

PRODUCTION

# 钻采产品事业部

DRILLING PRODUCTS DEPARTMENT





# 智采天传

作为国内石油钻机电控系统的研发基地和人才培养摇篮，40 多年来不断致力于提升石油钻机电控系统及其应用技术的创新与进步，已为全球 40 余个国家提供了 400 多套石油钻机电控系统装置。

立足天水，面向全球，依托不断壮大的高技术研发队伍和快速发展的软硬件环境及“国家重点实验室”平台，在推进国家“一带一路”和“中国制造 2025”战略的背景下，秉承绿色，节能和高效的理念，天水电传已成为国内外石油钻机电控系统最新技术的研发者、最佳电气解决方案的制定者、最佳电控系统装置的生产者和最优质服务的提供者之一。

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# DRILLING PRODUCTS DEPARTMENT PROFILE

## 钻采产品事业部简介



### DRILLING PRODUCTS DEPARTMENT PROFILE

Introduction to Drilling Products  
Department of Tianshui Electric  
Drive Research  
Institute Co., Ltd.

## 天水电气传动研究所有限责任公司 钻采产品事业部

钻采产品事业部主要负责公司油气行业电气传动及自动化产品的研发、设计、生产、销售及技术服务，是国产石油钻机电控系统成长的摇篮，国家标准的制定者，技术发展的引领者。

Drilling products department, the cradle for the growth of domestic oil drilling rigs electric control system, the maker of national standards and the leader of technical development, is mainly responsible for R&D, design, production, sales and technical services of electric driving and automation products of oil & gas industry.

钻采产品事业部

拥有教授级高级工程师 **6** 人

高级工程师 **12** 人

工程师 **40** 余人

人员梯队组成合理，具有雄厚的研发实力、先进的设计理念及丰富的工程经验，拥有一支有传承、有责任、有理想、勇创新、敢担当的技术队伍。

TEDRI drilling products department has 6 professorlevel senior engineers, 12 senior engineers and over 40 engineers. With reasonable echelon formation, strong R&D strength, leading designing and abundant engineering experience, the department is a transcend, responsible, aspiring, innovative and daring team.





## DRILLING PRODUCTS DEPARTMENT PROFILE

Introduction to Drilling Products  
Department of Tianshui Electric  
Drive Research  
Institute Co., Ltd.

经过 40 多年的发展，已经形成以石油钻机电控系统  
及石油钻机电网应用为主，包含抽油机电控系统，潜油泵电  
控系统，压裂泵组电控系统等的油气行业系列化产品。并负责  
钻机电气总包、移动电站、船舶岸电及 IE-HOUSE 等工程  
项目承接。

After more than 40 years development, drilling products department has  
formed that oil and gas industry series products, mainly are oil drilling rig  
electric control system and oil drilling rig grid power application device, and  
also including pumping unit electric control system, oilsubmerged pump  
electric control system, fracturing pump sets electric control system, etc.  
And also contracts projects of rig electric general package, mobile power  
station, ships' shore power, IE-HOUSE, etc.





6000米电驱动沙漠钻机国家科技进步一等奖



ZJ40DBS变频电传动钻机电传动系统国家科技进步二等奖



ZJ45D丛式井钻机国家重大技术装备成果奖



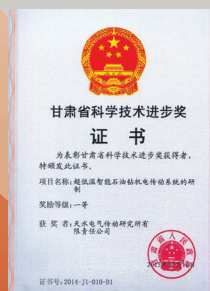
SS70H-40A海洋钻井平台石油钻采电传动控制系统甘肃省科技进步奖二等奖



ZJ80DB陆地钻机智能电传动系统甘肃省科技进步奖一等奖



超低温智能石油钻机电传动系统甘肃省科技进步奖一等奖



钻机电传动与柴油发电机组智能动态负荷分配系统甘肃省科技进步奖二等奖





## 2 创新 Innovate



石油钻机多模式自动送钻控制方法发明专利证书



电动钻机转盘柔性扭矩控制方法  
及其系统等发明专利证书

石油电动钻机再生制动能量的  
回收利用装置等发明专利证书

石油钻机泥浆泵控制方法  
等发明专利证书

## 3 成果 Achievement

主导产品之石油钻机电控系统装置，基本配置遵循相关的国家和行业标准与规范。根据特殊用户的需求，装置设计可符合 CCS、ABS、API、CSA、GOST、IEC 和 IEEE 标准及认证等。

