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Company Profile

Founded in 2007, Shandong Hande Automation Control Equipment Co., Ltd. is an independent innovative enterprise specializing in electrical drive control and industrial electrical automation. Our business has expanded to China's major oil fields, as well as more than 30 countries and regions including Russia, Iran, United Arab Emirates, and Saudi Arabia. We are a leading manufacturer of drilling rig electrical control and automation control system in China, occupied over 60% of Sinopec's market share.

Main Products:

Electric drive control systems of drilling rig , power supply control systems of drilling rig, automated drilling control system, drilling rig AC/DC motors, electric drive fracturing equipment, etc.

70000+m²
Production base

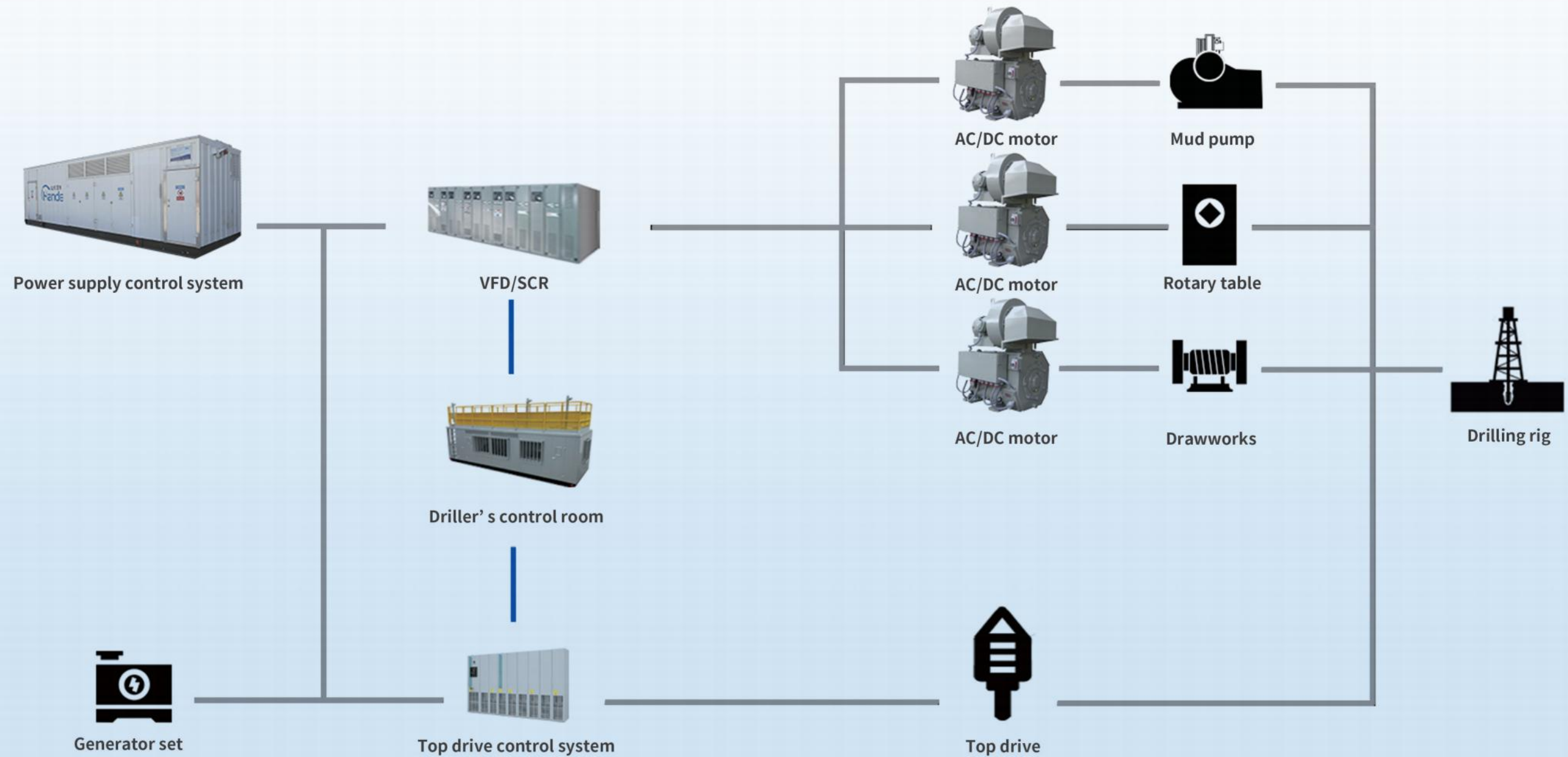
1000+sets
Electrical control systems

2000+sets
AC/DC motors

200+sets
Annual production capacity

300+sets
Annual production capacity





Business Areas

01

Electric drive and Control System of Drilling Rig

- DC control system
- VFD control system
- Mud pump control system
- Top drive control system

02

Electric drive and Control System of Workover Rig

03

Power Supply Control System of Drilling Rig

- Grid power high-voltage room
- SVG
- TSF

04

Electric Motor for Drilling Rig

- DC motor
- AC motor
- Direct drive motor
- Permanent magnet motor

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Electrified Retrofit and Services for Mechanical Drilling Rig

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Automated Drilling Rig Control System

- Integrated control system
- Integrated instruments
- Industrial monitoring system
- Driller's control room

07

Electric Drive Fracturing Equipment

China's Largest Shale Oil Demonstration Wellsite



Electric drive and Control System of Drilling Rig

The electric drive and control system of electric drilling rig includes power management system, drive system, MCC system, Control system etc.

