【国机集团国际化经营系列丛书】

国机制造

R&D AND MANUFACTURE

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第一卷

Volume Ⅰ

中国机械工业集团有限公司
China National Machinery Industry Corporation

国机制造

R&D AND MANUFACTURE

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8.3 国机智能科技有限公司
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（1）机器人 /Robot ..... 1254 & P1309

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CHINA HARBIN POWER SYSTEM ENGINEERING & RESEARCH INSTITUTE CO.,LTD.

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中设集团装备制造有限责任公司

China Machinery Industrial Products Co., Ltd.

公司名称：中设集团装备制造有限责任公司

Company Name: China Machinery Industrial Products Co., Ltd.

http://www.cmecipc.com

中设集团装备制造有限责任公司（中设装备）是中设集团全资核心子公司，是经国家认定的高新技术企业，拥有十余项专利技术。

中设装备专注于高端铸锻件、铜件、焊接结构件及精加工件等产品的制造，是世界上最大的矿山履带板供应商。在国内率先突破了高速列车铸钢制动盘盘体的生产技术，高铁制动盘完成了 60 万公里实际运行，各项指标达到甚至超过国际先进水平；高铁接地摩擦盘在高速列车上广泛应用。

中设装备拥有一个研发中心及铸件、锻件、铜件三个生产基地，为世界 500 强 OEM 客户提供从研发、质量控制、生产、售后服务、VMI（供方库存管理）全产业链的一站式整体解决方案。产品广泛应用于矿山设备、工程机械、电力、冶金、油气、造船、交通等行业。

China Machinery Industrial Products Co., Ltd. (CMIPC) is a key subsidiary company of China Machinery Engineering Corporation (CMEC).

CMIPC focuses on manufacturing of castings, forgings, bronze bushings, fabrications, finish machined parts, it's the largest supplier of mining crawler shoes in the world and the first in China to make a break-through in production technology of cast steel brake discs for high speed train. Brake discs developed by CMIPC for high speed train of 250 km/h have passed the 600,000-kilometer in-operation assessment.

CMIPC has a technology center and three manufacturing bases and provides 500 top ranking global Original Equipment Manufacturers with full supply chain management including research & development, manufacturing, quality control, after-market service and Vendor Managed Inventory. Its products are widely used in mining equipment, construction machinery, power generation, metallurgy, oil & gas, shipbuilding, transportation industries.

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1 高速列车制动盘
1 Brake discs for high speed train

图 1.1　轴装制动盘

图 1.2　轮装制动盘

图 1.3　重载机车制动盘

产品介绍

在国内，中设装备公司率先突破了高速列车铸钢制动盘盘体的生产技术。目前已经完成 4 个大类 10 个规格制动盘产品的生产开发，分别为时速 200~250 公里及时速 300~350 公里的轮装和轴装制动盘盘体，以及高速重载机车制动盘盘体。已经拥有高速列车制动盘制造相关的 4 项发明专利和 4 项实用新型发明专利，其中 1 项发明专利入选 2017 年国家铁路局重大科技创新成果库。

产品特性

国外制动盘设计寿命大约为 240 万公里，中设装备生产的产品设计寿命可达 480 万公里，比国外产品提高了一倍。

Product Introduction

CMIPC is the first in China to make a break-through in production technology of cast steel brake discs for high speed train. So far, CMIPC has developed brake discs for 10 specifications in 4 major categories: Axle-mounted discs for high speed train of 200-250km/h & of 300-350km/h, Wheel-mounted discs for high speed train of 300-350km/h and heavy-haul locomotives of 160-200km/h.

2 高铁用摩擦盘和碳刷架

2 Friction disc and carbon brush carrier for high speed train

图 2.1　摩擦盘

图 2.2　碳刷架

图 2.3　接地装置

产品介绍

摩擦盘和碳刷架是高铁用大电流导电装备接地装置中关键部件，中设装备公司研发的产品经过 60 万公里考核，现已批量装车，并在最新“复兴号”标准动车组装车运行。

Product Introduction

Friction discs and carbon brush carriers are the key parts of grounding equipment for high speed train. Products developed by CMIPC have passed the 600,000-kilometer in-operation assessment, and have been mounted in batches on “Fuxing” high speed train and began trial running.

产品特性

中设装备公司研发生产的高铁用摩擦盘和碳刷架寿命可达 60 万公里。

3 四轮一带
3 Undercarriages

图 3.1 四轮一带

产品介绍

大型矿用电铲及液压铲的下行走系统，简称四轮一带，包括驱动轮总成、惰轮总成、支重轮／托链轮总成和履带总成。中设装备公司是目前可以提供成套的大型矿山用挖机四轮一带系统的主要供应商 .

Product Introduction

Undercarriage for mining electric rope shovels and hydraulic excavators consist of drive tumbler, idler assembly, top/ lower roller assembly and track pad assembly. CMIPC is a major supplier of undercarriage components globally.

4 铜套
4 Bronze bushings

图 4.1　铜套

产品介绍

生产能力：铜合金铸件年产量 3000 吨。

材质：C83600，C86300，C93200，C93700，C95400，C95500 等符合美国 ASTM，英国 BS，德国 DIN，日本 JIS 等标准。

重量范围：0.1 ～ 4,000kg

最大外径：4 米

Product Introduction

· Capacity: 3,000 tons per year for bronze & brass casting

· Material: C83600, C86300, C93200, C93700, C95400, C95500 etc. conform to ASTM, BS, DIN, JIS.

· Finish Weight Range: 0.1~4,000kg

· Maximum O.D.: 4 meter

产品特性

产品广泛应用于矿山设备、工程 机械 、造船 、石化等行业 。

Features

The products are widely used in mining equipment, construction machinery, shipbuilding, petrochemical industries.

5 高温合金
5 High temperature alloy

图 5.1 高温合金棒材

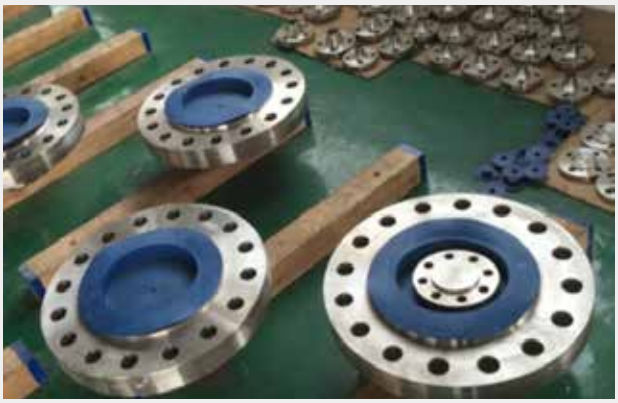
图 5.2 高温合金锻件

图 5.3 高温合金板材

图 5.4 高温合金管材

产品介绍

高温合金是指以铁、镍、钴为基，能在 600℃ 以上的高温及一定应力作用下长期工作的一类金属材料，具有优异的高温强度，良好的抗氧化和抗热腐蚀性能，良好的疲劳性能、断裂韧性等综合性能，又被称为“超合金，”是广泛应用于航空、航天、石化、舰船的一种重要材料。

产品形态

板材、锻件、钢管、管件、棒材、丝材、带材等。

主要业绩

石油化工设备

采油机械

航空、航天

汽车发动机配件

Product Introduction

High temperature alloy is a special metal material based on iron, nickel and cobalt. It works well under the condition of high temperature above 600 ˚C. It has excellent strength in high temperature working condition and good resistance to oxidation ,thermal corrosion resistance , fatigue properties, fracture toughness. It is also known as "super alloy" and widely used in aerospace, petrochemical shipbuilding industries.

Product form

Plate, forging, steel pipe, pipe fitting, bar, wire, strip, etc.

Main achievements

Petrochemical equipment

Oil &Gas

Aerospace

Automotive engine accessories

6 耐蚀合金
6 Corrosion Resistant Alloy

图 6.1 耐蚀合金锻件

图 6.2 耐蚀合金法兰

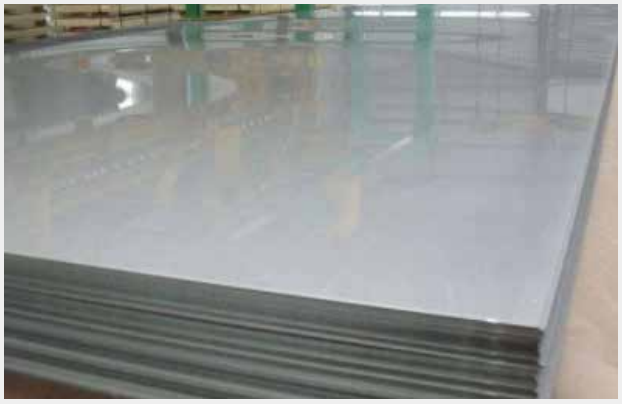
图 6.3 耐蚀合金板材

图 6.4 耐蚀合金管材

产品介绍

耐蚀合金是以镍为基体，适用于高温、高压、含硫环境、多相流等复杂工况的合金，广泛应用于油气、化工、环保、军工、海洋等领域。

产品形态

板材、锻件、钢管、管件、棒材、丝材、带材等。

主要业绩

石油化工设备
采油机械
环保设备
军工
海洋设备

Product Introduction

Corrosion resistant alloy is based on nickel, which can be well applied to high temperature, high pressure, sulfur-bearing environment, multiphase flow and other complex working conditions. It is widely used in oil & gas, chemical industry, environmental protection, military marine industries etc.

Product form

Plate, forging, steel pipe, pipe fitting, bar, wire, strip, etc.

Main achievements

petrochemical equipment
oil & gas
environmental protection equipment
military
Marine equipment

7 气阀钢
7 Air valve steel

图 7.1 Alloy LF2 气阀钢

图 7.2 N07751 气阀钢

图 7.3 Alloy 3015 气阀钢

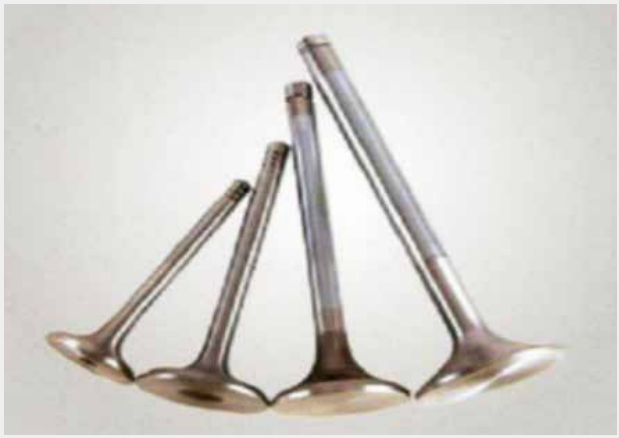

图 7.4 Nimonic80A 气阀钢

产品介绍

气阀钢是用于制造汽油发动机和柴油发动机进、排气阀的必用材料，也是整个发动机中的关键材料。一般气阀钢用于在高温、高压、高冲刷和高磨蚀的苛刻条件下工作，对气阀钢的性能要求较高，我们生产牌号均为高端发动机用镍基气阀钢。

产品形态

棒材

产品材质

Alloy LF2、N07751、Alloy 3015、Nimonic80A、31V Alloy

Product Introductio

Air valve steel is the necessary material in manufacturing intake and exhaust valves for gasoline engine, diesel engine and it's also the key material in the whole engine. Air valve steel has excellent performance in high temperature, high pressure, high erosion and high abrasion conditions. We manufacture Nickel-based air valve steel used in the high-end engine.

Product form

Bar

Product Material

Alloy LF2, N07751, Alloy 3015, Nimonic80A, 31V Alloy

8 特种合金丝材
8 High performance alloy material

图 8.1　镍基合金氩弧焊丝

图 8.2　镍基合金盘丝

图 8.3　ϕ0.6mm MP35N 丝材

图 8.4　ϕ0.08mm L605 丝材

产品介绍

我公司具备完整高端镍基合金焊材、钴基合金丝材等高端丝材研发、制造能力，已批量用于航空、航天、石化、医疗等行业的高端设备制造。

产品形态

盘条、丝材

主要业绩

石油化工装备
焊材厂母材
医疗器械
军工

产品材质：

ERNiCr—3、ERNiCrMo—3、ERNiCrMo—4、ERNiCrMo—10、ERNiCrMo—13、ERNiCu—7

Product Introduction

Our company has complete capabilities in R&D, manufacturing of high-end Nickel-base alloy and Cobalt-base alloy welding material. The products are widely used in aerospace, petrochemical, medical industries etc.

Product form

Wire rod, wire

Main achievements

petrochemical equipment
base material for welding material factory
medical instruments
military

Product Material

Ernicr-3, ernicrmo-3, ernicrmo-4, ernicrmo-10, ernicrmo-13, ernicu-7

天津电气传动设计研究所有限公司

Tianjin Research Institute of Electric Science Co., Ltd.

公司名称：天津电气科学研究院有限公司

Company Name: Tianjin Research Institute of Electric Science Co., Ltd.

http://www.tried.com.cn

天津电气科学研究院有限公司（原天津电气传动设计研究所）是原国家机械工业部直属研究所，现为中国机械工业集团有限公司所属、中国机械设备工程股份有限公司托管的国家创新型企业、国家级高新技术企业。

公司主要从事智能控制设备的研发及应用，在高端装备电气控制系统方面拥有丰富的工程实践经验。提供重型装备系统工程、智能装备系统工程、水力发电工程、变频器产品、储能及微网产品、电控设备检测等领域的系统解决方案。

Tianjin Research Institute of Electric Science Co., Ltd., TRIED, (Tianjin Design & Research Institute of Electric Drive) is owned by China National Machinery Industry Corporation, and now affiliated to CMEC, is a national innovation-oriented enterprise and a national high-tech enterprise.

TRIED is mainly engaged in the development and application of intelligent control equipment, and has rich engineering practice experience in high-end equipment electrical control system.

Provide system solutions in heavy-duty equipment system engineering, intelligent equipment system engineering, hydraulic power engineering, inverter products, energy storage and micro-grid products, testing and certification of electric drive and other fields.

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1 电气产品
1 Electrical Products

1.1 TMV1 中压大功率变频器
1.1 High-power three-level medium voltage converter

图 1.1　TMV1 中压大功率变频器

产品介绍

TMV1 中压大功率变频器属于高性能中压变频器，主要用于对调速性能要求很高的大功率交流电动机传动领域，例如冶金轧机、机车牵引、舰船推进、风力发电等主传动，变频器采用模块化结构设计，具有高功率密度、高可靠性，灵活扩展和强大易用等特点。

技术参数

额定输出容量：单机 6~10MVA，并联扩展最大到 32MVA

额定输出电压：3~3.3kV

输出频率：0~80Hz

速度控制稳态精度：±0.01%

控制方式：速度闭环或转矩闭环

Product Introduction

High - power three - level medium voltage converter belongs to high - performance medium voltage converter, It is mainly used in the drive field of high-power ac motor with high speed regulation performance, such as the main drive of metallurgical rolling mill, locomotive traction, ship propulsion, wind power generation, etc., Its inverter adopts modular structure design, with high power density, high reliability, flexible expansion and powerful and easy to use characteristics.

Main Technical Data

Rated output capacity: single 6~10MVA, parallel expansion up to 32MVA

Rated output voltage: 3~ 3.3kv

Output frequency: 0~80Hz

Steady-state accuracy of speed control: ±0.01%

Control mode: speed closed loop or torque closed loop

1.2 通用变频（逆变）器
1.2 General-purpose Converter

图 1.2　通用变频（逆变）器

产品介绍

通用变频（逆变）器可以输出频率可调的三相交流电，用于实现对交流电机的变频控制。功率等级从 5kW 到 4600 kW。通用变频（逆变）器根据软件参数设定不同，可运行于矢量控制模式和 V/F 模式。满足各种工业现场的使用要求。

技术参数

包括 9 种外型结构

功率范围：5~4600 kW

三相交流电网电压：AC380V—660V

直流母线电压 DC510V—930V

能够满足长期连续运行及 150%（60Sec）过载或其他过载能力要求

紧凑型结构设计

模块化的硬件、软件设计

Product Introduction

This general frequency inverter can convert industrial frequency power to variable frequency three-phase AC, used to implement frequency conversion control of AC motor. The range of power grade is from 5kW to 4600 kW.

With different software parameters configuration, this general frequency inverter can be operated under two different modes: vector control mode and the V/F control mode. The former mode is used in various industrial fields.

Main Technical Data

Includes 9 kinds of structure

Power range: 5~4600kW

The three-phase AC voltage: AC380V-660V

DC busbar voltage: DC510V-930V

Able to meet the long-term continuous operation and 150% (60Sec) requirements for overload or other overload capacity requirements.

Compact structure design

Modular design of hardware and software

1.3 变流装置
1.3 Converter Device

图 1.3.1　ZX □ A

图 1.3.2　ZX □ B

图 1.3.3　ZX1C

图 1.3.4　RG □ A

产品介绍

变流装置包括 ZX 系列和 RG 系列。ZX 系列、RG 系列整流装置为三相交流电源供电整流装置。

控制部分可根据不同的应用场合，选择不同的控制系统，组成大功率、高性能的交流或直流系统。应用于冶金、矿山、石油等多个工业领域。

技术参数

功率范围 30kW—4000kW；

三相交流进线电压从 3AC 400V—1200V；

具有长期连续运行及 150%（60Sec）或 200%（60Sec）以及其他过载能力要求；

包括四种系列；

模块化的硬件、软件使其能够达到精确配合；

单象限、四象限运行选配；

配套标准接口，适用多种全数字调速器，用于直流传动系统、交－交变频系统或公共直流母线系统等。模块化的硬件、软件设计

Product Introduction

Converter device including ZX series and RG series. They are three-phase AC power supply devices. According to different applications, the control part can choose different control system for high power, high performance AC or DC system. The product can be used in various industrial fields such as metallurgy, mine, petroleum etc.

Main Technical Data

Power range: 30kW-4000kW

Three phase AC line voltage range: 3AC 400V-1200V

Able to meet the long-term continuous operation and 150% (60Sec) or 200% (60Sec) requirements for overload and other overload capacity requirements.

Including four series

Modular hardware and software to achieve accurate matching

Single quadrant, four quadrant operation can choose

Standard interface, suitable for a variety of digital governor, can be used for DC drive system, cycloconverter system or public DC bus system, etc.

1.4 大功率光伏并网逆变器
1.4 High-power photovoltaic inverter

1.4 大功率光伏并网逆变器

产品介绍

具备电压穿越功能，并通过国网认证；
具备夜间 SVG 功能，全天候响应电网调度指令；
采用先进的主动式防孤岛技术；
集成优化的 PWM 调制算法，提高弱光发电量；
采用智能调速风冷散热设计，散热效率高；
采用高性能 DSP 芯片和 FPGA 大规模门阵列；
设备温度范围宽，适用于恶劣的工作环境；
装置体积小，重量轻，易于安装和运输；
可灵活集成直流汇流功能，满足多种应用场合需求。

Product Introduction

Zero voltage ride through function;
Night SVG function, response dispatching instruction;
The use of advanced active anti islanding technique;
The PWM algorithm optimized, improve low light power generation;
Intelligent speed air cooling design, high thermal efficiency, low power consumption of the fan;
Adopt the 32 bit DSP chip and the FPGA scale gate array;
Wide temperature range, suitable for harsh working environment;
Small volume, light weight, easy to install and transport;
Integrated functions of DC bus.

产品主要技术参数

MPPT 电压范围	450~820Vdc
启动电压	470Vdc
最大光伏阵列开路电压	1000Vdc
MPPT 效率	＞ 99.8%
最大直流电流	1200A
额定输出功率	500kW
最大输出容量	550kVA

Technical Parameters

MPPT Voltage Range	450~820Vdc
Starting voltage	470Vdc
Max DC voltage	1000Vdc
MPPT Efficiency	>99.8%
Max input DC current	1200A
Rated output power	500kW
Max output power	550kVA

额定输出电流	1069A
最大输出电流	1176A
欧洲效率	98.5%
最大效率	98.8%
输出电压	315Vac
工作电压范围	315Vac±15%
总电流波形畸变率	≤ 2.5%
额定电网频率	50/60Hz
可工作频率	47~52/57~62Hz
功率因数	－ 0.9~ ＋ 0.9
待机损耗	＜ 50W

环境条件和安全

防护等级	IP20
冷却方式	智能调速风冷
相对湿度	≤ 95%（无冷凝）
环境温度	−20~+45℃
安装最高海拔	3000m 以下无降容
排风需求量	4600m^3/h

显示与通讯

显示	LCD 触摸屏
标准通讯方式	RS485/ 以太网、CAN、RS232

机械参数

外形尺寸（宽＊高＊深）	1256mm*1780mm*830mm
重量	1630kg

国内外应用业绩

目前国内已经累计应用超过 350MW，在山东、河南、陕西等多地成功应用。

Rated output current	1069A
Max output current	1176A
European efficiency	98.5%
Max efficiency	98.8%
Output voltage	315Vac
Grid voltage range	315Vac±15%
Current THD	≤2.5%
Rated grid frequency	50/60Hz
Grid frequency range	47~52/57~62Hz
Power factor	-0.9~+0.9
Standby loss	<50W

Environmental conditions and safety data

Protection degree	IP20
Cooling method	IRC air-cooling
Permitted relative humidity	≤95%
Permitted ambient temperature	-20~+45℃
Highest altitude	3000 meters
Exhaust demand	4600m^3/h

Display AND Communication interface

Display	Touch-screen LCD
Communication interface	RS485/Ethernet, CAN

Mechanical data

Dimension(W*H*D)	1256mm*1780mm*830mm
Weight	1630kg

Application performance

Products are widely used in Shandong, Henan, Shaanxi, reaching 350MW.

1.5 储能变流器（PCS）
1.5 Power control system (PCS)

1.5 储能变流器（PCS）

1）产品简介

高品质硬件配置

主要元器件选用国际知名品牌，可靠性高；

采用最先进的 32 位 DSP 芯片和最先进的 FPGA 大规模门阵列；

采用光纤通信，保证通信的实时性和可靠性；

工作温度范围宽，适应于恶劣的工作环境；

高品质硬件是保证系统在全生命周期内稳定可靠运行的基石。

稳定、可靠的控制方案

具备零电压穿越功能；

具备离网（孤岛）运行功能；

并离网切换时间可设定；

具备先进的多机并联技术，同一台电力变压器下最多可实现 5 台并联；

采用先进的谐波抑制技术；

具有接受有功、无功调度功能；

最高转化效率可达 98.8%。

1) Product Introduction

High quality hardware configuration

The main components are well-known brands and have high reliability.

Adopt the 32 bit DSP chip and the FPGA scale gate array.

Adopt fiber-optic communication to ensure system communication reliability and real-time performance.

Wide temperature range, suitable for harsh working environment.

High quality hardware guarantees equipment.

Advanced system control solution

1) Zero voltage ride through function.

2) Off-grid operation.

3) And quickly switch off the grid.

4) Advanced multi-machine parallel operation control technology.

5)Advanced grid harmonic suppression technology.

6)Ability to accept active power and reactive power scheduling.

7)The highest conversion efficiency :98.8%.

2）产品主要技术参数
2) Technical Parameters

额定功率 Rated output power	500kW
最大功率 Max output power	600kW
最大直流电流 Max DC current	868A
输入直流电压范围 DC voltage range	600V~800V
直流电压纹波 DC voltage wave	≤ 1%
交流侧电压范围 AC voltage range	360V~440V
允许电网频率 Grid frequency range	47~52Hz
电流波形失真率 Current THD	≤ 2.5%
电网侧功率因数 Power factor	－0.9~＋0.9
最大效率 Max efficiency	98.8%
离网额定输出电压 Off-grid voltage	400V
离网电压不平衡度 Off-grid voltage imbalance	＜2%（线性负载）
离网电压总谐波畸变率 Off-grid voltage THD	＜3%
离网额定输出频率 Off-grid frequency	50Hz
离网动态电压瞬变范围 Off-grid voltage range	＜10%（电阻负载 0% 到 100%） ＜10%（Load 0% to 100%）

3）环境条件和安全

防护等级	IP20
冷却方式	智能调速风冷
相对湿度	≤ 95%（无冷凝）
环境温度	－20~+45℃
安装最高海拔	3000m 以下无降容
排风需求量	4600m³/h
抗震能力	7 级 0.1g

4）显示与通讯

显示	LCD 触摸屏
标准通讯方式	RS485／以太网、CAN、Profibus—DP

5）机械参数

外形尺寸（宽＊高＊深）	1700mm*1970mm*850mm
重量	1680kg

6）国内外应用业绩

该产品在印尼累计应用 5MW，同时 80MW 正在建设中。

3)Environmental conditions and safety data

Protection degree	IP20
Cooling method	IRC air-cooling
Permitted relative humidity	≤95%
Permitted ambient temperature	-20~+45℃
Highest altitude	3000 meters
Exhaust demand	4600m³/h
Seismic resistance	7Class 0.1g

4)Display AND Communication interface

Display	Touch-screen LCD
Communication interface	RS485/Ethernet,CAN,DP

5)Mechanical data

Dimension(W*H*D)	1700mm*1970mm*850mm
Weight	1680kg

6)Application performance

5MW energy storage power station have been applied in Indonesia. 80MW energy storage power station is under construction in Indonesia .

2 水电设备
2 HYDROPOWER EQUIPMENT

2.1 水轮机调速器
2.1 HTURBINE GOVERNOR

图 2.1　水电设备－水轮机调速器

图 2.2　水电设备

1) 产品简介

天津电气科学研究院有限公司水电设备成套公司（简称天传水电）研制的水轮机调速器以微型计算机为控制核心，步进电机和比例阀为电液转换组件，触摸屏为人机对话界面，硬件配置先进，软件技术成熟，技术先进，可靠性高，各种系列产品适用于不同机型的水力发电机组，几十年来，数千台天传水电的调速器运行在世界各地的水电站。

天传水电参与的《特大型水轮机控制系统关键技术、成套装备与产业化》项目，荣获国家科技进步二等奖，引领国际先进水平。

天传水电调速器为中国电器工业协会质量可信产品。

2) 水轮机调速器技术性能

产品符合 GB/T 9652.1—2019《水轮机调速系统技术条件》，GB/T9652.2—2019 《水轮机调速系统试验》，IEC60308《水轮机控制系统试验》和 IEC61362《水轮机控制系统规范指南》的技术要求。

1)Product Introduction

The turbine governors made by Hydropower Co. of Tianjin Research Institute of Electric Science Co., Ltd (TRiED HYDRO) are integrated with PLC (PCC) as control core, step motor and proportional servo valve as electro-hydraulic converter, GOT as user-friendly interface. With the advance technology and high reliability thousands of turbine governors made by TRiED HYDRO have been running in the hydorpower plants all over the world for decades,

The project “The Key Technology, Complete Equipment and Industrialization for Large Turbine Control System ” researched jointly by TRiED etc is placed second in National Science and Technology Progress Award.

TRiED Manufacturing is certified by ISO9001 QMS Certificate of Registration and GB/T24001/ISO14001 EMS Certificate of Registration.

Turbine Governor made by TRiED HYDRO are certified by China Electrical Equipment Industry Association.

2)TURBINE GOVERNOR SPECIFICATION

Standards GB/T 9652.1-2019 “(Specifications of hydraulic turbine governing systems”, GB/T9652.2-2019 ”Testing specifications of hydraulic turbine governing systems”, IEC60308 “Hydraulic turbines

调速器主要技术指标

静态特性曲线近似为直线；

转速死区 ix：中小型：<0.06%，大型：<0.02%；

转桨式水轮机调速系统，桨叶随动系统的不准确度不大于 0.8%；

接力器不动时间 <0.2 秒；

调速器主要技术参数

比例增益	0.5 ～ 20
积分增益：	0.05 ～ 10 ^{1}/s
微分增益：	0 ～ 5s
永态转差系数：	0 ～ 10 %
人工频率死区：	0 ～ ±1%Hz
频率给定：	45 ～ 55Hz/54 ～ 66Hz
功率给定：	0 ～ 110%
电气开度限制：	0 ～ 100%

频率测量：残压测频 AC0.5 ～ 110V，齿盘测速 DC24V

电源：AC:220V ±15%，DC220V/110V±15%

工作油压：2.5/4.0/6.3/10/12/16 MPa

开关机时间设定：2.5 ～ 60s

调速器主要功能

自动／手动开停机、增减负荷，保证在孤网和大网中稳定运行；

自动跟踪电网频率，设有多种启动模式，机组并网快速准确；

具有一次调频功能；

设有紧急停机装置，接受事故信号后自动紧急停机，亦可手动操作；

RS485 通讯接口，实现电站计算机监控管理；

以下功能按实际需要增设：

水位调节功能：保证上下游水位在给定范围内；

功率调节功能：保证机组输出功率在给定范围内；

分段关闭功能：限制甩负荷时的转速和水压上升值；

调压阀控制功能：长有压引水系统的中小型水电站，设置与调速器液压连锁的调压阀，确保电站安全运行。

- Testing of Control Systems" and IEC61362 "Guide to specification of hydraulic turbine governing systems." are adopted in our Turbine governor application.

Governor Main Technical Performance

Static characteristic curve is approximately a straight line
Speed dead band ix: <0.06% for medium and small type governor
<0.02% for large type governor
Inaccuracy of blade servo system for Kaplan turbine < 0.8%.
Servomotor dead time:<0.2 s

Governor Main Technical Data

Proportional gain:	0.5~20
Integral gain:	0.05~10 ^{1}/s
Derivative gain:	0~5s
Permanent droop:	0~10%
Artificial frequency dead band:	0~±1%Hz
Frequency setting range:	45~55Hz/54~66Hz
Power setting range:	0~110%
Electric opening limit setting range:	0~100%
Frequency measure: by residual voltage	AC0.5/110V,
by gear	DC24V

Power supply:
AC220V/110V±15%, DC220V/110V±15%
Rated hydraulic pressure:
2.5/4.0/6.3/10/12/16 MPa
Open/close time: 2.5~60s

Governor Functions

Auto/Manually start, stop, load increase/decrease; operation smoothly on a paralleled or isolated grid;
Unit frequency follows the grid rapidly and accurately, unit can be synchronized quickly and smoothly.
Primary frequency adjusting function
Equipped with emergency stopping device, the unit can be emergency stopped automatically after received accident signal or stopped manually.
RS485 communication
The following functions as per required:
Water level control: ensure the upstream and downstream water level are within limit
Load control:ensure the output is within the set range
Two steps closing:limit the speed rise and pressure rise during load rejection
Pressure relief valve: it is equipped to ensure the safe operation for the small and medium-sized hydropower plants with long pressure canal system

2）产品主要技术参数
2) Technical Parameters

大型双调节调速器业绩表 Experience of large size governor（double regulating governor）				
序号	电　站	型 号 Type	地　点	数量
1	文峰电站 Wenfeng	TDBWST-100	四川 Sichuan	3
2	偏石山 Pianshishan	TDBWST-80	广东 Guangdong	3
3	永兴 Yongxing	TDBWST-100	湖南 Hunan	1
4	浪水 Langshui	TDBWST-100	广西 Guangxi	2
5	江厦潮汐电站 Jiangxia	TDBWST-80	浙江 Zhejiang	1
6	八盘峡 6#Bapanxia6#	TDBWST-80-4.0	甘肃 Gansu	1
7	勒黄电站 Lehuang	TDBWST-100	广西 Guangxi	1
8	八盘峡 5#Bapanxia5#	TDBWST-100-4.0	甘肃 Gansu	1
9	ZAZA	TDBWST-50	古巴 Cuba	2
10	上罗 Shanluo	TDBWST-80-4.0	江西 Jiangxi	2
11	天宫电站 Tiangong	TDBWST-80-4.0	福建 Fujian	3
12	肯足 Kenzu	TDBWST-100	广西 Guangxi	2
13	八盘峡 4#Bapanxia	TDBWST-100-4.0	甘肃 Gansu	1
14	三枫 Sanferng	TDBWST-50	广东 Guangdong	2
15	关公凹 Guangongao	TDBWST-80-4.0	福建 Fujian	2
16	江口 Jiangko	TDBWST-80-4.0	广东 Guangdong	3
17	小云峰 Xiaoyunfeng	TDBWST-80	黑龙江 Heilongjiang	4
18	开元电厂 Kaiyuan	TDBWST-100	四川 Sichuan	1
19	小杞电站 Xiaoqi	TDBWST-100-6.3	福建 Fujian	2
20	黎河三级 Lihe	TDBWST-80-4.0	河北 Hebei	1
21	江口电站 Jiangko	TDBWST-100-4.0	广东 Guangdong	2
22	都平电站 Douping	TDBWST-100-4.0	广东 Guangdong	2
23	白垢电站 Baigou	TDBWST-100	广东 Guangdong	2
24	班山尾 Banshanwei	TDBWST-100	广西 Guangxi	2
25	红湖电站 Honghu	TDBWST-80-4.0	福建 Fujian	2
26	绵良电站 Mianliang	TDBWST-100-6.3	福建 Fujian	2
27	靖村电站 Jingcun	TDBWST-100-6.3	广东 Guangdong	2
28	利水电站 Lishui	TDBWST-80-6.3	福建 Fujian	3
29	上长洲 Shangchangzhou	TDBWST-80-4.0	江西 Jiangxi	3
30	七星墩 Qixingdun	TDBWST-80-4.0	广东 Guangdong	3
31	新庄电站 Xinzhuang	TDBWST-80-4.0	广东 Guangdong	3
32	白水江 Baishuijiang	TDBWST-100-2.5	云南 Yunnan	4
33	MENTAS	TDBWST-100-4.0	土耳其 Turkey	4
34	桂坑 Guikeng	TDBWST-80-2.5	广东 Guangdong	1
35	西山电站 Sesan	TDBWST-100-6.3	越南 Viet Nam	3
36	留金坝 Liujinba	TDBWST-100-6.3	江西 Jiangxi	2
37	名间电站 Mingjian	TDBWST-80-4.0	台湾 Taiwan	2
38	三甲电站 Sanjia	TDBWST-100	甘肃 Gansu	3
39	东江 Dongjiang	TDBWST-100-6.3	广东 Guangdong	4
40	英布鲁 IMBULOU	TDBWST-100-6.3	刚果 Congo	4
41	西金沟 Xijingou	TDBWST-80-4.0	吉林 Jilin	4
42	黎河四级 Lihe	TDBWST-80-4.0	河北 Hebei	1
43	长泥坪 Changniping	TDBWST-80-4.0	湖南 Hunan	2

44	天宝 Tianbao	TDBWST-80-4.0	云南 Yunnan	2
45	石龙嘴 Shilongzui	TDBWST-100-2.5	四川 Sichuan	2
46	松溪前进 Songxiqianjin	TDBWST-100-2.5	福建 Fujian	1
47	YAVUZ	TDBWST-80-4.0	土耳其 Turkey	3
48	UMUTLU	TDBWST-80-4.0	土耳其 Turkey	3
49	CHAO PHRAYA	TDBWST-80-4.0	土耳其 Turkey	2
50	金星电站 Jinxing	TDBWST-80-4.0	青海 Qinghai	1
51	齐家坪 Qijiaping	TDBWST-80-4.0	甘肃 Gansu	3
52	KARAKOY	TDBWST-80-6.3	土耳其 Turkey	1
53	Naresuan	TDBWST-80-6.3	泰国 Thailand	1
54	TUZKOY	TDBWST-80-4.0	土耳其 Turkey	2
55	牛岐电站 Niuqi	TDBWST-80-4.0	广东 Guangdong	2
56	DAGDELEN	TDBWST-80-4.0	土耳其 Turkey	2
57	KIRAZL IK	TDBWST-80-6.3	土耳其 Turkey	3
58	KUSAKLI	TDBWST-80-4.0	土耳其 Turkey	2
59	吉利电站 Jili	TDBWST-100-6.3	甘肃 Gansu	2
60	MEKIN	TDBWST-80-4.0	喀麦隆 Cameroon	3
61	左浙 Zuozhe	TDBWST-50-6.3	越南 Viet Nam	2
62	莲麓一级 Lianlu	TDBWST-80-4.0	甘肃 Gansu	1
63	开元电厂 Kaiyuan	TDBWST	四川 Sichuan	3
64	堡口 Baokou	TDBWST-100-2.5	湖南 Hunan	3
65	石龙嘴改造 Shilongzui	TDBWST-100-2.5	四川 Sichuan	2
66	永河 Yonghe	TDBWST-60-6.3	新疆 Xinjiang	1
67	新丰 Xinfeng	TDBWST-50-16	广西 Guangxi	2
68	名间电站改造 Mingjian	TDBWST-80-4.0	台湾 Taiwan China	2
69	鱼龙岗 Yulonggang	TDBWST-80-4.0	福建 Fujian	2
70	界滩 Jietan	TDBWST-100-6.3	广东 Guangdong	3
71	鹤地 Hedi	TDBWST-100-2.5	广东 Guangdong	2
72	青莲 Qinglian	TDBWST-100-2.5	四川 Sichuan	2
73	MANTAS	TDBWST-100-4.0	土耳其 Turkey	1
大型单调节调速器业绩表 Experience of large size governor（single regulating governor）				
1	丁村坝 Dingcunba	TDBWT-80	四川 Sichuan	3
2	小干沟 Xiaogangou	TDBWT-80	青海 Qinghai	1
3	永乐电站 Yongle	TDBWT-100-4.0	四川 Sichuan	3
4	上立亭 Shangliting	TDBWT-80-4.0	贵州 Guizhou	2
5	洛泽河 Luozehe	TDBWT-100	云南 Yunnan	1
6	镜泊湖 Jingpohu	TDBWT-80	黑龙江 Heilongjiang	2
7	大干沟 Dagangou	TDBWT-80	青海 Qinghai	2
8	高岭头二级 Gaolingtou	TDBWT-80-4.0	浙江 Zhejiang	1
9	藤子沟 Tengzigou	TDBWT-80-4.0	重庆 chongqing	2
10	金九电站 Jinjiu	TDBWT-80-4.0	福建 Fujian	1
11	洛泽河 Luozehe	TDBWT-100	云南 Yunnan	1
12	龙门滩四级 Longmentan	TDBWT-100-4.0	福建 Fujian	2
13	八镜湖 Bajinghu	TDBWT-80	江西 Jiangxi	3
14	阿珠 Azhu	TDBWT-80-4.0	贵州 Guizhou	2
15	坛罐窑 Tanguanyao	TDBWT-100-2.5	四川 Sichuan	2
16	KOYULHISAR	TDBWT-80-4.0	土耳其 Turkey	2

17	KAJAKAI	TDBWT-80-4.0	阿富汗 Afghanistan	3
18	槟榔 Binglang	TDBWT-100-4.0	云南 Yunnan	2
19	李大坪 Lidaping	TDBWT-80-4.0	福建 Fujian	1
20	小篷祖 Xiaopengzu	TDBWT-80-4.0	云南 Yunnan	2
21	CIRAKDAMI	TDBWT-80-4.0	土耳其 Turkey	2
22	DERELI	TDBWT-80-4.0	土耳其 Turkey	2
23	GOKTAS	TDBWT-100-6.3	土耳其 Turkey	2
24	嘉兴 Jiaxing	TDBWT-80-4.0	越南 Viet Nam	2
25	金星电站 Jinxing	TDBWT-80-4.0	青海 Qinghai	3
26	GOKTAS	TDBWT-100-4.0	土耳其 Turkey	2
27	MIDILLII	TDBWT-80-4.0	土耳其 Turkey	3
28	姚家山 Yaojiashan	TDBWT-100-2.5	辽宁 Liaoning	3
29	SEFAKOY	TDBWT-80-4.0	土耳其 Turkey	2
30	龙门滩一级 Longmentan	TDBWT-80-4.0	福建 Fujian	2
31	土仓电站 Tucang	TDBWT-80-4.0	云南 Yunnan	1
32	朗外河 Langwaihe	TDBWT-80-4.0	云南 Yunnan	3
33	南告 Nangao	TDBWT-100-2.5	广东 Guangdong	3
34	镜泊湖 5、6#Jingbohu	TDBWT-100-2.5	黑龙江 Heilongjiang	2
35	镜泊湖 3、4#Jingbohu	TDBWT-100-2.5	黑龙江 Heilongjiang	2
36	大平田 Dapingtian	TDBWT-80-6.3	云南 Yunnan	3
37	下坝电站 Xiaba	TDBWT-80-2.5	福建 Fujian	2
中小型调速器业绩表 Experience of small and medium size governor				
1	石头河 Shitouhe	TDBYWT-600-2.5	陕西 Shanxi	2
2	乃吉里 Naijili	TDBYWT-30000-16.0	青海 Qinghai	2
3	乃吉里 Naijili	TDBYWT-55000-16.0	青海 Qinghai	1
4	小干沟 Xiaogangou	TDBYWT-50000-16.0	青海 Qinghai	4
5	大干沟 Dagangou	TDBYWT-55000-16.0	青海 Qinghai	1
6	古宁 Guning	TDBYWT-30000	云南 Yunnan	1
7	新牙河二级 Xinyahe	TDBYWT-10000-16.0	云南 Yunnan	2
8	五指山二级 Wuzhishan	TDBYWT-6000-2.5	广东 Guangdong	1
9	哈萨克斯坦 Kazakhstan	TDBYWT-1800/3000	哈萨克斯坦 Kazakhstan	4
10	鹤地 Hedi	TDBYWT-18000-16.0	广东 Guangdong	3
11	华林溪 Hualinxi	TDBYWT-10000-4.0	福建 Fujian	2
12	那棱格勒河 Nalinggelehe	TDBYWT-55000-16.0	青海 Qinghai	2
13	那棱格勒河 Nalinggelehe	TDBYWT-18000-16.0	青海 Qinghai	2
14	水闸桥 Shuizhaqiao	TDBYWT-75000-16.0	福建 Fujian	1
15	蓝田 Lantian	TDBYWT-50000	福建 Fujian	1
16	扎敦 Zhadui	TDBYWT-18000	内蒙古 Neimenggu	3
17	朗外河 Langwaihe	TDBYWT-120000-16.0	云南 Yunnan	1
18	梅花山三级 Meihuashan	TDBYWT-6000-16.0	福建 Fujian	1
19	俄博图小机 Ebotu	TDBYWT-10000-16.0	青海 Qinghai	1
20	鲤鱼头 Liyutou	TDBYWT-1000-12.0	湖北 Hubei	2
21	大片溪三级 Dapianxi	TDBYWT-1000-16.0	福建 Fujian	2
22	观音岩 Guanyinyan	TDBYWT-30000-16.0	安徽 Anhui	2
23	中克炉 Zhongkelu	TDBYWT-10000-16.0	福建 Fujian	2
24	洪溪二级 Hongxi	TDBYWT-18000-16.0	浙江 Zhejiang	2
25	纳拉滩 Nalatan	TDBYWT-10000-16.0	青海 Qinghai	1