主持编写国家标准 3 个：

GB/T 23507.1-2017 石油钻机用电气设备规范 第 1 部分：主电动机

GB/T 23507.2-2017 石油钻机用电气设备规范 第 2 部分：控制系统

GB/T 23507.3-2017 石油钻机用电气设备规范 第 3 部分：电动钻机用柴油发电机组

参与编写石油钻采国家和行业标准 20 多个。

The basic configuration of electric control system device for oil drilling rigs, one of the leading products, conforms to relevant national and industrial standards and specifications. The device can be designed to meet the requirements CCS, ABS, API, CSA, GOST, IEC and IEEE standards and certification.

Presided over the preparation of three National Standards:

GB/T 23507.1-2017 Criterion for electrical equipment for oil drilling rig--Part 1: Main motors

GB/T 23507.2-2017 Criterion for electrical equipment for oil drilling rig--Part 2: Control system

GB/T 23507.3-2017 Criterion for electrical equipment for oil drilling rig--Part 3: The diesel generating set for electric drilling rig

Participated in the compilation of over 20 national and industrial standards on oil drilling.



# DRILLING PRODUCTS DEPARTMENT

## Major Achievements

### 重大业绩



1994 年国产第一套沙漠电驱动钻机  
ZJ60DS 钻机电控系统在塔克拉玛干沙漠  
成功投入运行

In 1994, the first set of domestic desert electric  
drive drilling rig ZJ60DS electric control system was  
successfully put into operation in the Taklimakan  
Deser.

1994

1987

1987 年国产第  
一套电驱动钻机  
ZJ45D 丛式钻机电控  
系统在中原油田投入  
运行

The first domestic electric  
drive drilling rig ZJ45D cluster  
drilling rig electric control  
system was put into operation  
in Zhongyuan Oilfield in 1987.

1998

1998 年国产第  
一套海洋平台钻机电  
控系统在上海海洋局  
勘探二号上成功投入  
运行

In 1998, the first domestic  
marine platform drilling rig  
electrical control system  
was successfully put into  
operation on the Shanghai  
Ocean Bureau Exploration  
No. 2.

2001

1998 年国产第  
一套交流变频钻机  
ZJ40DBS 钻机电传  
动系统在四川石油管  
理局成功投入运行

In 2001, the first set of domestic  
AC variable frequency drilling  
rig ZJ40DBS electric drive  
system was successfully put  
into operation in Sichuan  
Petroleum Administration  
Bureau.

2005

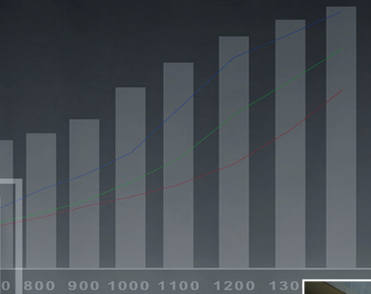
2005 年出口美  
国 Nabors 公司的八  
套 ZJ70DB 钻机电控  
系统成功投入运行

Eight sets of ZJ70DB drilling  
rig electrical control systems  
exported to USA Nabors  
were successfully put into  
operation in 2005.

2007

2007 年出口美  
国劳玛斯特公司的直  
升机吊装 LS30H-AC  
钻机电控系统成功投  
入运行

In 2007, the helicopter  
hoisting LS30H-AC drilling  
rig electrical control system  
exported to USA Loadmaster  
Company was successfully  
put into operation.



### 2014 年为哈萨克斯坦研制的智能一体化 ZJ80DB 钻机电控系统成功投入运行

The intelligent integrated ZJ80DB drilling rig electrical control system developed for Kazakhstan in 2014 was successfully put into operation.

### 2014 年为渤海钻探研制的节能自适应石油钻机网电系统成功投入运行

The energy-saving adaptive oil rig electric grid power system developed for Bohai Drilling in 2014 was successfully put into operation.