- Power management system: VFD formed by diesel generator sets or high-voltage power grids.
- Drive system: DC or AC drive and control system consisting of mud pumps, drawworks/rotary table, top drive, and other main equipment.
- MCC system: MCC control system composed of auxiliary motors, lighting, and power supply unit for various areas of the well site.
- Control systems: including the PLC system, industrial computer, HMI, etc.

Product Scope

- | | |
|----------------------|----------------------------|
| • DC control system | • Mud pump control system |
| • VFD control system | • Top drive control system |



DC Control System

The SCR systems for drilling rig with drilling depths ranging from 4000 to 9000 meters are produced using Hande's independent research and development technology.

System Composition

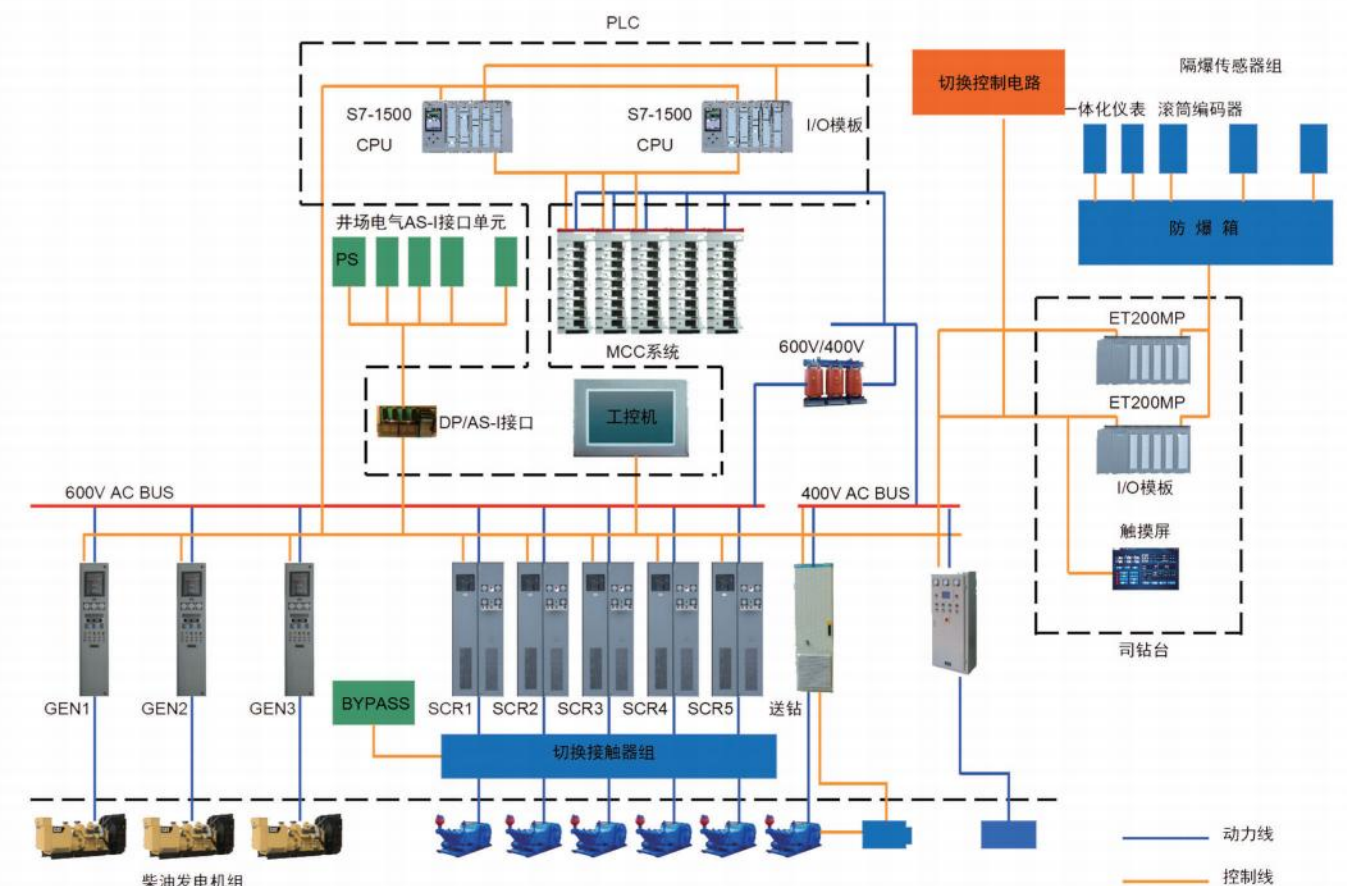
The system includes power management system, a SCR control unit, a driller's console, an electromagnetic brake control set, MCC, etc.

System Features

- Redundancy function
- Strong overload capacity
- High integration
- Strong anti-interference ability, high reliability
- Easy operation and maintenance

Technical Parameter	40D	50D	70D	90D
Grid Power Input Capacity	2500kVA	3200kVA	4000kVA	5000kVA
Generator Input Capacity	1715kVA×3	1715kVA×3	1715kVA×4	1715kVA×5
Auxiliary Generator Input Capacity	400kW	400kW *2	400kW *2	400kW *2
Power Transformer Capacity	1000kVA	1250kVA	1250kVA	1600kVA
Output Voltage	600V&400V&220V	600V&400V&220V	600V&400V&220V	600V&400V&220V
MCC Cabinet	4 sets	5 sets	6 sets	7 sets
Control System	PLC + Emergency	PLC + Emergency	PLC + Emergency	PLC + Emergency
IPC System	Available	Available	Available	Available

System Diagram



ROSSHILL 1400 CONTROL SYSTEM



• GEN Analog Management System

The main equipment in the diesel generator management system is installed in the GEN cabinet. The cabinet is characterized by easy operation, high reliability, superior performance, and easy maintenance.