26	团结电站 Tuanjie	TDBYWT-75000-16.0	云南 Yunnan	2
27	赤水溪 Chishuixi	TDBYWT-6000-16.0	福建 Fujian	2
28	白石 Baishi	TDBYWT-42000-2.5	辽宁 Liaoning	2
29	良坝 Liangba	TDBYWT-5000-2.5	福建 Fujian	2
30	红山 Hongshan	TDBYWT-30000-12.0	内蒙古 Neimenggu	4
31	朱坂 Zhuban	TDBYWT-18000-16.0	福建 Fujian	3
32	卢西瓦西 Lusiwasi	TDBYWT-18000-12.0	赞比亚 Zambia	3
33	赤坑 Chikeng	TDBYWT-6000-16.0	福建 Fujian	2
34	三斗电站 Sandou	TDBYWT-6000-10.0	福建 Fujian	2
35	吉溪 Jixi	TDBYWT-6000-16.0	福建 Fujian	5
36	百丈漈 Baizhangji	TDBYWT-6000-16.0	福建 Fujian	3
37	富泉溪一级 Fuquanxi	TDBYWT-10000-16.0	福建 Fujian	2
38	富泉溪二级 Fuquanxi	TDBYWT-18000-16.0	福建 Fujian	2
39	富泉溪三级 Fuquanxi	TDBYWT-30000-16.0	福建 Fujian	2
40	耖家庄 Chaojiazhuang	TDBYWT-30000-16.0	陕西 Shanxi	2
41	拿口 Nakou	TDBYWT-6000-16.0	福建 Fujian	5
42	三溪 Sanxi	TDBYWT-18000-4.0	福建 Fujian	2
43	鱼腰电站 Yuyao	TDBYWT-6000-16.0	福建 Fujian	2
44	马鞍山 Maanshan	TDBYWT-75000	云南 Yunnan	2
45	坝后 Bahou	TDBYWT-10000-16.0	福建 Fujian	1
46	大目溪二级 Damuxi	TDBYWT-10000-4.0	福建 Fujian	2
47	大目溪二级 Damuxi	TDBYWT-6000-4.0	福建 Fujian	1
48	许家坪 Xujiaping	TDBYWT-6000-10.0	湖北 Hubei	2
49	千岭电站 Qianling	TDBYWT-18000-16.0	福建 Fujian	2
50	魏家堡电站 Weijiabao	TDBYWT-30000-16.0	陕西 Shanxi	3
51	杨凌 Yangling	TDBYWT-18000-16.0	陕西 Shanxi	3
52	东溪三级 Dongxi	TDBYWT-10000-16.0	浙江 Zhejiang	2
53	一线天 Yixiantian	TDBYWT-30000-4.0	青海 Qinghai	5
54	南告 Nangao	TDBYWT-18000	广东 Guangdong	1
冲击式调速器业绩表 Experience of pelton governor				
1	喇叭河 Labahe	TDBWCT-1-6.3	四川 Sichuan	1
2	南沟电站 Nangou	TDBWCT-6/6-6.3	青海 Qinghai	2
3	班列 Banlie	TDBWCT/2-6.3	云南 Yunnan	2
4	东坑二级 Dongkeng	TDBWCT-1/2.5	广东 Guangdong	1
5	蓝村 Lancun	TDBWCT-1/4.0	广东 Guangdong	1
6	大目溪一级 Damuxi	TDBWCT-2-6.3	福建 Fujian	4
7	梅花山二级 Meihuashan	TDBWCT-1/1-2.5	福建 Fujian	3
8	马边 Mabian	TDBWCT-2/4.0	四川 Sichuan	3
9	丹云大湖 Danyundahu	TDBWCT-2-4.0	福建 Fujian	2
10	梅花山一级 Meihuashan	TDBWCT-1-2.5	福建 Fujian	2
11	宝坑 Baokeng	TDBWCT-1-6.3	福建 Fujian	3
12	高岭头一级 Gaolingtou	TDBWCT-6.3	浙江 Zhejiang	2
13	里村电站 Licun	TDBWCT-1-4.0	福建 Fujian	3
14	永发 Yongfa	TDBWCT-4.0	江西 Jiangxi	2
15	出水河 Chushuihe	TDBWCT-2-6.3	贵州 Guizhou	3
16	石山 Shishan	TDBWCT-1-2.5	广东 Guangdong	2

2.2 水轮机调压阀
2.2 TURBINE PRESSURE RELIEF VALVE

图 2.2　水轮机调压阀

1）产品简介

为了保证水电站的安全运行，在长有压引水系统的中小型水电站，通常都设有调压井，以保证压力管道的压力不超过限制值。但调压井的土建工程量大，造价高，一些特殊地形条件建造困难。采用调压阀取代调压井，是理想的替代方案，但多年来调压阀在水电工程建设中并没有获得广泛认可，近年来经过天传水电的技术升级和积极推广，越来越多的水电站采用与调速器液压联动的调压阀方案，取得了良好的效果。

天传水电研制的调压阀系列产品获得国家发明专利（ZL201210006907.8）

天传水电研制的调压阀系列产品获得欧盟 SZUTEST 机构 CE 认证。

2）调压阀的工作原理

天传水电研制的调压阀，采用独特的液压连锁设计，水轮机导叶接力器和调压阀同时受调速器特制主配压阀控制。

当机组甩较大负荷或紧急停机时，调压阀快速打开，将管路中的水迅速排出，从而使管路的压力上升得到控制，调速器则控制导叶快速关闭，控制机组的转速上升。当机组转速回复正常或紧急停机复归后，调压阀就缓慢关闭。

负荷小波动或增负荷时，调压阀处于关闭状态，不会影响调速器的调节品质。

由于调压阀和调速器的液压连锁，假如调压阀不能正常打开，调速器将控制导叶慢关，依然限制了管路的压力上升，从而绝对确保电站的安全。

1) Product Introduction

To ensure the safe operation, small and medium-sized hydropower plants with long pressure canal system are usually equipped with surge chamber (tank) to ensure that the pressure of pipes system does not exceed the limit. However, the big civil quantity of surge chamber, its high cost and sometimes the difficult topographic conditions make the Pressure Relief Valve a prior option. But the pressure relief valve has not been widely recognized in the construction of hydropower project for many years. n recent years, under the technical updating and active promotion by TRiED HYDRO more and more hydropower projects adopt the scheme of pressure relief valve hydraulic linked with governor.

The series of Pressure Relief Valve developed by TRiED HYDRO has been patented with No.ZL201210006907.8.

The series of Pressure Relief Valve developed by TRiED HYDRO has been certified by the SZUTEST.

2) THE PRINCIPLE OF THE TURBINE PRESSURE RELIEF VALVE

An unique hydraulic linking design is adopted on the pressure relief valve developed by TRiED HYDRO. Both the pressure relief valve and the turbine servomotor are controlled simultaneously by the governor through its special main distribution valve.

While load rejection or emergency shutdown occurs, the pressure relief valve is opened quickly to discharge the flow inside the penstock and spiral casing so the pressure is limited. Meanwhile the guide vanes are closed by the governor in the fast closing procedure thus the speed rise is also limited. The pressure relief valve will be closed while the unit back to normal or emergency shutdown is reset.

When the load fluctuates slightly or increases, the pressure relief valve is in the closed state, which will not affect the governor regulation.

Because the hydraulic linkage of the pressure relief valve and the governor, if the pressure relief valve fails to open, the governor will control the guide vane to close slowly, still limited the pressure rise of the pipeline, thus absolutely ensuring the safety of the power plant.

3）主要业绩
3) Main Experiences

No.	电站名称 Plant Name	调压阀型号 TYPE	水头 Head(m)	地点 Location
1	AfghanKALAKAI	TFW-1400/350	100	阿富汗 Afghanistan
2	PakistanPEHUR	TFL-750/220 TFL-850/220	68 44	巴基斯 Pakistan
3	益山电站 Yishan	TFL-500/300	21	韩国 Korea
4	LUNSEMFWN	TFW-400/130	114	赞比亚 Zambia
5	元树二级 Yuanshuerji	TFL500/120	35	青海 Qinghai
6	澄碧河电站 Chengbihe	TFW-800/130		广西 Guangxi
7	阿卡尔 AkaerIII, IV, V	TFW-400/130	105	新疆 Xinjiang
8	房家山 Fangjiashan	TFL-800/150	127	四川 Sichuan
9	KHARI	TFW-600/150	76	巴基斯坦 Pakistan
10	龙潭嘴 Longtanzui	TFL-650/170	144	湖北 Hubei
11	钓鱼台 Diaoyutai	TFL-500/130		湖南 Hunan
12	奎屯河六级电站 kuitunhe-6	TFL-850	63	新疆 Xinjiang
13	奎屯河六级电站 kuitunhe-6	TFL-800/140		新疆 Xinjiang
14	Georgia	TFL-780/220		格鲁吉亚 Gerogia
15	Azerbaijan	TFL-300/90		Azerbaijan
16	Andongni	TFL-300/90	37.5	厄瓜多尔 Ecuador
17	ZILAN	TFL-500/130		土耳其 Turkey
18	让幕贝尔斯科	TFL-300/90	80	哈萨克斯坦 Kazakhstan
19	古尔图河八 Guertuhe-8	TFL-800/200 TFL-600/150	39.4	新疆 Xinjiang
20	党上一 Dangshang-1	TFL-500/125	61	甘肃 Gansu
21	党上二 Dangshang-2	TFL-500/100	61	甘肃 Gansu
22	喀英德布拉克 Kayingdebulake	TFL-400/100 TFL-600/150	95.25	新疆 Xinjiang
23	青龙寨 Qinglongzhai	TFL-300/90	79.5	湖北 Hubei
24	阿克代雷 Ake dere	TFL-300 TFL-400	128.3	土耳其 Turkey
25	青龙水胡同 Qinglongshui	TFL-400/100		河北 Hebei
26	南奔 Nam Beng	TFL-1000/250	70	老挝 Laos
27	ANGUTLU-1	TFL-500 TFL-700	69.21	土耳其 Turkey
28	ANGUTLU-2	TFL-600 TFL-800	38.99	土耳其 Turkey
29	南山口电站 Nanshankou	TFL-800	74	青海 Qinghai
30	党上六级 Dangshang-6	TFL-600	62	甘肃 Gansu
31	党上七级 Dangshang-7	TFL-500	47.4	甘肃 Gansu
32	勐典河三级 Mengdianhe-3	TFL-800	188	云南 Yunnan
33	勐戛河六级 Menggahe-6	TFL-800	150	云南 Yunnan
34	芒牙河二级 Mangyahe-2	TFW-650/150	106	云南 Yunnan
35	西岸大渠一级 Xiandaqu-1	TFL-600/150	77.5	新疆 Xinjiang

No.	电站名称 Plant Name	调压阀型号 TYPE	水头 Head(m)	地点 Location
36	小江河 Xiaojianghe	TFL-400/150	150	云南 Yunnan
37	白云山一级 Baiyunshang-1	TFL-800	47.5	江西 Jiangxi
38	昆仑泉 Kunlunquan	TFL-700/175	110	青海 Qinghai
39	曼肯特 Mankente	TFL-400/100	63.7	哈萨克斯 Kazakhstan
40	坡岭沟右岸 Polinggou(right)	TFLP-700	170	印度 India
41	卡拉河 KORA	TFL-400/100	121	哈萨克斯 Kazakhstan
42	卡拉河 KORA	TFL-500/125	121	哈萨克斯 Kazakhstan
43	图尔根 Tuergen	TFL-300/75-6.3	33	哈萨克斯 Kazakhstan
44	图尔根 Tuergen	TFL-500/125-6.3	33	哈萨克斯 Kazakhstan
45	中益三级 Zhongyi-3	TFL-800/200-16	53.68	重庆 Chongqing
46	洞沟 Donggou	TFL-500/125-4.0	100.6	湖北 Hubei
47	西营河 Xiyinghe	TFL-500/125-10.0 TFL-400/80-10.0	85	甘肃 Gansu
48	白石头口子三级 Baishitoukozi-3	TFL-650/195-10.0 TFL-500/140-10.0 TFL-400/100-10.0	77 146	甘肃 Gansu
49	白石头口子四级 Baishitoukozi-4	TFL-800/240-10.0 TFL-650/195-10.0	27	甘肃 Gansu
50	羊智沟 yangzhigou	TFL-500/125	40.51	青海 Qinghai
51	金鸡车 Jinjiche	TFL-500/125-16.0	83	福建 Fujian
52	鲤鱼头 liyutou	TFL-600/130-12.0	130	湖北 Hubei
53	西岸大渠二级 Xiandaqu-2	TFL-600/150	77.5	新疆 Xinjiang
54	西岸大渠三级 Xiandaqu-3	TFL-600/150	77.5	新疆 Xinjiang
55	腊梯 Lati	TFL-800/200-16.0	36	云南 Yunnan
56	万宝沟 Wanbaogou	TFL-700/175-16.0	110	青海 Qinghai
57	卡伊尔特 Kayierte	TFL-1000/250-10.0 TFL-700/175-10.0	158.5	新疆 Xinjiang
58	台兰河三级 Tailanhe-3	TFL-1000/250 TFL-600/150	83	新疆 Xinjiang
59	帕拉居里	TFL-400/100	104	尼泊尔 Nepal
60	木坝河 Mubahe	TFL-700/125	68	湖北 Hubei
61	Bardonecchia/Gandellino	TFL-300/90	102.16	意大利 Italy
62	卡姆奇克 KAMCHIK	TFL-700 TFL-400	93	乌兹别克斯坦 Uzbekistan
63	老渡口 Laodukou	TFL1000/350-16	60	湖北 Hubei
64	康苏拉克 Kangsulake	TFL1000/350-16	83	新疆 Xinjiang
65	许家坪电站 Xujiaping	TFL300/75		湖北 Hubei
66	排孜一级 Paizi-1	TFLP400/60-10	210	新疆 Xinjiang
67	排孜二级 Paizi-2	TFL400-100	100	新疆 Xinjiang
68	溪头 Xitou	TFPZ-700	348	福建 Fujian
69	八尺 Bachi	TFLP-400/100		浙江 Zhejiang
70	东田丈村 Dongtianzhangcun	TFLP500	120	河南 Henan
71	疏花干渠 Shuhuaganqu	TFL700/175-10 TFL400/100-10	56	甘肃 Gansu
72	尼尔基渠首 Niwejiqushou	TFL1000/250-16 TFL800/200-16	14.5	内蒙古 Neimenggu

2.3 油压装置
2.3 PRESSURE OIL UNIT

图 2.3　油压装置

产品简介

HYZ/YZ 系列油压装置是水电厂辅机设备的重要组成部分，可为大型调速器等设备提供压力油源。根据用户需求，可配置诸如自动补气装置、软启动器、多功能组合阀、压力液位监测变送器等器件，实现油压装置的自动补油、自动补气、保证电站系统的安全、可靠运行。

Product Introduction

HYZ/YZ series Pressure Oil Unit is an important auxiliary equipment in hydropower plant, which can provide pressure oil for large governor. According to the requirements of users, devices such as automatic air supply device, soft starter, multi-function combined valve, pressure level monitoring transmitter and so on can be configured to realize the automatic oil and air supply of the pressure oil unit and ensure the safe and reliable operation of the power plant.

Working pressure: 2.5MPa, 4.0MPa, 6.3MPa, 10 MPa, 12 MPa, 16 MPa.

2.4 水电站自动化元件
2.4 AUTOMATION ELEMENT FOR HYDROPOWER STATION

产品简介

天传水电还为水电站提供各种辅机控制产品，自动化元件。主要产品有水轮机调速系统综合试验仪、事故配压阀、转速监测装置、油气水系统控制柜／箱、油泵控制柜／箱、机械过速保护装置和刹车装置等。

Product Introduction

In addition to governor and pressure relief valve, TRiED HYDRO also provides a variety of auxiliary control products and automation components for hydropower plants. It includes oil pressure units, speed monitoring unit, emergency distributing valve, mechanical auxiliary system control panel, oil pump control panel, mechanical over-speed protection device, brake device and multiple governor apparatus etc.

图 2.4.1　综合试验仪

1）GDMS—PE02／GDMS—SE—02 水轮机调速系统综合试验仪

该试验仪用于水电厂调速器、调速系统全面动静特性试验，可以自动记录机组动态数据，也可以在静态的条件下，模拟机组转速输出，以便在调速器出厂前或水电厂检修后检验调速器和整个闭环调速系统的动态特性。

1)GDMS-PE02/GDMS-SE-02 MULTIPLE TURBINE GOVERNOR APPARATUS

This apparatus can be used to test the overall dynamic and static characteristics of the governor and speed regulation system of hydropower plant. It can automatically record the dynamic data of the unit. It also can simulate the speed output of the unit under static conditions. In order to check the dynamic characteristics of the governor and the whole closed-loop speed regulation system in the factory or after the maintenance of the hydropower plant.

图 2.4.2　事故配压阀

2）事故配压阀

用于水电站水轮发电机组的过速保护系统中，当机组转速过高，调速器关闭导水机构操作失灵时，事故配压阀接受过速保护信号动作，其阀芯在差压作用下换向，将调速器切除，油系统中的压力油直接操作导水机构的接力器，紧急关闭导水机构，防止机组过速，为水轮发电机组的正常运行提供安全可靠的保护。

2)EMERGENCY DISTRIBUTING VALVE

This device is used in the overspeed protection system of hydro-generating unit. When the unit speed is over the limit and the governor fails, the emergency distributing valve will be activated by the received overspeed signal. The governor is cut off, the guide vanes are closed by emergency distributing valve to prevent the unit from overspeed, which provides safe and reliable protection for the normal operation of the hydro-generating unit.

图 2.4.3　机械过速保护装置

3）机械过速保护装置

该装置用于水轮发电机组的过速保护。当机组转速升高到过速保护设定值，由于系统故障原因，机组无法实现停机，该装置即可切换油路，利用油压装置油压实现机组停机，防止发生飞逸事故，保证机组安全运行。

3)MECHANICAL OVERSPEED PROTECTION DEVICE

This device is used for over-speed protection of hydro-generating set. When the speed of the unit increases to the set value of overspeed protection, the unit cannot stop because of the system failure, the device can switch the oil circuit to get the pressure oil of the pressure oil unit to stop the unit, prevent the occurrence of runaway accident, ensure the safe operation of the unit.

图 2.4.4　可编程转速监测装置

4）ZX—01P 可编程转速监测装置

该装置用于提供机组的投励磁、同期、电制动、机械制动、停机复归及过速保护等信号，保证机组的正常运行及事故时的安全，是电厂提高自动化水平和保证机组正常运行的重要装置。

4)ZX-01P SPEED MONITORING UNIT

This speed monitoring unit provides the speed signal for the excitation flashing, braking and overspeed protection of the hydro-generating unit to ensure the safe operation of the unit.

图 2.4.5　可编程转速监测装置

5）刹车装置

该装置用于水轮发电机组的制动。可用来自调速器液压系统的压力油控制，结构简单，性能可靠。

工作压力：＜16MPa

5)BRAKE DEVICE

This device is used for the braking of the turbine generating unit. It is operated by the pressure oil from the governor hydraulic system.
Working pressure: <16MPa

图 2.4.6　刹车装置

6）水电站油气水系统、闸门、泵站的控制柜／箱

油、气、水系统及闸门和泵站控制柜用于保证水电站油、气、水系统（闸门和泵站）的安全可靠运行，兼具自动、手动控制功能，用高性能的PLC为核心控制单元，实现对水电厂油、气、水系统及闸门和泵站的自动控制，具有系统保护、报警、通讯等功能。

6)MECHANICAL AUXILIARY SYSTEM / STOPLOG GATE /PUMP STATION CONTROL CABINET

The control cabinet is used to ensure the safe and reliable operation of the MECHANICAL AUXILIARY SYSTEM / STOPLOG GATE /PUMP STATION system of the hydropower plant. It has the function of automatic and manual control and the PLC as the control core realizes the automatic control, protection, alarm and communication of the system.

2.5 中小水电站设备成套
2.5 COMPLETE SUPPLY FOR MEDIUM & SMALL SIZED HYDROPOWER EQUIPMENT

图 2.5　中小水电站设备成套

产品简介

天传水电提供单机出力 25MW 的以下各种机型水电站从设计、制造、运输、安装、调试的成套服务：包括进水阀门、水轮机、发电机、励磁、调速器、中低压开关柜、电控、保护装置、变压器、高压开关设备及机械和电气辅助设备。

Product Introduction

RiED HYDRO provides complete turnkey services from design, manufacturing, transportation, installation and commissioning for small and medium hydropower projects. The supplied equipment includes turbine, generator, excitation system, governor, medium and low voltage switchgear, control & protection system, transformer, high voltage switch and mechanical & electrical accessories.

主要业绩
Main Experiences

序号 NO.	电 站 名 称 Plant Name	水轮机型号 Type	水头 Head (m)	装机容量 (kW)	站 址 Location	投产 COD 年份
1	江厦潮汐电站 JiangXia Tidal	GZN005-WP-250	2.5	1×500 1×600 3×700	浙江 ZheJiang	1980.5
2	白垢电站 BaiGou	GZ003-WP-550	6.2	2×10000	广东 GuangDong	1984.7
3	于桥电厂 YuQiao	GD006-WZ-180	9.4	2×1250 2×1650	天津蓟州 TianJin	1988.7
4	双东电站 ShuangDong	GZ006-WZ-275	6.4	3×2000	广东 GuangDong	1994
5	ZAZA 电站 ZAZA	GZ006-WZ-200	8.17	2×1350	古巴 Cuba	2002
6	NAM MAE SAP	HL160-WJ-60	60	2×800	泰国 Thailand	1990
7	BARAGUA	GD007-WZ-120	10.45	2×630	古巴 Cuba	2003
8	云峰电站 YunFeng	GD006-WZ-180	10.8	2×1600	广东 GuangDong	2004
9	DALAMAN 五级电站 DALAMAN Ⅴ	GD007-WZ-180	13.5	3×2500	土耳其 Turkey	1999.1
10	DALAMAN 四级电站 DALAMAN Ⅳ	GD007-WZ-180	13.5	3×2500	土耳其 Turkey	2000.6
11	DALAMAN 三级电站 DALAMAN Ⅲ	GD007-WZ-180	14	3×2500	土耳其 Turkey	2000.12
12	DALAMAN 二级电站 DALAMAN Ⅱ	GD007-WZ-180	12.5	3×2200	土耳其 Turkey	2001.6
13	DALAMAN 一级电站 DALAMAN Ⅰ	GD007-WZ-180	14	2×2500	土耳其 Turkey	2002.5
14	大西头电站 DaXiTou	GT006-WZ-160	7.5	2×800	江西 JiangXi	1990
15	白云山电 BaiYunShan	GT006-WZ-160	6.22	2×630	江西 JiangXi	1994
16	上罗电站 ShangLuo	GZ006-WZ-275	9.2	2×3500	江西 JiangXi	2002.9
17	龙归电站 LongGui	GD008-WZ-260	2.6	2×630	广东 GuangDong	1996.12
18	柴桑电站 ChaiSang	GD008-WZ-260	3.3	3×800	广东 GuangDong	1999.9
19	河坞电站 HeWu	GD006-WZ-180	7.5	3×1000	河南 HeNan	1992
20	Selabam 电站 Selabam	ZD560-LH-190	18	1×3000	老挝 Laos	1994
21	龙山电站 LongShan	GD006-WZ-140	8.9	3×670	河南 HeNan	1998
22	峪铁电站 YuTie	GD008-WZ-160	3.4	2×300	河南 HeNan	2000
23	小古电站 XiaoGu	GD008-WZ-230	4.5	2×1000	广东 GuangDong	1999.1
24	鲤鱼洲电站 LiYuZhou	GD007-WZ-180	17	1×3500	福建 FuJian	1997
25	妹滩电站 MeiTan	GT006-WZ-200	8	4×1250	安徽 AnHui	2000
26	榛子岭电 ZhenZiLing	GDM-WLP-80	6.3	3×200	辽宁 LiaoNing	1999
27	辽电冷却水电站 LiaoDian	GDM-WLP-100	6.5	2×250	辽宁 LiaoNing	2000
28	益民干渠电站 YiMin Main Canal	GD006-WZ-90	11.8	2×400	甘肃 GanSu	2001
29	董滩电站 DongTan	GD006-WZ-170	9	2×1250	广西 GuangXi	2003

序号 NO.	电 站 名 称 Plant Name	水轮机型号 Type	水头 Head (m)	装机容量 (kW)	站 址 Location	投产 COD 年份
30	李营电站 LiYing	ZDT03-LH-140	7.6	3×630	河南 HeNan	2005
31	鑫水源电 XinShuiYuan	GD008-WZ-160	4.6	3×500	河南 HeNan	2005
32	红旗电站 HongQi	GD008-WZ-180	4.1	1×400	广东 GuangDong	2006
33	练石引水电站 LianShi	GD007-WZ-90	20	2×900	广西 GuangXi	2012
34	大松树电 DaSongShu	GDM-WLP-70	9.2	1×160	吉林 JiLin	2009
		GDM-WLP-90		2×320		2009
35	SATPARA- Ⅰ	HLA575C-WJ-80	83	2×2500	巴基斯坦 Pakistan	2007
36	SATPARA- Ⅱ	HLA542C-WJ-105	165	2×4500	巴基斯坦 Pakistan	2008
37	PEHUR	HLA384-WJ-114	68	2×6000	巴基斯坦 Pakistan	2009
		HLA551-WJ-140	44	1×6000		
38	西北岔电站 XiBeiCha	HL98-WJ-71	124	1×1500	吉林 JiLin	执行中 In Progress
		HL70-WJ-65	124	2×630		
		XJA-W-50/1X11.5	86	2×250		
39	KAJAKAI	HLA743-LJ-195	66	1×20300	阿富汗 Afghanistan	2010
				2×18000		改造中 Renovation
40	RODHANAGARI	HLPO45-LJ-175	66	2×5000	印度 India	2010
41	CHAO PHRAYA	GZTF07B-WP-360	7.2	2×6000	泰国 Thailand	2011
42	NARESUAN	GZTF08C-WP-435	6.15	1*8200	泰国 Thailand	2013
43	KONDUS	CJA475-W-85/2*7.5	247	2*1000	巴基斯坦 Pakistan	2016
44	MARIVELES	GD007-WZ-143	14.3	2×1300	菲律宾 Philippines	2014
45	KANDAY	HLA69-WJ-70	90	1*2000	巴基斯坦 Pakistan	执行中 In Progress
46	Khari-II	HLA743-WJ-98	57.5	1*3500	巴基斯坦 Pakistan	2016
47	KARORA	HLHF160-WJ-98	142	2*6150	巴基斯坦 Pakistan	执行中 In Progress
48	JABORI	HLHF152-WJ-100	148	2*5215	巴基斯坦 Pakistan	执行中 In Progress
49	RANOLIA	CJA475-W-140/2*13.8	404	2*8500	巴基斯坦 Pakistan	2017
50	三宝溪 Sanbaoxi	CJA475-W-88/2*7.8	512	2*3200	福建 FuJian	2016
51	峰头左岸电站 FengTou (Left)	HL551C-LJ-140	42	1*5000	福建 FuJian	2016
52	峰头右岸电站 FengTou (Right)	HL551C-LJ-120	4.8	1*4000	福建 FuJian	2015
	贵岭左岸电站 GuiLing (Left)	GD995-WS-160		12*630		
53	朱庄水库电 ZhuZhuang	ZDJP502-LJ-100	22	2*500	河北 HeBei	2016
54	朱拉蓬电站 CHULABHORN	HLTF120-WJ-70	51.23	1*1250	泰国 Thailand	执行中 In Progress
55	Pha Chuk	GZ -WP-365	7.5	2*7000	泰国 Thailand	执行中 In Progress

哈尔滨电站设备成套设计研究所有限公司

CHINA HARBIN POWER SYSTEM ENGINEERING & RESEARCH INSTITUTE CO.,LTD.

公司名称：哈尔滨电站设备成套设计研究所有限公司

Company Name: CHINA HARBIN POWER SYSTEM ENGINEERING & RESEARCH INSTITUTE CO.,LTD.

http://www.chpi.com.cn/

哈尔滨电站设备成套设计研究所有限公司（简称为"哈成套"、CHPI）成立于 1978 年 9 月，时为原机械工业部直属科研事业一类研究所，现为国机集团（SINOMACH）中国机械设备工程股份有限公司（CMEC）控股，黑龙江省政府、杭锅集团及骨干员工参股的混合所有制企业。

作为首批国家级高新技术企业，哈成套以科技创新为驱动，持续强化电站工程"设计、设备监理、调试与性能试验、节能环保、先进控制设备"五位一体综合实力，高效整合"科研、设计、工程"各项业务，专注于提供电站领域全过程咨询服务。

从我国首台 300MW、600MW 电站机组的技术引进及国产化，到首台国产大型电站设备的出口，从电站技术的科学研究，到国内外电站工程的建设，为更多人送去光明和温暖——哈成套四十年的发展历程，正是中国改革开放伟大事业的缩影，哈成套始终站在电站领域科技前沿，与中国电力事业发展共

Harbin Power System Engineering & Research Institute Co., Ltd. (CHPI) was set up on Sep. 1978. CHPI was a class-A institute directly under the former Ministry of Machine Building Industry, now CHPI is a mixed ownership enterprise, held by China Machinery Engineering Corporation (CMEC) of SINOMACH, shared by Heilongjiang province government, Hangzhou Boiler Group and key employees of CHPI.

As a state-accredited new high-tech enterprise in first batch, driven by technological innovation, CHPI continuously intensify five comprehensive strength of power system engineering, 'engineering design, equipment quality supervision, commissioning & performance test, energy conservation & environmental protection, advanced control device', efficiently integrate 'scientific research, engineering design, and engineering project', concentrate on providing whole process consultation services for power plant projects. CHPI established the Coal Combustion & Environmental Protection Technology Research Center, Power Station Big Data Research Centes. CHPI has been enhancing the core competitiveness and providing one-stop service solutions for power plant projects.

From technology import and nationalization of the first 300MW & 600MW power plant to export of first domestic large power station equipment, from scientific research of power station technology, to construction of domestic and overseas power station projects, to sending light and warmth for more people——Forty years development of CHPI is the epitome of China reform and opening. CHPI always stands on frontier of science and technology of power plant, grows up together with development of China's power industry.

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1 全厂辅助车间控制系统（电厂辅控网）

1 Auxiliary workshop-BOP control system (Power plant auxiliary control network)

产品简介

1.1 概述

火力发电厂辅助车间控制系统将电厂所有辅机控制系统组成控制网络，实现对电厂辅机系统的集中管理、监视、操作。

电厂辅控网主要由下列辅控系统组成：

1）水处理控制系统（锅炉补给水控制系统、工业废水处理控制系统、综合水泵房控制系统、生活污水处理控制系统、海水淡化处理控制系统等）

2）燃料控制系统（输煤程控系统、石灰石输送程控系统、燃油泵房程控系统等）

3）灰渣控制系统（除灰程控系统、除渣程控系统、电除尘程控系统等）

4）其它子系统（空调程控系统、空压机程控系统、启动锅炉房控制系统、凝结水精处理控制系统等）

Product Introduction

1.1 Summarize

Power plant auxiliary workshop control system will form the network on all auxiliary equipment control system in the power plant so as to realize centralized management, monitor and operation of auxiliary equipment system.

Power plant auxiliary control system scope:

1) Water treatment control system (Boiler make-up water treatment control system, Industrial waster water treatment control system, Comprehensive pump yard control system, Domestic sewage treatment control system, Seawater desalination control system etc)

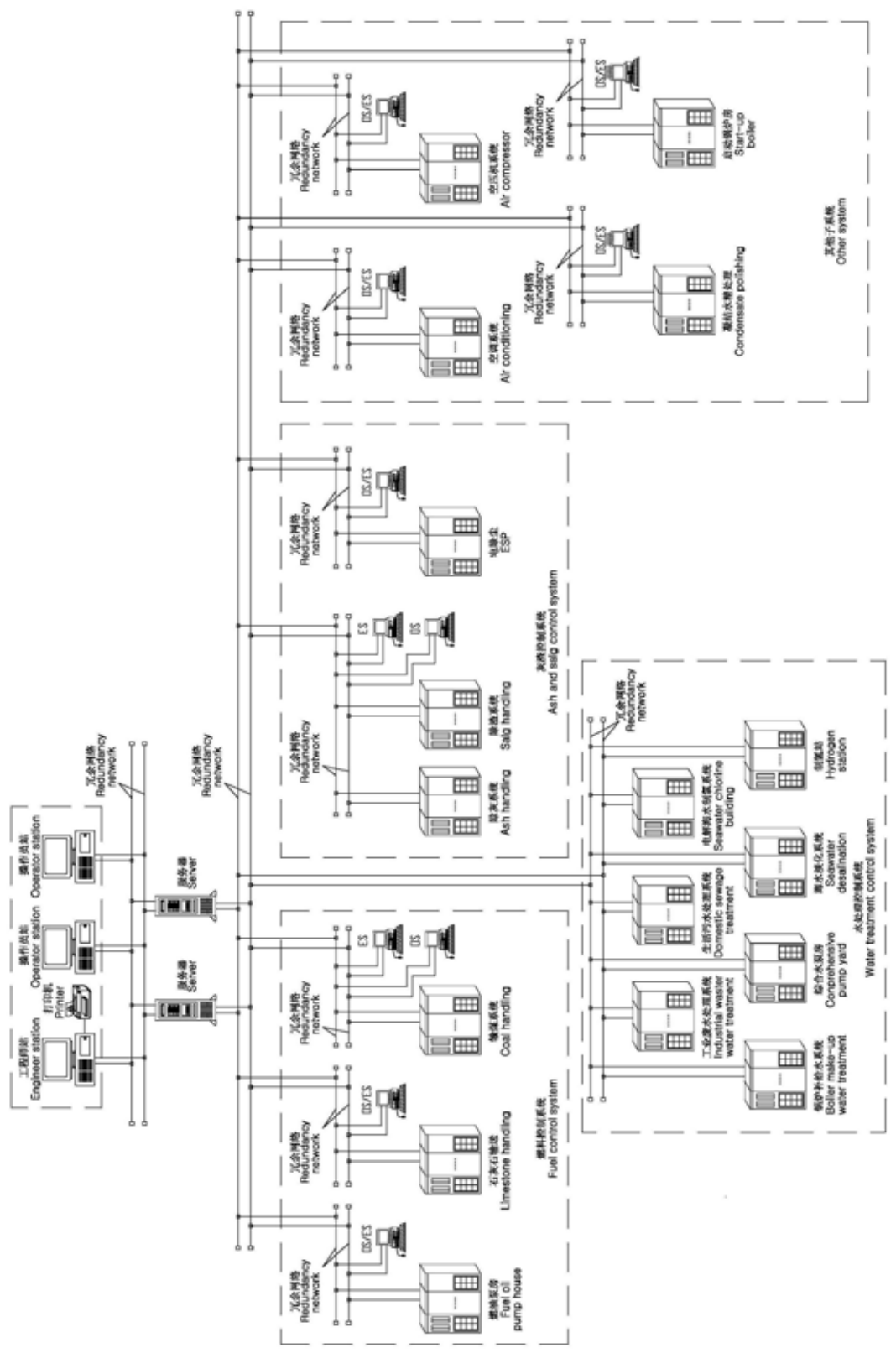
2) Fuel control system (Coal handling control system, Limestone handling control system, Fuel oil pump house control system etc)

3) Ash and slag control system (Ash handling control system, Slag handling control system, ESP etc)

4)Other control system (Air conditioning control system, Air compressor control system, Start-up boiler control system, Condensate polishing control system etc)

1.2. 辅控网系统配置

1.2. Auxiliary workshop BOP control system configuration



1.3 辅控网系统特点

1）可实现全厂辅助控制系统的联网及集中控制

2）采用统一的数据平台，所有数据共享，维护成本低

3）纯分布式结构平台，系统扩展十分方便

4）具有压缩能力的历史数据库能保存辅网长期海量数据

5）开放的组态平台可以自由嵌入与连接多种 PLC 硬件

6）实现与 SIS、MIS 系统的统一连接

1.3 Auxiliary workshop BOP control system feature

1) Can realize auxiliary control system containing all sub-control system networking and central control.

2) Use the same data platform, all data sharing and maintenance costs low.

3) Pure distributed structure platform, system extension is very convenient.

4) Have the ability of compression historical database can save auxiliary nets long-term production of mass data.

5) Open configuration platform can free embedded and connection third party products.

6) Realization unified connection with SIS/MIS system.