### 2017 年出口俄罗斯 Rosneft 公司的十一套 ZJ40DB 低温钻机三电平变频电控系统成功投入运行

In 2017, ten sets of ZJ40DB low-temperature drilling rig three-level frequency conversion electrical control system exported to Russia Rosneft company was successfully put into operation.

2008

2008 年出口乌兹别克斯坦的十一套 ZJ50DB 钻机电控系统成功投入运行

Ten sets of ZJ50DB drilling rig electrical control systems exported to Uzbekistan in 2008 were successfully put into operation.

2012

2012 年出口加拿大的三套 ZJ50DB 钻机电控系统获得 CSA 认证并成功投入运行

Three sets of ZJ50DB drilling rig electrical control systems exported to Canada in 2012 were CSA certified and successfully put into operation.

2013

2013 年为新胜利一号 50 米水深钻井平台研制的钻机电控系统成功投入运行

The drilling rig electrical control system developed for the new Shengli No. 1 50m-deep water drilling platform was successfully put into operation in 2013.

2015

2015 年出口土库曼斯坦的十套 ZJ70DB 钻机电控系统成功投入运行

Ten sets of ZJ70DB drilling rig electrical control systems exported to Turkmenistan in 2015 were successfully put into operation.

2016

2016 年出口美国 Weatherford 公司的智能多工艺视景钻井控制系统成功投入运行

In 2016, the intelligent multi-process vision drilling rig control system exported to the US Weatherford company was successfully put into operation.