• AC Control Module

The ROSS HILL 1400 AC control module is the core component for the control of the diesel generator and can be used for the CAT3512A and 3512B series or other brands of diesel engines.

- Operating temperature range: -30°C to 50°C.
- The active voltage regulation rate is less than 1%, the reactive voltage regulation rate is 3%, and the frequency stability regulation rate is less than 1%.
- AC components are interchangeable for quick maintenance.
- Functions: over-frequency protection, under-voltage protection, overvoltage protection, reverse power protection, and pulse loss protection.



• SCR Analog DC Control System

The DC module in the ROSS HILL 1400 system is used to control the conduction angle of SCR elements, transforming the constant voltage and frequency AC power supply into a continuously adjustable DC power supply. It enables speed and torque control of drilling rig winches, mud pumps, rotary tables, or top drives, allowing for stepless speed regulation and meeting the transmission requirements.

• DC Control Module

The DC control module is the core component for controlling the speed and torque of DC motors. It can output strong triggering pulses to achieve fast conduction of SCR and enables load balancing between two electric motors driving the same load in a coaxial configuration. Speed regulators for all drilling functions are interlocked with assigned contactors and the over-current threshold for the rotary table is set to 150% of the maximum current limit.





Drilling Rig VFD Control System

The system adopts a multi-drive variable frequency speed control system, and VFD systems for drilling rigs with drilling depths ranging from 3000 to 12000 meters are developed and produced.

The system utilizes fully digital vector control voltage-type AC variable frequency speed regulating devices, featuring frequency control modes with V/F characteristic curves and field-oriented vector control.

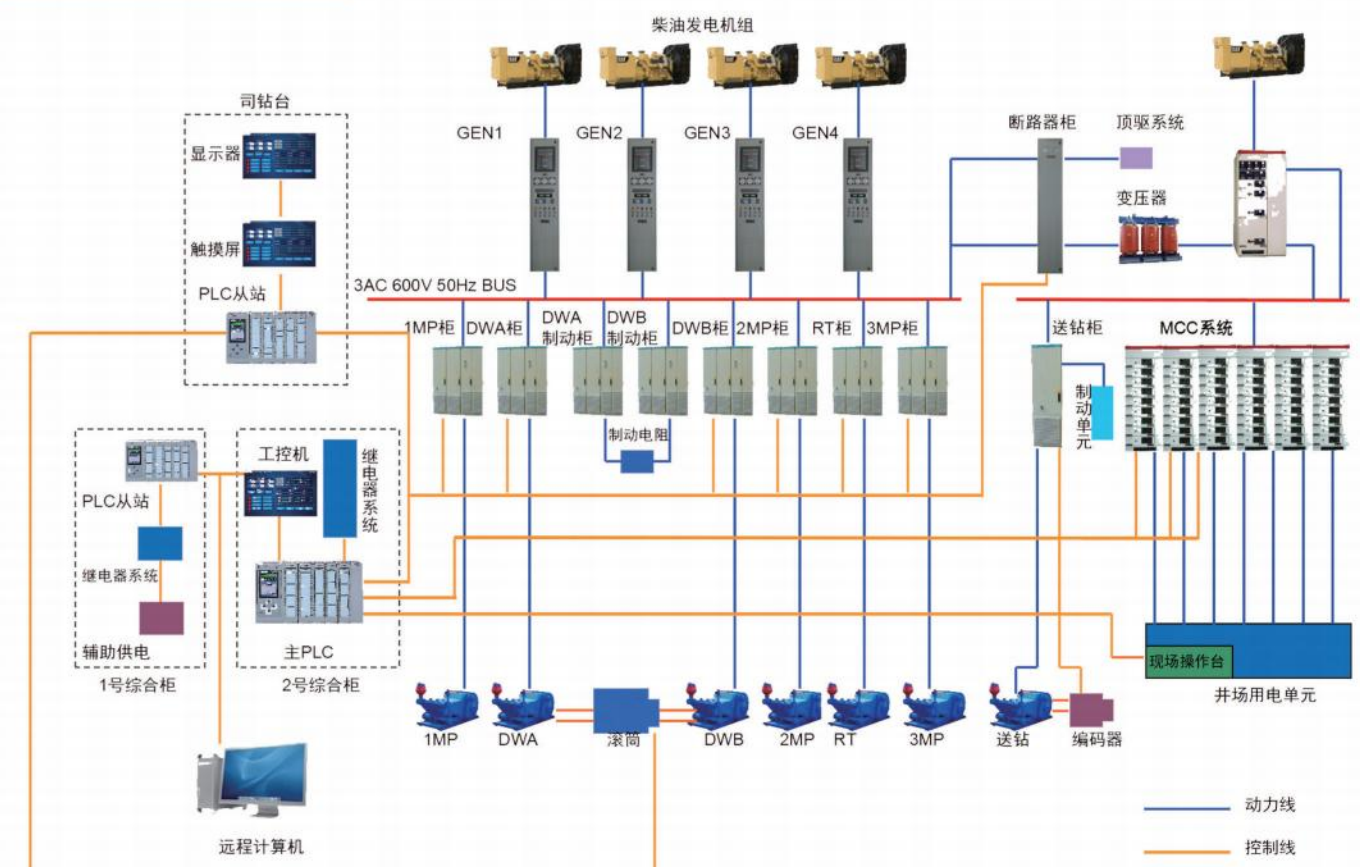
The PLC system utilizes PRONET fieldbus communication for transmission to enable the control, monitoring, and fault diagnosis of the system.