出口业绩
Export performance

编号 NO.	项目名称 Project Name	配套机组 Unit	套数 Set	出厂时间 Date	是否投运 State
1	印尼 AWAR-AWAR 2×350MW 辅助控制网系统 INDONESIA T.J. AWAR-AWAR 2x350MW POWER PLANT PROJECT AUXILIARY WORKSHOP BOP SYSTEM	2X350MW	1	2010	已投运 OPERATION
2	菲律宾 MARIVELES 2×300MW 辅助控制网系统 PHILIPPINES MARIVELES 2X300MW AUXILIARY WORKSHOP BOP SYSTEM	2X300MW	1	2011	已投运 OPERATION
3	老挝 HONGSA 3X626MW 辅助控制网系统 LAOS HONGSA 3X626MW AUXILIARY WORKSHOP BOP SYSTEM	3X626MW	1	2012	已投运 OPERATION
4	印度尼西亚 BANJARSARI 2X135MW 坑口燃煤电厂工程辅助控制网络系统设备 INDONESIA BANJARSARI 2X135MW AUXILIARY WORKSHOP BOP SYSTEM	2X135MW	1	2013	已投运 OPERATION
5	巴基斯坦塔尔 CFB 燃煤电站项目辅网 PLC 控制系统 THAR BLOCK II 2X330MW COAL-FIRED POWER PLANT AUXILIARY WORKSHOP BOP SYSTEM	2X330MW	1	2018	已投运 OPERATION
6	巴基斯坦塔尔煤田 II 区块 ThalNova 电站项目 辅网 PLC 控制系统 TNPTL 1X330MW POWER PLANT AUXILIARY WORKSHOP BOP SYSTEM	1X330MW	1	2019	执行中 IMPLEMENTATION
7	巴基斯坦塔尔煤田 II 区块二期 TEL 坑口燃煤电站项目 辅网 PLC 控制系统 TEL 1X330MW POWER PLANT AUXILIARY WORKSHOP BOP SYSTEM	1X330MW	1	2019	执行中 IMPLEMENTATION

2 水处理 PLC 程控系统
2 Water treatment PLC control system

产品简介

2.1 概述

水处理系统包括：锅炉补给水处理系统、工业废水处理系统、综合水泵房、生活污水处理系统、海水淡化系统、电解海水制氯系统、制氢站等系统。

水处理 PLC 程控系统是实现水处理过程自动化的计算机控制系统，水处理 PLC 程控系统可实现对水处理系统内部所有运行设备、工艺过程状态信号的采集、显示和控制。水处理 PLC 程控系统由主控设备、工业控制计算机及现场运行检测原件等组成，具有设备状态显示及控制、计算机监控管理、画面参数提示及设定、语音报警、打印报表等功能。

Product Introduction

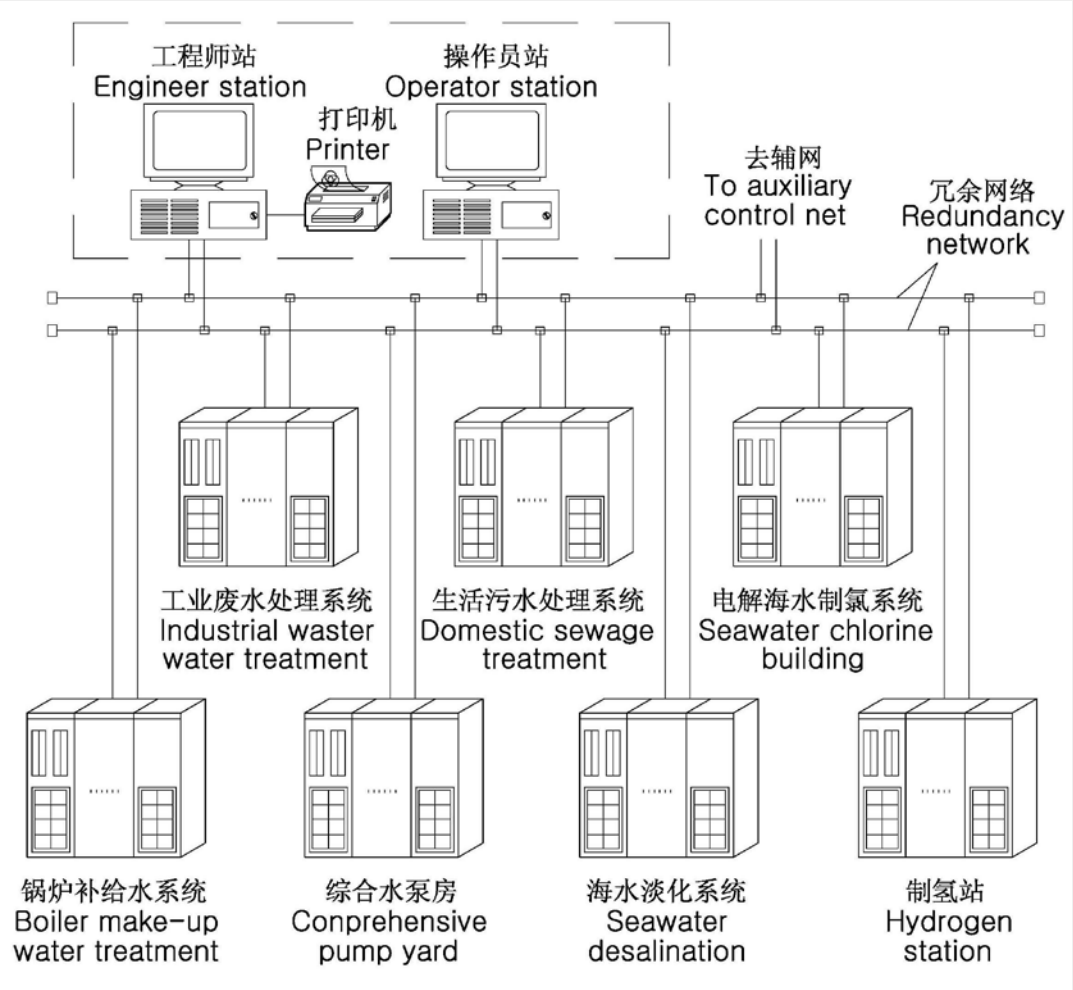
2.1 Summarize

Water treatment system is consisted of boiler make-up water treatment system, waste water treatment system, domestic sewage treatment system, hydrogen generation station, hypochlorite generation, seawater desalination treatment system, and so on.

The water treatment PLC control system is a computer control system which realizes the water treatment system technology process automation. The operator through the operation station which is setting on the control room monitor and control the whole system technology process. It can collect status and alarm information of water treatment system, send command of control signal, execute sequence control and interlock protection. The water treatment PLC control system is consisted of master controller, industrial computer and local detection instrument. The system also can conduct following functions: device state display and control, computer monitor and management, display parameter alarm and setting, sound alarm and logging printing, etc.

2.2 水处理 PLC 程控系统配置

2.2 Water treatment PLC control system configuration



2.3 水处理 PLC 程控系统控制功能

运行人员在水处理PLC程控系统操作员站可通过LCD、键盘／鼠标对工艺过程进行监视和控制，实现对整个水处理系统范围的设备进行数据采集、程序启／停、中断控制（自动步序和半自动步序控制以及跳步等）及单个设备操作，系统组态等功能，并在工艺系统运行工况异常时报警并能对紧急事故处理。

水处理 PLC 程控系统能够根据各系统工艺实现水处理的投运、停止，实现水处理装置的反洗和再生，能够自动／半自动的启动备用水处理装置。对于顺序控制设备设置分步操作、成组操作或单独等操作，并有跳步、中断或旁路等操作功能。还设有程序步骤时间、状态指示、故障原

2.3 Water treatment PLC control system control function

Through the water treatment PLC control system operator station the operator can monitor and control the whole water treatment system technology process by LCD, mouse and keyboard. The operator can realize following functions also: all controlled device data acquisition, programmable starting/stop, discontinuity control (auto step sequence, manual step control and step jumper) and single device operation; system configuration, system interlock protection, fault alarm and so on.

Water treatment PLC control system can according the system technology process realize water treatment startup, stop; realize water treatment device backwash and regeneration; start standby water treatment device automatically. In this system the sequence controlled device is set step by step operation, group operation, single operation, jumper operation, discontinuity/bypass operation and so on; is also set the step execution time, status display, fault occur origin and interlock protection.

因显示及联锁功能。

系统操作主要采用连锁手动与程序控制相结合的方式，分别完成锅炉补给水的制备，工业废水的净化处理等等水处理过程。由于工艺需要，有些设备（如阳床、阴床、混床）还需要按照指定步骤顺序操作（步序），一般步操作过程（以阳床为例）分为投运和再生两部分：

阳床投运：排气→正洗→投运→停运。

阳床再生：小反洗→大反洗→树脂沉降→排水→预喷射→进酸→置换→小正洗→充水→正洗→结束。

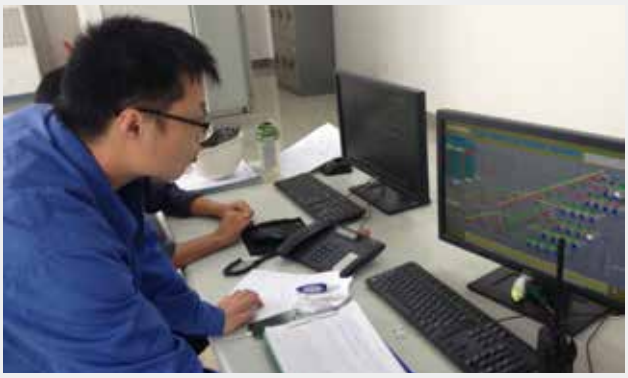
这些设备（阳床，阴床，混床）在系统能够运行稳定后，还可以使用自动控制方式（一键启动）进行程控操作。

The system is mainly combined programmable control and interlock manual control mode to finish make-up water preparation, waste water purifying etc. technology process. According the technology process, some device (for example: anion bed, cation bed, mix bed) need special sequence step operation, the technology process (for example: cation bed) is mainly contain make-up water running and regeneration:
Cation bed make-up water process: exhaust – wash—run—stop
Cation bed regeneration process: small anti-wash – big anti-wash - deposit - drain - exhaust – spout - f-acid - Permute - small-wash - filling water – washing - p-stop
These devices (cation bed, anion bed, mixed bed) can use automatic control mode (one key start) to start the programmed control when the system can be stable operation.

出口业绩
Export performance

编号 NO.	项目名称 Project Name	配套机组 Unit	套数 Set	出厂时间 Date	是否投运 State
1	博茨瓦纳 MORUPULE B 4×150MW 化学水控制系统 BOTSWANA MORUPULE B 4×150MW WATER TREATMENT CONTROL SYTEM	4X150MW	1	2009	已投运 OPERATION
2	印尼 AWAR-AWAR 2×350MW 化学水控制系统 INDONESIA T.J. AWAR-AWAR 2x350MW POWER PLANT PROJECT WATER TREATMENT CONTROL SYTEM	2X350MW	1	2010	已投运 OPERATION
3	菲律宾 MARIVELES 2×300MW 化学水控制系统 PHILIPPINES MARIVELES 2X300MW WATER TREATMENT CONTROL SYTEM	2X300MW	1	2011	已投运 OPERATION
4	老挝 HONGSA 3X626MW 化学水控制系统 LAOS HONGSA 3X626MW WATER TREATMENT CONTROL SYTEM	3X626MW	1	2012	已投运 OPERATION
5	印度尼西亚 BANJARSARI 2X135MW 坑口燃煤电厂工程化学水控制系统 INDONESIA BANJARSARI 2X135MW POWER PLANT PROJECT WATER TREATMENT CONTROL SYTEM	2X135MW	1	2013	已投运 OPERATION
6	菲律宾 CALACA 2x150MW CFB 燃煤电站工程化学水控制系统 PHILIPPINES CALACA 2x150MW CFB COAL FIRED POWER PROJECT WATER TREATMENT CONTROL SYTEM	2X150MW	1	2013	已投运 OPERATION
7	菲律宾 SEMIRARA 1×15MW CFB 燃煤电站工程化学水控制系统 PHILIPPINES SEMIRARA 1×15MW CFB COAL FIRED POWER PROJECT WATER TREATMENT CONTROL SYTEM	1X15MW	1	2013	已投运 OPERATION
8	印度尼西亚苏门答腊 SUMSEL（苏姆赛尔）2×150MW 坑口燃煤电厂项目化学水控制系统 INDONESIA SUMSEL 2×150MW WATER TREATMENT CONTROL SYTEM	2X150MW	1	2014	已投运 OPERATION
9	蒙古阿木古郎供热站项目化学水控制系统 MONGOLIAN AMUGULANG HEATING PLANT PROJECT WATER TREATMENT CONTROL SYTEM	3X116MW	1	2014	已投运 OPERATION
10	泰国 TPI PP 电厂项目工程锅炉补给水控制系统 THAILAND TPI PP 150MW POWER PLANT BOILER MAKE-UP WATER CONTROL SYSTEM	1X150MW	1	2018	已投运 OPERATION
11	巴基斯坦塔尔 CFB 燃煤电站项目水处理控制系统 THAR BLOCK II 2X330MW COAL-FIRED POWER PLANT WATER TREATMENT CONTROL SYTEM	2X330MW	1	2018	已投运 OPERATION
12	巴基斯坦塔尔煤田 II 区块 ThalNova 电站项目水处理控制系统 TNPTL 1X330MW POWER PLANT WATER TREATMENT CONTROL SYTEM	1X330MW	1	2019	执行中 IMPLEMENTATION
13	巴基斯坦塔尔煤田 II 区块二期 TEL 坑口燃煤电站项目水处理控制系统 TEL 1X330MW POWER PLANT WATER TREATMENT CONTROL SYTEM	1X330MW	1	2019	执行中 IMPLEMENTATION

3 输煤 PLC 程控系统
3 Coal handling PLC control system



产品简介

3.1 概述

对于燃煤发电厂而言，输煤系统的长期稳定运行，是保证发电机组正常运行的重要因素之一。输煤 PLC 程控系统是实现输煤系统长期安全、灵活、稳定运行的主要控制设备。

输煤 PLC 程控系统特点：

输煤系统是电厂能源转换的源头。为确保锅炉用煤，输煤 PLC 程控系统必须始终处于完好的运行状态，通常日累计运行时间达 8 ~ 10h 以上。输煤系统顺序启动设备多，安全联锁要求高，同时运行的设备多达 20 台以上，在启、停及运行过程中有严格的联锁要求。

输煤 PLC 程控系统是实现输煤过程自动化的计算机控制系统，输煤 PLC 程控系统可实现对输煤系统内部所有运行设备、工艺过程状态信号的采集、显示和控制。输煤 PLC 程控系统由主控设备、工业控制计算机及现场运行检测原件等组成，具有自动卸煤、自动上煤、煤仓自动配煤、计算机监控管理、画面参数提示及设定、语音报警、打印报表等功能。

Product Introduction

3.1 Summarize

Long-term running and stable operation of the coal handling system is an important factor to ensure the generator set stable for coal-fired power plants. The coal handling PLC control system is main control equipment of achieving keeping the coal handling system long-term safety, flexible and stable.

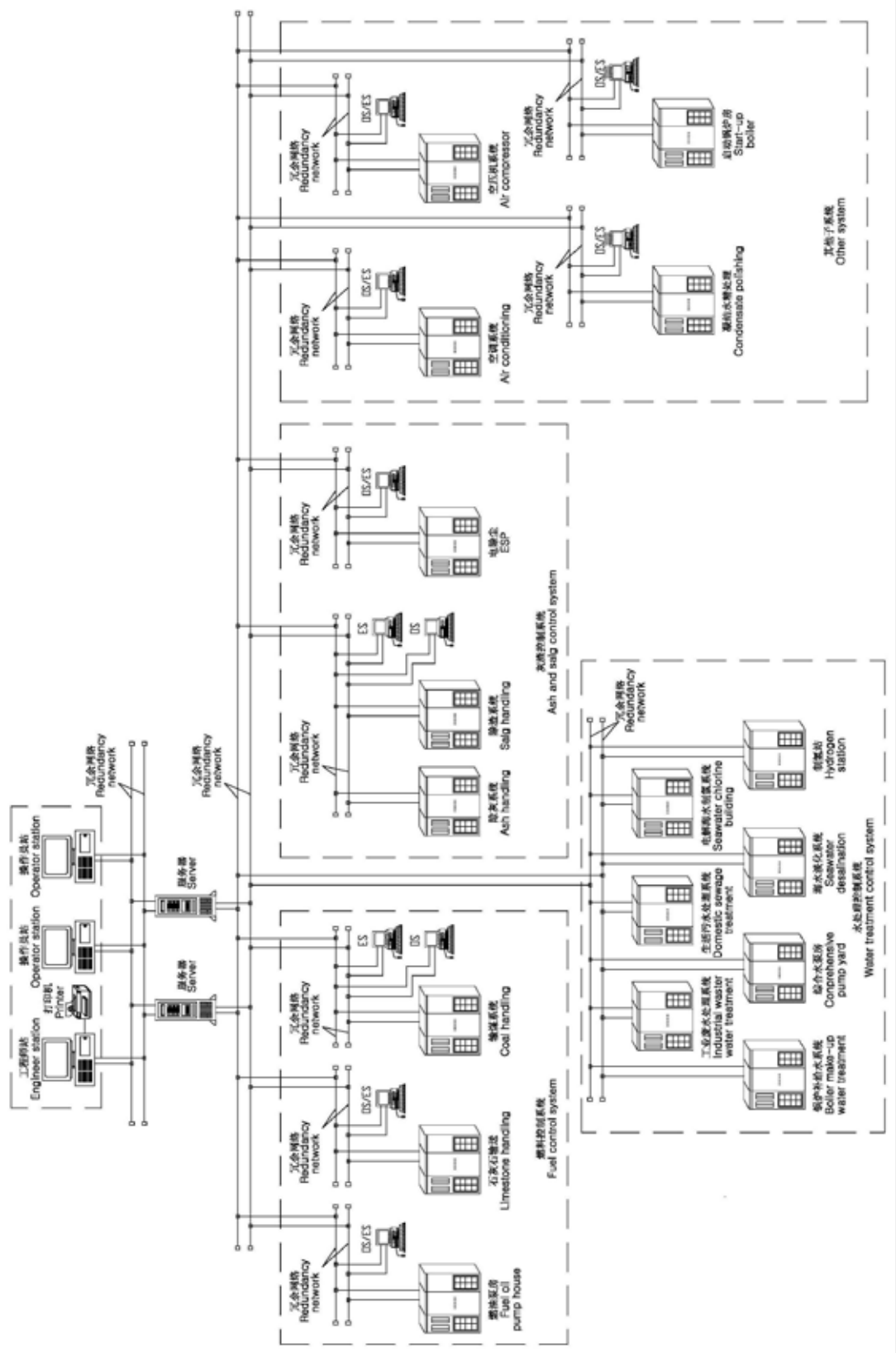
Features of the coal handling PLC control system:

The coal handling system is the source of energy conversion in power plant. For supplying the boiler with coal, PLC system must keep running in good condition all the time, usually the running time is more than 8~10h each day. The coal handling system has start device order, safety interlock demands. At the same time the equipment running as much as 20 or more, start the process of operational downtime and there are strict requirements of the interlock.

Coal handling PLC control system is to realize process automation computer control system, installed on all coal handling equipment to condition acquisition, display and control. Coal handling system controlled by the control equipment, remote control equipment at the scene, PLC, industrial control computers and the operation of the original scene, and so on, with automatic coal unloader, automatic belt coal, coal blending automated warehouses, computer monitoring and management, screen parameters tips and settings, voice alarm, print statements, and other functions.

3.2 输煤 PLC 程控系统配置

3.2 Coal Handling control system configuration



3.3 输煤 PLC 程控系统控制功能

3.3.1 上煤输送控制方式

上煤输送控制方式分为：自动、联锁手动、解锁手动及就地手动。自动和联锁手动为主要常规运行控制方式。解锁手动是在没有任何联锁的情况下，在操作员站 LCD 上一对一起停设备，就地手动方式则是通过就地无联锁的按钮来实现一对一起停设备，解锁手动和就地手动均作为检修调试用，不作正常使用。

3.3.1.1 自动方式在操作员站上操作，运行人员首先选择运行流程，如所选流程错误，则不允许设备启动并发选择错误信号，如正确，则发选择有效信号；然后检查沿线所有设备状态是否准备好，如未准备好则无程控准备好信号显示，该流程无法启动。如准备好则发出程控准备好信号，按下启动按钮所选上煤流程逆煤流顺序启动现场设备。停机时从煤源设备开始顺煤流方向逐一按预定的延时时间顺序停现场设备。当运行中任何一台设备出现故障，立即停故障设备，同时按逆煤流方向联锁停事故设备上游设备，按顺煤流方向停事故设备下游设备。

3.3.1.2 联锁手动是在操作员站上选择好运行流程后，当联锁条件满足要求时，运行人员可在操作员站功能键上一对一启动或停止设备。

3.3.2 配煤控制方式：程序配煤和手动配煤。

3.3.2.1 在程序配煤方式下，预启动时所有犁煤器自动抬起。煤仓胶带机启动后，先给出现低煤位报警的煤仓顺序配煤至报警消失，之后从第一个煤仓开始顺序配煤，将所有煤仓配成满仓（出现高煤位）。若在顺序配煤过程中某煤仓出现低煤位，则立即转至该煤仓优先配煤直至报警信号消失再回原处继续顺序配煤。如遇到高煤位或检修仓就自动越过。配煤完毕后，从煤源设备开始停机，停机过程中进行余煤配，即将胶带余煤顺序配至各煤仓直至配完，当任意煤仓出现超高煤位时，立即停止该仓配煤并发报警信号。在程序配煤方式下，操作人员也可根据煤仓煤位情况或制粉系统运行情况，对煤仓配煤顺序进行任意组合。

3.3.2.2 手动配煤只能在操作员站上用功能键根据 LCD 上显示的煤仓储煤情况对犁煤器进行操作。

每个煤仓至少要提供下列煤位传感器：

超高位—报警并停止配煤

高位—停止配煤

低位—开始配煤

3.3 Function of the Coal handling PLC control system

3.3.1 Control method of coal feeding

There are four modes of coal feeding control: auto , interlock manual, unlock manual and local manual. Auto and interlock manual are main usual control mode. unlock manual start or stop equipment one to one through function key on LCD station without any interlock, local manual realize through no interlock button, unlock manual and local manual will be used as maintenance, not normal use.

3.3.1.1 Auto mode operate on the operator station operator should choose operation process at first, if process is fault, equipment can not permit to start and fault signal will be sent, if process is right, effective signal will be sent; then check whether all equipment state is right, if fault happen, preparation signal will not show, the process can not start. If right operation, preparation signal will be sent, put the button that choose feeding process as reverse coal flow direction to start equipments. When shutdown, stop the equipment in site from coal source in the direction of coal flow as prepared delay sequence. Any equipment happen fault during running, fault equipment should be stop at once, and stop equipment above fault equipment as reverse coal flow, stop equipment under fault equipment as coal flow.

3.3.1.2 Interlock manual: after operator select process, operator can start or stop equipment one to one through function key on LCD station when interlock meet requirement.

3.3.2 Coal feeding control mode: program and manual mode.

3.3.2.1 Under program feeding, all coal plough will automatic lift when prepare to start. After coal bunker rubber belt start, first feeding coal for low coal level alarm until alarm disappears, then feeding all bunkers from first bunker until high coal level appears. If low coal level appears in the process of sequence feeding, feeding this low level bunker in prior and back original position to continue feeding in sequence until alarm disappears. If meet high level or maintenance, it will automatic go over. After feeding coal finished, shutdown will be start from coal source. during shutdown, feeding can go on to feed remained coal on rubber belt to each bunker until finish feeding, when any bunker appears high level, stop feeding for this bunker at once and alarm. Under program feeding, operator can freely combine the sequence of feeding as per level condition or pulverization system condition

3.3.2.2 Manual feeding only can operate function key to control coal plough as per storage condition in coal bunker showed on LCD.

Following coal level sensor should be provided at least for each bunker:

Super-high: giving the alarm and stopping coal blending

High level: stopping coal blending

Low-level: beginning coal blending

Super-low level- alarm and feeding immediately

Super high level and super-low level for each coal bunker should adopt analog continuous level sensor, level signal will be transmitted to coal handling program control system to show coal level. High, low level

超低位—报警并紧急配煤

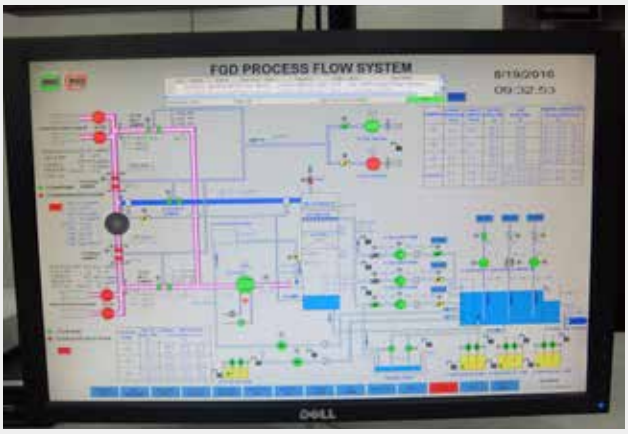
每个煤仓的超高、超低煤位应采用模拟量连续料位传感器，料位信号送入输煤程控系统。每个煤仓的高、低煤位应采用开关量料位传感器，高、低煤位开关信号送入输煤程控系统。

for each coal bunker should adopt digital level sensor for examination, high, low level signal will be sent to program system to show control.

出口业绩
Export performance

编号 NO.	项目名称 Project Name	配套机组 Unit	套数 Set	出厂时间 Date	是否投运 State
1	印度文达特 3×30MW 热电机组输煤控制系统 INDIA VEDANTA 3X30MW CO-GEN. POWER PLANT COAL HANGDLING CONTROL YSTEM	3X30MW	1	2005	已投运 OPERATION
2	土耳其碱矿自备电站项目输煤程控系统、石灰石粉制备程控系统 TURKEY ETI SODA COGENERATION POWER PLANT PROJECT COAL HANDLING AND LIMESTONE HANGDLING CONTROL SYSTEM	3X12MW	1	2007	已投运 OPERATION
3	马达加斯加锅炉岛 PLC 输煤程控系统 MADAGASCAR AMBATOBY 3x235T/H BOILER ISLAND PLC COAL HANGDLING CONTROL YSTEM	3X235t/h	1	2008	已投运 OPERATION
4	印度尼西亚 PLTU1 INDRAMAYU 3X330MW 燃煤电站输煤程控系统 INDONESIA PLTU1 INDRAMAYU 3X330MW COAL HANDLING CONTROL SYSTEM	3X330MW	1	2009	已投运 OPERATION
5	博茨瓦纳 MORUPULE B 4×150MW 输煤、石灰石控制系统 BOTSWANA MORUPULE B 4×150MW COAL HANDLING AND LIMESTONE HANGDLING CONTROL SYSTEM	4X150MW	1	2009	已投运 OPERATION
6	印尼 AWAR-AWAR 2×350MW 输煤、石灰石控制系统 INDONESIA T.J. AWAR-AWAR 2x350MW POWER PLANT PROJECT COAL HANDLING AND LIMESTONE HANDLING CONTROL SYSTEM	2X350MW	1	2010	已投运 OPERATION
7	菲律宾 MARIVELES 2×300MW 输煤控制系统 PHILIPPINES MARIVELES 2X300MW COAL FIRED POWER PROJECT COAL HANDLING CONTROL SYSTEM	2X300MW	1	2011	已投运 OPERATION
8	老挝 HONGSA 3X626MW 输煤、石灰石控制系统 LAOS HONGSA 3X626MW COAL HANDLING AND LIMESTONE HANDLING CONTROL SYSTEM	3X626MW	1	2012	已投运 OPERATION
9	印度尼西亚 BANJARSARI 2X135MW 坑口燃煤电厂工程输煤 PLC 程控系统设备 INDONESIA BANJARSARI 2X135MW COAL HANDLING CONTROL SYSTEM	2X135MW	1	2013	已投运 OPERATION
10	菲律宾 CALACA 2x150MW CFB 燃煤电站工程输煤 PLC 程控系统 PHILIPPINES CALACA 2x150MW CFB COAL FIRED POWER PROJECT COAL HANDLING CONTROL SYSTEM	2X150MW	1	2013	已投运 OPERATION
11	菲律宾 SEMIRARA 1×15MW CFB 燃煤电站工程输煤 PLC 程控系统设备 PHILIPPINES SEMIRARA 1×15MW CFB COAL FIRED POWER PROJECT COAL HANDLING CONTROL SYSTEM	1X15MW	1	2013	已投运 OPERATION
12	印度尼西亚苏门答腊 SUMSEL（苏姆赛尔）2×150MW 坑口燃煤电厂项目输煤 PLC 程控系统设备 INDONESIA SUMSEL 2×150MW COAL HANDLING CONTROL SYSTEM	2X150MW	1	2014	已投运 OPERATION
13	蒙古阿木古郎供热站项目输煤程控系统 MONGOLIAN AMUGULANG HEATING PLANT PROJECT COAL HANDLING CONTROL SYSTEM	3X116MW	1	2014	已投运 OPERATION
14	泰国 TPI PP 电厂项目工程输煤程控系统 THAILAND TPI PP 150MW POWER PLANT COAL HANDLING CONTROL SYSTEM	1X150MW	1	2018	已投运 OPERATION
15	巴基斯坦塔尔 CFB 燃煤电站项目输煤及石灰石控制系统 THAR BLOCK II 2X330MW COAL-FIRED POWER PLANT COAL HANDLING AND LIMESTONE CONTROL SYSTEM	2X330MW	1	2018	已投运 OPERATION

4 脱硫 PLC 控制系统
4 Desulfurization PLC control system



产品简介

4.1 概述

随着电力建设的发展，电厂烟气排放的二氧化硫含量增大，形成的酸雨污染环境，严重破坏生态平衡。火电厂烟气脱硫作为大气污染的治理手段之一，逐渐试点和实施。脱硫主要分为：海水脱硫，石灰石（石灰）－石膏湿法脱硫和炉内喷钙脱硫。

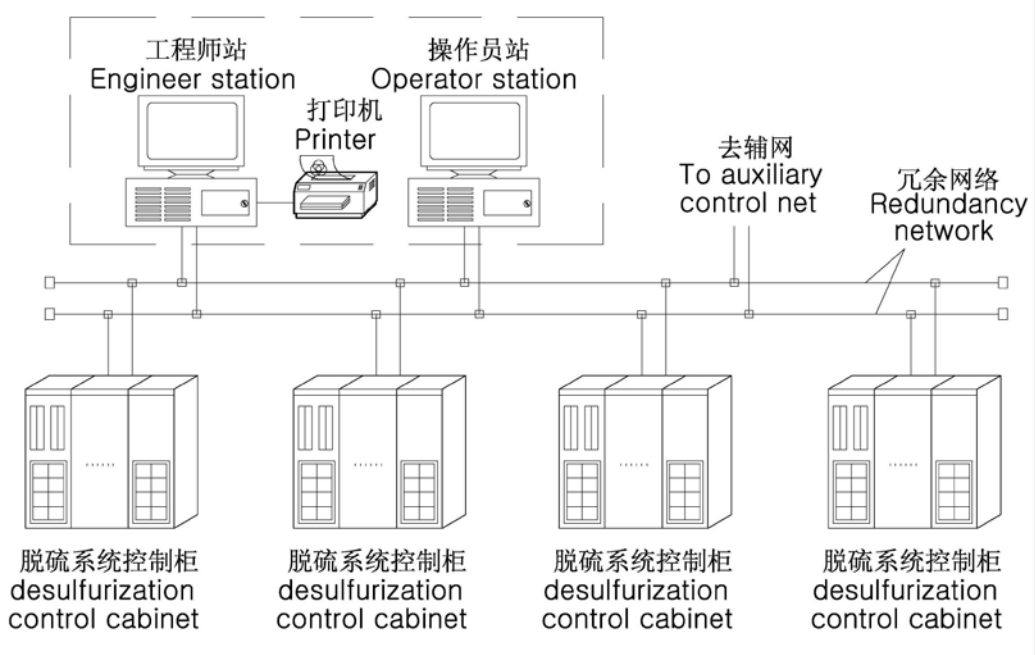
Product Introduction

4.1 Summarize

Along with the development of the electric power construction, power plant flue gas of sulfur dioxide content increase, form of acid rain pollution of the environment, serious damage the ecological balance. The power plant flue gas desulfurization of air pollution as a means of management, implementation and effect. The desulfurization are divided into: Seawater desulfurization, limestone (lime) limestone-gypsum wet desulfurization and furnace injected limestone desulfurization.

4.2 脱硫 PLC 控制系统配置

4.2 Desulfurization PLC control system configuration



4.3 脱硫 PLC 控制系统控制功能

运行人员在脱硫 PLC 控制系统操作员站可通过 LCD、键盘 / 鼠标对工艺过程进行监视和控制，实现对整个脱硫系统范围的设备进行数据采集、程序启 / 停、联锁手动控制及单个设备操作、系统组态等功能，并在工艺系统运行工况异常时报警并能对紧急事故处理。

脱硫 PLC 控制系统具有程序控制、手动控制、联锁保护及远程监控等功能，程序控制即根据工艺流程对适合于顺序启停的一些设备编组进行分组程序控制操作。手动控制为运行人员根据工艺流程及现场情况，选择单一设备进行启、停操作。系统联锁保护及报警功能：系统运行前某一设备出现故障，则禁止与该设备有关的流程程控运行、连锁手动运行。系统中所有设备运行故障均有显示报警。另外，通过工业以太网与辅助车间控制系统进行信息传输，电厂主控室运行人员可通过辅控网对本系统进行监视。

系统操作主要采用连锁手动与程序控制相结合的方式，分别完成脱硫系统的工艺过程。

手动操作为调试、检修时使用，单独控制某个设备的启动、停止，与其它设备无连锁关系，不作为运行时使用操作方式。

4.3 Desulfurization PLC control system function

Operators in desulfurization PLC control system operator station can use LCD and keyboard/mouse to technology process monitoring and control, and to realize the whole range of desulfurization system equipment in data collection, program start/stop, interlocking manual control and a single equipment operation, system configuration, and other functions, and in the technology process system running condition when an exception to alarm and emergency.

The desulfurization PLC control system has the process control, manual control, interlock protection and remote control, and other functions, program control is according to technology process operate the group witch congruity sequence start/stop some of the equipment. Manual control for operation personnel according to technology process flow, and the site condition, choose a single device for start/stop. Interlocking protection and alarm function: before the system start if same equipment failure, the process control start, interlock manual start is inadmissibility. Each devices fault are display alarming. In addition, through the industrial Ethernet and auxiliary workshop control system of information transmission, power plant operation control centre room personnel in auxiliary control can monitoring this system by network.

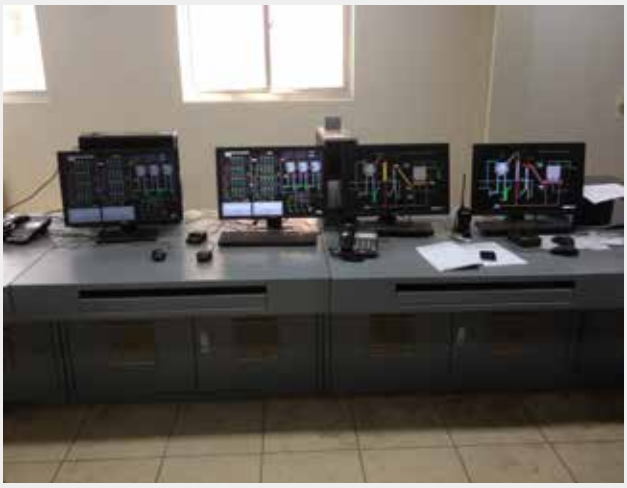
System operation mainly use interlock manual and program control mode. To complete the process of desulfurization system.

Manual operation use for commissioning and maintenance, control alone a equipment of the start/stop, and other equipment without interlock, when system running, can not use this mode of operation.

出口业绩
Export performance

编号 NO.	项目名称 Project Name	配套机组 Unit	套数 Set	出厂时间 Date	是否投运 State
出口业绩 Export performance					
1	菲律宾 MARIVELES 2×300MW 海水脱硫控制系统 PHILIPPINES MARIVELES 2X300MW DESULFURIZATION CONTROL SYSTEM	2X300MW	1	2011	已投运 OPERATION
国内业绩 Domestic performance					
1	高效清洁燃煤电站锅炉国家重点实验室扩建工程 - 脱硫试验台 HIGH EFFICIENCY PURE COAL POWERPLANT BOILER NATIONAL KEY LABORATORY EXPANSION PROJECT-DESULFURIZATION EXPERIMENT TABLE DESULFURIZATION CONTROL SYSTEM	1X30MW	1	2016	已投运 OPERATION

5 除灰、除渣 PLC 控制系统
5 Ash and slag handling PLC control system



产品简介

5.1 概述

除灰、除渣是火力发电过程中的一个重要环节。随着电厂机组容量的增大，这种重要性越来越突出。除灰、除渣系统同电厂的安全、经济运行有着密切关系。

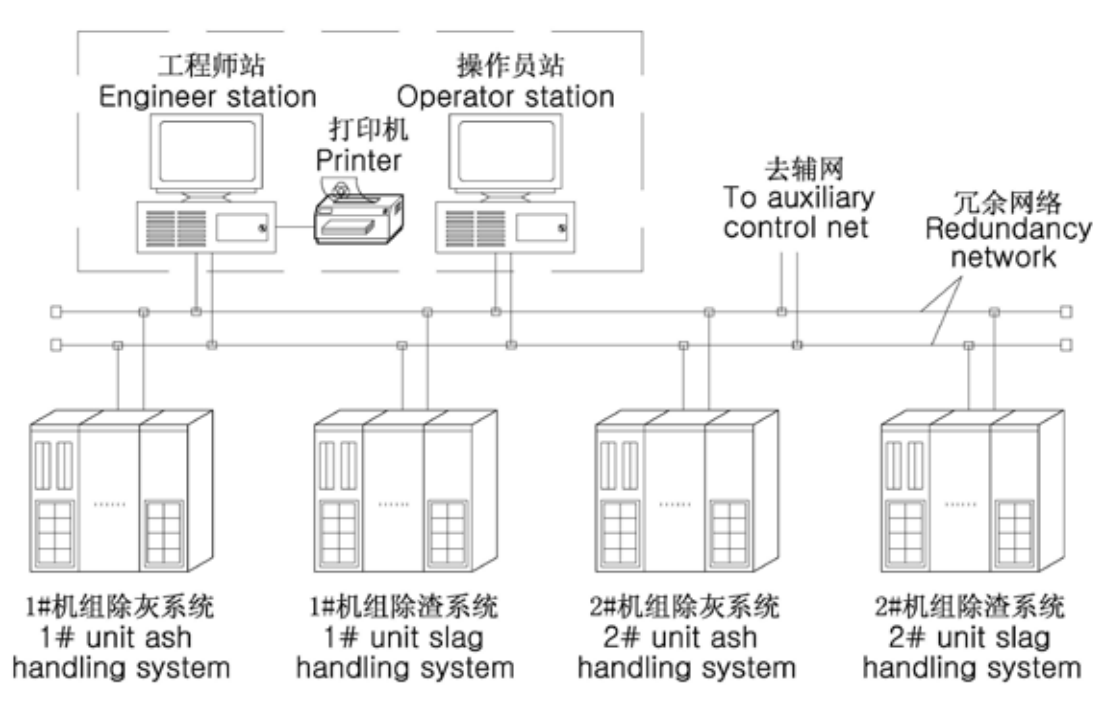
Product Introduction

5.1 Summarize

Ash and slag handling is important part of the power plant. Along with the increase of power plant unit capacity, this importance is becoming more and more serious. Ash and slag handling system with the safety and economic operation of the power plant, have close relationship.

5.2 除灰、除渣 PLC 控制系统配置

5.2 Ash and slag handling PLC control system configuration



5.3 除灰、除渣 PLC 控制系统控制功能

运行人员在除灰、除渣 PLC 控制系统操作员站可通过 LCD、键盘 / 鼠标对整个工艺过程进行监视和控制，实现对整个除灰、除渣系统范围设备的数据采集、程序启 / 停、联锁手动控制及单个设备操作、系统组态等功能，并在工艺系统运行工况异常时报警并能对紧急事故处理。

除灰、除渣 PLC 控制系统具有程序控制、手动控制、联锁保护及远程监控等功能，程序控制即根据预先设定的程序（根据具体工艺条件触发）完成系统的控制功能。手动控制为运行人员根据工艺流程及现场情况，选择单一设备进行启、停操作。系统联锁保护及报警功能：系统运行前某一设备出现故障，则禁止与该设备有关的流程程控运行，连锁手动运行。系统中所有设备运行故障均有显示报警。另外，通过工业以太网与辅助车间控制系统进行信息传输，电厂主控室运行人员可通过辅控网对本系统进行监视。

系统操作主要采用连锁手动与程序控制相结合的方式，分别完成除灰、除渣系统的工艺过程。

手动操作为调试、检修时使用，单独控制某个设备的启动、停止，与其它设备无连锁关系，不作为运行时使用操作方式。

5.3 Ash and slag handling PLC control system function

Operators in ash and slag handling PLC control system operator station can use LCD and keyboard/mouse to technology process monitoring and control, and to realize the whole range of ash and slag handling control system equipment in data collection, program start/stop, interlocking manual control and a single equipment operation, system configuration, and other functions, and in the technology process system running condition when an exception to alarm and emergency.

The ash and slag handling PLC control system has the process control, manual control, interlock protection and remote control, and other functions, program control is according to the predetermined programmer (according to the technology process) complete system control function. Manual control for operation personnel according to technology process flow, and the site condition, choose a single device for start/stop. Interlocking protection and alarm function: before the system start if one equipment failure, the process control start, interlock manual start is inadmissibility. Each devices fault are display alarming. In addition, through the industrial Ethernet and auxiliary workshop control system of information transmission, power plant operation control centre room personnel in auxiliary control can monitoring this system by network.

System operation mainly use interlock manual and program control mode to complete the process of ash and slag handling control system.

Manual operation use for commissioning and maintenance, control alone a equipment of the start/stop, without interlock with other equipment, when system running, can not use this mode of operation.