2014

2017



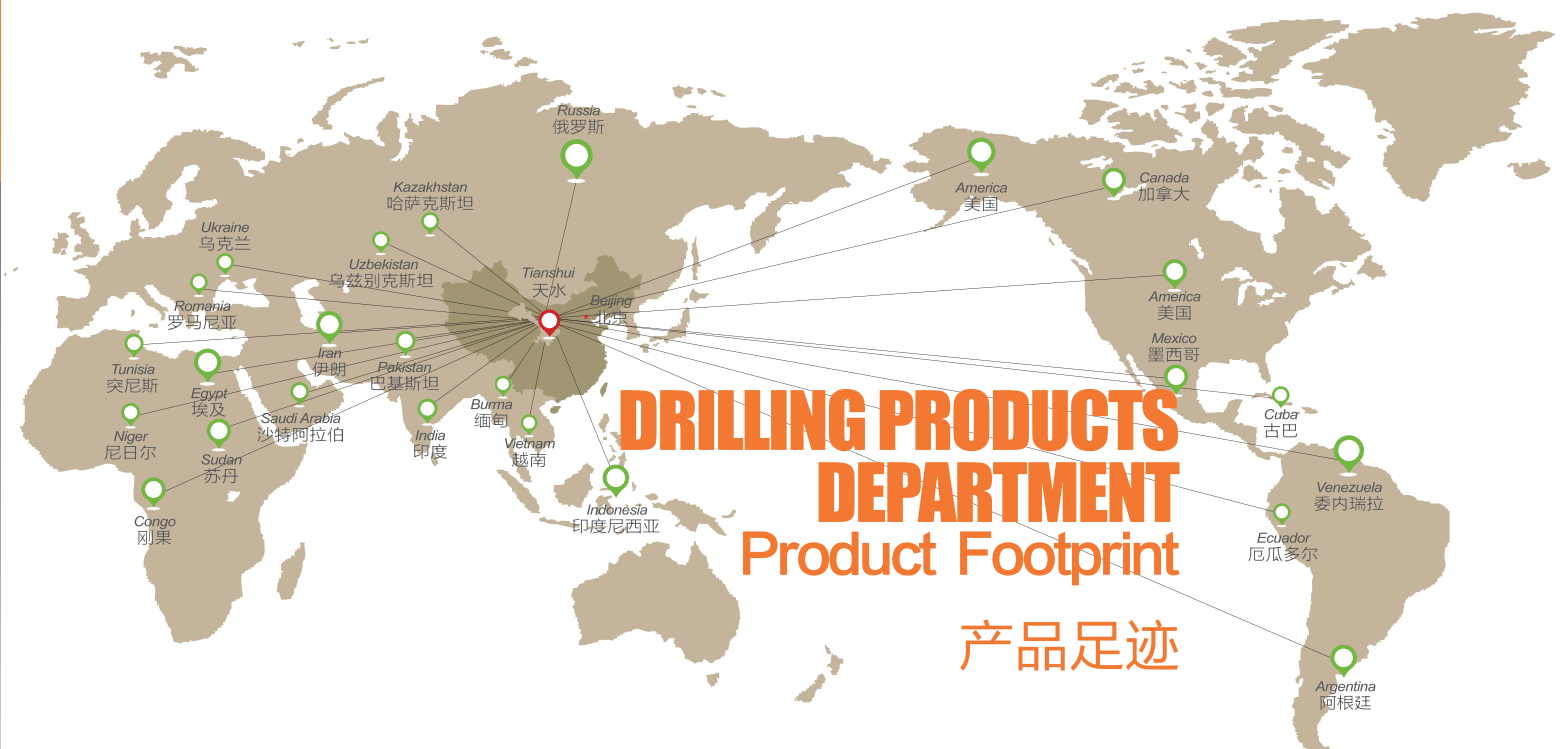
# DRILLING PRODUCTS DEPARTMENT

Partner

合作伙伴







## 亚洲（14个国家）

Asia: (14 countries)

东南亚：越南、缅甸、泰国、印度尼西亚

Southeast Asia: (Vietnam, Burma, Thailand, Indonesia)

南亚：印度、巴基斯坦

South Asia: India, Pakistan

中亚：哈萨克斯坦、乌兹别克斯坦、土库曼斯坦

Central Asia: Kazakhstan, Uzbekistan, Turkmenistan

西亚：伊拉克、伊朗、沙特阿拉伯、阿曼、阿塞拜疆

West Asia: Iraq, Iran, Saudi Arabia, Oman, Azerbaijan

## 欧洲（4个国家）

Europe (4 countries)

东欧：俄罗斯、乌克兰

East Europe: Russia, Ukraine

中欧：匈牙利

Central Europe: Hungary

南欧：罗马尼亚

South Europe: Roumania

## 非洲（7个国家）

Africa (7 countries)

北非：埃及、利比亚、苏丹、突尼斯

North Africa: Egypt, Libya, Sudan, Tunisia

中非：刚果

Central Africa: Congo

西非：尼日尔

West Africa: Niger

南非：阿尔及利亚

South Africa: Algeria

## 北美洲（4个国家）

North America (5 countries)

北美：加拿大、美国、墨西哥

Northern America: United States, Canada, Mexico

加勒比海地区：古巴

The Caribbean Area : Cuba

## 南美洲（3个国家）

South America (3 countries)

北部：委内瑞拉

North: Colombia

中西部：厄瓜多尔

Midwest: Ecuador

南部：阿根廷

South: Argentina

# DRILLING PRODUCTS DEPARTMENT

## Manufacturing Base

### 制造基地

#### 制作生产

Production and production



#### 设计团队

Design team





## 实验平台 Experiment platform





# DRILLING PRODUCTS DEPARTMENT

## Product Integration

### 产品集成



### 石油钻机电控系统

石油钻机电控系统是电动钻机的核心组成部分，主要负责钻机动力的控制、分配、输出以及为完成钻井作业而进行的各项操作、工艺、安全、监控、数据处理等。可配套陆地、沙漠、极地、海洋等多种环境下的钻机，全系列满足 2000 米 ~ 12000 米钻机的需求，基本包括直流电控系统和交流变频电控系统两大类。

#### Oil Drilling Rig Electric Control System

As the core component of the electric drilling rig, the oil drilling electric control system is mainly used for the control, distribution and output of the drilling rig power, as well as various operations, processes, safety, monitoring, data processing, etc. for the completion of drilling operations. It can be equipped with the rigs in various environments such as land, desert, polar and ocean. The whole series can meet the needs of rigs from 2000 meters to 12,000 meters, and basically include two categories: DC electric control system and AC variable frequency electric control system.