System Features

- High-performance speed control system
- Small starting current, high operating efficiency, and strong overload capacity
- Feedback braking can be implemented
- Convenient and safe use, low noise, and easy maintenance

Technical Parameter	30DB	40DB	50DB	70DB	80DB	90DB	120DB
Generator Control Cabinet	3 sets			4 sets	5 sets		
Frequency Inverter	600kW 1 set	800kW 1 set	800kW 2 sets	800kW 2 sets		1100kW 2 sets	1100kW 4 sets
	400kW 1 set	600kW 1 set	600kW 1 set	800kW 1 set		1100kW 1 set	
	1200kW 2 sets	1200kW 2 sets	600kW 4 sets	1000kW 6 sets		1100kW 6 sets	
Dynamic Braking	1200kW 1 set	2400kW 1 set		3600kW 1 set	4800kW 1 set		
Comprehensive Control Cabinet	S7-1500						
Driller’s Console	ET200SP						
Automatic Drilling Feed Frequency Cabinet	45kW 1 set		55kW 1 set	75kW 1 set	90kW 1set	90kW 2set	110kW 2set
Main Transformer	800kVA 1set	1000kVA 1set	1250kVA 1set	1600kVA 1set	2000kVA 1set	2100kVA 1set	2500kVA 1set
MCC Cabinet	4set		5set	6set	7set		8set
Soft Starter System	45kW 5 circuits1 set		55kW 7 circuits 1 set	75kW 8 circuits 1 set	110kW 12 circuits 1 set		110kW 15 circuits 1 set

System Diagram



Top Drive Control System

The system enables vector control and stepless speed regulation of the top drive main shaft. It is a fully digital control system that incorporates networking, informatization, hardware and software standardization, and modularization. This improves the system’ s performance and reliability, reduces maintenance workload, and lowers maintenance difficulty.

System Components

The system includes an incoming line cabinet, frequency inverter cabinet, PLC control cabinet, etc.



Mud Pump Control System

The mud pump control system is suitable for F series, 3NB series, and five-cylinder pump control. It covers all three-cylinder and five-cylinder pump products in the existing market.

System Components

The system includes an incoming line cabinet, rectifier cabinet, inverter cabinet, comprehensive control cabinet, transformer, driller’ s operation control system, and MCC.



Electric drive and Control System of Workover Rig

Technical Parameter	XJ1350	XJ1600	XJ1800
Frequency Inverter	Winch Inverter: 900kW	Winch Inverter: 1000kW	Winch Inverter: 1200kW
	Mud Pump Inverter: 500kW	Mud Pump Inverter: 710kW * 2	Mud Pump Inverter: 800kW * 4
	Rotary Table Inverter: 500kW	Rotary Table Inverter: 500kW	Rotary Table Inverter: 500kW
	Rectifier: 1727kW	Rectifier: 1727kW	Rectifier: 2800kW
	Brake Unit: 808kW	Brake Unit: 1200kW	Brake Unit: 2400kW
MCC Main Transformer	1000kVA		
MCC Feeder Cabinet	800A		
Soft Starter System	45kW 3-circuit	45kW 4-circuit	45kW 4-circuit
Air Conditioning Cooling System	TWE(A) 075		
Driller's Console	ET200SP		

Power Supply System of Drilling Rig

The power supply system replaces the diesel generator set power generation system. It directly utilizes the industrial power grid as the power source, leading the petroleum drilling industry in China into a new era of energy-saving, environmentally friendly, and efficient operations.

Product Scope

- Grid power high-voltage room
- SVG reactive power compensation and harmonic suppression device
- TSF reactive power compensation and harmonic suppression device



