 11kV soft starter used to drive an Iraq HAFA two phase compressor

Inverter used for an offshore platform project of the CNOOC Weizhou oilfield.

Positive Pressure Type 15,300kW, 10kV, 4P asynchronous motor used in BP/AIOC project to drive a turbine centrifugal compressor

6500kW, 11kV positive pressure type EXP motor used in the Iran Abbas refinery

32MVA (IEGT), the largest capacity high voltage inverter in China used in the Huanggang, Hubei oil refinery

The Iraqi Haofa soft start project, presently the largest offshore oil project from China

32MW, 10.5kV, 1500 rpm, 4P brushless excitation gas turbine generator used for the Siemens matching Katie project

9300kW, 11kV motor used to drive the Kobelco, Japan-AD-NOC V.A.E. project extrusion granulator

Fukui Mine ATP Furnace Shale Oil Project double pinion drive and other frequency conversion systems

Enhanced Safety Type 8600kW, 10kV, 18P synchronous motor driving a reciprocationg compressor for the 2.6 million ton hydrogenation unit project in Quanzhou, Sinopec

The first domestically made frequency converter set driving a petroleum pipeline compressor for the PetroChina Jining pipeline

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