出口业绩
Export performance

编号 NO.	项目名称 Project Name	配套机组 Unit	套数 Set	出厂时间 Date	是否投运 State
1	马达加斯加锅炉岛 PLC 除灰除渣程控系统 MADAGASCAR AMBATOBY 3x235T/H BOILER ISLAND PLC ASH AND SLAG HANDLING CONTROL SYSTEM	3X235t/h 锅炉岛 3X235t/h BOILER ISLAND	1	2008	已投运 OPERATION
2	博茨瓦纳 MORUPULE B 4×150MW 除灰、渣控制系统 BOTSWANA MORUPULE B 4×150MW ASH AND SLAG HANDLING CONTROL SYSTEM	4X150MW	1	2009	已投运 OPERATION
3	印尼 AWAR-AWAR 2×350MW 除灰、渣控制系统 INDONESIA T.J. AWAR-AWAR 2x350MW POWER PLANT PROJECT ASH AND SLAG HANGDLING CONTROL SYSTEM	2X350MW	1	2010	已投运 OPERATION
4	老挝 HONGSA 3X626MW 除灰、渣控制系统 LAOS HONGSA 3X626MW ASH AND SLAG HANGDLING CONTROL SYSTEM	3X626MW	1	2012	已投运 OPERATION
5	印度尼西亚 BANJARSARI 2X135MW 坑口燃煤电厂工程除灰 PLC 程控系统设备 INDONESIA BANJARSARI 2X135MW ASH HANGDLING CONTROL SYSTEM	2X135MW	1	2013	已投运 OPERATION
6	菲律宾 CALACA 2x150MW CFB 燃煤电站工程除灰 PLC 程控系统设备 PHILIPPINES CALACA 2x150MW CFB COAL FIRED POWER PROJECT ASH HANGDLING CONTROL SYSTEM	2X150MW	1	2013	已投运 OPERATION
7	菲律宾 SEMIRARA 1×15MW CFB 燃煤电站工程除灰 PLC 程控系统设备 PHILIPPINES SEMIRARA 1×15MW CFB COAL FIRED POWER PROJECT ASH HANGDLING CONTROL SYSTEM	1X15MW	1	2013	已投运 OPERATION
9	印度尼西亚苏门答腊 SUMSEL(苏姆赛尔)2×150MW 坑口燃煤电厂项目除灰 PLC 程控系统设备 INDONESIA SUMSEL 2×150MW 2X150MW ASH HANGDLING CONTROL SYSTEM	2X150MW	1	2014	已投运 OPERATION
10	泰国 TPI PP 电厂项目工程除灰程控系统 THAILAND TPI PP 150MW POWER PLANT ASH HANDLING CONTROL SYSTEM	1X150MW	1	2018	已投运 OPERATION
11	巴基斯坦塔尔 CFB 燃煤电站项目除灰程控系统 THAR BLOCK II 2X330MW COAL-FIRED POWER PLANT ASH HANDLING CONTROL SYSTEM	2X330MW	1	2018	已投运 OPERATION
12	巴基斯坦塔尔煤田 II 区块 ThalNova 电站项除灰控制系统 TNPTL 1X330MW POWER PLANT ASH HANDLING CONTROL SYSTEM	1X330MW	1	2019	执行中 IMPLEMENTATION
13	巴基斯坦塔尔煤田 II 区块二期 TEL 坑口燃煤电站项目除灰控制系统 TEL 1X330MW POWER PLANT ASH HANDLING CONTROL SYSTEM	1X330MW	1	2019	执行中 IMPLEMENTATION

6 分散控制系统 DCS
6 Distributed control system DCS

产品简介

6.1 概述

分散控制系统 DCS 能够实现对火电厂所有受控设备的监视、控制和管理。从而实现火电厂安全、稳定、经济、高效的运行。

本 DCS 产品基于双网络令牌环网架构，各主要功能模件都配备冗余模件，整套系统运行稳定、容错性强、安全可靠，同时逻辑处理功能十分强大，能够满足各种容量和各种类型机组对分散控制系统的要求。

本 DCS 系统能够实现数据采集（DAS）、模拟量控制（MCS）、顺序控制（SCS）、锅炉炉膛安全监控（FSSS）、汽轮机控制（DEH）、 给水泵汽轮机控制（MEH）、电气控制系统（ECS）、网控系统（NCS）、全厂性能管理系统（PPMS）、一键启停（APS）、自动发电控制（AGC）等功能。

本 DCS 产品可以实现对机组冷态启动、温态启动、热态启动等各种启动方式的有效控制，通过对机组重要运行参数的可靠监控，确保机组安全启动、提高各种状态的启动速度、有效缩短启动时间；DCS 系统的各种监控功能能够有效的保证机组安全、稳定、经济运行；控制机组快速

Product Introduction

6.1 Summarize

Distributed control system (DCS) can realize the monitoring, control and management of all the controlled equipment in power plant. Thus realizes the power plant can work security, stability, economic and efficient.

The DCS products based on double token ring networks architecture, Each main function module equipped with the redundancy module, the system running stabilize, fault tolerance, safe and reliable, and the logical processing function. It can be used to many kinds of various capacity and various types unit control system.

The DCS can realize the whole control functions of the power plant, including data collection system (DAS), mimic control system(MCS), sequence control system(SCS), the safety monitoring of Furnace Safety Supervision System (FSSS), Digital Electro-Hydraulic Control System(DEH), electric control system (ECS), network control system (NCS), plant performance management system (PPMS), a key start-stop (APS), automatic generation control (AGC), etc.

The DCS can be implemented controlled by the cold start, warm start and hot start. It is based on the reliable monitoring of important operation parameter, to ensure its safe start, improve the speed of unit

增减负荷。同时本 DCS 系统具备对机组故障停机（停机不停炉、快速甩负荷）、正常停机等控制功能。

6.2 DCS 系统组成

DCS 系统具体包括：现场（过程）控制单元、中控室设备、网络通讯系统、软件、DCS 与其它系统的接口、远程 I/O、其它设备。

6.2.1 现场控制单元

DCS 系统中的关键硬件，例如处理器、网络通信模件等，都采用冗余配置，一旦某一处理器或其他关键硬件损坏，系统会瞬间切换至冗余设备，不会影响 DCS 系统的运行。

6.2.1.1 控制器

控制器主要用于在线控制与管理，是 DCS 系统中主要设备之一。控制器用于过程控制的特点：汇集多种类型的控制方案、内置多任务的操作系统、具有在线组态能力、采用冗余化的结构、固化多种类型的功能码、强调相互独立的运行模式、实现上电自动工作、尊重统一的设计风格、满足带电插拔的要求。

6.2.1.2 I/O 模件

DCS 系统的 I/O 模件也采用表面安装技术，同样具有结构紧凑、风格尺寸统一的优点，以及模件种类少、信号类型全、采集精度高等特点。

6.2.1.3 SOE 系统

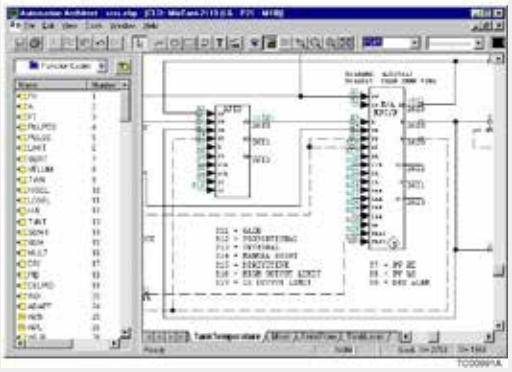
DCS 中的 SOE 系统是一个具有模件化特点的系统，由一组相关与控制器和 I/O 模件尺寸大小一模一样的模件构成。SOE 采集卡件具备普通 DI 的所有功能。

6.2.2 中央控制室设备

中央控制室设备包括工程师站，操作员站，打印机，以及操作台，硬手操按钮等。

6.2.2.1 工程师站

工程师站上运行工程设计组态软件，用于整个 DCS 系统的设计、组态、调试、过程监视和管理维护。工程师站软件可以方便地用图形的方式组态机组监控、管理程序，完成所有工程师站的功能。



start-up, and save the start-up time; The monitoring function of DCS system can ensure the unit working safety stably and economically; It can make the unit increase or decrease the load quickly. At the same time the DCS system has the function of unit stop (the turbine stopped and the boiler running, rapid load rejection) , and the unit normal stop.

6.2 The composition of DCS

DCS system including: the local control unit (process), the equipment of control center, the network communication system, the software, the interfaces between DCS and other systems, the remote I/O station, and other equipments.

6.2 .1 The local control unit

The key hardware of DCS system, such as processor, network communication module, etc..They use redundant configurations, once a processor or other key hardware damage, the system can switch to the redundant equipment instantly, it will not affect the operation of DCS system.

6.2.1.1 Controller

Controller is used to control and management on line. It is one of the main equipment in the DCS system. The Controller features which are used in process is: multiple types of control scheme, the multitasking built-in operating system, the capability of condition on-line, redundant structures, curing variety types of functional code, emphasize independent operating mode, to realize automatic power on work, respect of unified design style, support hot-plug.

6.2.1.2 The I/O module

The DCS I/O module of the system is also the surface technology mount , also has the merit of compact structure, style, size and unified less species module, signal type, collecting precision characteristic.

6.2.1.3 The SOE system

The SOE of the DCS system is a module system, it is built by the module which the size is same as the I/O module. The SOE card has the same function as the general DI card.

6.2.2 The equipment of control center

The equipment of control center including: engineer station, operator station, printers, desk, and button, etc.

6.2.2.1 Engineer station

The design configuration software is used in the design of the whole DCS system, configuration, commissioning, process monitoring and management maintenance. The software of engineer station uses the application software of graphic configuration control system method, friendly interface, convenient using, it has a very strong file management ability and functions such as online help. Engineer station can backup database, graphics library of utility system configuration, management and application software development, complete all functions of the engineers station.

6.2.2.2 Historical data station

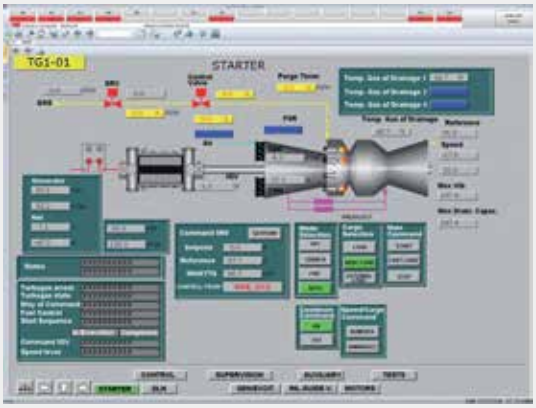
The main features of historical data station including: support storage

6.2.2.2 历史站

历史站的主要功能包括：支持 DCS 系统的历史数据存储和检索，随时记录重要的状态改变和参数改变。可定义生成各类报表（包括 EXCEL 格式）和趋势图，使用户方便快捷地对实时 / 历史数据进行分析。历史数据存储不受时间的限制，支持压缩功能（采用先进的压缩 / 解压算法），可把数据分类压缩储存，数据恢复时可选择按标签恢复。历史站配置了可读写光盘驱动器，以转存硬盘中的历史数据作长期备份，归档可以根据用户设置自动进行。历史站中存储的所有数据都可以通过打印机打印出来。

6.2.2.3 操作员站

操作员站可供多个运行人员同时对机组的运行工况进行监视和控制，虽然操作员站的使用各有分工，但任何显示和控制功能均应能在任一操作员站上完成。



操作员站数据库相互一致，互为后备，使整个人机接口系统具有很高的可靠性。

6.2.3 网络通讯系统

本 DCS 系统网络通信，采用了特定的技术和协议，在数据发送端应用先进技术，避免了大量的数据重复发送，极大地降低了数据发送量，有效地减少了网络拥塞，为产品实现高效、安全的分散控制功能提供了有力的保障。本 DCS 系统具有一套完整、可靠、开放的通讯系统，通讯系统分为：控制网络，操作管理网络和 DCS 对外部系统的通讯接口。该网络是真正的双环冗余网络；采用专业的工业控制用网络设备，如专业的网络接口和数据处理模件，保证真正的毫秒快速切换。

6.2.4 主要软件

DCS 系统随硬件设备一起，还提供必要的软件，包括系统软件，应用软件和优化软件。

系统软件：人机接口操作系统；操作员站系统软件；历史站系统软件；工程师站系统软件；现场控制系统功能

and retrieval history data of the DCS system, record important data when it changed. It can be generated the forms (including EXCEL format) and trend diagrams. Users can analyze the real-time/ historical data expediently. The historical data is not restricted by time, and support compression (advanced compression/decompression algorithm), the data can be compressed by class. The data can be recovered by tag. The historical data station have R/W CD-ROM, it can back-up the data. User can set it Run automatically. All the data can print by the printer.

6.2.2.3 Operator station

Operator station can provide and control many operator monitors at the same time. The whole control function can realize every operator station.

Operator station can realize many operators operate at the same time. As backup, it makes the man-machine interface system have a high reliability.

6.2.3 Network communication system

The DCS communication system network adopts the specific technology and protocol, it's application of advanced technology at the data sender, reduces the number of data. it can be reduced the network congestion, and provide guarantee of the DCS's control function. The DCS system has a set of complete, reliable, open communication system. The communication system includes: control network, operating management network and the interface of DCS communication with external systems. The network adopts really the double loop redundancy networks; It uses the professional industrial network control devices, such as a professional network interface data processing module, it guarantees switch as millisecond.

6.2.4 Main software

The DCS system provide same software in computer, including: system software, application software and optimization software.

System software: HMI operating system; the operator station system software; historical station system software; engineer station system software; the control system function code library.

Application: DCS engineering configuration software; Picture configuration software; Tag database management software; Alarm management software; Performance calculation software; DCS and PLC system interface software; DCS - SIS system interface software; DCS - MIS system interface software.

Optimization software: Smith estimates, free pressure operation strategy.

6.2.5 The interface between DCS and other systems

The communication interface of system is used to deal the data communication from DCS to external systems. The criterion communication interface including: the Modbus protocol, OPC Client, TCP/IP protocol, etc.

6.2.6 Remote I/O station

码库。

应用软件：DCS 工程组态软件；画面组态软件；标签数据库管理软件；报警管理软件；性能计算软件；DCS—PLC、DCS—SIS、DCS—MIS 等系统接口软件。

优化软件：Smith 预估、自由压力运行策略等。

6.2.5 DCS 与其它系统的接口

系统的通讯接口用于处理DCS与外部系统的数据通讯。标准的通讯协议包括：Modbus 协议、OPC client、TCP/IP 等。

6.2.6 远程 I/O

为距离中央控制室较远的系统配置一体化的远程 IO 站。远程 I/O 模件和相关继电器模块设置于远程 IO 站房，就地信号则接入远程 IO 柜，可以大大节省电缆。

6.2.7 其它设备

GPS 时钟系统采用专用 GPS 接收器作为时间标准。具有精度高、可靠性高、全天候的特点。

As the distance from the central control room far integration of system configuration, We supply the remote I/o station. The controller and the I/O module which collects I/O signal is set into electronic room of main plant. It uses the fiber optic repeater extended bus from I/O module to local. The remote I/O module and relay module is set in remote station. The local signal will be connected to the remote I/O cabinet. That would be save a lot of cables.

6.2.7 Other equipment

The GPS clock system uses the GPS receiver as the standard time. It has the characteristics of high precision, high reliability, round-the-clock.

出口业绩
Export performance

编号 NO.	项目名称 Project Name	配套机组 Unit	套数 Set	出厂时间 Date	是否投运 State
出口业绩 Export performance					
1	老挝 HONGSA 3X626MW 电站项目主机 DCS 系统设备 LAOS HONGSA 3X626MW MAIN UNIT DCS	3X626MW	1	2013	已投运 OPERATION
2	老挝 HONGSA 3X626MW 电站项目脱硫岛 DCS 系统设备 LAOS HONGSA 3X626MW FGD DCS	3X626MW	1	2013	已投运 OPERATION
国内业绩 Domestic performance					
1	华能玉环电厂 3# 机组 WGGH 改造项目分散控制系统 (DCS) HUANENG YUHUAN POWER PLANT 3# UNIT WGGH RECONSTRUCTION PROJECT DCS	4X1000MW	1	2014	已投运 OPERATION
2	牡丹江热电厂 #2 机及附属系统 DCS/DEH 控制系统改造工程 MUDANJIANG THERMAL POWER PLANT #2 UNIT AND AUXILIARY SYSTEM DCS/DEH CONTROL SYSTEM RECONSTRUCTION PROJECT	1X25MW	1	2017	已投运 OPERATION

7 工业电视系统
7 Industrial television monitoring system

产品简介

7.1 概述

在环境条件差的地方安装工业电视监视设备，可以把工作人员从恶劣的工作环境中解脱出来，改善职工的工作条件，实现远距离监视。

电视监视系统有以下特点：

1）提高工作效率。采用工业电视监视，可实现一人多点监视，改善劳动条件和减轻劳动强度，使操作运行人员具有亲临运行现场的直观感觉，提高操作运行人员参与自动控制操作的主动性和准确性。

2）保证安全生产。工业电视监视系统可以对生产过程中的关键部位实行连续监视和随时监视，能及时发现设备出现的问题，对设备进行及时的调整和消缺，减少事故的发生。

3）改善工作条件。在工厂里，有些工作岗位粉尘大、噪声高、阴暗潮湿，影响值班人员的身体健康。采用工业电视监视，可以实现值班人员远离环境差的地方，实现远距离监视。

Product Introduction

7.1 Summarize

Industrial television monitoring equipment installs in places with poor environmental conditions, staff can be freed from poor working conditions, improve the working conditions of workers to achieve remote monitoring.

1) Improve work efficiency. Using the industrial television monitoring can achieve a multi-point monitoring, improve working conditions and reduce labor intensity and allows the operator to run with an intuitive feeling for the person running the scene to use the industrial television monitoring, it also improve the operation and running the personnel involved in the operation of the automatic control initiative and accuracy.

2) To ensure safe production. Industrial television monitoring system can be a key component in the production process to implement continuous monitoring and subject to monitoring, timely detection of equipment problems, equipment for timely adjustments and eliminating defects, reduce accidents.

3) Improve working conditions. In the factory, some jobs in dust, noise, dark and damp affect the health of the staff on duty. Industrial television monitor can guarantee the staff on duty away from the poor environment, to achieve the remote monitoring.

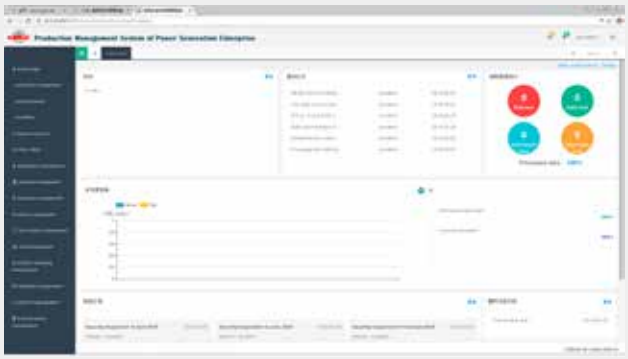
7.2 工业电视系统配置

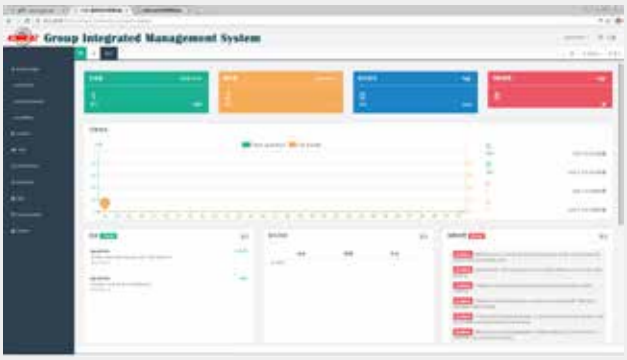
7.2 Industrial television system configuration

出口业绩
Export performance

编号 NO.	项目名称 Project Name	配套机组 Unit	套数 Set	出厂时间 Date	是否投运 State
1	土耳其碱矿自备电站项目输煤及石灰石输送工业电视系统 TURKEY ETI SODA COGENERATION POWER PLANT PROJECT COAL CONVEYING AND LIMESTONE POWER PREPARATION INDUSTRIAL TELEVISION MONITORING SYSTEM	3X12MW	1	2007	已投运 OPERATION
2	印度尼西亚 PLTU1 INDRAMAYU 3X330MW 输煤工业电视系统 INDONESIA PLTU1 INDRAMAYU 3X330MW COAL HANDLING INDUSTRIAL TELEVISION MONITORING SYSTEM	3X330MW	1	2009	已投运 OPERATION
3	博茨瓦纳 MORUPULE B 4 × 150MW 全厂工业电视系统 BOTSWANA MORUPULE B 4 × 150MW CCTV	4X150MW	1	2009	已投运 OPERATION
4	印尼 AWAR-AWAR 2 × 350MW 输煤、石灰石电视系统 INDONESIA T.J. AWAR-AWAR 2x350MW POWER PLANT PROJECT COAL HANDLING AND LIMESTONE INDUSTRIAL TELEVISION MONITORING SYSTEM	2X350MW	1	2010	已投运 OPERATION
5	菲律宾 MARIVELES 2 × 300MW 输煤工业电视系统 PHILIPPINES MARIVELES 2X300MW COAL FIRED POWER PROJECT COAL HANDLING INDUSTRIAL TELEVISION MONITORING SYSTEM	2X300MW	1	2011	已投运 OPERATION
6	老挝 HONGSA 3X626MW 全厂工业电视系统 LAOS HONGSA 3X626MW CCTV SYSTEM	3X626MW	1	2012	已投运 OPERATION
7	菲律宾 CALACA 2x150MW CFB 燃煤电站工程输煤工业电视设备 PHILIPPINES CALACA 2x150MW CFB COAL FIRED POWER PROJECT COAL HANDLING INDUSTRIAL TELEVISION MONITORING SYSTEM	2X150MW	1	2013	已投运 OPERATION
8	印度尼西亚 BANJARSARI 坑口燃煤电厂输煤工业电视系统 INDONESIA BANJARSARI 2X 135MW COAL HANDLING INDUSTRIAL TELEVISION MONITORING SYSTEM	2X135MW	1	2013	已投运 OPERATION
9	蒙古乌兰巴托阿木古朗供热站项目输煤工业电视系统 MONGOLIA AMUGULANG HEATING PLANT PROJECT COAL HANDLING INDUSTRIAL TELEVISION MONITORING SYSTEM	3X116MW	1	2013	已投运 OPERATION
10	巴基斯坦塔尔煤田 II 区块二期生活办公区工业电视系统 THAR BLOCK II PHASE II 1X330MW COAL-FIRED POWER PLANT LIVING OFFICE AREA INDUSTRIAL TELEVISION MONITORING SYSTEM	1X330MW	1	2019	已投运 OPERATION
11	巴基斯坦塔尔煤田 II 区块 ThalNova 电站项目 全厂和输煤及石灰石输送系统闭路电视监视系统 TNPTL 1X330MW POWER PLANT WHOLE PLANT 、COAL AND LIMESTONE CONVEYING SYSTEM INDUSTRIAL TELEVISION MONITORING SYSTEM	1X330MW	1	2019	执行中 IMPLEMENTATION
12	巴基斯坦塔尔煤田 II 区块二期 TEL 坑口燃煤电站项目 全厂和输煤及石灰石输送系统闭路电视监视系统 TEL 1X330MW POWER PLANT WHOLE PLANT 、COAL AND LIMESTONE CONVEYING SYSTEM INDUSTRIAL TELEVISION MONITORING SYSTEM	1X330MW	1	2019	执行中 IMPLEMENTATION

8 管理信息系统
8 Management Information System (MIS)





产品简介

8.1 概述

管理信息系统包含生产管理系统和集团综合管理系统两部分。

生产管理系统：通过主流的、先进的、完善的前后端架构和友好、美观、实用的前台页面构建的 MIS 系统。

生产管理系统可对电站日常生产业务进行信息化管理，包括运行管理、两票管理、设备管理、物资管理和燃料管理等功能模块，提供交接班管理、运行日志记录、工作票操作票开票、设备台账管理、缺陷管理、物资从需求计划到入库的主线业务管理、物资出库管理等功能，基本覆盖了电站生产涉及的所有业务。同时，生产管理系统可为集团综合管理系统提供生产数据、为远程故障预警与诊断服务提供检修历史数据和检修情况反馈。

生产管理系统的应用，能够帮助电站更加有序的开展生产业务，增强工作效率，节约运营成本。

集团综合管理系统：利用互联网技术，将生产管理系统中的设备管理信息、工作流程信息、备品备件管理信息等业务运营数据采集到数据中心，在大屏幕中展示各个电站的综合统计分析情况，从集团的层面对海外电站的运营进行统一管控，对备品备件进行统一调配，可有效增强集团对海外电站的运营管理能力。

Product Introduction

8.1 Summarize

Management Information System consists of two parts: Production Management System and Group Integrated Management System.

Production Management System: Which is built through the mainstream, advanced and complete front-end architecture and friendly, attractive and practical front page MIS system.

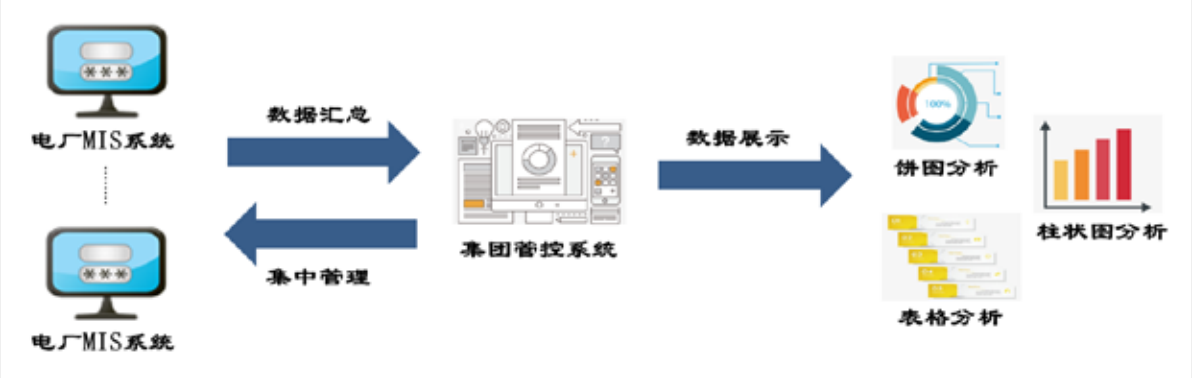
Production Management System can provide informatization management for daily production of the power plant, including operation management, two ticket management, equipment management, material management, fuel management and other function modules. It can provide shift management, operation log recording, work ticket and operation ticket issuing, equipment ledger management, defect management, mainline business management of material from demand plan to storage, material out of storage management and other function, which nearly covers all businesses of power plant production. At the same time, Production Management System can provide production data for group integrated management system, provide maintenance history data and maintenance feedback for remote fault predictive alarm and diagnostic services .

The application of Production Management System can help the power plant to carry out production business more orderly, enhance work efficiency and save operating costs.

Group Integrated Management System: Utilize Internet technology to collect the operation data of equipment management information, work flow information and spare parts management information from Production Management System to data center, display the comprehensive statistical analysis of each power station on the big screen, unified manage and control, uniform deployment of spare parts , effectively enhancing the operation and management capabilities of overseas power plants.

8.2 管理信息系统配置

8.2 The configuration of Management Information System



出口业绩

Export performance

编号 NO.	项目名称 Project Name	配套机组 Unit	套数 Set	出厂时间 Date	是否投运 State
出口业绩 Export performance					
1	博茨瓦纳 MORUPULE B 燃煤电站工程 MIS 系统 BOTSWANA MORUPULE B 4 × 150MW POWER PLANT PROJECT MIS SYSTEM	4X150MW	1	2010	已投运 OPERATION
国内业绩 Domestic performance					
1	绥化中盟热电有限公司生产管理系统 SUIHUA ZHONGMENG THERMAL POWER Co., Ltd. PRODUCTION MANAGEMENT SYSTEM	3 机 8 炉供热 3 turbines 8 boilers	1	2018	已投运 OPERATION

9 远程监控系统
9 Remote monitoring system

产品简介

9.1 概述

远程监控系统包含远程实时监控系统和远程视频监控系统两部分。

远程实时监控系统：系统接收来自主控 DCS 及辅控 PLC 的全部数据信息，实时数据从接口服务器经过单向网闸传输到镜像服务器，再经过硬件防火墙接入互联网，最终传输到国内公司数据中心。系统具有安全级别高、稳定性强的特点。

远程视频监控系统：采用全网络化的视频监控解决方案，基于互联网传输，构建远程视频监控系统。将视频数据实时传输到国内公司数据中心，实现远程视频监控功能。

哈成套所的运维团队可通过监控平台在大屏幕、手机等设备中实时查看电站运行数据和视频监控信号，辅助电站更好的进行运维。同时，借助哈成套所的技术优势，远程监控系统还可提供业内独有的电站机组运行效率的实时在线计算，以直观的数据展示机组运行状态，为机组运行优化提供指导。

电站管理者也可随时随地通过计算机、手机等设备查看现场情况。

Product Introduction

9.1 Summarize

The remote monitoring system consists of two parts: remote real-time monitoring system and remote video monitoring system.

Remote real-time monitoring system: The system receives all data information from the master DCS and the auxiliary PLC. Real-time data is transferred from the interface server to the mirror server via the one-way gatekeeper, then access the Internet through a hardware firewall, final transfer to the domestic company data center. The system has the characteristics of high security level and strong stability.

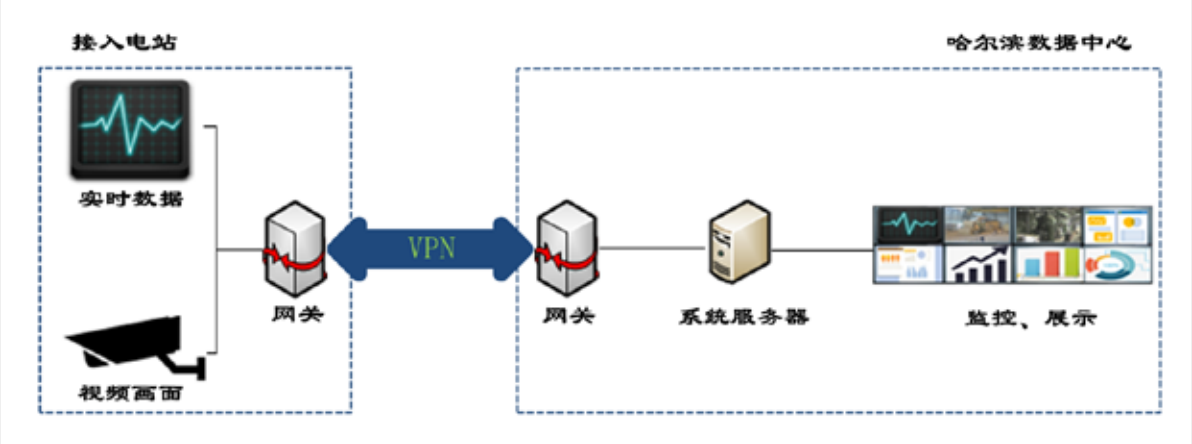
Remote video monitoring system: Using a fully networking monitoring video solution, based on Internet transmission, build a remote video monitoring system. Real-time transmission of video data to domestic company data centers for remote video monitoring.

The operation and maintenance team of CHPI can monitor the power station operation data and video monitoring signals in real time through large-screen, mobile phones and other devices through the monitoring platform. Assist power station get better operation and maintenance. At the same time, with the technical advantages of CHPI, the remote monitoring system also provides real-time online calculations of the operating efficiency of the power plant units which is unique in the industry, display unit operating status with intuitive data, provide guidance for unit operation optimization.

Power station managers can also view the situation on the computer, mobile phone and other equipment anytime and anywhere.

9.2 远程监控系统配置

9.2 Remote monitoring system configuration



出口业绩

Export performance

编号 NO.	项目名称 Project Name	配套机组 Unit	套数 Set	出厂时间 Date	是否投运 State
出口业绩 Export performance					
1	博茨瓦纳 MORUPULE B 燃煤电站工程 SIS 系统 BOTSWANA MORUPULE B 4×150MW POWER PLANT PROJECT SIS SYSTEM	4X150MW	1	2010	已投运 OPERATION
国内业绩 Domestic performance					
1	绥化中盟热电有限公司 SIS 系统 SUIHUA ZHONGMENG THERMAL POWER Co., Ltd. SIS SYSTEM	3 机 8 炉供热 3 turbines 8 boilers	1	2018	已投运 OPERATION
2	黑河市热电有限责任公司实时数据采集系统 HEIHE THERMAL POWER Co., Ltd. REAL-TIME DATA COLLECTION SYSTEM	7 机 10 炉供热 7 turbines 10 boilers	1	2019	执行中 IMPLEMENTATION

10 设备故障诊断预警系统

10 Equipment fault diagnosis and predictive alarm system

产品简介

10.1 概述

设备故障诊断预警系统一款基于设备历史数据挖掘的设备运行工况预测分析软件，通过实时监测发电机组运行情况，及早发现并通知员工设备异常状况和设备性能的细微变化，帮助设备管理者尽早诊断设备运行情况与性能劣化问题。

1）设备故障诊断预警系统能够通过对电厂海量设备运行数据的提取，形成设备运行工况知识库，对典型正常工况、异常工况进行标识，完成数据到信息到知识的转化。利用这些知识可以进行设备异常征兆、历史寻优的判断依据。

2）设备故障诊断预警系统能够及早发现传统监测手段无法发现的设备隐性异常和设备性能劣化的细微变化，提早发现那些设备、系统运行不良。让异常还没有成为故障就已经了解其趋势变化，帮助设备负责人能够预知的采取有效的应对预案。

3）设备故障诊断预警系统能够让管理者对电厂生产设备定量监测和量化评估，动态掌握设备实时健康状态。确保有限的人力资源做正确的事。

4）设备故障诊断预警系统针对设备异常、测点异常的人工分析功能，分析人员可以填写自己的分析诊断意见、异常故障原因，故障解决办法。系统将最后的诊断结果记入知识库进行积累。

Product Introduction

10.1 Summarize

Equipment fault diagnosis and predictive alarm system is a operation condition prediction analysis software based on equipment historical data mining. By monitoring the operation status of the generator set in real time, it can detect and notify the employees of equipment abnormal conditions and subtle changes of equipment performance timely, and help the equipment manager diagnose equipment operation and performance degradation as early as possible.

1) Equipment fault diagnosis and predictive alarm system can form the knowledge base of the equipment operation condition by extracting massive operation data of equipment in power plant, identify the typical normal working conditions and abnormal working conditions, and complete the conversion of data to information to knowledge. Using this knowledge, it can judge the abnormal signs of equipment and historical optimization.

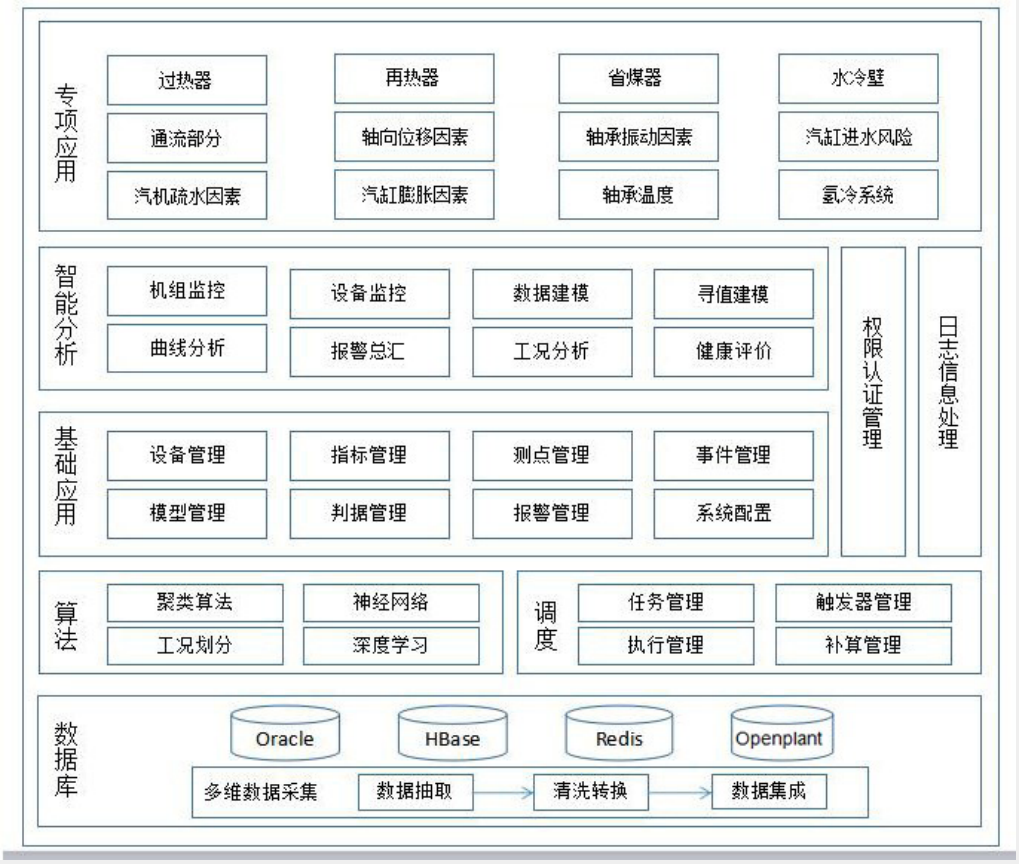
2) Equipment fault diagnosis and predictive alarm system can detect the subtle changes of equipment hidden defects and equipment performance degradation that cannot be discovered by traditional monitoring methods, and find those equipment and systems running poorly. Only the abnormal but has not become a fault yet, it has already understood the trend change, and helps the equipment owner to predict the effective response plan.

3) Equipment fault diagnosis and predictive alarm system enables the manager to quantitatively monitor and quantify the power plant production equipment, and dynamically grasp the real-time health status of the equipment. Make sure that limited human resources do the right thing.

4) For the manual analysis function of equipment anomaly and abnormal measuring point, the analyst can fill in his own analysis and diagnosis opinions, abnormal fault causes and fault resolution methods. The system records the final diagnosis in the knowledge base for accumulation.

10.2 设备故障诊断预警系统架构

10.2 Equipment fault diagnosis and predictive alarm system structure



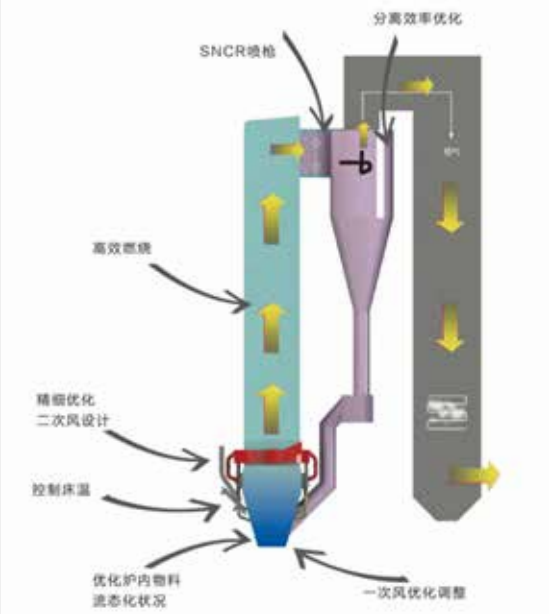
出口业绩

Export performance

编号 NO.	项目名称 Project Name	配套机组 Unit	套数 Set	出厂时间 Date	是否投运 State
国内业绩 Domestic performance					
1	绥化中盟热电有限公司设备故障诊断预警系统 SUIHUA ZHONGMENG THERMAL POWER Co., Ltd. EQUIPMENT FAULT DIAGNOSIS AND PREDICTIVE ALARM SYSTEM	3 机 8 炉供热 3 turbines 8 boilers	1	2018	执行中 IMPLEMENTATION
2	黑河市热电有限责任公司设备故障诊断预警系统 HEIHE THERMAL POWER Co., Ltd. EQUIPMENT FAULT DIAGNOSIS AND PREDICTIVE ALARM SYSTEM	7 机 10 炉供热 7 turbines 10 boilers	1	2019	执行中 IMPLEMENTATION

11 CFB 锅炉低氮燃烧与 SNCR/SCR 脱硝技术与装备

11 CFB Boiler Low Nitrogen Combustion and SNCR/SCR Denitration Technology and Equipment



产品简介

CFB 锅炉低氮燃烧与 SNCR/SCR 脱硝装备应用于 600MW 以下中小型 CFB 锅炉具有较好的脱硝效果，CFB 炉的原始 NOx 排放浓度一般在 200~300mg/m^3，该技术首先进行低氮燃烧技术改造，将 NOx 浓度控制在 150mg/m^3 以下；其次在炉膛内实施 SNCR 脱硝技术改造，或将锅炉尾部省煤器与预热器之间烟道改造为 SCR 反应器，将 NOx 排放浓度控制在 50mg/m^3 以下。CFB 锅炉低氮燃烧与 SNCR/SCR 脱硝技术与装备见图 CFB 锅炉低氮燃烧与 SNCR/SCR 脱硝技术与装备 001、002、003 和 004。

产品主要性能指标

本技术在氨逃逸低于 3mg/m^3 时，经过 CFB 锅炉低氮

Product Introduction

Low nitrogen combustion of CFB boiler and SNCR/SCR denitration equipment applied to small and medium-sized CFB boilers below 600MW have better denitration effect. The original NOx emission concentration of CFB furnace is generally between 200 and 300mg/m^3. This technology is firstly reformed with low nitrogen combustion technology to control NOx concentration below 150mg/m^3. Secondly, the SNCR denitrification technology transformation was carried out in the furnace, or the flue duct between economizer and preheater at the tail of the boiler was transformed into an SCR reactor, and the NOx emission concentration was controlled below 50mg/m^3. CFB boiler low-nitrogen combustion and SNCR/SCR denitration technology and equipment are shown in figure 001, 002, 003 and 004.