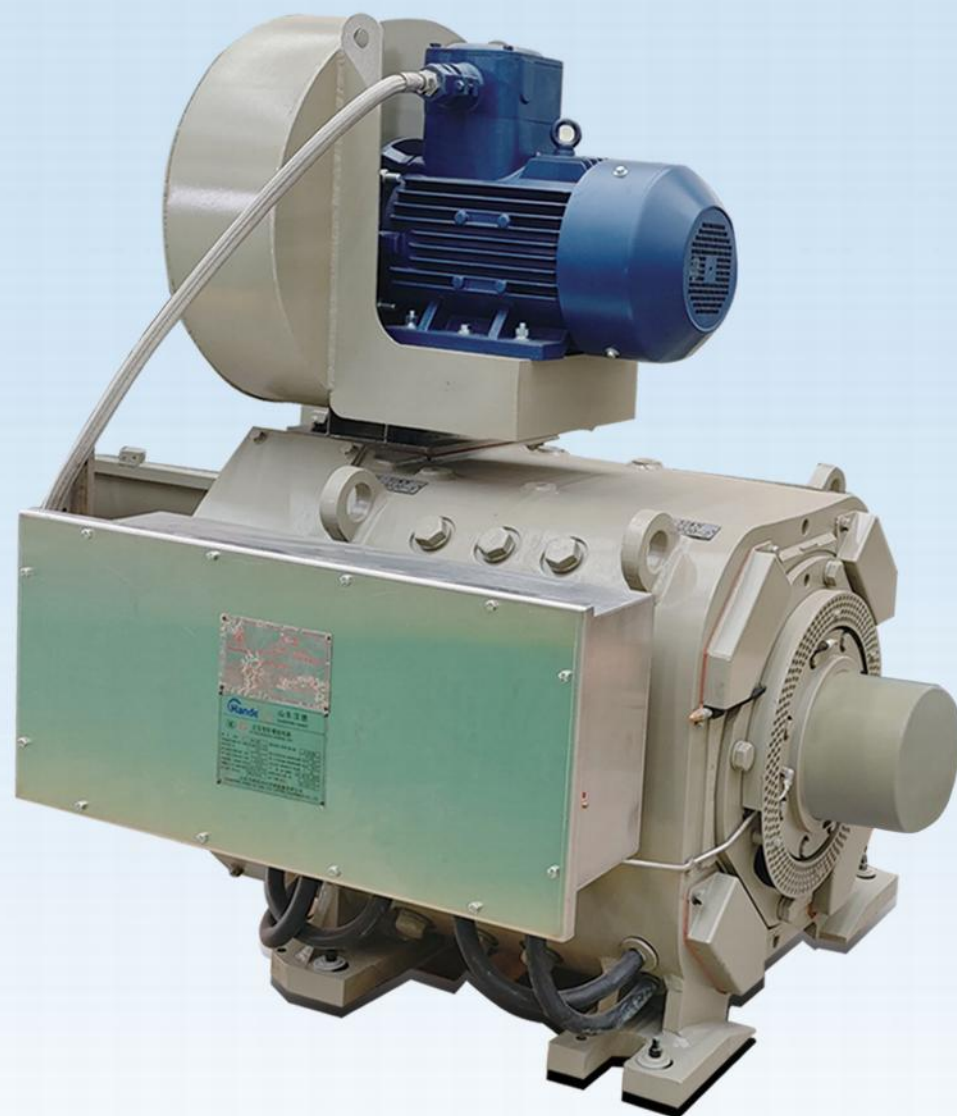
Electric Motor for Drilling Rig

Power range: 600 kW - 1200 kW for DC motors; and 600 kW - 4500 kW for AC motors.

Product Scop

- DC motor
- AC motor
- Direct drive motor
- Permanent magnet motor





DC Motor

DC motors are high-power, high-torque drive motors specifically designed for DC electric drilling rig. They are used for drawworks, mud pumps, and rotary tables. There are two types available: series excited and separately excited.

Performance Features

- Compact size
- High speed
- High starting torque
- Direct voltage regulation and speed control
- Good braking feedback
- Wide applicable voltage range

S/N	Model	Rated Power (kW)	Rated Voltage (V)	Rated Speed (rpm)	Supporting Equipment
1	YZ-800	800	750	1000	Rotary table,drawworks,and mud pump
2	YZ-1000A	1000	750	750	Drawworks and mud pump
3	YZ-1000B	1000	750	1000	Drawworks and mud pump
4	YZ-1200	1200	750	750	Drawworks and mud pump



AC Motor

The AC variable frequency motor, in conjunction with the Hande digital vector variable frequency control system, achieves full-process automation and high operational performance.

Performance Features

- Excellent speed control performance, high output torque, and low starting current.
- Strong overload capacity
- Compact size and high efficiency
- Easy installation, commissioning, and maintenance

S/N	Model	Rated Power (kW)	Rated Voltage (V)	Rated Speed (rpm)	Supporting Equipment
1	YJ-400	400	400	700	Rotary table
2	YJ-600	600	600	660	Rotary table
3	YJ-800A	800	600	740	Drawworks and mud pump
4	YJ-800B	800	550	660	Drawworks and mud pump
5	YJ-900	900	600	1000	Drawworks and mud pump
6	YJ-1000	1000	600	800	Drawworks and mud pump
7	YJ-1100	1100	600	1000	Drawworks and mud pump
8	YJ-1200	1200	600	1000	Mud pump
9	YJ-1600	1600	600	750	Fracturing pump
10	YJ-1800	1800	600	750	Fracturing pump
11	YJ-2000	2000	600	750	Fracturing pump
12	YJ-4500	4500	6000	1000	Fracturing pump



AC Direct Drive Motor

S/N	Model	Rated Power (kW)	Rated Voltage (V)	Rated Speed (rpm)	Supporting Equipment
1	YJZ-600	600	600	500	Direct drive motor for mud pump
2	YJZ-900	900	600	500	Direct drive motor for mud pump
3	YJZ-1000	1000	600	500	Direct drive motor for mud pump
4	YJZ-1150	1150	600	500	Direct drive motor for mud pump
5	YJZ-1200	1200	600	500	Direct drive motor for mud pump
6	YJZ-D-500	500	520	116	Direct drive motor for drawworks
7	YJZ-D-600	600	520	116	Direct drive motor for drawworks
8	YJZ-D-800	800	600	116	Direct drive motor for drawworks

Permanent Magnet Motor

Using the permanent magnet as the excitation source, the motor has a simple structure, high power density, and high efficiency.

S/N	Model	Rated Power (kW)	Rated Voltage (V)	Rated Speed (rpm)	Supporting Equipment
1	YYC-JC-400	400	600	165	Direct drive drawworks
2	YYC-JC-750	750	600	150	Direct drive drawworks
3	YYC-JC-865	865	600	120	Direct drive drawworks
4	YYC-400	400	600	700	Direct drive mud pump
5	YYC-500	500	600	405	Direct drive mud pump
6	YYC-500	500	600	504	Direct drive mud pump
7	YYC-600	600	600	504	Direct drive mud pump
8	YYC-1000	1000	600	504	Direct drive mud pump
9	YYC-1200	1200	600	504	Direct drive mud pump

Electrified Retrofit for Mechanical Drilling Rig

Mechanical drilling rigs adopt electric drive instead of diesel engine drive, to enhance the efficiency and reliability of drilling rig, reduce drilling costs, and minimize environmental pollution. This system is primarily applied to the retrofit of drilling rig such as 40LDB, 50LDB, 70LDB, etc.

System Components

The system comprises a high-voltage incoming line cabinet, transformer, frequency inverter, 400V switchgear, 600V switchgear, PLC cabinet, remote driller’s console, and other equipment.