## 石油钻机直流电控系统 (SCR 系统)

### 概述

石油钻机直流电控系统是指由柴油发电机组或电网供电，通过直流调速器驱动直流电机，为钻井绞车、转盘及泥浆泵提供动力，是最早应用于石油钻机的电气控制系统。因其技术成熟、性能稳定、投资较少而受到国内外用户的青睐。

### 技术数据

#### Technical Data

#### 发电系统

频率稳态精度：≤ 1%  
频率调节时间：≤ 3s  
电压稳定精度：≤ 1%  
电压调节时间：≤ 1.5s  
有功负荷不均衡度：≤ 5%  
无功负荷不均衡度：≤ 5%

#### Power Generation System

Frequency stability accuracy: ≤1%  
Frequency adjustment time: ≤3s  
Voltage stability accuracy: ≤1%  
Voltage regulation time: ≤1.5s  
Active load unevenness: ≤5%  
Reactive load unevenness: ≤5%

## Oil Drilling Rig DC Electric Control System (SCR system)

### Overview

The oil drilling rig DC electric control system refers to the earliest electric control system applied to the oil drilling rig of which the power supplied by diesel generator sets or the grid and drives the DC motors through the DC speed governor to provide power for drawworks, rotary table and mud pumps. Due to its mature technology, stable performance and small investment, it is favored by users home and abroad.



### 传动系统

输出电压：0~750V 连续可调  
输出电流：“一对一”驱动 0~1400A (1600A 90S)  
“一对二”驱动 0~2300A (2600A 90S)

### 连接直流电动机

直流他励电动机（增加励磁装置）  
直流串励电动机

### 驱动方式

直流他励电动机采用“一对一”方式  
直流串励电动机采用“一对一”方式或“一对二”方式

### Drive System

Output voltage: 0~750V continuously adjustable  
Output current: "one to one" drive 0~1400A (1600A 90S)  
"one to two" drive 0~2300A (2600A 90S)

### Connected DC Motors

DC separately excited motor (excitation device included)  
DC universal motor

### Drive Mode

DC excitation motor adopts "one to one" mode  
DC universal motor adopts "one to one" mode or "one to two" mode

石油钻机直流电控系统（SCR 系统）应用场景见图 1、图 2、图 3。

Applications of oil rig DC electric control system (SCR system) are shown in Picture 1, Picture 2 and Picture 3.



图 1 石油钻机房体装置工作现场  
Picture 1 Oil rig control houses operation on-site



图 2 现场运行房内场景  
Picture 2 On-site operation indoor scene



图 3 SCR 钻机现场作业中  
Picture 3 SCR rig on-site operation



## 石油钻机交流变频电控系统（VFD 系统）

### 概述

石油钻机交流变频电控系统是指由柴油发电机组或电网供电，通过变频调速器驱动交流变频电机，为钻井绞车、转盘及泥浆泵提供动力。石油钻机交流变频电控系统无需再配电磁辅助刹车、易实现自动送钻、钻机结构简单、效率高、易实现自动化等突出特点，使交流变频钻机在国内外得到了飞速的发展。

### Oil Drilling Rig AC Variable Frequency Electric Control System (VFD System)

#### Overview

The oil drilling rig AC variable frequency electric control system refers to the electric control system of which the power supplied by diesel generator sets or the grid and drives the AC variable frequency motors through the converters to provide power for drawworks, rotary table and mud pumps. Due to no need for electromagnetic auxiliary brakes, easier to realize auto-drilling, simple rig structure, high efficiency, easy to realize automation, etc., it has been developed and applied rapidly home and abroad.

### 技术数据

#### 发电系统

频率稳态精度： $\leq 1\%$   
频率调节时间： $\leq 3s$   
电压稳定精度： $\leq 1\%$   
电压调节时间： $\leq 1.5s$   
有功负荷不均衡度： $\leq 5\%$   
无功负荷不均衡度： $\leq 5\%$

#### 传动系统

输出电流：0~300Hz  
输出电压：最高为交流母线电压

#### 采用变频器

自主生产的基于矢量控制的变频器  
世界知名品牌的变频器

#### 驱动方式

采用“一对一”方式  
公共直流母线方式

### Technical Data

#### Power generation system

Frequency stability accuracy:  $\leq 1\%$   
Frequency adjustment time:  $\leq 3s$   
Voltage stability accuracy:  $\leq 1\%$   
Voltage regulation time:  $\leq 1.5s$   
Active load unevenness:  $\leq 5\%$   
Reactive load unevenness:  $\leq 5\%$