Main performance indicators of the product

By this technology, when ammonia escape is less than 3mg/m^3, through transformation of CFB boiler low nitrogen combustion NOx emission concentration can be controlled below 150 mg/m^3, after

燃烧改造 NOx 排放浓度可控制在 150mg/m³ 以下，经 SNCR 或 SCR 系统改造后，整体脱硝效率达到 90% 以上，NOx 排放浓度控制在 50mg/m³ 以下，在满足新的《火电厂大气污染物排放标准》GB13223—2011 中 NOx 排放限值的基础上，实现 NOx 的超低排放。

技术优势

（1）本技术结合了 SCR 和 SNCR 两种工艺的有利特点，同时增加低氮燃烧改造，工艺比灵活，能达到 90% 以上脱硝效率。满足现行环保标准要求。

（2）通过低氮燃烧有效减少 NOx 生成浓度，能够有效减少脱硝剂用量，减少 SCR 催化剂用量和寿命周期后的回收处理量、同时减少氨逃逸，降低空预器堵塞风险。

（3）本技术占地空间小，场地适应性强。

（4）烟道式 SCR 脱硝装置阻力小，从而减少了引风机改造的工作量，降低了运行电耗。

（5）可以根据需要确定是否设置新的制氨和喷氨装置，经济灵活性高，投资成本和运行成本较低。

（6）程控系统投入灵活，可根据锅炉运行参数，灵活调整脱硝系统投入情况，实现脱硝系统安全、经济、稳定运行。

modification by SNCR and SCR system , the denitration efficiency of 90% or more, NOx emission concentration is controlled under 50 mg/m³, to meet the new coal-fired power plant air pollutants emission standards GB13223-2011 in NOx emission limit value, on the basis of the implementation of ultra-low NOx emissions.

Technical advantages

(1) This technology combines the advantages of SCR and SNCR processes, and meanwhile add the transformation of low-nitrogen combustion, so that the process is flexible and the denitration efficiency can reach more than 90%. Meet the requirements of current environmental standards.

(2) NOx concentration can be effectively reduced through low-nitrogen combustion, which can effectively reduce the amount of denitrifier, the amount of SCR catalyst and the amount of recovery and treatment after the life cycle, and at the same time reduce ammonia escape and reduce the risk of air preheater blockage.

(3) The technology occupies a small space and has strong site adaptability.

(4) The flue SCR denitrification device has low resistance, thus reduce the work load of IDF transformation and reduce the operating power consumption.

(5) It can determine whether to set up new ammonia production and spraying devices according to requirement, with high economic flexibility and low investment cost and operation cost.

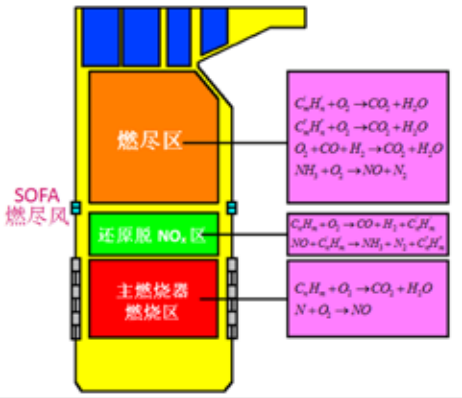
(6) The program control system is flexible operation, which can flexibly adjust the denitrification system operation according to the boiler operation parameters, so as to realize the safe, economic and stable operation of the denitrification system.

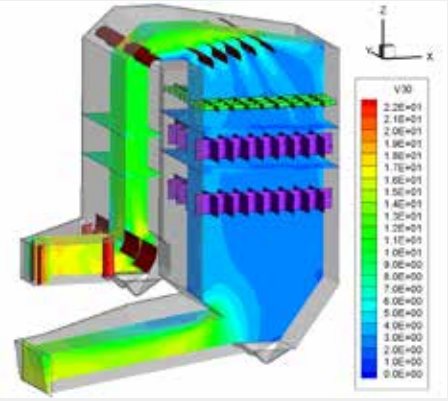
出口业绩
Export performance

序号 No.	项 目 名 称 Name of project	工程规模 Scale	工程地点 Position	投运时间 Operation year
国 内 业 绩 Domestic achievements				
1	黑河市热电厂 6-10 号炉 SNCR 脱硝工程总承包项目 General Contracting Project of SNCR Denitration Project for No. 6-10 Furnace of Heihe Thermal Power Plant	2×220t/h	黑龙江黑河 Heihe, Heilongjiang	2014 年
2	绥化中盟热电热电有限责任公司 3~6 号炉脱硝总承包项目 General Contracting Project of No. 3~6 Furnace Denitration of Suihua Zhongleague Thermoelectric co., LTD	4×130t/h	黑龙江绥化 Suihua, Heilongjiang	2015 年
3	嫩江盛烨热电有限责任公司 1~6 号炉脱硝总承包项目 Nenjiang Shengye Thermoelectric co., LTD. 1-6 Furnace Denitrification General Contract Project	3×75t/h+2×130t/h+116MW	黑龙江嫩江 Nenjiang, Heilongjiang	2016 年
4	绥化中盟电热电有限责任公司 4 台热水炉脱硝项目 4 Hot Water Furnace Denitration Project of Suihua Zhongmeng Electric Power co., LTD	4×116MW	黑龙江绥化 Suihua, Heilongjiang	2017 年
5	大庆中蓝石化有限公司 130t/h 循环流化床锅炉低氮燃烧改造工程 Daqing Zhonglan Petrochemical co., LTD. 130t/h Circulating Fluidized Bed Boiler Low Nitrogen Combustion Renovation Project	130t/h	黑龙江大庆 Daqing, Heilongjiang	2018 年
6	海伦地势坤生物质热电联产脱硝项目 Helenkun Biomass Cogeneration Denitrification Project	130t/h	黑龙江海伦 Helen, Heilongjiang	2018 年
7	中国石油大庆石化公司热电厂新建 9# 循环流化床锅炉项目 New No.9 Circulating Fluidized Boiler Project in The Thermal Power Plant of PetroChina Daqing Petrochemical Company	240t/h	黑龙江大庆 Daqing, Heilongjiang	2019 在建
8	淮北涣城发电有限公司 2×300MW 机组 CFB 锅炉低氮改造和 SCR 脱硝项目	2×300MW	徽淮北	2019 年在建

12 煤粉锅炉低氮燃烧和 SCR 脱硝技术与装备

12 Technology and Equipment for Low Nitrogen Combustion and SCR Denitrification of Pulverized Coal Boilers





产品简介

煤粉锅炉低氮燃烧（LNB）和 SCR 脱硝技术与装备适用于大中小煤粉电站锅炉，具有较好的脱硝效果。煤粉锅炉的原始 NOx 排放浓度一般在 600~700mg/m^3，该技术首先进行 LNB 技术改造，将 NOx 浓度控制在 400mg/m^3 以下，其次根据 LNB 改造后锅炉烟气排放特性，有针对性的建立 SCR 脱硝系统。

SCR 系统一般由氨的储存系统、氨与空气混合系统、

Product Introduction

Low nitrogen combustion and SCR denitrification technology and equipment of pulverized coal boiler are suitable for large, medium and small pulverized coal power station boilers, with better denitrification effect. The original NOx emission concentration of pulverized coal boilers is generally 600~700 mg/m^3. LNB technical transformation is carried out firstly to control the NOx concentration below 400 mg/m^3. Then, according to the flue gas emission characteristics of the transformed LNB boiler, the SCR denitrification system is targeted.

SCR system generally consists of ammonia storage system, ammonia

氨气喷入系统、反应器系统、检测控制系统等组成。液氨从液氨罐车由卸料压缩机送入液氨储罐，再经过蒸发罐蒸发为氨气后通过氨缓冲罐和输送管道进入锅炉区，通过与空气均匀混合后进入 SCR 反应器内部反应，SCR 反应器设置于空气预热器前，氨气在 SCR 反应器的上方，通过特殊的喷雾装置和烟气均匀分布混合，混合后烟气通过反应器内催化剂层进行还原反应。煤粉锅炉低氮燃烧和 SCR 脱硝技术与装备见图煤粉锅炉低氮燃烧和 SCR 脱硝技术与装备 001、002、003、004 和 005。

产品主要性能指标

本技术在氨逃逸低于 3mg/m³ 时，经过煤粉锅炉 LNB 改造和 SCR 脱硝系统改造后，形成 LNB+SCR 组合式脱硝系统，整体脱硝效率达到 90% 以上，NOx 排放浓度控制在 50mg/m³ 以下，在满足新的《火电厂大气污染物排放标准》GB13223—2011 中 NOx 排放限值的基础上，实现 NOx 超低排放。

技术优势

（1）相对于单独建立 SCR 脱硝系统，大型电站燃煤锅炉低氮燃烧和 SCR 脱硝装备在满足 NOx 排放浓度低于 50mg/m³ 的同时，节省还原剂和催化剂用量。

（2）通过热态调平使 SCR 脱硝系统在尽量降低还原剂用量、氨逃逸满足设计要求的同时，提高脱硝效率，保证 SCR 脱硝系统达到设计值，系统的运行得到最大优化。

and air mixing system, ammonia gas injection system, reactor system, detection and control system, etc. Liquid ammonia is feed from the liquid ammonia tank by the unloading compressor into the liquid ammonia tank, after evaporation tank evaporation of ammonia by ammonia buffer tank and pipeline into the boiler area, through internal reaction after mixing with air into the SCR reactor, SCR reactor is set before the air preheater, ammonia is at the top of the SCR reactor, through the special spray and evenly mixed flue gas, mixed gas through the reactor catalyst layer after reduction reaction. Low-nitrogen combustion and SCR denitration technology and equipment of pulverized coal boiler are shown in figure 001, 002, 003, 004 and 005.

Main performance indicators of the product

By this technology, when ammonia escape is less than 3mg/m³, a pulverized coal fired boiler LNB and SCR denitration system after the reform forms the LNB+SCR combined denitration system, overall denitration efficiency more than 90%, NOx emission concentration control under 50 mg/m³, to meet the new coal-fired power plant air pollutants emission standards GB13223-2011 in NOx emission limit value, realize ultra-low NOx emissions.

Technical advantages

(1) Compared with the independent SCR denitrification system, low-nitrogen combustion of coal-fired boilers in large power stations and SCR denitrification equipment can meet the NOx emission concentration of less than 50mg/m³ while saving the amount of reducing agent and catalyst.

(2) Through hot state leveling, SCR denitrification system can reduce the amount of reducing agent and escape of ammonia to meet the design requirements as much as possible, improve denitrification efficiency, ensure that the SCR denitrification system reaches the design value, and maximize the optimization of system operation.

出口业绩
Export performance

序号 No.	项 目 名 称 Name of project	工程规模 Scale	工程地点 Position	投运时间 Operation year
国 内 业 绩 Domestic achievements				
1	河南万基铝业股份有限公司自备电厂低氮燃烧和烟气脱硝项目	2×300MW	河南洛阳 Luoyang, Henan	2011 年
2	中国第一汽车股份有限公司动能分公司 6-10 号炉低氮燃烧和烟气脱硝改造项目	5×130t/h	吉林长春 Changchun, Jilin	2013 年
3	大化集团大孤山热电厂脱硝装置改造项目 Dahua Group Dagushan Thermal Power Plant Denitration Device Renovation Project	3×410t/h	大连大孤山 Dagu mountain, Dalian	2014 年
4	抚顺石化电厂锅炉脱硝装置改造项目 Fushun Petrochemical Power Plant Boiler Denitration Device Renovation Project	3×460t/h	辽宁抚顺 Fushun, Liaoning	2014 年

13 CFB 锅炉程控喷钙与回料活化脱硫技术与装备

13 Technology and Equipment of CFB Boiler Program Controlled Limestone Injection and Feedback Activated Desulfurization

产品简介

循环流化床（CFB）锅炉采用清洁燃烧技术，在节能减排政策的推动下，近些年在世界范围内得到迅速发展和广泛应用，通过程控喷钙与回料活化脱硫技术实现 SO_2 的高效脱除。

脱硫剂一般采用石灰石粉（$CaCO_3$），经气力输送喷射到炉内，部分石灰石粉受热分解成 CaO 和 CO_2，CaO 与烟气中的 SO_2 反应生成固态硫酸盐随炉渣排出。剩余大部分石灰石粉和未反应的 CaO（乏脱硫剂）随着飞灰循环，大幅提高脱硫剂的利用率和脱硫效率。锅炉出口高温分离器收集的含乏脱硫剂的飞灰通过回料阀使用蒸汽回送到炉膛，同时蒸汽与未反应或游离的 CaO 反应生成 $Ca(OH)_2$，通过回料装置返回炉膛继续参与脱硫反应，进一步提高脱硫剂的利

Product Introduction

Circulating fluidized bed (CFB) boiler adopts clean combustion technology. Driven by energy conservation and emission reduction policies, it has been rapidly developed and widely applied worldwide in recent years. SO_2 can be effectively removed through program-controlled calcium injection and feedback activated desulfurization technology.

Desulfurizer generally adopts limestone powder ($CaCO_3$), which is injected into the furnace through pneumatic transport. Part of limestone powder is decomposed into CaO and CO_2 when heated, and CaO reacts with SO_2 in flue gas to form solid sulfate which is discharged with slag. With the fly ash circulation, the utilization rate and desulfurization efficiency of the desulfurizer are greatly increased. The fly ash collected by the high temperature separator at the outlet of the boiler with spent desulfurizer is sent back to the furnace with steam through the feed valve. At the same time, the steam reacts with unreacted or free CaO to generate $Ca(OH)_2$. It is returned to the furnace through the feedback device to continue to participate in

用率和系统脱硫效率。CFB 锅炉程控喷钙与回料活化脱硫技术与装备见图 CFB 锅炉程控喷钙与回料活化脱硫技术与装备 001、002、003 和 004。

产品主要性能指标

(1)Ca/S ≤ 2.5 时，系统脱硫率可达 87% 以上 ，若实施蒸汽回料活化技术，则系统脱硫率可达 95% 以上。

(2)SO_2 的排放浓度达到《火电厂大气污染物排放标准》(GB13223—2011) 中 SO_2 ≤ 100mg/m^3 的排放限值，在燃用低硫煤 CFB 锅炉上应用能够达到 SO_2 ≤ 35mg/m^3 的超低排放标准。具体工艺、技术参数，根据锅炉容量、燃煤含硫量等确定。

技术优势

(1) 工艺流程简单，操作简便，占地面积小，初投资和运行费用低。

(2) 设定合理的 Ca/S 能够得到较高的脱硫效率，SO_2 排放浓度能够满足美国、欧盟、日本等发达国家和我国国家及地方环保标准的严格要求。

(3) 优化喷入炉内含粉气流的空气动力场，减小对主机运行参数的影响。

(4) 通过建立冷态实验系统，研发滚筒给料机、变频计量密封给料器、可调喷射器、粉仓底部防搭桥防堵装置等专利产品，提高输送浓度，增加输送距离，降低能耗，保证系统高效稳定运行。

(5) 脱硫剂资源广泛、价格低，脱硫后无副产物和二次污染。

(6) 配套建设石灰石制粉和输送系统可以保证整个脱硫系统能够连续、稳定、高效的运行，相比外购石灰石原料节省大量运行成本。

desulfurization reaction, so as to further improve the utilization rate of desulfurizer and desulfurization efficiency of the system. Technology and equipment of CFB boiler program controlled calcium injection and feedback activation desulfurization technology and equipment 001, 002, 003 and 004.

Main performance indicators of the product

(1) When Ca/S ≤ 2.5, the desulfurization rate of the system can reach more than 87%, and if the steam feedback activation technology is implemented, the desulfurization rate of the system can reach more than 95%.

(2) The emission concentration of SO_2 reaches the emission limit of SO_2 ≤100mg/m^3 in the air pollutant emission standard of thermal power plant (GB13223-2011), and the ultra-low emission standard of SO_2 ≤35mg/m^3 can be achieved in CFB boiler burning low-sulfur coal. Specific process and technical parameters are determined according to boiler capacity and sulfur content of burning coal .

Technical advantages

(1) Simple process, simple operation, small area, low initial investment and operating costs.

(2) Reasonable Ca/S can achieve high desulfurization efficiency, and SO_2 emission concentration can meet the strict requirements of the United States, the European Union, Japan and other developed countries as well as China's national and local environmental standards.

(3) Optimize the aerodynamic field containing the powder flow in the furnace, and reduce the influence on the operating parameters of main machine.

(4) Develop patented products, such as drum feeder, variable frequency metering seal feeder, adjustable injector and anti-bypass and blocking device at the bottom of powder warehouse, by establishing a cold-state experiment system, to improve the conveying concentration, increase the conveying distance, reduce energy consumption and ensure the efficient and stable operation of the system.

(5) Desulfurization agent resources are extensive, the price is low, no by-products and secondary pollution after desulfurization.

(6) The supporting construction of limestone powder preparing and conveying system can ensure the continuous, stable and efficient operation of the whole desulfurization system, and save a lot of operating costs compared with the purchased limestone raw materials.

出口业绩
Export performance

序号 No.	项 目 名 称 Name of project	工程规模 Scale	工程地点 Project site	投运时间 Operation year
国内业绩 Domestic achievements				
1	黑河市热电厂 6-7# CFB 炉喷钙脱硫工程 Heihe CHP 6-7# CFB Boiler Limestone Injection Desulfurization Project	2×75t/h	黑龙江黑河 Heihe, Heilongjiang	2007 年
2	内蒙石药集团 1-3# CFB 炉喷钙脱硫工程 Inner Mongolia Shiyao Group1-3# CFB Boiler Limestone Injection Desulfurization Project	3×75t/h	内蒙古 Inner Mongolia	2007 年
3	黑河市热电厂 1-5# 和 8# 炉 CFB 锅炉喷钙脱硫工程 Heihe CHP 1-5# and 8# CFB Boiler Limestone Injection Desulfurization Project	5×65t/h +75t/h	黑龙江黑河 Heihe, Heilongjiang	2008 年
4	嫩江县海信热电有限公司 1-3# 炉喷钙脱硫工程 Nenjiang Haixin CHP Co., Ltd. 1-3# Boiler Limestone Injection Desulfurization Project	3×75t/h	黑龙江嫩江 Nenjiang, Heilongjiang	2009 年
5	黑河市热电厂 20t/h 石灰石制粉厂及输粉工程 Heihe CHP 20t/h Limestone Preparation Factory and Transportation Project	20t/h	黑龙江黑河 Heihe, Heilongjiang	2009 年
6	黑河市热电厂 9# 炉 CFB 锅炉喷钙脱硫工程 Heihe CHP 9# CFB Boiler Limestone Injection Desulfurization Project	220t/h	黑龙江黑河 Heihe, Heilongjiang	2010 年
7	黑河市热电厂 10# 炉 CFB 锅炉喷钙脱硫工程 Heihe CHP 10# CFB Boiler Limestone Injection Desulfurization Project	220t/h	黑龙江黑河 Heihe, Heilongjiang	2011 年
8	鸡西矿业（集团）矸石热电厂 1#CFB 锅炉脱硫工程 Jixi Mine Group Coal Gangue CHP 1#CFB Boiler Desulfurization Project	1×130t/h	黑龙江鸡西 Jixi, Heilongjiang	2013 年
9	绥化中盟热电有限公司 CFB 锅炉脱硫工程 Suihua Zhongmeng CHP Co., Ltd. CFB Boiler Desulfurization Project	4×130t/h	黑龙江绥化 Suihua, Heilongjiang	2013 年
10	黑龙江省鸡东热电有限公司 CFB 锅炉脱硫工程（带蒸汽回料系统） Heilongjiang Jidong CHP Co., Ltd. CFB Boiler Desulfurization Project (with steam return system)	4×75t/h	黑龙江鸡东 Jidong, Heilongjiang	2013 年
11	双鸭山虹炎热电有限公司 CFB 锅炉脱硫工程 Shuangyashan Hongyan CHP CFB Boiler Desulfurization Project	5×40t/h +75t/h	黑龙江双鸭山 Shuangyashan, Heilongjiang	2014 年
12	鸡西矿业（集团）矸石热电厂 3#CFB 锅炉脱硫工程 Jixi Mine Group Coal Gangue CHP 3# CFB Boiler Desulfurization Project	1×130t/h	黑龙江鸡西 Jixi, Heilongjiang	2014 年
13	龙煤矿业集团双鸭山分公司虹炎热电有限公司沸腾锅炉脱硫改造工程总承包及成套设计供货项目 Longmei Mining Group Shuangyashan Branch Hong Hot Power Co., LTD. Boiler Desulfurization Transformation Project General Contract and Supply Project of Complete Set Design	1×75t/ h+5×40t/h	黑龙江双鸭山 Shuangyashan, Heilongjiang	2014 年
14	大庆中蓝石化热电厂 CFB 锅炉喷钙脱硫改造工程总承包项目 Daqing Zhonglan Petrochemical Thermal Power Plant CFB Boiler Injection Calcium Desulfurization Renovation Project General Contracting Project	1×75t/h +2×130t/h	黑龙江大庆 Daqing, Heilongjiang	2015 年
15	嫩江盛烨热电有限责任公司 6 号炉脱硫总承包项目 Nenjiang Shengye Thermal Power Co., LTD	116MW	黑龙江嫩江 Nenjiang, Heilongjiang	2016 年
16	绥化中盟热电有限公司 4 台热水炉脱硫项目 4 Hot Water Furnace Desulfurization Project of Suihua Zhongmeng Thermal Power Co., LTD	4×116MW	黑龙江绥化 Suihua, Heilongjiang	2017 年
17	沈阳新北热电干法脱硫改造项目 Shenyang Xinbei Dry Desulfurization Project	90MW	辽宁沈阳 Shenyang, Liaoning	2018 年
国外业绩 Outside the industry performance				
15	博茨瓦纳 MORUPULE B 电站 CFB 锅炉脱硫工程 Botswana MORUPULE B Power Plant CFB Boiler Desulfurization Project	4×520t/h	博茨瓦纳 Botswana	2010-2013 年
16	菲律宾 SEMERARA 电站 CFB 锅炉脱硫工程 Philippine SEMERARA Power Plant CFB Boiler Desulfurization Project	1×65t/h	菲律宾 SEMERARA SEMERARA, the Philippines	2013 年
17	菲律宾 CALACA 电站 CFB 锅炉工程脱硫工程 Philippine CALACA Power Plant CFB Boiler Desulfurization Project	2×150MW	菲律宾 CALACA CALACA, the Philippines	2013 年

14 石灰石—石膏湿法脱硫技术与装备

14 Technology and Equipment for Wet Desulfurization of Limestone and Gypsum

产品简介

石灰石—石膏法烟气脱硫工艺是目前应用最广泛的一种脱硫技术，锅炉烟气经除尘器除尘后，通过增压风机、GGH（可选）降温后进入吸收塔。在吸收塔内烟气向上流动且被向下流动的循环浆液以逆流方式洗涤。循环浆液则通过喷浆层内设置的喷嘴喷射到吸收塔中，以便脱除 SO_2、SO_3、HCl 和 HF，与此同时在“强制氧化工艺”的处理下反应的副产物被导入的空气氧化为石膏（$CaSO_4 \cdot 2H_2O$），并消耗作为吸收剂的石灰石。循环浆液通过浆液循环泵向上输送到喷淋层中，通过喷嘴进行雾化，可使气体和液体得以充分接触。

在吸收塔中，石灰石与二氧化硫反应生成石膏，这部分石膏浆液通过石膏浆液泵排出，进入石膏脱水系统。经过净化处理的烟气流经两级除雾器除雾，在此处将清洁烟气中所携带的浆液雾滴去除。同时按特定程序不时地用工艺水对除雾器进行冲洗。最后，洁净的烟气通过烟道进入烟囱排向大气。石灰石—石膏湿法脱硫技术与装备见图石灰石—石膏湿法脱硫技术与装备 001 和 002。

Product Introduction

The limestone-gypsum flue gas desulfurization process is one of the most widely used desulfurization technologies at present. The flue gas of the boiler enters the absorption tower after being dusted by the dust collector and cooled by the pressurized fan and GGH (optional). The flue gas in the absorber flows upward and is washed by the circulating slurry flowing downward in a counter-current manner. The circulating slurry is sprayed into the absorption tower through a nozzle set in the spray layer to remove SO_2, SO_3, HCl and HF, while the by-products of the reaction are oxidized to gypsum ($CaSO_4 \cdot 2H_2O$) in the imported air under the treatment of "forced oxidation process", and the limestone as the absorber is consumed. Circulating slurry is transferred upward to spray layer by slurry circulating pump, and atomized by nozzle, so that gas and liquid can fully contact.

In the absorption tower, the limestone reacts with sulfur dioxide to form gypsum, which is discharged through the gypsum slurry pump and enters the gypsum dehydration system. The flue gas after the purification process flows through the two-stage mist remover, where the slurry droplets carried in the clean flue gas are removed. At the same time according to specific procedures from time to time with process water to wash the mist eliminator. Finally, clean smoke enters the chimney through the flue and is discharged into the atmosphere. Limestone - gypsum wet desulfurization technology and equipment

产品主要性能指标

随着《煤电节能减排升级与改造行动计划（2014年—2020年）》及《全面实施燃煤电厂超低排放和节能改造工作方案》的推出，石灰石—石膏法脱硫工艺又得到了进一步的发展，脱硫效率可达99.5%，最终实现二氧化硫排放浓度小于35mg/m³的国家规定。

技术特点

（1）脱硫效率高，二氧化硫排放浓度小于35mg/m³，可实现超低排放。

（2）技术成熟，运行可靠性好，装置投运率一般可达98%以上。

（3）对煤种变化的适应性强。该工艺适用于任何含硫量的煤种的烟气脱硫。

（4）吸收剂资源丰富，价格便宜。该工艺的吸收剂为石灰石，在我国分布很广，资源丰富，许多地区石灰石品位也很好，碳酸钙含量在90%以上，优者可达95%以上。在脱硫工艺的各种吸收剂中，石灰石价格最便宜。

（5）脱硫副产物便于综合利用。石灰石－石膏湿法脱硫工艺的脱硫副产物为二水石膏，主要用途是用于生产建材产品和水泥缓凝剂。

see figure. Limestone - gypsum wet desulfurization technology and equipment 001 and 002.

Main performance indicators of the product

With the transformation and upgrading of coal and electricity energy conservation and emissions reduction action plan (2014-2020) and the full implementation of coal-fired power plant ultra-low emissions and energy saving modification plan the launch of the limestone-gypsum desulfurization process and got further development, the desulfurization efficiency can reach 99.5%, finally realizes the SO_2 concentration is less than 35mg/m³ of the state provisions.

Technical characteristics

(1) High desulfurization efficiency, sulfur dioxide emission concentration is less than 35mg/m³, which can achieve ultra-low emissions.

(2) The technology is mature, the operation reliability is good, and the operation rate of the device can reach more than 98%.

(3) Strong adaptability to coal variety. The process is suitable for desulfurization of flue gas from coal with any sulfur content.

(4) Absorbent is abundant in resources and cheap in price. The absorbent of this process is limestone, which is widely distributed in China and rich in resources. The limestone grade in many areas is also very good, with the content of calcium carbonate above 90% and the best above 95%. Limestone is the cheapest absorbent in the desulfurization process.

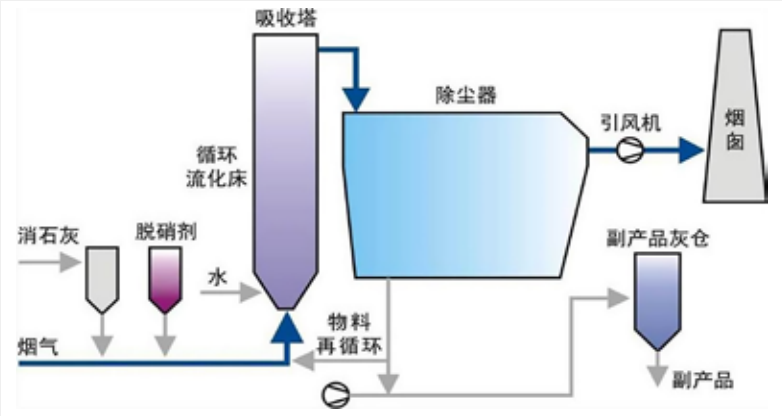
(5) Desulfurization by-products are convenient for comprehensive utilization. The by-product of limestone-gypsum wet desulfurization process is dehydrate gypsum, which is mainly used to produce building materials and cement retarder.

出口业绩
Export performance

序号 No.	项 目 名 称 Name of project	工程规模 Scale	工程地点 Position	投运时间 Operation year
国 内 业 绩 Domestic achievements				
1	国电龙华和龙热力有限公司3×75t/h锅炉脱硫改造项目 3×75t/h Desulfurization Renovation Project of Guodian Longhua Thermal Power Co., Ltd	3×75t/h	吉林延边 Yanbian, Jilin	2017年
2	华电哈尔滨发电有限公司3×220t/h锅炉湿法脱硫废水零排放性能试验项目 Performance Test of Desulfurization Wastewater Evaporation "Zero Emission" System for 3×220t/h of Huadian Harbin Power Generation Co.,Ltd.	3×220t/h	黑龙江哈尔滨 Harbin,Heilongjiang	2018年
3	华电潍坊发电有限公司3#机组湿法脱硫废水零排放性能试验项目 Performance Test of Desulfurization Wastewater Evaporation "Zero Emission" System for Unit No. 3 of Huadian Weifang Power Generation Co., Ltd	670MW	山东潍坊 Weifang, Shandong	2018年
4	宁夏宝丰能源集团有限公司焦化1#2#4#烟囱脱硫塔液滴检测项目 Liquid Drop Detection Project of Desulfurization Tower for Coking 1#2#4# Chimney of Baofeng Energy Group Co., Ltd	60000m³/h 烟气量	宁夏宁东 Ningdong, Ningxia	2019年

15 燃煤锅炉多污染物联合脱除技术与装备

15 Technology and Equipment of Multi-pollutant Removal for Coal-fired Boiler



产品简介

我公司以多年电站环保领域工程技术经验为基础，紧密结合当前国内外环保形势，研发的烟气循环流化床半干法脱硫技术工艺，其脱硫效率可达 98% 以上，在脱除二氧化硫的同时还能高效脱除三氧化硫、氮氧化物（氧化法脱硝）、酸性气体、颗粒物和重金属等多种大气污染物，能够用较常规的工艺高效低成本地实现超低排放目标，实现大气多污染物联合治理和控制硫化物排放总量及抑制雾霾生成，是目前中小型电站、热电站、自备电站和非电行业等用户解决超低排放问题的有效途径。

空气预热器出来的 130~160℃ 烟气，通过预除尘器后从脱硫塔下部文丘里装置加速进入循环流化床床体，利用 $Ca(OH)_2$ 脱硫剂的多次再循环，使脱硫剂与烟气充分混合并延长接触时间，使反应器内的局部 Ca/S 比高达 50 以上，提高脱硫剂的利用率和脱硫效率，同时在流化床反应器入口加入氧化脱硝剂，实现联合脱硝脱汞作用。燃煤锅炉多污染物联合脱除技术与装备见图燃煤锅炉多污染物联合脱除技术与装备 001 和 002。

Product Introduction

On the basis of many years of experience in power plant environmental engineering technology, combining the current situation of environmental protection at home and abroad, research and development of flue gas circulating fluidized bed dry process desulfurization technology is carried out by CHPI, its desulfurization efficiency can reach more than 98%, the removal of sulfur dioxide, nitrogen oxides sulphur trioxide as well as efficient removal (oxidation process denitration), acid gases, particulate matter and heavy metals and other pollutants, can use a conventional process efficient and low cost to realize ultra-low emissions targets, implement the atmosphere more joint governance and control sulphide pollutant discharge amount and growth inhibition of fog, It is an effective way to solve the problem of ultra-low emission for small and medium size power station, thermal power station, captive power station and non-power industry.

Flue gas of 130~160℃ from air preheater, passes preliminary filter, then accelerate into the circulating fluidized bed body from desulfurization tower bottom venturi device, using the $Ca(OH)_2$ desulfurizer of recycling for many times, make the desulfurizer with flue gas mixing and to extend the time of contact, the reactor of local Ca/S ratio is as high as more than 50, improve the utilization of desulfurizer, and the desulfurization efficiency, at the same time to join the entrance of the fluidized bed reactor oxidation denitration agent, the realization of joint denitration to take off the mercury. Technologies

产品主要性能指标

本技术在投入 Ca/S ≤ 1.5 时，SO_2 排放浓度≤ 35mg/m^3；与燃煤锅炉原有脱硝系统相配合的情况下，添加的氧化剂与 NOx 摩尔比≤ 1.0 时，NOx 排放浓度≤ 50mg/m^3；以此工艺系统为载体，还可以实现多重污染物的联合脱除，可以达到汞排放浓度≤ 0.015mg/m^3，循环流化床吸收塔后部配置布袋除尘器或静电除尘器，烟尘排放浓度≤ 10mg/m^3。

技术优势

（1）脱硫效率高：在钙硫比为 1.1 ～ 1.5 时，脱硫效率可达 90% 以上，基本能达到湿法脱硫工艺的脱硫效果，通过合理控制是可以达到超低排放的。

（2）工程投资费用和运行费用较低，为石灰石－石膏湿法脱硫工艺的 50% ～ 70%。

（3）工艺流程简单，系统设备少，占地面积小，能源消耗低。

（4）能有效脱除 SO_3、氯化物和氟化物等有害气体，其脱除效率，达 90% ～ 99%，腐蚀性较小，烟囱无需防腐，直接排放脱硫烟气。

（5）无脱硫废水排放，且脱硫副产品呈干态，不会造成二次污染，对综合利用和处置堆放有利。

（6）通过在反应塔入口烟道加入氧化脱硝剂，能有效脱除 NOx 和二价汞等重金属元素，实现多污染物协同脱除。

（7）该技术可以通过程控系统根据烟气中 SO_2 变化自动调节脱硫剂的投入量，保证 SO_2 稳定达标排放。

and equipment of multi-pollutant combined removal for coal-fired boilers are shown in figure 001 and 002.

Main performance indicators of the product

When Ca/S is ≤1.5, the emission concentration of SO_2 is ≤35mg/m^3. When combined with the original denitrification system of coal-fired boiler, when the molar ratio of oxidant to NOx is ≤1.0, NOx emission concentration is ≤50mg/m^3. With this process system as the carrier, the combined removal of multiple pollutants can be achieved, and the mercury emission concentration is no more than 0.015mg/m^3. The rear of the circulating fluidized bed absorber is equipped with bag filter or electrostatic precipitator (ESP), and the dust emission concentration is no more than 10mg/m^3.

Technical advantages

(1) High desulfurization efficiency: when the calcium-sulfur ratio is 1.1~1.5, the desulfurization efficiency can reach more than 90%, basically achieving the desulfurization effect of wet desulfurization process, and ultra-low emission can be achieved through reasonable control.
(2) The project investment cost and operation cost are relatively low, which are 50%~70% of the limestone-gypsum wet desulfurization process.
(3) Simple process, less system equipment, small area, low energy consumption.
(4) Can effectively remove SO_3, chloride, fluoride and other harmful gases, the removal efficiency is up to 90% ~ 99%, less corrosive, no need to prevent corrosion for chimney, direct emission of desulfurization flue gas.
(5) There is no desulfurization wastewater discharge, and the desulfurization by-products are dry, which will not cause secondary pollution, which is beneficial to comprehensive utilization and disposal stacking.
(6) By adding oxidizing and denitrifying agent in the inlet flue of reaction tower, heavy metal elements such as NOx and divalent mercury can be effectively removed to achieve collaborative removal of multiple pollutants.
(7) This technology can automatically adjust the amount of desulfurizer input according to the change of SO_2 in flue gas through the program control system, so as to ensure the stable discharge of SO_2 up to the standard.

出口业绩
Export performance

序号 No.	项 目 名 称 Name of project	工程规模 Scale	工程地点 Position	投运时间 Operation year
国 内 业 绩 Domestic achievements				
1	杭联热电有限公司超低排放工程 Ultra-low Emission Project of Hanglian Thermal Power Co., Ltd	3 × 130 t/h	浙江杭州 Zhejiang hangzhou	2016 年
2	桐昆集团股份有限公司超低排放工程 Tongkun Group Co., Ltd. Ultra-low Emission Project	5 × 140t/h	浙江桐乡 Tongxiang, Zhejiang	2019 年在建

中国福马机械集团有限公司

China Foma (Group) Co.,Ltd.

公司名称：中国福马机械集团有限公司

Company Name: China Foma (Group) Co.,Ltd.

http://www.chinafoma.com

中国福马机械集团有限公司（简称中国福马集团公司）前身为林业部机械公司，成立于 1979 年， 1998 年划归国家大型企业工委、2003 年由国务院国资委直接管理，2007 年与中国机械工业集团有限公司重组，成为其全资子公司，公司总部位于北京市，目前拥有二、三级企业 21 家，其中林海股份有限公司为上市公司；与日本雅马哈发动机株式会社合资组建了江苏林海雅马哈摩托车有限公司等合资企业。

中国福马集团公司是中国专用设备研发、制造、销售的大型企业，是中国林业机械协会的会长单位。集团公司以〝动力装备、林业装备、工程与贸易〞为三大主业，积累了动力机械、人造板机械等几十年的生产经营经验，多次被中国质量协会用户委员会认定为〝全国用户满意产品〞。产品出口到美国、加拿大、日本、欧洲、东南亚等 130 个国家和地区，享有较高市场声誉。〝十二五〞以来，大力推进〝绿色能源开发〞项目，建设了宁夏、江苏、河北、甘肃等地多个大型地面光伏电站，并结合西部地区沙漠治理，建设、持有宁夏振启 30MW 地面光伏电站，为地区的发展做出应有的贡献。近年，涉足新能源汽车研发、制造领域，探索并形成新能源汽车研发、制造和销售实力。

中国福马集团公司持续加大科技投入，技术力量雄厚，拥有国家认定企业技术中心 1 个、博士后科研工作站 1 个、省部级以上科研机构 7 个、省级高新技术企业 4 家，拥有 25 名享受国务院特殊津贴专家，累计获得国家级科技进步奖 5 项，省部级科技进步奖 65 项；先后有 23 个产品被颁获国家高新技术产品；累计获得授权专利 294 项，其中包括 1 项欧洲专利在内的发明专利 38 项；公司主持参与了 10 多项国家标准、行业标准的制定与修订，承担并完成国家〝863〞 高技术课题〝人造板连续平压与精准控制技术〞的研发，〝BPY74265 宽幅人造板连续压机成型压制系统〞系列产品获得〝国家重点新产品〞认定，并被列入国家《首台（套）重大技术装备推广应用指导目录》；掌握并拥有以全地形车、通用汽油机为代表的动力机械核心技术。完

China Foma (Group) Co., Ltd. (hereinafter referred to as China Foma) formerly known as the Machinery Company of Ministry of Forestry, founded in 1979 and allocated to National Committee for Large Enterprises in 1998, directly managed by the State-owned Assets Supervision and Administration Commission of the State Council in 2003, became the wholly -owned subsidiary of China National Machinery Industry Corporation (Sinomach) in 2007 during its reorganization. Its headquarters is located in Beijing, with 11 secondary and tertiary enterprises, including listed companies such as Linhai Stock Co., Ltd.. It has built a joint venture Jiangsu Linhai Yamaha Motorcycle Co., Ltd. with Yamaha (Japan).

China Foma is a large enterprise which is committed to special equipment R&D and manufacture in China, it is a chairman unit of China Forestry Machinery Association. The company has 3 main businesses "power equipment, forestry equipment, engineering and trade", and within a few decades, it has accumulated abundant production and operation experiences for power machinery, wood-based panel machinery, etc., boosting the leading technologies in China. It has been honored by China Quality Association User Committee as "National Customer Satisfactory Product". Products are exported to the United States, Canada, Japan, Europe, Southeast Asia, over 130 countries and regions, enjoying a high reputation in the market. Since the "Twelfth Five Year Plan", and it has been vigorously promoting the "green energy development" projects, and has built many large-scale ground photovoltaic power stations in Ningxia, Jiangsu, Hebei, Gansu and other provinces; it has joined in the efforts for desertification control of the western region, and has built and owned Ningxia Zhenqi 30MW ground photovoltaic power plant, which has made due contributions for the regional development. In recent years, it has been involved in the R&D and manufacture fields for new energy automobiles, and through explorations it has built up its strengths in R&D, manufacture and sales for new energy automobiles.