System Features

- Flexible configuration: The system offers flexible configuration combinations based on the user’s existing equipment to meet the power requirements of the drilling rig;
- Adopting the variable frequency motor drive, it features minimal grid impact and a wide speed adjustment range;
- Remote diagnostics: supporting remote diagnostics of on-site faults;
- Remote monitoring: allowing remote monitoring of operating parameters of various equipment;

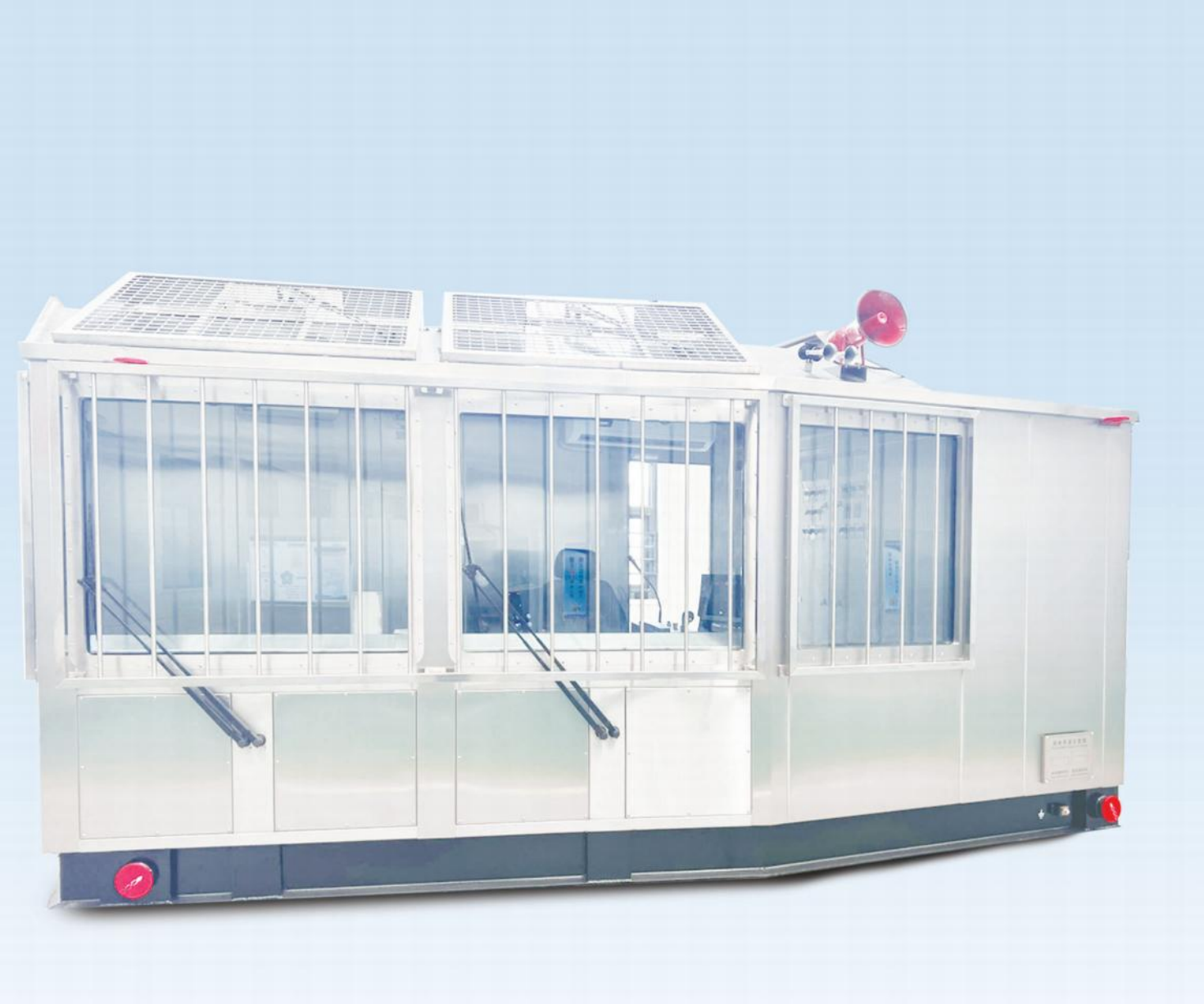
Technical Parameter	40LDB	50LDB	70LDB
High-voltage Incoming Line Cabinet	10(6)kV		
Transformer	2000-10/0.6/0.4	2500-10/0.6/0.4	3150-10/0.6/0.4
600V Low-voltage Cabinet	600V Main Power Supply		
400V MCC	Auxiliary Equipment and Room Power Supply		
Frequency Inverter	2*1000kW	2*1200kW	2*1400kW
PLC Cabinet	Including HMI and hardware		
SVG	Reactive power compensation, filtering		
AC motor	600V/800kW、1000kW、1200kW		

Automated Drilling Rig Control System

Product Scope

- Integrated control system
- Integrated instruments
- Video surveillance
- Driller's control room





Automated Drilling Rig Control System

The automated drilling rig control system consists of a positive pressure explosion-proof cabin, 2 sets of integrated seats, a PLC cabinet, a positive pressure explosion-proof system, explosion-proof air conditioning, CCTV, etc.