#### Transmission system

Output current: 0~300Hz  
Output voltage: The max. is the AC bus voltage

#### Frequency converter adopted

Self-produced VFD based on vector control  
World famous brand VFD

#### Drive mode

Adopts "one to one" mode  
Common DC bus mode

### 石油钻机交流变频电控系统（VFD 系统）应用场景见图 4、图 5、图 6

Applications of oil rig AC electric control system (VFD system) are shown in Picture 4, Picture 5 and Picture 6



图 4 VFD 钻机电控房  
Picture 4 VFD drilling rig electric control room



图 5 现场运行房内场景  
Picture 5 On-site operation indoor scene



图 6 VFD 钻机在加拿大作业  
Picture 6 VFD drilling rig operating in Canada



## 石油钻机网电装置

### 概述

石油钻机网电装置是指在电力网（6kV/10kV）覆盖的油区，以电力取代柴油发电机组为钻机提供动力的电控系统，根据输出电压等级分为低压网电装置和中压网电装置两大类。

### *Oil Drilling Rig Grid Power Device*

#### Overview

The oil drilling rig grid power device refers to the electric control system in the oil area covered by the power grid (6kV/10kV) that replaces diesel units with the electric power and supplies power to the rig. And according to the output voltage level, there are mainly two categories: low-voltage grid power device and medium-voltage grid power device.

### 石油钻机网电装置应用场景见图 7

Application of oil drilling rig grid power device is shown in Picture 7



图 7 石油钻机网电装置在俄罗斯寒冷气候中安全运行  
Picture 7 Oil drilling rig electric grid power device safely operating under Russia's extremely cold weather

## 石油钻机低压网电装置

石油钻机低压网电装置采用“高——低”方案，主要由四个模块构成：高压配电模块（高压房）；电能质量模块（SVG/APF）；电力驱动模块（VFD/SCR）；动力机组模块。各模块相对独立，可根据钻机现场实际情况自由组合使用。钻机网电应用系统以电网作为接入电源，通过高压房将 10kV/6kV 降为 AC600V，为 VFD/SCR 提供电源，再通过 VFD/SCR 输出可控电源驱动动力机组为钻机提供动力，同时 SVG/APF 确保电能质量。该系统可完全替代柴油动力机组，降低作业成本，满足环保要求。

### *Oil Drilling Rig Low-voltage Grid Power Device*

The oil drilling rig low-voltage grid power device adopts the "high-low" scheme and is mainly composed of four modules: high-voltage power distribution module (high-voltage room), power quality module (SVG/APF), electric drive module (VFD/SCR), and power unit module. Each module is relatively independent and can be freely combined according to on-site actual situation of the rig. The rig grid power application system uses the grid power as power supply, transfers the 10kV/6kV power to AC600V through the high-voltage room, supplies power for VFD/SCR, and then through VFD/SCR outputs controllable power supply to drive the power unit to power the rig, and meanwhile SVG/APF ensures the power quality. The system can completely replace diesel generators, reduce operation costs and meet environmental requirements.





## 石油钻机中压网电装置

石油钻机中压网电装置采用“高——高”方案，将 10kV/6kV 网电接入系统后，通过中压变频调速直接驱动电机，为钻机提供动力。该系统不仅取消了降压变压器还取消了电能质量模块 (SVG/APF)，因此中压变频直驱钻机电控系统安全高效、配置简洁、成本下降，特别适合钻机快速安装，便捷转运，紧凑组合。

### *Oil Drilling Rig Medium-voltage Electric Grid Equipment*

The oil drilling rig medium-voltage grid power device adopts the "high-high" scheme. After connected to 10kV/6kV grid power, the system, through medium-voltage frequency converter, drive motors to provide power for the rig. The system cancels not only the step-down transformer, but also the power quality module (SVG/APF). Therefore, the medium-voltage variable frequency direct drive drilling rig electric control system is safe and efficient, with simple configuration and lower cost, especially suitable for quick installation, convenient transportation and compact combination.