China Foma owns strong technical forces and has 1 national certified technical center, 1 post-doctoral scientific workstation, 7 ministerial level scientific research institutions, 4 provincial level high-tech enterprises, and 25 experts who enjoy the special allowance of the State Council; it has obtained a total of 5 national science and technology progress awards, and 65 ministerial level scientific and technological progress awards. There have been 23 products awarded with the national high and new technology products; it has obtained

善的研发体系、高素质的人才队伍、先进的科研设备，充分保证了中国福马集团公司研发能力的持续提升。

中国福马集团公司拥有先进的生产制造系统，在江苏泰州、苏州、镇江，天津等地拥有多个生产基地，培养了一支经验丰富、技术水平较高的专业技术人才队伍。动力机械板块拥有四十余条动力机械、全地形车、摩托车、电动车、新能源汽车等自动化水平较高的专业生产线和柔性生产线，并凭借国家一级计量水平的计量检测系统保障产品质量。林业装备板块拥有大型落地镗铣床、八米龙门铣、高精度外圆磨、立卧式加工中心、高精度动平衡机、激光测量仪等〝精、大、稀〞加工和检测设备，支撑着主导产品、关键零件的制造生产，在国内同行业中加工能力位列前茅。

a total of 294 authorized patents, 38 invention patents including 1 European patent; the company has been in charge of the formulation and revision of over 10 national standards and industry standards, undertaken and completed the R&D of national "863" high technology project "continuous press and precision control technology of wood-based panel", "molding system of BPY74265 wood-based panel continuous press" series products, which have gained accreditation for "National Key New Product", and were included in the national" Promotion and Application Guidance Catalogue for First (set) of Major Technology and Equipment"; China Foma has mastered and owned the core technologies of power machinery, which are represented by all-terrain vehicles and general gasoline engines. Perfect R&D system, high-quality personnel and advanced scientific research equipment all fully guarantee the continuous enhancement of R & D capabilities.

China Foma has the first-class manufacturing system in China; owns many manufacturing bases in Taizhou Zhenjiang Province, Suzhou, Tianjin and other places. It has cultivated a professional and technical team with abundant experience and higher technical level. Its power machinery sector has over 40 professional production lines and flexible production lines of high level for power machinery, all-terrain vehicle, motorcycle, motor vehicle, new-energy automobile, etc., with national first class measurement and testing system guaranteeing the product quality. The forestry equipment sector has large-scale ground boring machine, 8-meter gantry milling machine, high precision cylindrical grinder, vertical and horizontal machining center, high precision dynamic balancer, laser measuring device, etc. "refined, large and rare " machining and testing equipment, which support the manufacture and production of the main products and key parts, and rank No.1 within the industry in China.

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1 农业机械产品
1 Agricultural machinery products

1.1 水田车 3WZ—350A
1.1 Paddy field Vehicle 3WZ-350A—NO.7

产品特点

本产品水旱两种工况，使用安全可靠，采用静电细喷雾技术，意大利五级过滤，四轮驱动行走，四轮转向，前后差速锁，可在各种复杂路面行走作业，操作简单方便。

适用范围

水稻及旱田施药管理，加装抛肥机可实施水旱地的田间施肥。

可选附件

抛肥机（日资佐佐木）、三种轮圈、快速脱困器、夜间工作灯、凉风扇、GPS 远程控制系统

Product characteristics

This product flood and drought two working conditions, the use of safe and reliable, the use of electrostatic fine spray technology, Italian five-stage filtration, four-wheel drive walking, four-wheel steering, front and rear differential lock, can be in a variety of complex road walking operations, simple and convenient operation.

Scope of application

Scope of application: Rice and dry field application management, adding fertilizer throwing machine can carry out field fertilizer in water dryland.

Optional accessories: fertilizer throwing machine (Japanese Sasaki), three kinds of wheels, fast extruder, night work lamp, cool fan, GPS remote control system.

技术参数
Technical parameters

型号 Model	3WZ-350A
药箱容积 Medicine box volume（L）	350（420 OPTIONAL）
额定流量 Rated flow（L/min）	* 8-10
喷头数量 Nozzles QTY	24
喷幅 Spraying swath（m）	12.8
农药利用率 Pesticide utilization rate	≥50%
离地间隙 Ground clearance（mm）	950/1100
执行标准 Operative norm	GB/T24677.1
作业效率（亩 / 小时） Operation efficiency (mu / hour)	* 40-60
配套动力 Matching power（kW）	14.2
药泵工作压力（MPa） Working pressure of drug pump	0.25-0.35
行走速度 Speed of travel（km/h）	0-18
整机尺寸 Machine size（mm）	5350*2150*2850

注：带＊部分由于和作业方式关系较大，解释权归林海。

Note: due to the great relationship part of “*” and the mode of operation, the right of interpretation belongs to Linhai.

1.2 果园机 3WL—16A
1.2 machine 3WL-16A –NO.8

产品特点

本产品为六轮全地形车行走系统，转弯半径小，越野性能强，喷雾雾化效果好，雾滴均匀，穿透性强。

适用范围

适用于面积大，作业环境规范，行距大于2.5米的果园、苗木园、花卉培育基地等。

Product characteristics

This product is a six-wheel all-terrain vehicle walking system, small turning radius, strong off-road performance, good spray atomization effect, uniform droplets, strong penetration.

Scope of application

Suitable for large area, working environment specification, row spacing greater than 2.5 meters orchard, seedling garden, flower cultivation base and so on.

技术参数
Technical parameters

型号 Model		3WL-16A
药箱容积 Medicine box volume（L）		* 120
单个额定流量 Single rated flow rate（L/min）		* 0.2
喷嘴数量 Nozzles QTY		* 8
射程 Flight shot（m）		* 4-6
利用率 Coefficient of utilization		* ≥60%
最高车速 Max speed（km/h）		* 70
刹车形式 Brake system		液压（带驻车功能）Hydraulic pressure (with parking function)
执行标准 Operative norm		GB/T24677.1
作业效率 Operation efficiency（亩 / 小时）		* 30-40
配套动力 Matching power（HP）		28
分段控制 Subdivision control		2
空压机工作压力 Working pressure of air compressor（MPa）		0.2-0.3
整机尺寸 Machine size（mm）	长度 Length	2850
	喷嘴宽度（左右喷头距离）Spray width (left and right nozzle distance)	1200-1600（1600 以上可定制 More than 1600 customizable）
	整机高度（可调节）Machine height (adjustable)	1500-1900（1900 以上可定制 More than 1900 customizable）

带 * 部分由于和作业方式关系较大，解释权归林海。

Note: due to the great relationship part of "*" and the mode of operation, the right of interpretation belongs to Linhai.

1.3 手扶式插秧机（2ZS–6）
1.3 Hand-supported rice transplanter (2ZS-6)

技术参数
Technical parameters

外形尺寸：长 × 宽 × 高 mm Size：Length x width x height	2390 × 2275 × 1110
结构质量 kg　Structural weight	190
发动机型号 Engine type	SPE175C/MZ175
发动机结构形式 Engine structure	四冲程风冷单缸 OHV 汽油发动机 4 stroke air cooled single cylinder gasoline engine
标定功率 kW Rated power	3.3（4.5）最大 4.0（5.5） 3.3（4.5）max4.0（5.5）
标定转速 r/min　Rated speed	3600
燃油 Fuel oil	车用无铅汽油 Clear gasoline
燃油箱容积 L　Fuel tank capacity	4
总排气量　ml	171
行走轮直径 mm　Diameter of wheel	660
作业速度 m/s　Operating speed	0.28-0.77
行走速度 m/s　Traveling speed	0.55-1.48
变速级数 Gear range	主变速：前进为 2 级，后退为 1 级 Forward:2series　Back:1series
行距 mm　Line spacing	30
行数　行　Line number	6
横向传递量 mm/ 次数 Lateral transfer quantity　mm/once	14、18、20、26
纵向取秧深度 mm　Longitudinal depth	7-17（9 级）（9series）
插秧深度 mm　Planting depth	7-37（5 段）（5series）
叶龄　叶　Leaf age	2.0-4.5
苗高 mm　Height of seedling	10-25
作业小时生产率 km²/h　Operating hour productivity	1.5-4.8

1.4 乘坐式高速插秧机（2ZG–6D1）
1.4 High-speed rice transplanter (2ZG-6D1)

技术参数
Technical parameters

产品型号 Product mode		2ZG-6D1
结构型式 Structural style		乘坐式 Seated
驱动型式 Driving type		四轮驱动 4-wheel drive
外形尺寸 Size	长度（mm）（运输状态 / 作业状态） length（mm）（travel position/Working Position）	3090/3050
	宽度（mm）（运输状态 / 作业状态） breadth（mm）（travel position/Working Position）	2220/2280
	高度（mm）（运输状态 / 作业状态） height（mm）（travel position/Working Position）	2580/2580
结构质量（kg） structural mass（kg）		815
配套发动机 Engine	生产企业 manufacturing enterprise	洋马发动机有限公司 YANMAR CO., LTD
	型号 Type	3TNM68
	结构型式 structural style	立式水冷 3 缸柴油机 Vertical water cooled 3 cylinder diesel engine
	总排气量（L）	0.784
	标定功率（kW）rated power	14.7
	标定转速（r/min）rated speed	3600
	燃油 Fuel	优质柴油 diesel
	燃油箱容量（L） fuel tank capacity	34
	起动方式 start-up mode	电起动 Electric starting

2 林业机械产品
2 Forestry machinery products

2.1 4 英呎、6 英呎、8 英呎、9 英呎宽幅连续平压热压机
2.1 4’ , 6’ , 8’ , 9’ width continuous press

产品简介

1、具备系统设计及工程组织能力，提供整套生产线解决方案

2、生产线设备容易操作和使用，提供进行生产运营服务

3、设备质量稳定，运行可靠，维护频率低，源于强大的加工和质量保证能力

4、节能原材料和能源消耗，基于合理的压力和热量分布

5、拥有智能控制理念和远程监控措施的先进控制系统。

6、国家“863 高技术”计划项目研发成果

7、包含欧洲发明专利的多项自主知识产权技术

Product Introduction

1. We are capable of system engineering and project organization. We are an one-stop whole plant solution supplier.
2. The equipment of production line is easy to use. We also provide service of operation and management to our customers.
3.Our equipment also own stable quality, reliable operation and low-frequency maintenance because of the ability of manufacture and quality guarantee.
4. Saving of raw material and energy consumption based on reasonable hydraulic press and heat distribution.
5. The advanced control system with intelligent method and remote monitor.
6. Research and development fruit of State ‘863 high-tech’ project.
7. The technology from self-owned intellectual property right including European patent of invention.

设备组成

钢带及驱动总成
链毯系统
框架及热压总成
液压系统
循环供热系统
电气及自动控制系统
保温装置
润滑系统
清洁生产系统
平台支架
安装支持机具包

Constituting Parts

steel belt and driving assembly
roller rod carpet
frame and hot pressing assembly
hydraulic system
recycling heat supply system
electrical and automatic control system
warm-keeping device
lubrication system
clean production system
platform supporting
tool-kit for installation and maintenance

主要技术参数
Main tech parameter

	单位 Unit	4 英呎 (ft)	6 英呎 (ft)	8 英呎 (ft)	9 英呎 (ft)
设计压制速度 Designed pressing speed	毫米 / 秒 mm/s	Max.1800	Max.1500	Max.1500	Max.1500
工作面标高 Work platform level height	毫米 mm	1500	1700	1700	1700
热板宽度 Hot platen width	毫米 mm	1430	2050	2650	2950
钢带进口辊直径 Steel belt infeed roller Dia.	毫米 mm	Φ1800	Φ1800	Φ2070	Φ2070
钢带出口辊直径 Steelbelt discharge roller Dia.	毫米 mm	Φ2100	Φ2100	Φ2100	Φ2100
链毯辊子直径 Roller rod Dia.	毫米 mm	Φ20	Φ20	Φ20	Φ20
钢带厚度 Steelbelt thickness	毫米 mm	2.3/2.7/3.0	2.3/2.7/3.0	2.3/2.7/3.0	2.3/2.7/3.0
钢带宽度 Steel belt width	毫米 mm	1450	2070	2670	3030
最高区间压力 Max.area pressure	兆帕 MPa	5	5	5	5
压力分区 Pressure sub-area		4	4	4	4
加热区长度 Heating area length		依据产能及热压因子确定 As per productive capacity and hot pressing factor			
整机功率 Machine power		依据产能及热压因子确定 As per productive capacity and hot pressing factor			

2.2 砂光机
2.2 Sanding Machine

特点

1. 适应 MDF、PB、OSB、胶合板、硅酸钙板等各种板材的定厚、抛光加工。

2. 适应最薄 2mm，150m/min 高速砂光。

3. 高刚度机架及理想尺寸接触辊设计，振动水平低，持续保证精度。

4. 上逆下顺、前顺后逆、上下交错的砂光工艺布局及磨垫随动技术，全方位磨削板面。

5. 信息化控制系统，全面管理设备、产出、消耗。

6. 可选配砂头单元伺服调整、砂带自动纠偏、中央润滑等技术，实现数字化自动操控。

Main features

1.Successfully applied in calibration sanding and polishing for MDF, PB, OSB, Plywood and Calcium silicate board.
2.Applicable for min. 2mm sanding with high speed of 150 m/min.
3.Frame with high stiffness and reasonable design size of contact roller to enable low vibration and higher precision performance continuously.
4.Sanding combination of “Top forward + bottom backwards”“front forward + exit backwards”and top/bottom stagger configuration together with flexible pad technology could achieve full scale sanding.
5.More informatized control system enables intelligent management of equipment, output and consumption.
6.Optional technologies like sanding head unit servo adjustment, sanding belt auto off-tracking and central lubrication etc.could help achieve digital operation.

砂光机主要技术经济指标
Main technical data for Sanding Machine

型号			M 型				V 型		V4il 型	
主要参数		单位								
加工宽度 BoardWidth		mm	1900	2300	2600	2850	1300	1600	2600	2850
加工厚度 Panel thickness	配套多层压机 For multiple opening press	mm	3~50	3~50	3~50	3~50	3~50	3~50		
	配套连续压机 For continuous press	mm	2~50	2~50	2~50	2~50	2~50	2~50	2~50	2~50
加工精度 Working tolerance		mm	±0.08	±0.08	±0.08	±0.08	±0.05	±0.05	±0.075	±0.075
进料速度 Feeding speed	配套多层压机 For multiple opening press	m/min	6~50	6~50	6~50	6~50	6~50	6~50		
	配套连续压机 For continuous press	m/min	2~90	2~90	2~90	2~90	2~120	2~120	2~150	2~150
砂带宽度 Sanding belt width		mm	1950	2350	2650	2900	1350	1650	2650	2900
压缩空气耗量 Compressed consumption		m^3/h	5~8	5~8	5~8	5~8	4~7	4~7	5~8	5~8
系统压力 System pressure		Mpa	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6

2.3 砂光锯切生产线
2.3 Sanding and CTS Line

特点

1. 集成砂光、锯切技术，提供一体化解决方案，实现整体交付。

2. 连续推板、高速叠板、大锯片等技术，适应超薄板、大产能、高速化生产，产能最大 1600m³/d。

3. 百余套配套技术，满足 MDF、PB、OSB 等板种的不同配套需求。

4. 西门子 S7 系统总线控制、工控机操作，锯切规格自动调整，自动化程度高。

5. 生产管理系统，全面管理设备、产出、消耗。

Main features

1.Integrated technology and solutions of sanding and CTS, one-stop whole function delivery.
2.Technology of non-stop pusher, high speed book forming and large cutting blade suits for trend of large capacity and high speed production. Maximum capacity reaches 1600m³/d.
3.Over hundred of solution models could fulfill all sanding and cutting requirements for MDF, PB, OSB etc..
4.Control system adopts Siemens S7 series, bus-type communication and IPC operation. The cutting patterns could be adapted flexibly. The whole production system is highly automated.
5.The production management system could handle all data for equipment, output and consumption.

砂光锯切生产线主要技术经济指标
Main technical data for Sanding and CTS Line

主要参数 Main data	单位 Unit	4 ∽ 9 英尺砂锯线 4-9 ft sanding and CTS line
生产线生产能力 Capacity	m³/y	200 000 ∽ 500 000
锯切宽度 Cutting width	mm	≤2950
锯切长度 Cutting length	mm	≤7500
锯切精度（对角线误差） Cutting tolerance(diagonal error)	mm	≤2
锯切周期 Cutting cycle	s	65 ∽ 95
进板垛位高度 Feeding stack height	mm	2500 ∽ 4000
锯片直径 Blade diameter	mm	Φ770
锯切高度 Cutting height	mm	≤230
主锯电机 Main saw motor	kw	53/55
系统压力 Air pressure	Mpa	0.6
推板次数 Pushing frequency	times/min	≤25
砂光速度 Sanding speed	m/min	20 ∽ 120/150

2.4 日产 110 ～ 500m^3 刨花板生产线

2.4 110~500m^3/d Particleboard Production Line

特点

1. 国内先进备料设备获取优质刨花。
2. 通道干燥机保证刨花含水率稳定。
3. 先进的机械、气流铺装技术，表面细腻，结构均质。
4. 多层压机液压系统配置方案及性能优异，高效稳定。
5. 国际先进的电气控制技术及元件，保证工艺过程运行闭环及稳定。

Main features

1.Highly qualified flakes produced by domestic advanced material preparation equipment.
2.Steady flakes moisture controlled by passage dryer.
3.Advanced mechanical and airflow forming technology to gain fine surface and uniform structure.
4.High performance and efficiency of hydraulic system for multi-opening press.
5.Closed-loop and steady running process controlled by international advanced electrical technology and components.

主要技术经济指标

Main technical data for PB line

项目 Item	单位 Unit	指标 Specification				备注
日产量 Capacity	m^3/day	110	180	300	500	以板厚 19mm，密度 700kg/m^3 计算；thickness19mm
厚度 Thickness	mm	10~25				
密度 Density	kg/m^3	600~750				
木材消耗 Wood consumption	kg/m^3	580~730				
脲醛胶 Urea formaidehyde resin	kg/m^3	68~85				
固化剂 Hardener	kg/m^3	0.17~0.22				
石蜡 Paraffin	kg/m^3	2.87~3.6				
生产用水 Water	m^3/h	5	10	15	18	
压缩空气 Compressed	m^3/min	6	10	12	14	
热能消耗 Heat energy	Kcal/h	300*10^4	600*10^4	1200*10^4	1500*10^4	
总装机容量 Installed power	kw	~1700	~2500	~3500	~4000	
车间定员 Personnel		~90				
年工作日 Yearly	days	300				
日工作班次 Shift	shift	3				
日工作有效时间 Daily hour	h	22.5				

2.5 日产 150 ～ 500m^3 中／高密度纤维板生产线
2.5 150~500m^3/d MDF Production Line

特点

1. 先进纤维分选技术，高效分离粗纤维与胶团，提升板材质量；
2. 伸缩式皮带运输技术，避免板坯在加速分离中的拉伸压缩变形；
3. 高性能液压系统， 有效地减少预固化层；
4. 热压位置控制技术，使得断面密度结构更优；
5. 多种砂光机配置形式，提高砂光后板面质量；
6. 国际先进的电气控制技术及元件，保证工艺过程运行闭环及稳定。

Main features

1.Advanced fiber sifting technology enables high efficiency separation of coarse fiber and glue, thus to improve panel surface quality.
2.Flexible belt conveying technology to avoid mat deformation during the accelerating and separating transportation.
3.Hydraulic system with high performance to reduce pre-solidified layer.
4.Displacement control technology of press obtains better sectional density structure.
5.Multiple options for sanding process to improve surface quality.
6.Closed-loop and steady running process controlled by international advanced electrical technology and components.

主要技术经济指标
Main technical data for MDF line

经济技术指标	单位 Unit	指标 Specification			备注 Remarks
日产量 Capacity	m^3/day	150	300	500	以 15mm 板厚计 Thickness 15mm
工作制度 Work hours/day	h	22.5	22.5	22.5	
成品板规格 Board specification	mm	8~25	8~25	8~25	
木材原料消耗 Wood material consumption	t/a	3.5*10^4	7.2*10^4	12.6*10^4	
脲醛胶消耗 Urea formaldehyde resin	t/a	3780	7200	11400	
氯化铵消耗 Ammonium chloride	t/a	40	72	126	
石蜡消耗 Paraffin	t/a	378	720	1260	
热能消耗 Heat energy consumption	kcal/h	9*10^6	18*10^6	25*10^6	
总装机容量 Installed power	kw	5000	7500	9500	
生产车间总面积 Workshop	m^2	~5500	~6500		

2.6 气流铺装机
2.6 Airflow Mat-former

特点

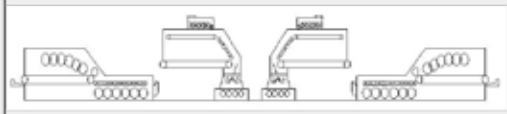
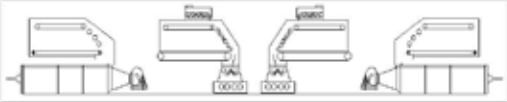
1. 表层铺装刨花分离度高，表面针孔缺陷少，更细腻
2. 铺装板坯更平整，精度更高
3. 芯层铺装结构均质混合，内结合强度更高、胶耗低
4. 芯层对原料适应性强、产能限制小
5. 横向布料、伺服分区控制保证料仓内横向密度的均匀性
6. 宽度方向调整方便，可满足用户宽度幅面微量变化的要求
7. 横向密度偏差≤ ±14/√t（t：板厚）（达到国际标准）
8. 纵向密度偏差≤ ±1.5%

Main features

1. Higher separation performance for surface flakes to enable fine surface and less needle holes.
2. Higher flatness and precision for the forming mat.
3. Core materials are uniformly mixed to get high inner bonding and lower glue consumption.
4. More optional materials for core, less limitation in capacity.
5. Transversal material distribution and servo area control method gains more uniform cross density in the flake bin.
6. Flexible crosswise adjustment to obtain slight width adaption.
7. Cross density deviation≤ ±14/√t (t: board thickness)(reached international standard).
8. Longitudinal density deviation ≤ ±1.5%.

主要技术经济指标

Main technical data for Airflow Mat-former

模式 MODE	铺装配置图谱 List of forming configurations	表层 Surface	芯层 Core	铺装箱/铺装头 Forming bin/ Forming head	产能（m^3/年） Capacity (m3/y)
1		双排钻石辊+尾部气流 Two rows of diamond roller+ Tail airflow		两箱/两头 2 bins/2 head	30 000~50 000
2		钻石辊+尾部气流 Diamond roller+ Tail airflow	双排钻石辊 Double row diamond	四箱/四头 4 bins/ 4 heads	100 000~150 000
3		钻石辊+尾部气流导流 盘+正压气流 Diamond rolelrs+ Tail airflow disc +positive airflow	笼辊 Cage roller		150 000~200 000
4		气流 Airflow			200 000~400 000

2.7 通道式干燥机
2.7 Passage dryer

特点

1. 热效率高，余热可循环利用，节能降耗。
2. 刨花形态保持良好。
3. 刨花含水率稳定。
4. 单台产能大。
5. 无氧干燥不易着火、更安全。

Main features

1.Heat could be recycled with higher efficiency.
2.Flake shape could be well maintained.
3.Stable flakes moisture content.
4.Large unit capacity.
5.Anaerobic drying could prevent fire and enable more safe running.

主要技术经济指标
Main technical data for passage dryer

通道式干燥机主要技术参数 Main technical parameters of passage dryer						
	单位 Unit	BGXT07	BGXT10	BGXT15	BGXT25	BGXT30
通道数量 Qty. of passage	个	3	3	1	1	1
滚筒直径 Drum diameter	mm	Φ3200	Φ3600	Φ4000	Φ4600	Φ5000
滚筒长度 Drum length	mm	14000	18000	26000	28000	28000
刨花初含水率 Initial moisture	%	≤80	≤80	≤80	≤80	≤80
刨花终含水率 Finished moisture	%	∽2	∽2	∽2	∽2	∽2
生产能力 capacity	kg/h	7700	8500∽10000	18700	24000	31500
热耗 Heat consumption	Kcal/h	$600x10^4$	$650∽780x10^4$	$1500x10^4$	$2300x10^4$	$2500x10^4$
主电机功率 Main motor power	kw	250	400	560	710	800
总重 Total weight	T	145	167	257	460	500
外形尺寸 Dimensions	mm	31000X15000X21000	35000X15000X22000	51500X21000X28500	60000X23000X32000	63000X21000X25000

2.8 矩形筛
2.8 Oscillating screen

特点

1. 筛分能力大、筛分效果好。
2. 设备结构紧凑，占用空间小。
3. 运行稳定，使用寿命长。

Main features

1.Larger unit capacity and better sifting performance.
2.Compact structure and less running space required.
3.More stable in performance, longer lifetime.

主要技术经济指标
Main technical data for oscillating screen

矩形筛主要技术参数 Main technical parameters of oscillating screen				
	单位 Unit	BF178	BF14150	BF14260TD
结构形式 Structure		塑料弹簧 Plastic spring	吊筛/弹性支撑 Hoisting/elastic support	弹性支撑 Elastic support
筛网层数 Qty. of decks	层	1/2/3	1/2/3	1/2/3*2
筛网面积 Screen area	m2	7.5	15	26
主轴转速 Rotation of main shaft	rpm	210∽250	∽180	175∽200
倾斜角度 Inclined angle	°	5	7	5
筛分能力 Capacity	m3/h	40	70	120
电机功率 Motor power	kw	5.5	15	15
总重 Total	kg	4000	9600	19000
外形尺寸 Dimensions	mm	5380X2600X2140	8800x4100x3340	9000x4340x4300

2.9 盘式削片机
2.9 Disk chipper

产品简介

盘式削片机是一种将原木加工成优质木片的专用设备，广泛用于造纸、刨花板、纤维板等工业生产的备料工段和单一的木片生产基地。公司从 60 年代就开始研究开发盘式削片机系列产品，到目前为止共有 30 种，刀盘直径从Φ630—Φ2490mm，切削最大原木直径从 Φ100—Φ450mm，生产能力从 3—160m3/h。盘式削片机安装型式有固定式和移动式两类，主轴传动方式有电机通过（减速机）联轴器直接传动和通过三角皮带减速传动两种，进料方式有水平进料和倾斜进料两种，出料方式有上出料和下出料之分。

盘式削片机结构紧凑、布局合理、安装简便、操作维修方便、生产能力高；切削原木时，木片质量好，且木片长度可在一定范围内自由调节。

Product Introduction

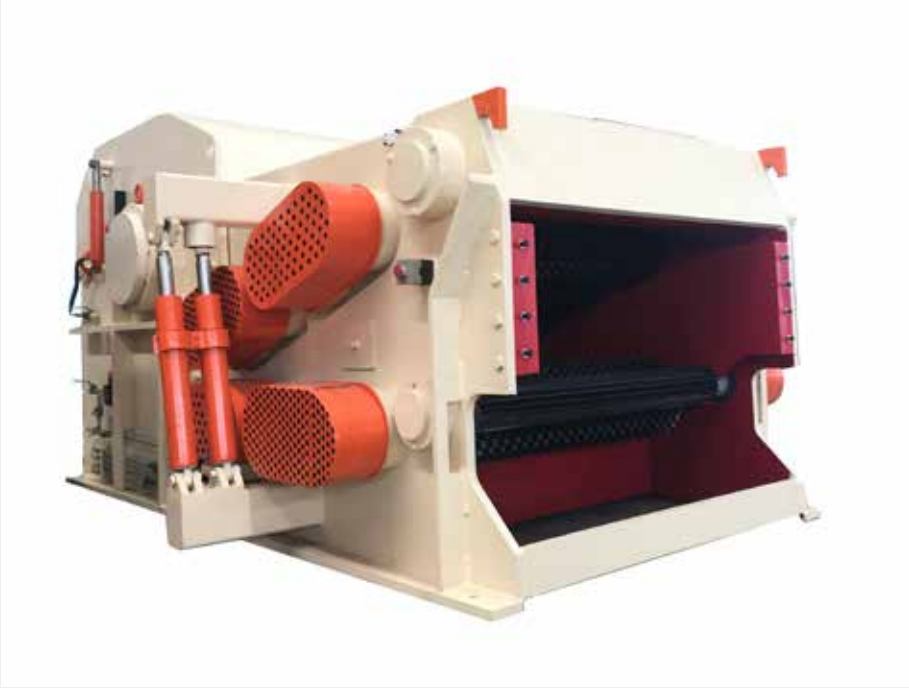
Disc chipper is a special equipment for high quality chips. This series of machine are suitable for wood chips preparation in the paper pulp, and wood-based panel industries, as well as the chip production bases. Since the 1960s, our company has researched and developed over 30 kinds of disc chipper, among of which disc diameter ranges from Φ630mm to Φ2490mm, wood max. diameter ranges from Φ100mm to Φ450mm, capacity ranges from 3m3 /h to 160m3 /h. There are two mounting types for disc chipper, fixed and movable, two drive types of main shaft, direct driven by motor via coupling and driven by V-belt, two feeding types, horizontal and inclined, and two discharge types, upper and lower.

Disc chipper is designed with compact structure and reasonable layout, easy to operate and maintenance, high capacity, high quality chips from cutting, as well as chip length can be freely adjusted in the restricted scope.

主要技术参数
Main tech parameter

技术规格 Specifications	BX116A	BX1112	BX1212	BX1212A	BX1216	BX1220	BX1225	BX1227
刀盘直径（mm） Knife disc diameter	630	1220	1220	1220	1600	2060	2490	2650
木片长度范围（mm） Chip length range	15-25	12-35	20-35	20-35	20-35	20-35	20-35	20-35
喂料方式 Feeding way	水平 level	倾斜 decline	水平 level	倾斜 decline	水平 / 倾斜 level/decline	水平 level	水平 / 倾斜 level/decline	水平 level
喂料口尺寸（mm） Feeding opening dimension	130 × 150	207 × 190	400 × 275	300 × 300	545 × 383	584 × 560	650 × 615	584 × 600
切削原料最大直径（mm） Cutting log max.dia.	100	100	200	200	300	450	450	450
出料方式 Discharge way	top	top	top	bottom	top	bottom	bottom	bottom
生产能力（实积）（m^3/h） capacity（solid volume）	2-3	5.5-8	15-20	15-20	25-45	110	160	100-130
主电机功率（kw） Main motor power	22	75	110	110	220/250	500	2 × 315	2 × 280
重量（t） Weight	0.8	4.59	4.45	4.59	8.7	29.14	28/30	26

2.10 鼓式削片机
2.10 Drum chipper



产品简介

鼓式削片机是我公司的传统产品，多年来以产品性能优越、质量上等、性价比高等优点被国内外客商广泛选用。鼓式削片机是生产工艺木片的一种专用设备。广泛应用在造纸、中密度纤维板、普通刨花板等工业生产中，也可用于超强刨花板和定向刨花板，切削原料主要为小径木、木材采伐剩余物（枝桠，枝条等）、木材加工剩余物（板条，板皮，园木芯，废单板等）等。可将原木、小径木等切削成长度均一、切口平整，厚度均匀的优质工业木片，还可以切削枝丫材、板材等。是木片备料工段主机之一，也可作为生产木片的单机使用。

为满足造纸、纤维板、刨花板等行业对木片长度的不同要求，近来公司对各类鼓式削片机进行改进提高；现新机型更贴近用户，性能更优越，是国内外木片制备的理想设备。

Product Introduction

Drum chipper is the traditional product of our company, it is widely used by
domestic and oversea customers because of its good performance, top quality etc. the drum chipper is the special equipment for producing perfect chips, it is
used in paper plant, medium density fiberboard plant,common particleboard plant, and also used for super particleboard and directional particleboard. By which, logs, small diameter wood, wood cutting residuals and wood processing residuals are cut into high quality chips with even length and uniform chip thickness, it is also suitable for the chipping of branches and twigs, plank, etc.
The chip length is different in accordance with the requirement of paper plant, particle board and fiber board industries, so in order to meet this need, our company improve different kind of drum chippers recently, and the new type machine has more advantage. All the features show that it is an ideal equipment for chip production which can be exported all over the world.

主要技术参数
Main tech parameter

技术规格 Specifications	BX218	BX218/8	BX2110/12	BX2113	BX2113A	BX2113/13	BX2113/11	BX2116/13	BX2120/13	BX2120/15
刀辊直径（mm） Roller dia.	800	800	1000	1300	1300	1300	1300	1600	2000	2000
进料口尺寸（mm） Feed opening	225 × 680	240 × 750	330 × 1050	400 × 700	400 × 700	400 × 1250	400 × 1050	600 × 1250	850 × 1250	750 × 1450
切削原料最大直径（mm） Cutting log max.dia	160	160	210	230	230	250	230	310	410	380
生产能力（实积）（m^3/h） capacity（solid volume）	15-20	38	75	34-64	34	132	100	185	220-300	250-330
主电机功率（kw） Main motor power	110	132	220	220/250	250	450	315	710	1500	1250
重量（t） Weigh	7	7.3	12.5	11.8	11.8	20.54	14.5	32	65.7	62

2.11 滚筒式剥皮机
2.11 Drum De-barker

产品简介

随着国民经济的不断发展和人民生活水平的提高，人们对人造板产品和纸张质量的要求也越来越高。生产人造板的原料大多为不同材种、不同径级的原木，普遍带有树皮，而树皮纤维含量低，灰尘杂质多，直接用带树皮的原木生产出来的密度板，其物理性能及外观质量与去皮后生产的密度板相比明显降低。同时在造纸行业，去除树皮可以降低蒸煮液的消耗、减少纸浆中的尘埃度和提高纸浆的质量。

滚筒式剥皮机是人造板、造纸工业生产备料工段的主设备之一。公司从 2000 年开始研究、开发滚筒式剥皮机，到目前为止，共有 4 种产品，滚筒直径从 Φ2780–Φ5080mm，滚筒长度从 15m–27m，生产能力从 75–300m3/h 不等。经专家组技术鉴定，BBP1140 系列滚筒式剥皮机结构合理，技术先进，剥皮质量高，处于国内领先水平，主要性能指标达到国际先进水平，可替代进口产品。

Product Introduction

Along with the economic development and standard of living improvement, higher and higher quality wood based panel product and paper are required increasingly. Majority of raw materials are wood logs in different species and diameters, being with barks which content few fibers, but more dusts and unrelated objects, from wood logs with barks, MDF board's physical properties and appearance quality are remarkably reduced compared to MDF board from debarked wood logs. As well as in paper making industry, debarking can reduce the cooking liquid consumption and dirt in pulp so as to improve pulp quality.

Drum de-barker is one of main equipment in chip preparation section in wood based panel and paper & pulp making industry. Since 2000, our company has researched and developed 4 kinds of de-barker, among of which, the roller diameter ranges from Φ2780mm to Φ5080mm, the roller length ranges from 15m to 27m, the capacity covers from 75m3 /h to 300m3/ h and main motor power ranges from 3×55KW to 510×55KW. After the technical appraisal of the specialists, BBP1140 series drum debarker has reasonable structure,advanced technology and high debarking quality,which is up to the advancing level in China, and then its main performance index reaches the international advanced level, which can replace the import product.

2.12 环式刨片机
2.12 Knife-ring Flaker

产品简介

环式刨片机是以一定规格的木片为原料，将其刨切成一定厚度范围内刨花的设备，广泛用于普通刨花板，可用于生产超强刨花板和定向结构刨花板。

刀环直径 1.6 米的环式刨片机是我公司人造板制备产品向大产能发展的标志性产品，该设备的成功研发及使用推广推动了我国刨花板行业迅猛发展，对国内人造板产业升级将起到积极的推动作用。经专家组技术鉴定，本公司的 BX4614/5、BX4616/5 型环式刨片机总体技术达到国际先进水平，其中多级导流重物分离技术处于国际领先水平。

Product Introduction

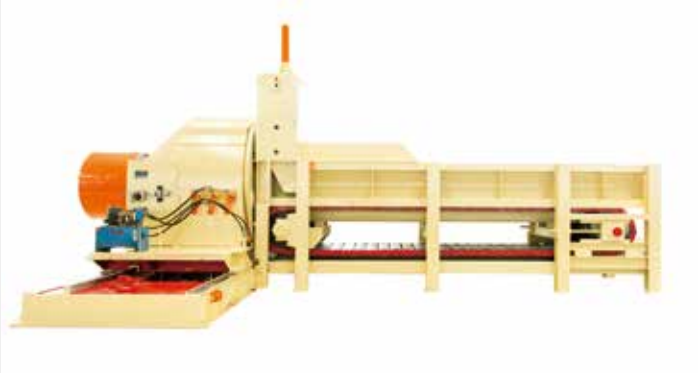
The knife-ring flaker is a kind of equipment which can cut certain specifications wood chips into flakes at certain thickness. It is widely used in common particleboard and also used to produce super flakes and directional structural particleboard.

The knife-ring flaker with a diameter of 1.6 meters is a landmark product for the development of our wood-based panel to large capacity,which successful development and use promotes the rapid development of our countries' particleboard industry and will play a positive role in upgrade of the domestic wood-based panel industry. Through the technical appraisal of expert group,our BX4614/5 and BX4616/5 type knife-ring flaker has basically reached the international advanced level, especially its multistage diversion weight separation technology is in the international leading level.

主要技术参数
Main tech parameter

型号 Model	BX466	BX468	BX4612	BX4612/5	BX4614/5	BX4616/5
刀环直径（mm） Knife-ring dia.	600	800	1200	1200	1400	1600
刀片数量（pcs） Qty of knives	21	28	42	50	66	74/70
刨花厚度（mm） Flakes thickness	0.4-0.7	0.4-0.7	0.4-0.7	0.4-0.8	0.4-0.8	0.4-1
主电机功率（kw） Main motor power	75	132	200	250	250	315
生产能力（t/h） Capacity	0.7-0.9	1.5-3	2.5-4	4-6	6-9	10-14
重量（t） Weight	3.5	5.8	8.5	9	9.6	13.15

2.13 环式长材刨片机
2.13 Knife-ring long log flaker



产品简介

长材刨片机是我公司最新研制的新产品，填补了国内定向结构刨花板市场的空白。该产品将原木直接加工为优质的表层和芯层刨花，满足定向刨花板等特种刨花板对刨花形态的需求，刨花长度可根据用户要求进行调整。设备刀环直径大，切削室容量大，产量高，可实现自动刨削，自动化程度高，刨花形态好。

Product Introduction

Long log flaker is the newest product developed our company, which occupies the blank market of domestic oriented structure particleboard. This equipment can be directly processed the log into high quality surface and core layer flakes to meet the flake requirements of oriented particleboard and other special particleboard. We can adjust the flake length according to the user requirements. It has advantages of large diameter knife ring,large capacity of cutting chamber, high capacity,automatic cutting, high degree automation and good shape of flakes.

主要技术参数
Main tech parameter

技术规格 Specifications	刀环直径（mm） Knife-ring dia.	刀片数量（group） Qty of knives	主电机功率（kw） Main motor power	生产能力（t/h） Capacity	运输机输送宽度（mm） Conveying width	主机重量（t） Weight
BX4912/5	1200	26	500	7-13	940	16.3
BX4920/7	2000	44	1000	18-25	1600	46.3

2.14 筛环式打磨机
2.14 Double-stream Mil

产品简介

筛环式打磨机是将大刨花打磨成一定工艺要求的细小刨花，作为刨花板的表层用料。

Product Introduction

The double-stream mill is used for milling flakes into fine flakes, which are used as surface material of the particleboard.

主要技术参数
Main tech parameter

型号 Model	BX566	BX568	BX5610	BX5612	BX5615
磨筛环直径（mm） Grinding ring dia.	600	800	1000	1200	1500
磨环宽度（mm） Grinding ring width	150	175	180	210	280
磨齿片数量（mm） Qty of tooth plate	30	42	52	62	75
主电机功率（kw） Main motor power	55	90	132	200	315
生产能力（t/h） Capacity	0.3-0.8	0.5-1	0.8-1.6	1.4-2.6	3-5
主机重量（t） Weight	1.5	2.05	2.6	3.5	6.5

2.15 热磨机
2.15 Pressurized Refiner

产品简介

热磨机是中（高）密度纤维板生产线和造纸制浆行业生产中的关键设备。镇江中福马公司热磨机经过几十年的研发，开发出BM、EX两大系列（直径42″～64″）的几十种热磨机投放国内外市场，满足年产6～30万 m^3 中(高)密度纤维板生产线需求，进口设备的替代品。

BM、EX系列热磨机采用多项国家专利技术，具有结构先进、自动化程度高、操作方便、运转平稳、工作可靠、运行精度高、分离纤维质量好、纤维含水率低等优势特点，主要参数和技术水平处于国内领先，达到国际水平。经专家组技术鉴定，本公司的BM1112/15/30EX（48″EX）热磨系统总体技术达到国际先进水平。

Product Introduction

Pressurized Refiner is one of key equipment in MDF/HDF production line and paper & pulp making industry. Through decades of research and development, Zhenjiang ZHONGFOMA has developed BM and EX series with diameters from 42 to 64 inches totally to dozens of refiners to the domestic and foreign markets, to meet the requirement of 60,000~300,000 m^3 /year MDF/HDF production line.