System Features

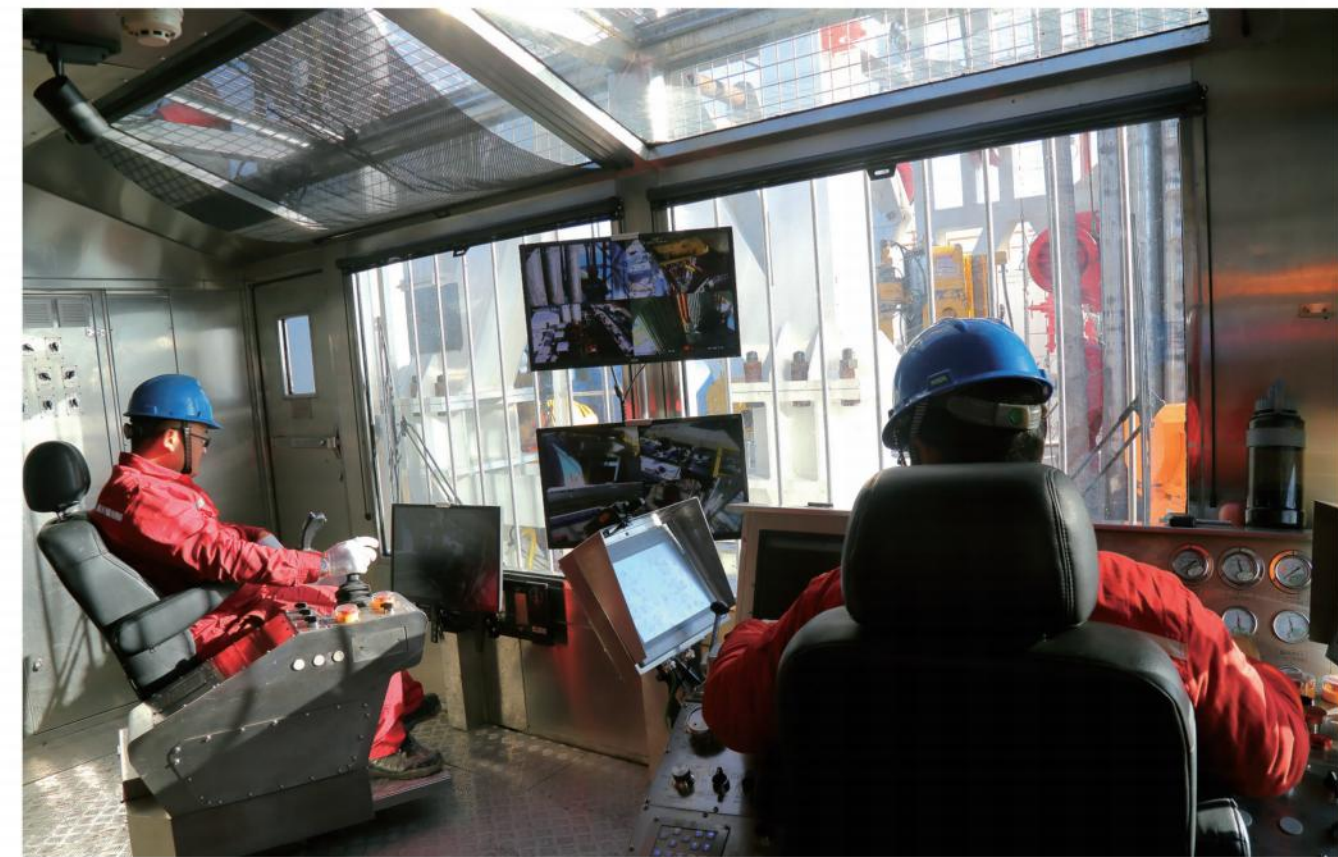
- All hydraulic and pneumatic controls of the drilling rig are replaced with electronic controls. The traditional winch control method is replaced with joystick control, and the control of the rotary table, mud pump, and other equipment is replaced with touchscreen control integrated into the integrated seats, providing a simple, convenient, and intuitive control mode.
- The operating system utilizes a graphical interface and process-oriented operations.
- Integrated display and control of drilling rig electrical control system parameters, drilling parameter measurement, travelling block collision prevention and related interlocks, travelling block speed control and winch control, derrick lifting control and protection, tension warning and protection, top drive collision and scratch prevention, and other equipment warning and protection functions.
- Integrated display and control of data for automated drilling rig equipment such as power catwalk, drill floor manipulator, power slips, iron roughneck, hydraulic cathead, and second-floor platform manipulator.
- Integrated CCTV functionality.
- The electrical control system and integrated seats form two independent communication systems that are compatible, interchangeable, and serve as backups for each other.

Integrated Instruments

The instrument is used for the acquisition, display, analysis, and storage of various drilling data at the drilling site. It uses a new type of touchscreen to centrally display all parameters, allowing the driller to conveniently operate through the touchscreen.

Performance Features

- User-friendly human-machine display interface.
- Parameters can be displayed in different interfaces such as numerical, graphical, and instrument displays according to customer requirements.
- A database is used for storage to ensure complete data retention. LAN connection allows data transmission between multiple remote terminals at the well site and the drilling console for easy monitoring.