## 抽油机电控系统

抽油机变频节能电控系统，能够实时准确地监测油井电机的各种参数及油井参数（压力、位移、示功图等），同时通过传感器将数据采集到工控机，工控机将上述参数形成数据报表和各种曲线进行显示，并根据初始参数设置对超过上下限的参数进行报警和实时现场控制，延长油井无故障工作时间。

该系统通过对油井各种参数的监测及对设备的自动保护，确保了油井各种设备的正常运行，避免设备损坏，从而节省了大量的人力物力，减轻了工人的劳动强度；同时使用变频装置控制电机可以有效的节约电能。

## 潜油泵电控系统

潜油泵是一种在油田直接接驳电网广泛应用的采油设备，其工作环境非常恶劣（沙漠或海洋环境）。潜油泵变频控制系统，可有效提高采油效率，减小装置体积，控制投资成本，可实现潜油泵的软启动、软停车，有效保护潜油泵与电缆，使潜油泵处于最佳运行状况，延长潜油泵的使用寿命，节约油井维护费用，并且可拓展潜油泵的特种化、专业化和集约化应用范围。采用户外型结构设计方案、智能化控制和内环境温控系统，潜油泵电控系统具有良好的防护和散热性能，广泛适宜于恶劣环境（风沙、高温和高湿等）工况。

## 压裂泵组电控系统

压裂泵组电控系统采用先进的全数字水冷变频器驱动六相变频电机，实现对电机的多相冗余控制，可靠性大大增强，利用通讯网络技术和程序控制技术的结合，将压裂泵电驱动系统的各子系统融为一体，实现电动压裂泵的智能化控制。系统采用撬装式结构，按功能区域分为高压室、变压器室、变频驱动室，快插式对外接口，便于流动作业。压裂泵电驱动系统由高压变电系统、变频传动系统、供配电系统、水冷系统、自动控制系统、远程监控系统等子系统构成。高压变电系统 10kV、6kV 网电可选，配备 24 脉整流变压器，预充磁回路可以避免变压器浪涌电流对电网及其他设备造成冲击；先进的全数字中压水冷变频器，配备高效的水冷系统，大大提高了散热效率。整个电驱动系统具有绿色、环保、运行噪声低、谐波含量低等优点。

## Pumping Unit Electric Control System

The pumping unit frequency conversion energy-saving electric control system can accurately monitor various parameters of the motors and oil well parameters (pressure, displacement, indicator diagram, etc.) in real time, and collect data to IPC through sensors. And IPC displays the above parameters in the form of journal sheets and various curves, and according to the initial parameter settings, IPC alarms and real-time on-site controls the parameters exceeding the upper or lower limits to extend the fault-free working time of the well.

The system ensures normal operation of various equipment of oil wells and avoids equipment damage by monitoring various parameters and automatic protections of the equipment, thus saving a lot of manpower and material resources and reducing the labor intensity of workers. At the same time, it can effectively save energy to use frequency conversion devices to control motors.

## Oil-submerged Pump Electric Control System

The oil-submerged pump is a kind of oil extraction equipment directly connected to the power grid and widely used in the oil field, and its working environment (desert or marine) is very tough. The oil-submerged pump variable frequency control system can effectively improve oil recovery efficiency, reduce device size, control investment cost, realize soft start and soft stop of oil-submerged pump, effectively protect the oil-submerged pump and cable, make the oil-submerged pump in optimal operation condition, and extend service life of the oil-submerged pump, reduce oil well maintenance costs and expands the range of specific, professional and intensive applications of oil-submerged pumps. Adopting outdoor structural design scheme, intelligent control and internal environment temperature control system, the oil-submerged pump electric control system has good protection and heat dissipation performance, and is suitable for harsh environments (wind & sand, high temperature and high humidity).