BM and EX series high precision pressurized refiner adopts several national patents, which has the advantages of advance structure, utomatic and easy operation, reliable and high precision running, the separated fiber with good quality and low moisture content etc. Main parameters and technology is in the leading domestic level, approaching the international level. Through the technical appraisal of expert group,our BM1112/15/30EX(48”EX) type refining system has basically reached the international advanced level.

主要技术参数
Main tech parameter

序号 No	项 目 Projcct	规格 Specification	42″	44″	45/48″	50/54″	54/58″	48″ EX	50″ EX	56″ EX	64″ EX
		每小时产量（吨）Capacity per hour(Ton)	7-8	10-12	13-18	20-26	26-30	14-18	20-24	26-30	32-40
1	进料螺旋 Feeding screw	直径（毫米 / 英寸）Dia. (mm/inch)	Φ355/14	Φ406/16	ϕ 452/18	ϕ 496/20	ϕ 496/20	ϕ 452/18	ϕ 496/20	ϕ 496/20	Φ600/24
		电机功率（千瓦）Motor power(Kw)	250（直流）DC	315（直流）DC	450（直流）DC	550（直流）DC	550（直流）DC	450（直流）DC	550（直流）DC	550（直流）DC	800（直流）DC
2	蒸煮器规格 Digest specifications	下口直径 X 高度（毫米）Bottom dia.X Height(mm)	ϕ 1050 X7000	ϕ 1175 X9000	ϕ 1175 X9000	ϕ 1366 X9000	ϕ 1600 X9000	ϕ 1175 X9000	ϕ 1366 X9000	ϕ 1600 X9000	ϕ 1600 X10000
3	回转拨料器电机功率（千瓦）Agitator motor power(Kw)		11	15	15	30	30	15	30	30	45
4	卸料螺旋规格（英寸）Discharging screw specifications(inch)		16	16	16	18	20	16	18	20	20
5	卸料螺旋电机功率（千瓦）Discharge screw motor power(Kw)		30（直流）DC	30（直流）DC	45（直流）DC	75（直流）DC	75（直流）DC	55（直流）DC	75（直流）DC	75（直流）DC	75（直流）DC
6	带式螺旋规格（英寸）Ribbon screw specifications		16	16	16	18	20	16	18	20	20
7	电机功率（千瓦）Motor power(Kw)		1600-1800	2240	3000-3550	4000-4500	4500-5600	3000-3550	3550-4000	4500-5600	6000-7100
8	可安装磨片直径（英寸）Segment mounting dia.(inch)		42、44	44	45、48	50、54	54、58	45、48	50、52	54、56、58	60、64
9	磨室体密封方式 Sealing way		机械密封 Mechanical seal	机械密封 Mechanical seal	机械密封 Mechanical seal	机械密封 Mechanical seal	机械密封 Mechanical seal	机械密封 Mechanical seal	机械密封 Mechanical seal	机械密封 Mechanical seal	机械密封 Mechanical seal

3 动力机械产品
3 power machinery

3.1 特种车辆 T—BOSS550／750
3.1 Special vehicle T-BOSS550/750

产品简介
Product Introduction

整车参数 Vehicle	产品型号 Technical Parameter	T-Boss 550	T-Boss 750
	尺寸：长 × 宽 × 高 Size: Length × Width × Height(mm)	2730 × 1460 × 1890	2790 × 1470 × 1920
	轴距（毫米） Wheelbase(mm)	1855	1885
	整备质量（千克） Weight: (kg)	525	580
	轮胎规格 Specification of Tire	前轮 Front AT25 × 8-12	前轮 Front AT27 × 9-14
		后轮 Rear AT25 × 10-12	后轮 Rear AT27 × 11-14
	制动操纵方式 Brake System Control Model	前后联合脚制动 Foot brake	前后联合脚制动 Foot brake
	前轮制动 Front Brake	盘式 Disc	盘式 Disc
	后轮制动 Rear Brake	盘式 Disc	盘式 Disc
发动机参数 Engine	型号 Type No.	LH188MR-A	LH1102U-2
	型式 Model	单缸、四冲程、水冷 Single cylinder,4 Stroke, Water cooled	单缸、四冲程、水冷 Single cylinder,4 Stroke, Water cooled
	缸径 × 行程 Stroke × Bore	87.5 × 82	102 × 85
	气缸工作容积 Cylinder Dimension(ml)	493	694.6
	最大功率及对应转速 Rated power(kW/r/min)	21kW/6000r/min	30/5800
	最大扭矩及对应转速 Max torque(N·m/r/min)	38.8N.m/5500 r/min	50 /5250
	压缩比 Compression Ratio	10.2:1	10:1
	燃油牌号 Gasoline Code	92	92
	点火方式 Ignition Type	EFI	ECU
	启动方式 Strat Type	电起动 Electric Starter	电起动 Electric Starter

3.2 电动特种车辆 EV—BOSS
3.2 Electric special vehicle EV-BOSS

产品简介
Product Introduction

整车参数 Vehicle	产品型号 Technical Parameter	EV-Boss
	尺寸：长 × 宽 × 高 Size: Length × Width × Height(mm)	2730 × 1460 × 1890
	轴距（毫米） Wheelbase(mm)	1860
	整备质量（千克）Weight: (kg)	645
	轮胎规格 Specification of Tire	前轮 Front AT25 × 8-12
		后轮 Rear AT25 × 8-12
	制动操纵方式 Brake System Control Model	
	前轮制动 Front Brake	前轮 Front 脚刹 Foot Brake
	后轮制动 Rear Brake	后轮 Rear 脚刹 Foot Brake
动力参数 Power	电机类型 Electric Motor	72V 三相交流异步电机 72V Three-Phase AC Asynchronous Motor
	额定功率 Rated Power (kW)	7.5
	峰值功率 Max Power （kW）	20
	控制器规格 Controller Specification	400A 多模式驱动控制器 400A Multimode Drive Controller
	电池容量 Battery Capacity (kW.h)	15
	电池种类 Battery Type	磷酸铁锂蓄电池 lithium Iron Phosphate Battery
	充电机规格 Charger Specification	输入：220V 交流 输出：72V 直流 Incoming Current:220V Alternating Voltage Output Current:72V Direct Voltage
	充电时间 Charging time (hour)	8
	最高车速 Max Speed (km/h)	50
	续航里程 Endurance Mileage (km)	100

3.3 特种车辆 M550／750
3.3 Special vehicle M550/750

产品简介
Product Introduction

整车参数 Vehicle	产品型号 Technical	M550	M750
	尺寸：长 X 宽 X 高（mm） Size：Length x Width X Height	2175x1160x1265	2425x1185x1423
	轴距（毫米） Wheelbase，mm	1285	1455
	整备质量（千克） Weight：kg	362	414
	轮胎规格 Specification of Tire	前轮 Front：AT25X8-12	前轮 Front：AT25X8-12
		后轮 Rear：AT25X10-12	后轮 Rear：AT25X10-12
	制动操纵方式 Brake system control model：		
	前轮制动 Front Break	前轮 Front：手刹 / 脚刹 Hand break, foot break	前轮 Front：手刹 / 脚刹 Hand break, foot break
	后轮制动 Rear Break	后轮 Rear：手刹 / 脚刹 Hand break, foot break	后轮 Rear：手刹 / 脚刹 Hand break, foot break
发动机参数 Engine	型号 Type No.	LH188MR-A	LH1102U
	型式 Model	单缸，四冲程，水冷 Single Cylinder、4-Stroke、Liquid-Cooled、SOHC	单缸，四冲程，水冷 ,SOHC，四气门 Single Cylinder、4-Stroke、Liquid-Cooled、SOHC、4-Valve
	缸径 X 行程 Stroke and bore	87.5mmX82mm	102mmX85mm
	气缸工作容积 Cylinder dimension，ml	493	695
	最大功率及对应转速 Rated power，kW/r/min	24/6500	32/5800
	最大扭矩及对应转速 Max torque Nm/r/min	39/5500	58/4500
	压缩比 Compression Ratio	10.2:1	10：1
	燃油牌号 Gasoline code	95	95
	点火方式 Ignition type	ECU	ECU
	起动方式 Start type	电启动 Electric Starter	电启动 Electric Starter

3.4 电动特种车辆 LH40DA
3.4 LH40DA / EV-BOSS LH40DA

产品简介
Product Introduction

整车参数 Vehicle	产品型号 Technical	LH40DA
	尺寸：长 X 宽 X 高（mm） Size：Length x Width X Height	2150x1160x1460
	轴距（毫米） Wheelbase，mm	1270
	整备质量（千克） Weight：kg	491
	轮胎规格 Specification of Tire	前轮 Front：AT24X8-12
		后轮 Rear：AT24X8-12
	制动操纵方式 Brake system control model：	
	前轮制动 Front Break	前轮 Front：手刹 / 脚刹 Hand break, foot break
	后轮制动 Rear Break	后轮 Rear：脚刹 foot break
	续航里程（km） Range of voyage	85
电动机参数 For pure electric	电池型号 Battery Type	铅酸电池 免维护
	电机工作电压 Electric motor operating voltage	DC 48V（100Ah）
	电池数量 Number of cells	4
	Mass of cells 电池质量	32.5kg ×4
	电池工作电压 Voltage of battery	48V
	充电器 Charger	on-board 车载
	额定功率 Rated power	4kW
	驻车制动 Parking brake	机械驻车

3.5 特种车辆 LH1630
3.5 Special vehicle LH1630

产品简介
Product Introduction

整车参数 Vehicle	产品型号 Technical	LH1630
	尺寸：长 X 宽 X 高（mm） Size：Length x Width X Height	2360x935x1250
	轴距（毫米） Wheelbase，mm	1270
	整备质量（千克） Weight：kg	520
	轮胎规格 Specification of Tire	前轮 Front：5.00-12
		后轮 Rear：8.00-16
	制动操纵方式 Brake system control model：	
	前轮制动 Front Break	前轮 Front：脚刹 foot break
	后轮制动 Rear Break	后轮 Rear：脚刹 foot break
发动机参数 Engine	型号 Type No.	PERKINS 403D-07
	型式 Model	3 缸，水冷 Three Cylinder、Liquid-Cooled
	缸径 X 行程 Stroke and bore	67mmX72mm
	气缸工作容积 Cylinder dimension，ml	762
	最大功率计对应转速 Rated power，kW/r/min	12.2/2800
	最大扭矩及对应转速 Max torque N.m/r/min	45.6/2000
	压缩比 Compression Ratio	23.5:1
	燃油牌号 Gasoline code	柴油
	起动方式 Start type	电启动 Electric Starter

3.6 摩托车（LH125T—20、LH175T）
3.6 Motorbike（LH125T-20、LH175T）

产品简介
Product Introduction

型号 Model:	LH125T-20	LH175T
长 x 宽 x 高 (mm) LengthxWidthxHeigth (mm)	1860 × 655 × 1130	1990 × 720 × 1130
轴距 (mm) Wheelbase (mm)	1295	1410
制动形式（前 / 后） Brake System（Front/Rear）	前 : 碟刹　后 : 碟刹 Front：Disc Rear：Disc	前 : 碟刹　后 : 碟刹 Front：Disc Rear：Disc
前后轮制动方式 Front And Rear Unite Brake System	前 : 手制动　后 : 手制动 Front：Hand Brake Rear：Hand Brake	前 : 手制动　后 : 手制动 Front：Hand Brake Rear：Hand Brake
轮辋式样 (前 / 后) Wheel（Front/Rear）	前：MT2.75 *12 后：MT3.00*12 (铝合金) Front：MT2.75 *12 Rear：MT3.00*12 (Aluminum alloy)	前：MT3.00*13 后：MT3.50*13 (铝合金) Front：MT3.00*13 Rear：MT3.50*13 (Aluminum alloy)
轮胎规格 (前 / 后) Tire（Front/Rear）	前 110/70-12 后 120/70-12 Front：110/70-12 Rear：120/70-12	前：120/70-13 后：130/70-13 Front：120/70-13 Rear：130/70-13
轮胎压力（前 / 后） kPa Tire Pressure（Front/Rear） kPa	前：200 后：250 Front：200 Rear：250	前：200 后：250 Front：200 Rear：250
发动机型号 Engine Model	LH152QMI-3A	LH160MK
品牌 Brand	LINHAI	LINHAI
形式 Type	单缸 , 四冲程 , 风冷 , 电喷 Single,4-Stroke,Wind Cooling,EFI	单缸 , 四冲程 , 水冷 , 电喷 Single,4-Stroke,Water Cooling,EFI
缸径 X 行程 mm Bore X Stroke mm	52.4 × 57.9	60 × 58.6
排量 ml Cylinder Capacity ml	125	166
压缩比 Compression Rate	10:1	11:1
最大功率 kW/ 转速 r/min Max Power And Rev kW/(r/min)	6.8/7500	11/8000
最大扭矩 N.m/ 转速 r/min Max Torque And Rev N·m/(r/min)	9/7000	14/6000
最小稳定转速 r/min Minimum Idle Speed r/min	1700	1600
润滑方式 Lubrication System	压力 , 飞溅 Pressure、Splash	压力 , 飞溅 Pressure、Splash
润滑油牌号 Lubrication Oil Type	10W-40	10W-40
离合器式样 Clutch	CVT	CVT
启动方式 Starter System	电启动 Electric Starter	电启动 Electric Starter

配套发动机 Engine	蓄电池 battery	额定电压（V） nominal voltage		12
		额定容量（Ah） rated capacity		45
单位作业量燃油消耗量（kg/hm²） Fuel consumption per unit of operation				2.2-5.6
行驶部 traveling system	行走轮 wheel	结构型式 type	前轮 front wheel	防爆轮胎 Run-flat tire
			后轮 rear wheel	粗轮毂橡胶轮胎 rubber tire
		直径 × 宽（mm） diameter × width（mm）	前轮 front wheel	Φ650 × 95
			后轮 rear wheel	Φ950 × 50
		轮距 tread	前轮 front wheel	1200
			后轮 rear wheel	1200
	转向方式 steering mode			整体液压转向 hydraulic pressure
	变速方式 gearshift method			液压式变速（HST） hydraulic pressure（HST）
	变速级数（级） Gear range			主变速：前进后退五级变速（副变速：2 挡；防陷变速：2 挡） 5series
	作业速度（km/h） operating speed（km/h）			0-5.94
	最小离地间隙（mm） minimum ground clearance（mm）			500
插秧部 Planting system	插植机构型式 Type of planting mechanism			旋转式强制插秧 Rotary forced rice transplanting
	工作行数（行） Lines of work（line）			6
	行距（mm） linewidth（mm）			300
	穴距（mm） hill spacing（mm）			（＊1）100、120、140、160、180、210、240
	插秧深度（mm） Planting depth（mm）			10-55（7 级） 10-55（7series）
	1 穴苗数调节量 Regulation quantity of seedling number		横向移动次数 Number of lateral moves	20、18、16、14
			纵向取秧深度（mm） Longitudinal seedling depth（mm）	8-18
	平衡机构型式 Type of balancing mechanism			机械式 mechanical
秧苗条件 The seedlings condition	秧苗种类 Seedling types			块状秧苗 The massive seedlings
	苗高（mm） height of seedling（mm）			80-250
	叶龄（叶） leaf age			2.0-4.5
秧盘架（个） rice seedling plate				6
警报装置 warning device				充电、油压、后退时、水温、秧苗用尽 battery charging、oil pressure、back off、water temperature、out of rice seedling
作业小时生产率（hm²/h） Operating hour productivity				（＊1）0.2-0.42

3.7 智能高压串联森林消防泵（SFBC10／2—A）

3.7 Intelligent high pressure series forest fire pump (SFBC10/2-A)

产品简介

单机扬程高，流量大，输水距离远，多种启动方式，电启动、手启动、遥控启动，串联压力感应自行启动，无需人为操作，减少人为操作故障率；发动机为四冲程汽油机，噪音小，启动更方便，无需混合燃料，操作更简单。

Product Introduction

High pumping head, large flow,long distance, electrical and hand starting,remote start, pressure sensor starts itself. No manual operation required. Four stroke gasoline engine is used, it has low noise, very easy to start and operate.

技术参数
Technical parameters

型号 Type	SFBC10/2-A		
进口口径 Import caliber	50 mm		
出口口径 Export caliber	40 mm		
吸水扬程 Suction lift	7 m		
最大压力 Maximum pressure	1.65 MPa		
最大流量 Maximum flow	395 L/min		
压力 Pressure	0.55 MPa	0.8 MPa	1.1 MPa
流量 Quantity of flow	249 L/min	189 L/min	90 L/min
射程 Range	30 m		
发动机型号 Engine type	YAMAHA MZ200		
发动机型式 Engine mode	1 cylinder，4 stroke ， forced air cooling、OHV		
排量 Displacement	192 cm^3		
油箱容量 Fuel tank volume	15 L		
油箱型式 Fuel tank type	外置防静电塑料油箱，快速接口供油 Antistatic plastic fuel tank, Fast interface		
最大输出功率 maximum power output	4.2kW/3600r/min		
火花塞型号 Spark plug mode	F5TC		
火花塞间隙 spark plug gap	0.7 ～ 0.8 mm		
飞轮点火器间隙 Flywheel igniter gap	0.30 mm		
汽油 gasoline	90 号或以上无铅汽油 90#or better clear gasoline		
润滑油 lubricating oil	SE10W-30 四冲程专用润滑油 Only SE10W-30		
润滑油量 Lubricating oil quantity	600 ml		
点火方式 sparking mode	T.C.I		
起动方式 start-up mode	手拉反冲起动 / 电启动 / 遥控启动 Start with recoil by hand/electrical starting/Remote start		
串联启动方式 Series start mode	压力感应智能启动 Pressure sensing intelligent activation		
尺寸（长 × 宽 × 高）Size	480 × 360 × 330 mm		
净重 net weight	20 kg		
连续工作时间 continuous working hours	大约 6 小时 6 hours		

3.8 远程高压森林消防泵（SFBA30／1.0—C）

3.8 Remote high pressure forest fire pump（SFBA30/1.0-C）

产品简介

采用原装 YAMAHA 四冲程发动机，噪音低，无需混合燃料，启动更迅速，使用更方便；由于隔膜泵工作时仅隔膜与介质接触，且往复行程小，可应用于含有细小砂砾的水源；单机扬程高，压力大，流量平稳，输水距离远。

Product Introduction

Original YAMAHA four stroke engine is used in this pump，which has low noise, require no mixed fuel and very easy to start and use. Since only the diaphragm contact with medium when working, and the reciprocating stroke is short, so this pump can apply to water sources containing fine grit. This pump has high pumping head, high pressure, smoothly flow,long distance.

技术参数
Technical parameters

泵头型号 Pump head type	CR1703 三缸隔膜水泵 CR1703 3 cylinder diaphragm pump
外观 Appearance	框架封闭式 Frame closure
水泵品牌 Pump brand	CARRAROSPRAY （意大利）
进水口直径 Inlet diameter mm	40
出水口直径 Outlet diameter mm	25/40
水带型号（聚氨酯衬里） Hose type(Polyurethane lining)	30-25-30
水枪口直径 Nozzle diameter mm	6
水枪射程 Range m	28
最大扬程（流量为 0） Maximum head(no water out) m	690
吸水扬程 Suction lift m	7
额定压力 Nominal pressure MPa	3
额定流量 Rated flow L/min	72
引水时间（1 米吸深） Water diversion time(1 m) s	6
发动机型号 Engine type	YAMAHA MZ400
型式 mode	单缸、强制风冷、四冲程、OHV single cylinder, forced air cooling ,4-stroke,OHV
最大功率 Maximum power kW/(r/min)	9.5/4000
标定功率（12h 功率）kW/(r/min) Rated power	6.3/3600
最大扭矩 Maximum torque Nm/(r/min)	28.7/2400
怠速转速 Idle speed r/min	2200±100
最低燃油消耗率 Minimum fuel consumptiong/(kW.h)	281
直径 × 冲程 Diameter X stroke mm	85×63
排量 displacement ml	357
压缩比 compression ratio	8.1:1
起动方式 start-up mode	手拉反冲式 / 电启动 Hand pull recoil type/electrical starting
燃油牌号 Fuel brand	RQ-90 无铅汽油 RQ-90 clear gasoline
机油牌号 Oil brand	SE10W-30
机油量 oil quantity ml	1100
油箱容积 fuel tank capacity L	25
一次加油连续工作时间 h One refueling continuous working time	6
外形尺寸 Size mm	870×590×630
净重 net weight kg	60
保护装置 protector	电子压力传感器超压熄火保护 Electronic pressure sensor overpressure flameout protection
启动时间 starting time s	5

3.9 森林消防泵（4BJL—12／3.5）
3.9 Forest fire pump (4BJL-12/3.5)

产品简介

单机扬程高，流量大，输水距离远；机泵分离，卡箍式快速连接，携带方便；可多级串联，灵活机动；国产动力，手电一体启动，具备电源输出功能，技术行业领先。

Product Introduction

This pump has high head, large flow and long distance; Engine and pumpcan be separated and quickly connected with clamp, it is easy to carry; This pump has high technology, it is easy to start and can provide electricity.

技术参数
Technical parameters

水泵型式 Pump type		单吸式四级离心 Single suction four stage centrifugation
进口口径 Inlet diameter mm		50
出口口径 Outlet diameter mm		38
吸水扬程 Suction lift m		5
引水时间（1 米吸深） Water diversion time(1 m) s		11
最大出口压力 Maximum outlet pressure MPa		2.75
最大扬程 Maximum head m		275
最大流量 Maximum flow L/min		386
工况 1 Working condition 1	额定压力 Rated pressure MPa	1.2
	额定流量 Rated flow L/s	4.1
工况 2 Working condition1	压力 Pressure MPa	2
	流量 Flow L/s	2.2
喷嘴直径 Nozzle diameter mm		6.3（1/4″）/9.5（3/8″）/12.7（1/2″）
水平射程 Range m		31
水带型号（聚氨酯衬里） Hose type(Polyurethane lining)		30-40-30
发动机型式 Engine mode		单缸、强制风冷、二冲程 Single cylinder, forced air cooling ,2-stroke
发动机功率 Engine power kW/(r/min)		8.2/7500
直径 × 冲程 Diameter X stroke mm		72 × 54
排量 Displacement ml		220
磁电机型式 Magneto type		外触发飞轮磁电机 External trigger flywheel magneto
化油器型式 Carburetor type		膜片式 diaphragm
点火方式 Sparking mode		TCI
启动方式 Starting mode		手拉反冲式 / 电启动 Hand pull recoil type/ electrical starting
启动时间 Starting time s		10
燃油牌号 Fuel brand		RQ-90 无铅汽油＋二冲程润滑机油 RQ-90 gasoline + Two-stroke lubricating oil
油箱容积 Fuel tank capacity L		15
一次加油连续工作时间 h One refueling continuous working time		2.1
水泵与发动机连接方式 Connection type between pump and engine		卡箍式快速连接 Quick Connect
框架材质 Material of framework		高强度铝合金 high-strength aluminum alloy
超速保护 Overspeed protection r/min		8000
输出设备 Output device		照明、充电接口 /USB 接口 Lighting, charge couple,usb
输出功率 Output power w		35
水泵净质量 Net quality kg		25
外形尺寸 Size mm		600 × 420 × 410

3.10 消防四轮摩托车（XMC4PW／60—LH300ATV）

3.10 Fire fighting four-wheel motorcycle (XMC4PW/60-LH300ATV)

产品简介

1．灭火效率高：配置的高效细水雾灭火系统，自带120L 水，两种喷嘴，性能卓越，快捷、高速，可以轻松扑灭初期火灾，防止初起火的蔓延，起到控制火势的作用。

2．越野性能好：装备国内领先的林海水冷四冲程发动机，性能可靠，四轮驱动系统，超宽越野轮胎，通过能力强，可适应在林区山路等不规则道路上行驶。

3．操作简便：采用先进的 CVT 变速机构，转弯半径小，操作简便，可由一人轻松驾驶。

4．安全可靠：30 米出水管及加长枪喷头设计，灭火队员可远距离对火焰进行灭火。

5．载重能力强：可携带一部分水、燃料、灭火装备、消防队员等，节约了宝贵时间，减少了消防队员的体力消耗。

6．持久作战：备有燃料储备和补水泵，启动补水泵，由最近的水源向水箱补水或直接通过直流水枪向火场喷射，进行水灭火，确保持久作战。

Product Introduction

High fire extinguishing efficiency: This motorcycle is equipped with efficient water mist extinguishing system,120L water and two kinds of nozzles, excellent performance, fast and high-speed, can easily extinguish the initial fire, prevent the spread of the initial fire, play the role of controlling the fire.

Good off-road performance: It is equipped with domestic leading linhai water-cooled four-stroke engine, which have reliable performance, four-wheel drive system, ultra-wide off-road tires, strong passing ability, suitable for driving on irregular roads such as forest mountain road.

Easy to operate: advanced CVT transmission mechanism, small turning radius, easy to operate, can be easily driven by one person.

Safe and reliable: 30 meters outlet pipe and long gun nozzle design, fire extinguisher can be long-distance fire.

Strong capacity: It can carry some water, fuel, fire-fighting equipment, firefighters, etc., saving valuable time and reducing the physical consumption of firefighters.

Durable combat: It is equipped with fuel reserve and replenishment pump, start the replenishment pump, replenish water from the nearest water source to the water tank or directly spray water to the fire site through the dc gun to extinguish water and ensure durable combat.

主要用途

本产品适用于森林防火宣传，防火期林间巡护，可扑灭初起火灾。

Main application

This product is suitable for forest fire prevention propaganda, fire prevention period forest patrol, can put out the initial fire.

技术参数
Technical parameters

A、发动机：Engine	
型式 mode	单缸、四冲程、水冷、SOHC、卧式 Single cylinder,4-stroke,Water cooling , SOHC, Horizontal type
缸体 × 行程 Diameter X stroke mm	66.8 × 72.5
排量 Displacement ml	275
最大功率： maximum power kW/r/min	14/6500
最大扭矩： maximum torque N·m/r/min	23/5500
B、四轮摩托车（ATV）four-wheeled motorcycle	
驾驶操纵方式 Steering mode	方向把式 By steering wheel
外形尺寸（长 × 宽 × 高） mm Size：Length x width x height	2090 × 1180 × 1460
轴距 wheel base mm	1265
最小离地距离 mm Minimum distance from the ground	183
满载质量 Full quality kg	500
最高车速 maximum speed km/h	51
制动距离 braking length m	6
传动方式 kind of drive	CVT 轴传动 CVT shaft drive transmission
驱动方式 drive mode	4WD
启动方式 starting mode	单一电启动 electrical starting
油箱容积 fuel tank capacity L	14.5±0.5
水箱容积 The tank volume L	120
整车配置 The vehicle configuration	车身颜色大红色，配有警灯、警具、耳麦 The color of the car is bright red, Equipped with warning lights, warning equipment, headset
C、细水雾灭火装置 Water mist extinguishing device	
启动方式 Starting mode	手拉和电启动 Hand pull and electric start
细水雾喷射距离 spray distance m	6
有效喷射时间 Effective time min	5.1
绞盘长度 Winch length m	30
D、配消防泵 Fire pump	含水枪、进水管、20 米出水管各 1 件 One water gun, one water inlet pipe and one water outlet pipe of 20 meters
功率 Power kW/r	4/4000
额定流量 Rated flow L/s	3.42
额定压力 Nominal pressure Mpa	0.551
最大扬程 Maximum head m	80
整机质量 Quality kg	30.5

3.12 消防四轮摩托车（LH800UTV）
3.12 Fire fighting four-wheel motorcycle（LH800UTV）

技术参数
Technical parameters

整车参数 The vehicle parameters	
外型尺寸 Size mm	2825 × 1470 × 1960
轴距 wheel base mm	1910
轮距（前 / 后）Wheel base (front/rear) mm	1215/1180
最小离地间隙 minimum ground clearance mm	255
整车整备质量 curb weight kg	755
最大允许载质量 Maximum allowable mass kg	600
最高车速 maximum speed km/h	50
制动器型式（前 / 后） Brake type (front/rear)	盘式 / 盘式 Disc/disc
制动操作方式（前 / 后） Brake operation mode (front/rear)	脚制动 With foot
发动机参数 engine parameter	
型式 Mode	三缸、四冲程、水冷 Three cylinders, four-stroke, water cooling
缸径 × 行程 Diameter X stroke mm	68 × 72
气缸工作容积 Cylinder volume ml	784
最大功率及对应转速 Maximum power speed	14.1/3600kW/（r/min）
最大扭矩及对应转速 Maximum torque speed	45.1/2500N·m（r/min）
传动方式 kind of drive	CVT 轴传动 CVT shaft drive transmission
启动方式 Starting mode	电启动 Electric start
燃油种类 Fuel type	柴油 Diesel

3.13 新型手持式风力灭火机（6MF—22—50C）

3.13 New hand-held pneumatic extinguisher（6MF-22-50C）

技术参数

Technical parameters

型号 Model		6MF-22-50C
有效风力灭火距离 Effective extinguishing distance	cm	≥230
灭火机出口风量 Export volume	m^3/s	≥0.52
外形尺寸（长、宽、高） Size：（Length, width, height）	mm	510×270×480（不含风筒）(Without tube)
净质量 Net quality	kg	7.7
整备质量 curb weight	kg	9.5
油箱容积 fuel tank capacity	L	1.8
发动机型式 Engine type		单缸、风冷二冲程汽油机 Single cylinder, air cooled two stroke gasoline engine
排量 Displacement	cm^3	80.7
发动机额定转速 rated speed	r/min	7500
空滤器形式 Air filter form		海绵 Sponge
化油器 Carburetor		泵膜转阀式 Pump membrane rotary valve type
磁电机形式 Magneto form		C.D.I
火花塞 sparking plug		A7TC(M7)
燃油牌号 Fuel brand		92
润滑油牌号 Lubricating oil		L-ERB 二冲程汽油机润滑油 L-ERB lubricating oil for two-stroke gasoline engines
燃油与润滑油混合比（按容积） Mixing ratio of fuel oil and lubricating oil(According to the volume)		新机最初 50h 为 30:1，以后 40:1 The new machine is 30:1 in first 50h, and then 40:1

中国地质装备集团有限公司

China Geological Equipment Group Co., ltd

公司名称：中国地质装备集团有限公司

Company Name: China Geological Equipment Group Co., ltd

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China Geological Equipment Group Co., Ltd(CGEG)established in 1987, CGEG are always stay on the forefront of technological development as a large-scale state-owned geological equipment manufacturing enterprise integrating scientific research, engineering, trade, manufacturing, supply and sales, and having the most competitive technical strength, the most complete product specifications, the most complete product chain. Our products cover the major processes of geological exploration with the ground geophysical exploration, coring drilling, borehole detecting and chemical analysis of minerals . Our major job is to research, develop, manufacture and sell the various products including drilling machinery (core drilling rig, truck-mounted drilling rig, water well drilling rig, engineering drilling rig ,mud pump, drilling tower and other accessories) , drilling tools (drill rod , drill bit, bottom hole drill tools, rock drilling tools, synthetic diamond and its products, hard alloy and its products, etc.) , geophysical instruments (gravity , magnetic , electrical , seismic , radiological and wells instruments), analysis instruments (atomic absorption, atomic fluorescence, mercury analyzer flow Injection Analysis, solvent extraction, etc.), for the application fields of geology, metallurgy , nonferrous metals, coal, oil , nuclear industry , defense , construction, water conservancy and hydropower , transportation, environmental protection and other industries. The Technology Center of CGEG is the only state-level technical center for the geological equipment industry in China now. There are 6 provincial-level R&D platforms. Many CGEG's products achieved the innovation in China, such as, the first set fully-electric driven core drill rig, the first set spindle type drill rig, the first set variable output mud pump, the first set Mechanic top drive engineering foundation drill rig, and the first set fully-automatic double-channels hydride-generation atomic fluorescence spectrometer (the first in business), the only high-precision quartz spring gravimeter in Asia, and the magnetometer and wire line drilling tools as domestic leading level.

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1 钻采机械
1 Drilling and exploring machinery

1.1 地质岩心钻机
1.1 Geological Core Drilling Rigs

1.1.1 机械立轴岩心钻机
1.1.1 Spindle Type Core Drilling Rig

XY—5

XY—8

XY—42L

XY—2BTC

XY—5T

产品简介

XY 系列岩心钻机，适用于不同深度岩心钻进等，并可应用于铁路、公路、桥梁、水利、大坝等建设领域的工程勘察与注浆，也可用于中小型水井与基桩孔钻进，主要产品包括 XY—1 型、XY—2 型、XY—3 型、XY—4 型，XY—5 型、XY—6 型、XY—8 型及该系列钻机派生产品 XY—2B、XY—2PCL、XY—42L、XY—44C、XY—44H、XY—44L、XY—44HA、XY—5L、XY—5T、XY—6B、XY—8B 等。

Product Introduction

XY Series Core Drills is a compact hydraulic-feed spindle drilling rig. It is suitable for shallow and medium depth core drilling and geophysical exploration. It is widely used in engineering geological exploration and grouting for the construction of railway, highway, bridge, hydropower and dam etc. It is also used for drilling small and medium water well and pile hole. There are many models :XY-1, XY-2, XY-3, XY-4, XY-5, XY-6, XY-8. The main products also include the derivative products of XY-2B, XY-2PCL, XY-42L, XY-44C, XY-44H, XY-44L, XY-44HA, XY-5L, XY-5T, XY-6B, XY-8B, etc.

主要技术参数
Main tech parameter

参数 parameter:	XY-44N	XY-5	XY-6B	XY-8
钻孔深度 (m) Drilling depth	1000	1000-1500	1000-2000	1000-3000
钻杆直径 Drilling pipe (mm)	ϕ50 ϕ60 ϕ71 ϕ89	普通回转器 ϕ50 ϕ60 大通径回转器 ϕ89	ϕ50 ϕ60 ϕ89	ϕ50.5 ϕ60 ϕ71 ϕ73 ϕ89 ϕ114
立轴通径 Vertical drilling diameter（mm）	ϕ93	普通回转器 ϕ80 大通径回转器 ϕ96	ϕ96	ϕ118
扭矩 Torques (kN m)	3.8	0.39 — 5.64	5~6	8
立轴转速 Rotational speed (r ／ min)	83 152 212 316 254 468 667 970 反转 Reverse67 206	85 166 261 294 335 577 906 1232 反转 Reverse65 225	80 175 225 260 360 490 730 1000 反转 Reverse 62 170	79、137、213、223、366、384、604、1024 反转 Reverse51、144
给进油缸行程 Vertical spindle stroke (mm)	600	500	600	1000
提升力 Maximum lifting force (kN)	120	135	200	300
给进力 Maximum stress (kN)	90	90	150	142
卷扬单绳最大提升力 Maximum lifting force (kN)	45	40	60	130
卷扬提升速度 Lifting speed (m ／ s)	0.70 1.29 1.84 2.68	0.89 1.74 2.73 3.18 3.74 6.08	0.66 1.44 1.85 2.13 2.96 4	0.57-7.58
钢丝绳直径 Winch Diameter (mm)	ϕ18.5	ϕ18.5	ϕ20	ϕ21.5
容绳量 capacity (m)	110	140	140	160
移位油缸行程 Reverse stroke (mm)	460	500	550	690
动力电动机 Electric motor	Y225S-4	55kW Y250M-4	55kW Y250M-4	90KW Y2280M-4
动力柴油机 Diesel motor	R4105G53	80HP 4135AG	100HP 4135AG	132kW 6BTA5.9-C180
主机重量 Weigh (t)	2.3	3.5	3.8	7.8
外型尺寸 Dimensions(L × W × H) (mm)	3024 × 1100 × 1920	3190 X1495 X 2140	3450 × 1500 × 2250	4049 × 1754 × 2593

1.1.2 电传动立轴式岩心钻机
1.1.2 Exploration core drill rig, VFD type XY series

XY—8DB

产品简介

XY 系列电传动立轴钻机适用于 3000 米以深的固体矿产勘探、浅层油气地质调查，是传统 XY 系列机械传动钻机在能力、结构、传动、控制、工艺、安全等方面进行的全方位提升，更加符合深孔施工在效率、能耗、操控等功能要求。

Product Introduction

Exploration core drill rig, VFD type XY series is a drilling rig that improves the traditional XY series mechanical drive drilling rig in terms of capability, structure, transmission, control, technology, safety, etc. It is suitable for solid mineral exploration and shallow oil and gas geological investigation at a depth of 3000 meters. The XY series electric drive vertical shaft drilling rig has high efficiency, low energy consumption and convenient operation.

主要技术参数
Main tech parameter

参数 parameters		XY-8DB	XY-9DB
钻 深 Drilling depth	75mm（N 口径 N caliber）	3200m	4000m
	95mm（H 口径 H caliber）	2500m	3000m
	114mm（P 口径 P caliber）	2000m	2000m
钻 塔 Drill tower	井架类型 Model	SG24 加重塔 Heavy derrick	SG24 加重塔 Heavy derrick
	最大承载 Load	500kN	680kN
	平台面积 Area of tower platform	6500mm × 6500mm	6500mm × 6500mm
提 升 Lifting mechanism	电机功率 Power	YZP-90kW	YZP-110kW
	主钢丝绳 Steel rope	Φ20mm/220m	Φ24mm/220m
	单绳拉力 Single rope pulling force	100kN	130kN
	游车绳速 Freely-moving hook speed	0.9m/s（4 绳系 ropes）	0.9m/s（4 绳系 ropes）
回 转 Gyrator mechanism	电机功率 Power	YZP-75kW	YZP-90kW
	转速范围 Rotational speed	0 ～ 1000rpm	0 ～ 1000rpm
	最大扭矩 maximum torque	8000Nm	10000Nm
	通孔直径 Drilling diameter	Φ118mm	Φ118mm
打 捞 Hoisting mechanism	绳速范围 Speed	0 ～ 250m/min	0 ～ 250m/min
	最大拉力 Maximum pulling force	20000N	25000N
	钢丝绳尺寸 Steel rope	Φ8mm/3200m	Φ8mm/4200m
动力钳 Power tong	适用管径 Applicable pipe diameter	Φ50 ～ 118mm	Φ50 ～ 118mm
	最大扭矩 Torque	10000Nm	12000Nm
	最大通径 Diameter of power tong	Φ130mm	Φ130mm
泥浆泵 Mud pump	功　率 Power	30kW	45kW
	型　号 Model	BW300/16DB	BW400/28DB

1.1.3 电传动顶驱／转盘钻机
1.1.3 Electric top drive & rotary drilL, TYPE XD-20DB/30DB/40DB

XD—40DB

产品简介

XD 系列顶驱式电传动深孔钻机可钻深 3000 ～ 4000m，广泛应用于地热钻采、固体矿产勘探、浅层石油、煤层气、页岩气勘探领域。能耗制动、液压盘刹、自动送钻、紧急制动、防碰刹车、数字化操控等功能满足大口径深井施工的安全、效率、节能环保的要求。钻机可带转盘。

Product Introduction

Top drive exploration drilling rig, XD series can drill up to 3000-4000meters deep, widely applicable in geothermal drilling, solid mineral exploration and exploration of shallow layer petroleum, coalbed methane, shale gas. Furthermore, it has functions including automatic drilling, emergency brake, anti-collision braking, digital control, low energy consumption and so on. These greatly enhance the safety requirements, efficiency, in the meantime energy saving and environment-friendly. The drill can be equipped with a turntable.

主要技术参数
Main tech parameter

参　数 parameters		XD-20DB	XD-30DB	XD-40DB
钻 深 Drilling depth	NQ 绳索钻杆 NQ wireline drill pipe	3000m	4500m	
	HQ 绳索钻杆 HQ wireline drill pipe	2000m	3000m	4000m
	PQ 绳索钻杆 PQ wireline drill pipe	1300m	2000m	2500m
钻塔 Drill tower	井架型式 Derrick type	A 型 A-shaped	A 型 A-shaped	K 型 K-shaped
	钻塔高度 Height	27m	29m	31.5m
	最大钩载 Maximum hook load	500kN	700kN	1350kN
顶驱 Top drive	电机功率 Power of electric motor	74kW	110kW	150kW
	转速 Rotational speed	0-600rpm	0-600rpm	0-500rpm
	最大扭矩 maximum torque	7200N·m	8000N·m	12500 N·m
	导向行程 Guided stroke	15m	18m	18m
	最大输入功率 Maximum power input	90kW	110kW	160kW
	额定拉力 Rated pulling force	70 kN	8 0kN	100 kN
主绞车 Main winch	最大快绳拉力 Maximum pulling force	100 kN	110kN	130kN
	钢丝绳直径 Diameter of steel rope	Φ25mm	Φ25mm	Φ28mm
	钩速 Hook speed	0-1.2m/s	0-1.2m/s	0-1.5m/s
	主刹车 Main brake	能耗制动 Dynamic braking		
	辅助刹车 Auxiliary brake	盘刹 + 安全制动 Disc braking + safety braking		
	进线电源柜 Incoming power cabinet	300A	400A	600A
取心绞车 Coring winch	单绳最大拉力 Single rope maximum pulling force	15kN	20kN	25kN
	最高绳速 Maximum rope speed	120m/min	120m/min	120m/min
	钢丝绳尺寸 Steel rope	Φ7mm/2500m	Φ8mm/3500 m	Φ9mm/4500m
泥浆泵 Mud pump	型号规格 specification	BW300/16	BW300/16	BW400/25
	最大流量 Rated pump volume	300L/min	300L/min	400L/min
	最高压力 Rated pump pressure	16MPa	16MPa	25MPa

1.1.4 液压动力头式岩心钻机
1.1.4 Hydraulic power head core drill rig

XD—5

产品简介

全液压岩心钻机是适用于绳索取芯金刚石钻探工艺方法的专用机型，是一种适用中深孔取芯钻探的地质技术装备。主要应用于地矿、煤田、核工业、有色、黄金等领域的工程勘探作业，主要产品包括 XD—5、XD—6 等。

Product Introduction

Hydraulic Core Drill are specially designed for wire-line core drilling. It is a representative model with tracklayer mainly for medium and deep core drilling. It is mainly used in the exploration of mineral resources, environment and engineering geology field. There are many models of type XD-5,XD-6 and so on.