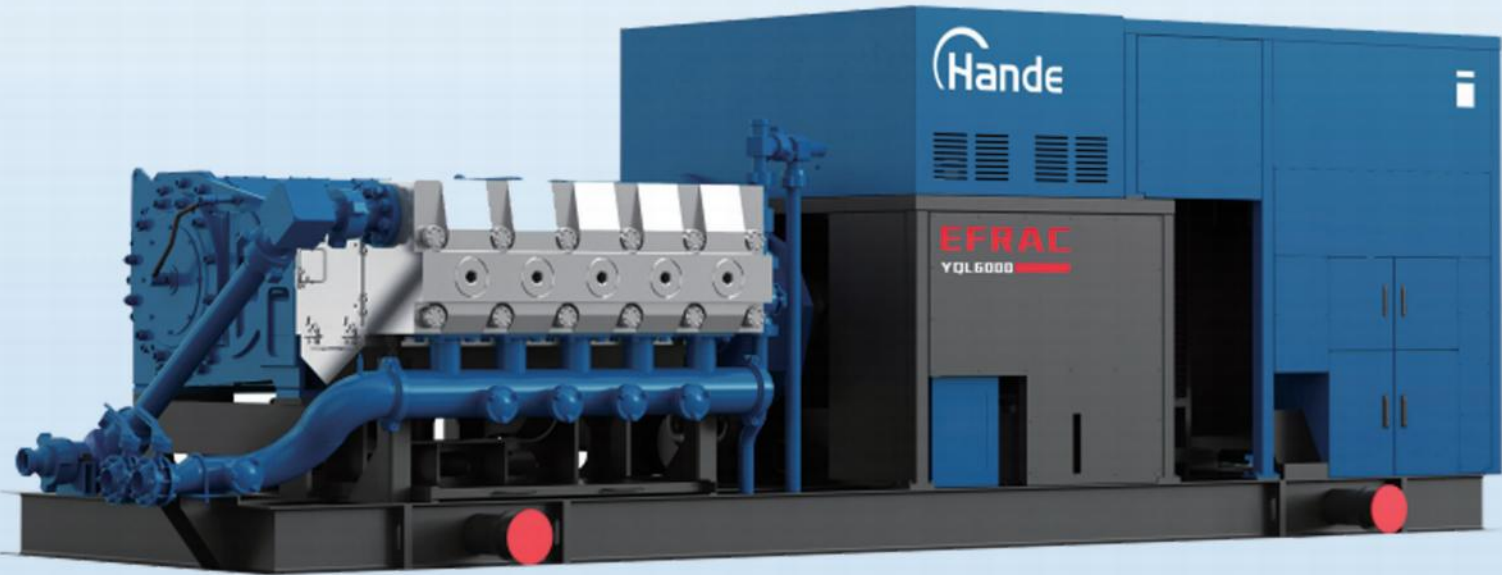


Electric Drive Fracturing Equipment

Based on years of experience in electrical transmission and automation control in the oil industry, Hande integrates power managment, electrical control, motors, and fracturing pumps into a complete set of electric drive fracturing equipment.

Product Advantages

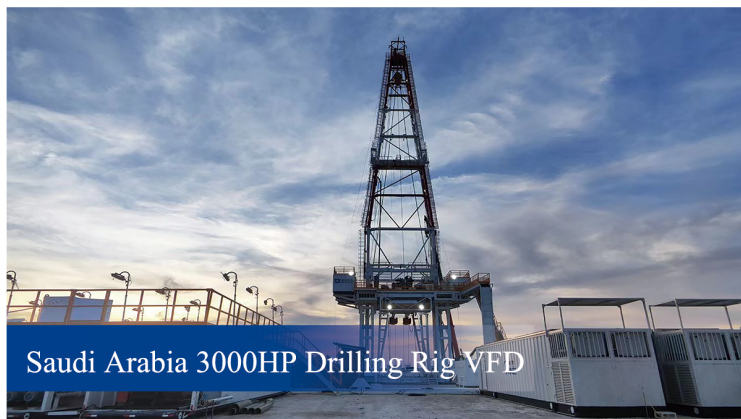
- Independent research and development
- Integrated production
- Strong adaptability
- One-stop service
- High cost-effectiveness



Technical Parameter	HDYL-600	HDYL-1000	HDYL-2000	HDYL-2500	HDYL-2800	HDYL-6000
Maximum Operating Pressure (MPa)	105	105	105	105	140	140
Maximum Displacement (L/min)	1170	1950	1820	3037	3037	2600
Plunger Diameter (in)	2.75/3/3.5/4	2.75/3/3.5/4	4/4.5/5	4/4.5/5	3.75/4/4.5/5	4.5/5/5.5
High-Pressure Plunger Pump Model	HD600	HD1000	HD2000	HD2500	HD2800	HD6000
External Dimensions of Fracturing Skid (mm)	5000×2450×2600	5000×2450×2600	5500×2450×2600	6000×2450×2600	3100×2500×3000 6000×2450×2600	7500×2600×2800
Fracturing Skid weight (t)	10	12	18	20	20	36
Motor power (kW)	600	800	1600	1800	2000	4500
External Dimensions of Electrical Control Room (mm)	6000×2900×3000	6000×2900×3000	9500×2900×3000	9500×2900×3000	9500×2900×3000	10000×2800×3000
Weight of Electrical Control Room (t)	12	13	16	17	17	32
Transmission Method	Variable frequency	DC/variable frequency	Variable frequency	Variable frequency	Variable frequency	Variable frequency



Application Cases



Performance Coverage

Chinese Market:

East China:

Dagang Oilfield, Shengli Oilfield

Northeast China:

Daqing Oilfield, Jilin Oilfield

Yanchang Petroleum

Huabei Oilfield

Southwest China:

Changqing Oilfield

Southwest Gasfield

Northwest China:

Xinjiang Oilfield

Tuha Oilfield

Tarim Oilfield, Tahe Oilfield



International Market:

Post-Soviet :Russia, Kazakhstan, Uzbekistan, Kyrgyzstan, Turkmenistan

Middle East :Saudi Arabia, United Arab Emirates, Kuwait, Iraq, Iran, Turkey

Southeast Asia:Indonesia, Malaysia, Bangladesh,India

South America :Mexico, Venezuela, Argentina



✂ After-sales Service Center

After-Sales Service



Engineers on standby 24 hours



Arrival at the site within 24 hours



Response to customer inquiries within 1 hour



One-stop problem-solving

Comprehensive Services

- Equipment maintenance service**
Conducting equipment inspections, fault analysis and handling, and providing maintenance plans for customers to ensure normal equipment operation.
- Equipment upgrade and retrofit**
Customized upgrade and retrofit of equipment based on customer requirements and product characteristics.
- Supply of spare parts and consumables**
Supply of a full range of spare parts and equipment consumables.
- Rapid talent incubation**
Providing all-around theoretical training, simulation teaching, and practical operation.
- Equipment rental service**
Rental of electrical control system, power supply control system, fracturing equipment, etc.