## Fracturing Pump Sets Electric Control System

The fracturing pump sets electric control system uses advanced all-digital water-cooled frequency converter to drive the six-phase variable frequency motor to realize multi-phase redundancy control of the motor, and its reliability is greatly enhanced. By combining communication network technology and program control technology, the subsystems of the fracturing pump electric drive system are integrated to realize the intelligent control of the electric fracturing pump. The system adopts a skid-mounted structure, which is divided into a high-voltage room, a transformer room and a variable frequency drive room according to the functional areas, and quick-plug external interfaces enable convenient mobile operation. The fracturing pump electric drive system is composed of subsystems such as high-voltage substation system, variable frequency drive system, power supply and distribution system, water cooling system, automatic control system and remote monitoring system. In high-voltage substation system, there are 10kV and 6kV grid power for option, equipped with 24-pulse rectifier transformer, pre-magnetization circuit to avoid transformer surge current impact on the power grid and other equipment. The advanced all-digital medium-voltage water cooling converter is equipped with efficient water-cooling system, which greatly improves heat dissipation efficiency. The whole electric drive system has the advantages of green, environmental protection, low operating noise and low harmonic content.



## IE-HOUSE 系统

IE-HOUSE 是一种客户定制型、预制模块化的智能可移动电气动力控制系统。它高度融合了高低压智能化开关控制、谐波治理、变频控制、网络通信、可编程控制、实时监控、智能消防、温湿度控制等自动化电气技术，通过高强度结构模块进行系统集成，提供智能化、可靠性和安全性兼备的定制型电气系统。现场设备工厂化，可大大减少用户现场基建的施工周期和资金投入。可广泛应用于石化、海工、地质、矿山、电站、城铁、新能源等行业。



### **IE-HOUSE System**

IE-HOUSE is a customized, prefabricated modularized intelligent mobile electric control system. It deeply integrates high-low voltage intelligent switch control, harmonic control, frequency conversion control, network communication, programmable control, real-time monitoring, intelligent fire protection, temperature and humidity control and other automated electrical technologies. And its system is integrated through high-strength structural modules to provide a customized electric system that combines intelligence, reliability and safety. The factorized on-site equipment can greatly reduce the construction period and capital investment of the user's on-site infrastructure. And it can be widely used in petrochemical, offshore, geology, mining, power stations, urban railways, new energy and other industries.



## 移动电站

移动电站，实现单台或多台柴油发电机组的并网运行，为各类型的野外基地、大型用电设备、岛礁等提供电源。采用 PMS 电能管理系统，具备高效，节能及便携性的特点。

### Mobile Power Station

The mobile power station realizes the synchronization operation of single or multiple diesel generator sets, and provides power for various types of field bases, large-scale power equipment, island reefs, and the like. The PMS power management system is adopted and it is characterized by high efficiency, energy saving and portability.



## 船舶岸电电源系统

船舶岸电电源系统，即在船舶靠港期间，停用船舶上的柴油发电机供电，而由（港区）码头对船上电气设备供电的中介系统。适用于 IT 系统和 TN-S 系统，依据港口配电容量和船舶停靠泊位数量等设计岸电电源系统容量，一般为 200 ~ 8000kVA。供电方式主要包含两种（高压上船：输入侧 6kV 或 10kV，50Hz；输出侧 6kV/50Hz ,6.6kV/60Hz。低压上船：输入侧 0.4kV、6kV 或 10kV，50Hz；输出侧 0.4kV/50Hz ,0.45kV/60Hz）。应用船舶岸电电源系统是解决靠岸船舶柴油发电机对港口带来污染问题的重要举措，对节能减排建设绿色港口有着非常积极的意义。

### Ship Shore Power System

The ship shore power supply system, that is, the intermediate system that stops the power of the diesel generators on the ship during mooring and supply power to the ship's electrical equipment by the (port) terminal. IT system and TN-S system are available, and the design of shore power system capacity, which is generally 200-8000kVA, is based on port distribution capacity and the number of docked berths. The power supply mode mainly includes two types (high voltage input: input side 6kV or 10kV, 50Hz; output side 6kV/50Hz, 6.6kV/60Hz. Low voltage input: input side 0.4kV, 6kV or 10kV, 50Hz; output side 0.4kV/50Hz, 0.45kV/60Hz). The application of the ship shore power supply system is an important measure to solve the pollution problem caused by the diesel generators on the port, and it has a very positive significance for the construction of green ports for energy saving and emission reduction.



### 全生命周期服务

天水电传产品服务涵盖石油钻机电气传动控制系统运行的全生命周期。

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TEDRI product service covers the entire life cycle of the operation of the oil rig electric drive control system.

Service goals: satisfy and assure customers, keep improving and enhancing service quality.

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