主要技术参数
Main tech parameter

参数 parameter		XD-5	XD-6
钻孔深度 Drilling Depth	BQ(55.6mm)	1650m	2100m
	NQ(69_9mm)	1230m	1650m
	HQ(88.9mm)	850m	1200m
	PQ(114mm)	550mm	800m
发动机 Power			
柴油机型号 Diesel 涡轮增压 turbo charged 132kW/2200rpm		康明斯 Cummins 6BTA5.9-C180	康明斯 Cummins 6BTA8.3-C240
		涡轮增压 turbo charged	
		179kW/2200rpm	
动力头 Drill Head			
1 档（转速 / 扭矩）1st speed/torque		119-193rpm/5175-3187Nm	124-203rpm/6048-3631Nm
2 档（转速 / 扭矩）2nd speed/torque		218-353rpm/2826-1743Nm	227-372rpm/3250-1986Nm
3 档（转速 / 扭矩）3st speed/torque		418-678rpm/1475-910Nm	463-713rpm/1695-1036Nm
4 档（转速 / 扭矩）4nd speed/torque		761-1234rpm/761-500Nm	793-1300rpm/931-569Nm
主轴通径 Spindle I.D		117mm	117mm
液压卡盘 Hydraulic Chuck			
结构类型 Structure		弹簧加紧，液压张开 Spring closed hydraulic opened	
夹持力 Force		200kN	220kN
给进系统 Drill Mast and Feed System			
给进行程 Feed Stroke		3500mm	3200mm
给进力 Thrust		45kN	70kN
起拔力 Pull		135kN	200kN
钻探角度 Drilling Angle		90 ～ 45°	90 ～ 45°
液压系统 Hydraulic System			
主泵 Primary Pump		190L/min 25.5MPa	235L/min 28MPa
主卷扬 Main winch			
单绳拉力 Hook load of single line		77kN	135kN
提升速度 Hoisting Speed		72m/min	270m/min
容绳量 Main Hoist Cable		60m（ϕ 18mm）	80m （ϕ 26mm）
绳索卷扬 Wire-line Hoist			
第一层单绳拉力 Hoisting capacity of single wire rope first floor		12kN	15kN
容绳量 Cable Capacity		1500m ((ϕ 5mm 钢丝绳）	

1.1.5 便携式岩心钻机
1.1.5 Portable exploration drilling rig

XD600

产品简介

XD 系列便携式钻机应用于地质调查、矿产勘查、商业勘探，铁路、公路、水电、桥梁、隧道等工程勘查，可机动、快速、经济的完成地质探矿任务，特别适用于高海拔的陡峻山区、交通不便的植被覆盖区等难进入地区。

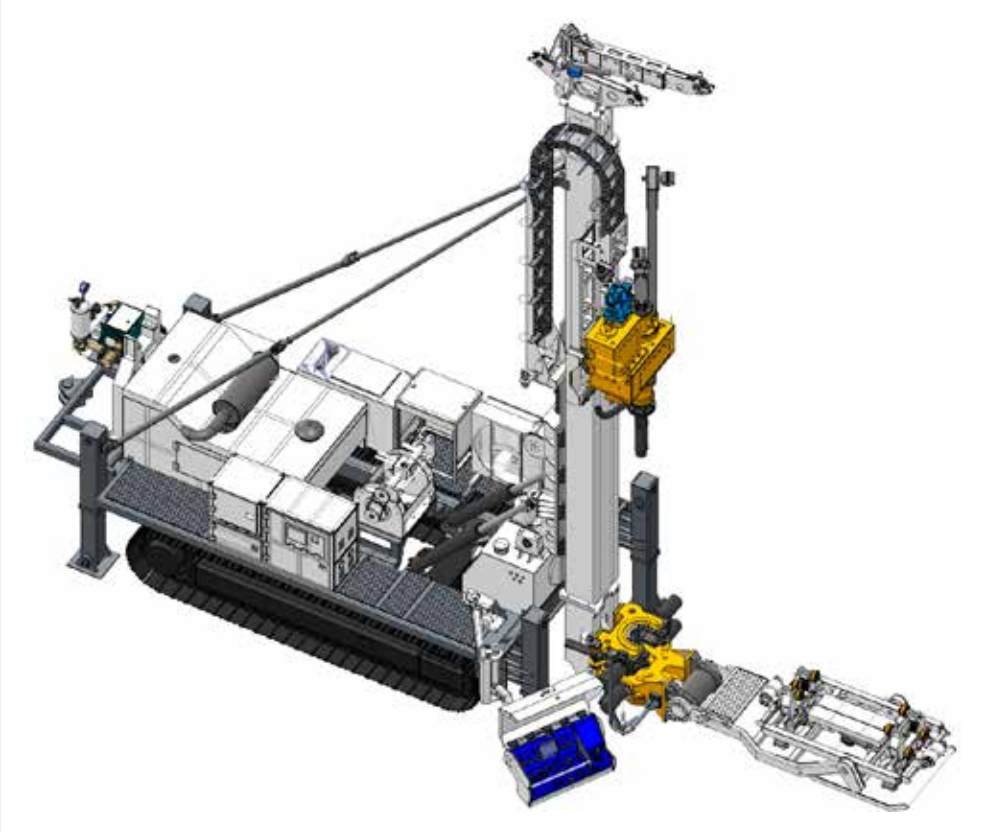
Product Introduction

Portable exploration drilling rig, type XD series is applicable in geological prospecting, mineral exploration, commercial exploration and engineering exploration in railways, highways, hydropower station, bridges, tunnels and so on. The geological and mineral prospecting tasks can be accomplished mechanically, rapidly and economically. Particularly, it is suitable for construction works in steep mountain areas with high altitude or areas that are difficult to be assessed such as vegetation covered-areas.

主要技术参数
Main tech parameter

规格 Size	孔径 Hole Dia（mm）	岩心直径 Core Dia（mm）	XD800	XD600	XD400	XD200G
BTW	Ø60	Ø42	2600 ft	2000 ft	1300 ft	700 ft
NTW	Ø75.7	Ø56	2000 ft	1300 ft	700 ft	300 ft
HQ	Ø96	Ø63.5	1300 ft	700 ft	500 ft	200 ft
动力机 Power System		驱动功率 Engine（HP）	44 × 3	32 × 3	32 × 3	32 × 2
动力头 Drill Head		最高转速 Max Speed（rpm）	1500	1500	1380	1380
		最大扭矩 Max Torque（ft-lb）	1327	885	590	590
给进机构 Feed System		给进行程 Feed Stroke（ft）	6	6	6	6
		起拔力 Pull Force（lb）	20000	15500	11000	11000
		加压力 Thrust Force（lb）	11100	9920	8800	6600
泥浆泵 Mud Pump		泵量 Pump capacity（gal/min）	30	26	19	30
		泵压 Pump pressure （psi）	1740	1450	1160	870
主绞车 Hoist		拉力 Pull Force （lb）				4409
绳索绞车 Wireline Hoist		绳速 Speed（ft /min）	650	650	650	650
		拉力 Pull Force（lb）	1760	1540	1320	1100
尺寸 & 质量 Size & Weight		长 × 宽 Working Platform（ft）	14.76 × 14.76	14.76 × 14.76	13 × 13	11.48 × 11.48
		重量 Weight(lb)	4188	3747	3086	2685

1.1.6 XD—12R 多工艺钻机
1.1.6 Multi-Purpose drilling rig, Type XD-12R



XD—12R 多工艺钻机

产品简介

XD12R 多工艺钻机是一种新型、电控、高效、环保、多功能全液压履带式钻机，它可采用空气正、反循环钻采工艺施工，也可以采用绳索取心钻探工艺施工。空气反循环钻采施工，是由空气压缩机提供高压空气，使用双壁钻杆结合不同的钻具组合，岩（矿）样通过钻杆中心通道返回至岩样采集装置有效收集，避免了环境污染。也可以通过缩分装置收集排渣，用于地质勘探部门取样分析工作，主要用于地质勘探钻孔、钻凿水井、监测井、地源热泵空调孔及其它钻孔施工等。

Product Introduction

Multi-Purpose drilling rig is a new type of fully hydraulic crawler rig with electric control, high efficiency, environmental protection and multi-function. It can be constructed by air forward and reverse circulation drilling and production technology, as well as by wire-line coring drilling technology. Air reverse circulation drilling and mining construction is provided with high pressure air by air compressor. Using dual-wall drill pipe combined with different drilling tool combinations, rock (mine) samples are returned to the rock sample collection device through the central passage of drill pipe to effectively collect, thus avoiding environmental pollution. Slag can also be collected and discharged by shrinkage device, which can be used for sampling and analysis of geological exploration departments. It is the preferred equipment for geological exploration drilling, drilling water wells, monitoring wells, ground source heat pump air conditioning holes and other drilling construction.

主要技术参数
Main tech parameter

钻进能力 Depth capacity	
最大钻孔深度 Drilling Depth	NQ 1200m；114 双层钻杆 dual-wall drill pipe 300m
夹持器通孔直径 Drilling diameter	190mm
夹持钻杆直径 Drill pipe diameter	76—168mm
发 动 机 Power	
柴油机型号 Diesel	康明斯 Cummins QSB5.9-C210-30
	5.9L/6 缸 涡轮增压空空中冷 Turbocharged air cooling
功率 / 额定转速 Power/rated speed	154KW/2200rpm
顶驱 Top drive	
转速 Speed	1 档 1st gear：515-750 rpm 2 档 2nd gear：288.5-420.2 rpm 3 档 3rd gear：159.6-232.4 rpm 4 档 4th gear：71.5-104.2 rpm
扭矩 Torque	1 档 1st gear：1678.6-1152.7 Nm 2 档 2nd gear：2996.3-2057.6 Nm 3 档 3rd gear：5416.8-3719.8 Nm 4 档 4th gear：12085.9-8299.5 Nm
适用钻杆 Drill pipes	ϕ71、ϕ89、ϕ101.6、ϕ108、ϕ114
调速方式 Speed manipulation method	调速阀 + 变速马达 + 机械换挡调速方式 speed-regulating valve + speed-changing motor + mechanical shift
给进系统 Feeding System	
给进行程 Feed Stroke	3700mm
给进力 Feeding Force	100kN
起拔力 Lifting Force	200kN
桅杆摆角 Mast angle	90° -60°
钻杆长度 Length of drilling pipe	3 m
给进速度 Feeding speed	0-5.2 m/min
倒杆速度 Rechuck	25 m/min
液压系统 Hydraulic system	
主泵流量 / 压力 Main pump Flow t/pressure	200 L/min 30MPa
给进泵排量 / 压力 Feed pump Flow t/pressure	20 L/ min 21MPa
辅助泵流量 / 压力 Auxiliary Flow /Pressure	100 L/ min 21MPa
绳索绞车 Wireline winch	
第一层单绳拉力 Single rope pulling force	14 kN
容绳量 Cable capacity	1350 m （ϕ6 mm 钢丝绳 steel rope）
工具卷扬 Tool hoisting	
第一层单绳拉力 Single rope pulling force	11 kN
容绳量 Cable capacity	35m （ϕ8mm 钢丝绳 ,3 层） （ϕ8mm steel rope,3 layers）
履带行走 Crawler track	速度 speed：1.6/3.3 km/h
	爬坡能力 Climbing ability：0-20°
调平装置 Leveling device	4 条液压支腿 hydraulic legs
钻机外形尺寸 Dimension	7560 × 2200 × 2750mm
整机重量 Weight	15000kg
适用地层 application	松散层及基岩 loose strata and bedrock
钻进方式 Drilling method	空气反循环钻进 Air reverse circulation drilling
配冲击器 Equipped with impactor	中、高风压系列 medium and high wind pressure series

1.1.7 XT—6R 空气钻进多工艺钻机

1.1.7 Wireline coring and reverse circulation drilling rig, Type XT-6R

XT—6R 多工艺钻机

产品简介

XT 空气钻进－多工艺钻机以空气反循环取样、金刚石绳索取心两个工艺为主，实施多工艺钻进，并可实现多种工艺间的快速切换。

Product Introduction

Wireline coring and reverse circulation drilling rig is designed mainly for the purpose of reverse circulation sampling and diamond wireline coring. It allows drilling with various technologies as well as achieving rapid exchanging among the technologies.

主要技术参数
Main tech parameter

钻深能力 Drilling ability	绳索取心 Wireline coring	N 口径 N diameter	600 m
		H 口径 H diameter	350 m
	空气钻进 Reverse Circulation Drilling	Φ150 mm	300 m
		Φ273 mm	40 m
外形尺寸 External dimensions	6655mm × 2150mm × 2850mm		
发动机 Engine	动力型号 Model	康明斯 Cummins 4BTA3.9-C125	
	功率 / 转速 Power / rotational speed	93 kW/2200 rpm	
动力头 Power head	调速方式 Speed manipulation method	双马达 + 变量泵 + 比例手柄 Double motor + variable pump + ratio handle	
	高速挡 High gear	0 ～ 304.4 rpm	1568. 8Nm
		304.4 ～ 900 rpm	1568.8 ～ 511.6 Nm
	低速挡 Low gear	0 ～ 76.5 rpm	6048 Nm
	主轴通径 Main spindle speed	Φ93 mm	
	卡盘能力 Chucking ability	160 kN	
液压系统 Hydraulic system	主系统 Main system	28 MPa，LS 控制变量泵 LS control variable pump	
		132 L/min @ 2200rpm	
	辅助系统 Auxiliary system	22 MPa，恒压变量泵 constant pressure variable pump	
		55 L/min @ 2200rpm	
给进系统 Feeding system	给进行程 Feeding stroke	3600 mm	
	给进力 Feeding force	60 kN	
	提升力 Lifting force	120 kN	
	快进速度 Fast forward speed	41. 5m/min	
	慢进速度 Slow forward speed	17.3 m/min	
桅杆 Mast	桅杆摆角 Mast angle	90 ～ 45°	
	桅杆滑移 Mast sliding distance	800 mm	
	钻杆长度 Length of drilling pipe	3 m	
	立根能力 Stand ability	6 m	
	孔口夹持 Clamping force	160 kN	
主绞车 Main winch	单绳拉力 Single rope pulling force	54 kN	
	最快绳速 Maximum speed	42 m/min	
	容绳量 Rope capacity	50 m (Φ14mm)	
绳索绞车 Wireline winch	单绳拉力 Single rope pulling force	13.6 kN	
	最快绳速 Maximum speed	128 m/min	
	容绳量 Cable capacity	800 m (Φ5mm)	
履带装置 Crawler track	速度 Speed	1.7 ～ 3.28 km/h	
	爬坡能力 Gradeability	0 ～ 20°	
泥浆泵 Mud pump	流量 Swept volume	160 L/min	
	压力 Pressure	6 MPa	

1.1.8 RC 系列空气反循环钻机
1.1.8 Reverse circulation drilling rig, Type RC series

RC—5 反循环钻机

产品简介

RC 系列空气反循环钻机是一种高效、环保、多功能全液压履带式钻机，它采用气举反循环钻采技术，凿岩粉尘可通过集尘器有效收集，避免了环境污染。也可以通过旋风分离器收集排渣，可用于地质勘探部门取样分析工作。它是地质勘探钻孔、钻凿水井、监测井、地源热泵空调孔及其它深孔的首选设备。

Product Introduction

Reverse circulation drilling rig, Type RC series is a hydraulic crawler type drill rig which is high efficiency, environmentally friendly and has multi-functions. It uses gas lift reverse circulation drilling technology and the resulting dust from the drilling can be collected effectively via dust collector to avoid pollution to the environment. Slag can be collected using cyclone separator, which can be used for sampling and analysis work in geological exploration department. It is a preferred drilling device for geological exploration, water well, monitoring well, geothermal pump air conditioning hole and others deep hole drilling.

主要技术参数
Main tech parameter

参数 Parameters		RC-3	RC-4	RC-5
钻深能力 Drilling ability	孔径 Diameter 110mm	300m	400m	500m
	钻杆长度 Length of drill pipe	3m	3m	3m
发动机 Engine	动力型号 Power type	康明斯 4 缸 Cummins 4-cylinder	康明斯 4 缸 Cummins 4-cylinder	康明斯 6 缸 Cummins 6-cylinder
	功率 / 转速 Power/rotational speed	75kW/2200 rpm	93 kW/2200 rpm	132 kW/2200 rpm
动力头 Power head	高 速 档 High gear	0 ～ 130 rpm 0 ～ 4110 Nm	0 ～ 90 rpm 0 ～ 8500 Nm	0 ～ 75 rpm 0 ～ 8500 Nm
	低 速 档 Low gear	0 ～ 65 rpm 0 ～ 8220 Nm	0 ～ 180 rpm 0 ～ 4250 Nm	0 ～ 150 rpm /0 ～ 5500 Nm
给进系统 Feeding system	给进行程 Feeding stroke	4000 mm	4500 mm	5200 mm
	给 进 力 Feeding force	59 kN	100 kN	110 kN
	提 升 力 Lifting force	120 kN	200 kN	250 kN
	桅杆摆角 Mast angle	90 ～ 45°	90 ～ 45°	90 ～ 45°
绞 车 Winch	提 升 力 Lifting force	15kN	15kN	15kN
	容 绳 量 Capacity	25m（Φ8mm）	25m（Φ8mm）	25m（Φ8mm）
履带行走 Crawler track	速　度 Speed	3.5 km/h	3 km/h	2.5km/h
	爬坡能力 Gradeability	0 ～ 20°	0 ～ 20°	0 ～ 20°
整机重量 weight		约 about 7000kg	约 about 9000kg	约 about 12000kg

1.2 工程勘察钻机
1.2 engineering survey drill

1.2.1 DPP100 系列汽车钻机
1.2.1 Truck Mounted Drilling Rig

DPP100 汽车钻机

产品简介

DPP100 系列钻机是车载式钻探设备，根据需要，钻机安装在不同的汽车底盘上，适用于浅层钻探、地震爆破孔钻进、工程勘察及浅层水井钻进等。

Product Introduction

DPP100 Series Mobile Drills are truck-mounted drilling rigs. The drilling equipment installed on the chassis of selected trucks according to the need of customer. It is mainly used in sallow depth exploration, seismic exploration drilling, engineering geography exploration and sallow water well drilling.

主要技术参数
Main tech parameter

钻进深度 Drilling depth	50-100m
钻孔直径 Drilling diameter	Φ150 ～ 190mm
机下钻杆直径 Drilling pipe diameter	Φ42 ～ 50mm
主动钻杆规格 Kelly bar specifications	89X79mm
卷扬单绳最大提力 Winch maximum lifting force	12.5kN
给进油缸上顶力 Feed oil tank maximum pulling capacity	48kN
给进油缸给进力 Feed oil tank feeding capacity	36kN
给进油缸行程 Feeding stroke	450mm
整机重量 Overall weight	7.5t
外型尺寸 Dimensions (L × W × H)	6200 × 24700 × 9000 mm (工作状态 working status) 9000 × 2470 × 3300 mm (行走状态 moving status)

1.2.2 多功能地质调查钻机车

1.2.2 Pick-Up Multi-Purpose Geo-Investigation Drill Rig, Type GD-2C

GD—2C 型地质调查钻机

产品简介

GD—2C 型地质调查钻机是采用越野皮卡底盘、全功率取力、全液压驱动、具有顶驱钻进系统及标准贯入系统的新型钻机车，该钻机车满足多种工艺（全面钻进、取心钻进、直推钻进）；适用于工勘、环境和探矿领域。

Product Introduction

Pick-Up Multi-Purpose Geo-Investigation Drill Rig, Type GD-2C has a cross-country pickup chassis. The rig has a top drive drilling system and a standard penetration system. It can be driven at full power and fully hydraulically. The rig can meet the requirements of full drilling, core drilling, direct drilling, etc. A variety of processes; suitable for industrial exploration, environment and prospecting.

主要技术参数
Main tech parameter

钻进能力 Drilling Power	钻进深度 Drilling Depth (m)	200	
	钻杆规格 Drill Rod Size (mm)	ϕ50	
	钻孔倾角 Drilling Angle (°)	45 ～ 90	
移动能力 Movability (Pick-up)	车型 / 动力 Model/Power (kW)	丹东黄海 HHN2/ 柴油机 95Huanghai Brand HHN2/Diesel 95	
	驱动方式 Driven method	全功率断轴取力 PTO/ 四驱 Driven by pick-up PTO/4 × 4	
	最高时速 Max (km/h)	150	
动力头 Power Head	结构型式 Structure Form	马达直驱 Motor Direct-drive	
	转速范围 Rotation Range (r/min)	0 ～ 485	0 ～ 240
	最大扭矩 Max Torque (Nm)	650@480 RPM	1300@240RPM
高频头 Impaction Head	激振力 Impaction Power (kN)	47(单头 Single head)/94(双头 Dual head)	
	振动频率 Impaction Frequency (Hz)	217	
标贯头 SPT Device ASTM, D1586	标准贯入器 SPT	63.5kg/760mm(GB/T12746-2007)	
	加重贯入器 Heavy SPT	100kg/1500mm (GB/T12746-2007)	
给进系统 Feeding System	最大给进力 Max. Feeding Force (kN)	25	
	最大起拔力 Max Lifting Force (kN)	50	
	给进行程 Feeding Stroke (mm)	1850(1500mm Drill Rod)	
液压系统 Hydraulic System	合流流量 Combined Flow/Pressure	95L/min@21MPa	
	辅助流量 Auxiliary Flow /Pressure	47L/min@21MPa	
泥浆泵 Mud Pump	泵量 Displacement (L/min)	120	
	泵压 Pump Pressure (MPa)	2.5	
标贯卷扬 SPT Winch (kN)		7	
主卷扬 Main Winch (kN)		15	
外形尺寸 Transport Dimension(mm)		5600 × 1900 × 2700	
重量 Total Weight(kg)		3500	

1.2.3 HT 系列工程钻机
1.2.3 ENGINEERING DRILLING RIGS, TYPE HT SERIES

HT150 E 钻机

HT260 钻机

产品简介

HT 系列钻机是一种以工程地质钻探为主，并能进行地质岩心钻探，小型水井钻凿得新型浅孔钻机。适用于铁路、公路、桥梁、电站、隧道、工业及民用建筑、验桩等工程地质勘察，小型水井钻凿以及岩心钻探。根据地质条件的不同可选用金刚石、合金、钢砂及钢粒等钻进工艺，可钻2—9级的砂质粘土及基岩层等。

Product Introduction

Engineering drilling rigs, type HT series is a new-type of the shallow hole drill which is mainly used in engineering geological exploration and it can also be used to geological core drilling and small-scale water well drilling. The drill can be used in many fields such as railway, bridge, power plant, tunnel, both industry and civil building engineering geological exploration and geological core drilling or small-scale water well drilling.Different drilling technology can be selected such as diamond, alloy, steel sand or grain with regard to the different geological condition. The drilling condition can be 2-9 sand clay or bedding course.

主要技术参数
Main tech parameter

型号 Type	HT-150	HT-150A	HT-150B	HT-150G	HT-150E
钻进深度 Drilling depth （Φ42 rod）	150m	150m	150m	150m	150m
主动钻杆 Driving drill rod （六方 hexagonal ）	51*46mm	51*46mm	51*46mm	51*46mm	51*46mm
回转器速度 Swivel head speed (r/min)	58-598	83-854	18-532	99-1019	99-1019
立轴最大输出扭矩 Vertical shaft Max output-torque (Nm)	1275	1115	1250	725	750
立轴最大提升力 Vertical shaft Max lifting-force (KN)	30	30	30	30	30
立轴最大加压力 Vertical shaft Max pressure (KN)	23	23	23	23	23
回转器倾斜角度 Swivel head circumvolve angle	360º	360º	360º	360º	360º
单绳最大提升力 Single-rope lifting-force (KN)	12.5	12.5	12.5	11	11
单绳提升速度 Single-rope lifting-speed (m/s)	0.32-3.23	0.23-3.23	0.097-2.873	0.413-4.237	0.413-4.237
动力型号 Engine type(柴油机 Diesel engine)	S1100N	S1100N	Y132M-4-B3 (电机 /Motor)	S1100N	Zs1105N
质量 weight （Kg）	380	380	380	380	530(含泵 /including pump)

1.2.4 海洋工程勘察船载钻机
1.2.4 Marine engineering survey Drill RIG, TYPE HD series

HD—500 海洋工程勘察钻机

产品简介

HD—500 海洋工程勘察钻机专为海洋地质勘探而设计。适用于各种高效钻进技术，如金刚石取心，波浪补偿定向钻进，连续循环取心等。

Product Introduction

Marine engineering survey Drill Rig HD-500 is specially designed for marine geological exploration. It is suitable for various high efficiency drilling techniques such as diamond wireline coring, wave compensation directional drilling, continuous circulation coring and so on.

主要技术参数
Main tech parameter

钻孔深度 (水深 100m 时) Coring depth （water depth is 100m)	钻孔直径 Drilling Diameter mm	ϕ 91 ϕ 110 ϕ 127
	钻杆直径 Drill pipe diameter mm	ϕ 50 ϕ 73 ϕ 89
	钻孔深度 Approximate drilling depth	500m 400m 300m
主卷扬机 Main Hoist	提升能力（单绳第一层） Hoisting capacity (single wire rope first floor) kN	80
	单绳提升最大速度 Single wire rope hoisting maximum speed m/min	42
	钢绳规格 Wire rope specification	Φ20mm × 50 m
取心卷扬 Coring Hoist	提升能力（单绳第一速） Hoisting capacity (single wire rope first floor)	20kN
	单绳提升最大速度 Sigle wire rope hoisting maximum speed	40m/min
	钢绳规格 Wire rope specification	Φ 10 mm × 600 m
冲击卷扬 Impact hoist	提升能力（单绳第一速）	15kN
	单绳提升最大速度	90m/min
	钢绳规格 Wire rope specification	Φ 10 mm × 40 m
液压升沉补偿装置 Balance weight heave compensation system	升沉补偿能力 Heave compensation ability	25kN
	升沉补偿行程 Heave compensation stroke	3m
泥浆泵 Mud pump	BW-250A	
配重 Balance weight	800kg/ 含滑动筒（约 6-8m 长） 800kg/contain sliding drum(length is about 6-8m)	
钻塔 Drill tower	结构形式 Structural configuration	vertical
	垂直高度 height	9 m
	额定负载能力 Rated load	400 kN
动力头 Power head	型号 Type	4BTAA3.9-C125
	功率 Power	93 kW
	转速 Rotate speed	2200r/min

1.3 工程施工钻机
1.3 Construction work drill

1.3.1 GQ 系列工程钻机
1.3.1 Geological drill rig, type GQ series

GQ—15

GQ—60

产品简介

GQ 系列工程钻机采用立轴式岩心钻机的结构形式，结构紧凑体积小，施工过程稳定可靠。该钻机适用于高层建筑、堤坝、港口码头、桥梁工程等大口径基础桩孔的施工钻进。

Product Introduction

Geological drill rig, type GQ series are suitable for use in drilling for large diameter foundation pile projects such as high-rise buildings, dams, port terminals and bridge.

主要技术参数
Main tech parameter

技术参数 parameters		型号			
		GQ-10	GQ-15	GQ-20	GQ-60
钻孔直径 Drilling diameter		1000mm	1500	2000	600
钻孔深度 Drilling depth		50m	50m	60m	30m
动力头 Power head	输出转速 Rotational speed output	47.6 80 134 224 355 383	13 22 40 62 98	9.5、10.5、28.4、44.1、65.9	40 118 218 300
	额定扭矩 Rated maximum torque output	6kN	27.4kN	55kN	4.5kN
	动力头行程 Up down feeding stroke	600mm	1000mm	1000mm	700mm
卷扬机 Winch	提升力 Lifting ability kN	39.6kN	6 kN	58kN	30kN
	单绳提升最大速度 Maximum lifting speed of single rope	2.78m/min	4.17 m/min	0.78 m/min	0.35 m/min
	钢绳尺寸 Steel rope specification	ϕ 18.5mm × 60m	ϕ 19.5mm × 30m	ϕ 19.5mm × 30m	ϕ 12.5mm × 30m
钻机动力 Power		30kW	45kW	55kW	22kW

1.3.2 锚固钻机
1.3.2 Anchor drill rig, type MGY series

MGJ—50LZ

MGY—100BL

产品简介

MGY 型系列锚固钻机适用于滑坡、岩石坍塌等地质灾害的整治，也适用于水电、交通、能源、城建施工中的岩土锚杆、锚索、挡土墙加固等锚固工程以及微型桩、水文水井、高压旋喷孔的施工。

Product Introduction

Anchor drill rig, type MGY series is applicable in geological disaster remediation for landslides, rock collapsing, etc. Besides, it is suitable for anchoring projects such as rock anchoring, anchoring cable, retaining wall reinforcement in constructions of hydrology, transportation, energy source and urban constructions. In addition, it is used in constructions with micro piles, hydrological water well and high-pressure grouting

主要技术参数
Main tech parameter

<table>
<tr><td colspan="2">参数 parameter</td><td>MGY-80</td><td>MGY-90</td><td>MGY-90L</td><td colspan="2">MGY-100A</td><td>MGY-135L</td></tr>
<tr><td rowspan="2">钻进能力</td><td>孔径 Drilling diameter mm</td><td>Φ110 ～ 250</td><td>Φ110 ～ 250</td><td>Φ150 ～ 210</td><td colspan="2">Φ110 ～ 250</td><td>Φ150 ～ 250</td></tr>
<tr><td>深度 Drilling depth m</td><td>100 ～ 50</td><td>100 ～ 50</td><td>100 ～ 50</td><td colspan="2">120 ～ 60</td><td>140 ～ 100</td></tr>
<tr><td colspan="2" rowspan="3">动力头转速 Power head speed (r/min)</td><td rowspan="2">I 挡 1st gear
0 ～ 140</td><td rowspan="3">46</td><td rowspan="3">54 ～ 42</td><td rowspan="2">A 动力头
A Power head</td><td>I 挡 1st gear
0---100</td><td rowspan="3">10 ～ 140</td></tr>
<tr><td>II 档 2nd gear
0---30</td></tr>
<tr><td>II 档 2nd gear
0 ～ 50</td><td>B 动力头
B Power head</td><td>10</td></tr>
<tr><td colspan="2" rowspan="3">动力头扭矩 Power head torque (N.m)</td><td rowspan="2">I 挡 1400</td><td rowspan="3">3700</td><td rowspan="3">4620</td><td rowspan="2">A 动力头
A Power head</td><td>I 挡 1st gear
1600</td><td rowspan="3">6500</td></tr>
<tr><td>II 档 2nd gear
5000</td></tr>
<tr><td>II 档 3500</td><td>B 动力头
B Power head</td><td>6400</td></tr>
<tr><td colspan="2">最大提升力 lifting-force (kN)</td><td>50</td><td>44</td><td>回拖力
pull-back force 63</td><td colspan="2">57</td><td>70</td></tr>
<tr><td colspan="2">最大给进力
Feeding Force(kN)</td><td>34</td><td>63</td><td>44</td><td colspan="2">80</td><td>36</td></tr>
<tr><td colspan="2">最大行程
Up down feeding stroke (mm)</td><td>1800</td><td>1800</td><td>2200</td><td colspan="2">2000</td><td>3400</td></tr>
<tr><td colspan="2">钻进角度 Drilling Angle</td><td>-10° ～ 90°</td><td>0 ～ 360°</td><td>0 ～ 360°</td><td colspan="2">仰角 20° 俯角 100°</td><td>0 ～ 90°</td></tr>
<tr><td colspan="2">主机外形尺寸
dimensions(mm)</td><td>3270 × 1100 × 1425</td><td>2000 × 805 × 646</td><td>6520 × 2100 × 2305</td><td colspan="2"></td><td>5690 × 2160 × 2050</td></tr>
<tr><td colspan="2">主机重量 weight(kg)</td><td>1100</td><td>950</td><td>6600</td><td colspan="2">1800</td><td>6500</td></tr>
<tr><td colspan="2">动力机 (电动机)
Electric Motor</td><td>22 kW</td><td>22 kW</td><td>30 kW</td><td colspan="2">37 kW</td><td>55kW+18.5kW+2.2.kW</td></tr>
</table>

1.3.3 全液压冲击取心钻机
1.3.3 Hydraulic Exploration Core Drill Rig, Type GXY-100

GXY—100

产品简介

GXY—100 全液压冲击取心钻机是针对公路、铁路线路野外勘察工艺要求多样，移动频繁，需自备动力的工程特点，研制的新一代履带底盘安装的、柴油机驱动的多工艺钻机。除可满足一般的勘察施工外，同时也可广泛用于城建、水电、以及隧道等工程施工领域。

Product Introduction

Hydraulic Exploration Core Drill Rig, Type GXY-100 is a new generation of crawler track type and diesel-driven multi-purpose drill rig designed by us subject to the projects that required diversity, frequent moving and self-supplied power. For instance, field surveying process for highways and railways. Beside satisfying the needs of general construction survey, it can be widely used in various construction fields such as urban construction, hydropower power stations, tunnels and so on.

主要技术参数
Main tech parameter

基本参数 Basic parameters	钻孔深度 Drilling depth	100m			
	钻孔直径 Drilling diameter	150mm			
	钻杆直径 Diameter of drilling pipe	按钻孔选配 Depends on the choices on drilling hole			
动力头参数 Power head		1 挡 1st gear	2 挡 2nd gear	3 挡 3rd gear	4 挡 4th gear
	输出转速（正反）Rotational speed output (clockwise)	50r/min	100r/min	150r/min	300r/min
	额定输出最大扭矩 Rated maximum torque output	4500N.m			
	动力头给进行程 Up down feeding stroke of the power head	2500mm			
主卷扬 Winch	提升能力（单绳第一层） Lifting ability (Single rope 1st layer)	3000kN			
	单绳提升最大速度 Maximum lifting speed of single rope	6m/min			
	钢绳规格 Steel rope specification	13mm			
	钢绳容量 Capacity for the steel rope	20m			
动力参数 Power	柴油机型号 Diesel motor model	4105			
	功率 Power	37kW			
	使用转速 Rotational speed	1500r/min			

1.3.4 GK—3 型空气潜孔锤快速成孔钻机
1.3.4 GK-3 rapid-drill air DTH hammer drilling rig

GK—3 型空气潜孔锤快速成孔钻机

产品简介

GK—3 型空气潜孔锤快速成孔钻机是以空气潜孔锤钻进及潜孔锤跟管钻进为主要工艺，可广泛应用于水资源探采、地热能源开采、地质灾害防治和应急抢险等领域。

Product Introduction

GK - 3 rapid-drill air DTH hammer drilling rig with air DTH hammer drilling and drilling with casing DTH hammer as the main process, can be widely used in exploration of water resource, geothermal energy exploitation, the geological disaster prevention and emergency rescue, etc.

主要技术参数
Main tech parameter

钻深能力 Drilling Capacity	孔径 Aperture 150mm	300m
	跟管 Follow-Pipe 273mm	45m
发动机 Diesel engine	柴油机型号 model	康明斯 4BTA3.9-C1253.9L/4 缸 涡轮增压 水空中冷 Cummins4BTA3.9-C1253.9L/ 4cyl Turbocharged & Aftercooled
	功率 / 额定转速 Power/rated speed	93kw/2200rpm
动力头 Rotary Head 0-74rpm/0-8084Nm	高速档（转速 / 扭矩）High gear （Rotate-speed/Torque）	0-148rpm/0-4042Nm
	低速档（转速 / 扭矩）Low gear （Rotate-speed/Torque）	0-74rpm/0-8084Nm
	调速方式 Speed Control	液压比例手柄调速 Hydraulic proportioning system
给进系统 Feed system	给进行程 Feed Stroke	3600mm
	给进力 Pull Down Force	59KN
	提升力 Pull Back Force	122KN
	快升速度 Fast Feed	20.5m/min
	快进速度 Fast Feed	42.7m/min
	慢升速度 Feed Speed-Up	7.5m/min
	慢进速度 Feed Speed-Down	15.6m/min
	桅杆摆角 Mast Inclination	90-45°
	桅杆滑架 Rod Length	1100mm
液压系统 Hydraulic system	主泵流量 / 压力 Primary pump Flow/ Pressure	80+80 L/min @27MPa
	辅助泵流量 / 压力 Auxiliary pump Flow/ Pressure	46 L/min @24MPa
	容绳量 Rope capacity	25m（ϕ8mm 钢丝绳 wirerope）
绞车 Main winch	提升力 Line Pull	15KN
	容绳量 Rope capacity	25m（ϕ8mm 钢丝绳 wirerope）
	提升速度 Line Speed	30m/min（第一层 first layer） 33m/min（第二层 second layer）
履带行走 Crawler Unit	速度 Speed	1.73-3.35km/h
	爬坡能力 Climbing ability	0-20°
	调平装置 Levelling Device	4 条液压支腿 hydraulic leg
尺寸重量 Weights& Dimensions	整机重量 weight	约 6500kg Total about 6500kg
	外形尺寸（长 * 宽 * 高） Length*Width*Height	5730mm*2100mm*2545mm（运输状态 Transport dimensions）

1.3.5 反循环钻机
1.3.5 Reverse circulation rig

1.3.5.1 DKZ—10 型坑道钻机
1.3.5.1 DKZ-10 underground RC drill rig

DKZ—10 型坑道钻机

产品简介

DKZ—10 型坑道钻机其超轻型钻机具有可靠的性能，可轻松移动，以准确有效地工作。最大钻孔直径为 1.8m，适用于长隧道工程的基础施工，可应用于运营空间有限的地铁车站建设。

Product Introduction

DKZ-10 underground RC drill rig plays an important role in the construction of subway station, whose operation should be in limited space. Its super lightweight rig with reliable performance can be moved easily to work accurately and efficiently. The maximum drilling diameter is 1.8m, suitable for foundation construction of long tunnel project.

主要技术参数
Main tech parameter

钻孔深度 Drilling Depth	150 m
钻孔直径 Drilling Diameter	600-1800 mm
动力头转速 Power Head Rotational Speed	0-12 r/min
钻杆直径 Drill Rod Diameter	Φ299
钻杆长度 Drill Rod Length	1620 mm
动力头额定扭矩 Power Head Torque	≥45 kN.m
给进系统提升能力 Feed System Lifting Capability	≥200 kN
砂石泥浆泵流量 Displacement of Mud Pump	≥600 m^3/h
砂石泥浆泵吸程 Mud Pump Suction Distance	≥7 m
水环真空泵 Water Ring Vacuum Pump SK-9	极限压力 Ultimate Pressure 6700Pa
	抽速 540m^3/h
动力总和 Total Power	182 kW
运输尺寸 Transport Dimension	6150 × 2300 × 2750 mm
工作尺寸 Working Dimension	6150 × 2300 × 3940 mm
重量 Weight	约 16000kg about 16000 kg (Excluding tools)

1.3.5.2 KDY 系列全液压坑道钻机
1.3.5.2 Hydraulic Underground Rock Drill, Type KDY SERIES

KDY—30G 型全液压坑道钻机

产品简介

KDY 系列全液压坑道钻机主要针对水电站大型廊道固结灌浆施工成孔钻掘研发的多功能钻机。也可广泛的使用于公路、铁路隧道建设的支护、防渗、爆破；危岩、边坡地质灾害治理等领域的孔类钻掘。它主要适用于硬岩层中金刚石和复合片钻进，也可以使用潜孔锤钻进。

Product Introduction

KDY series hydraulic underground rock drill, with multiple functions, is mainly designed for the consolidation grouting construction and borehole drilling of large gallery in hydropower stations. It can also be widely used for the support, anti-seepage and blasting treatment of highway and railway tunnel constructions as well as unstable rock and slope geologic hazard treatments. It's mainly suitable for the drilling of hard rock stratum. The drilling methods are mainly diamond drilling and polycrystalline diamond compact bit drilling, and DTH hammer drilling can also be adopted.

主要技术参数
Main tech parameter

Basic Parameters 基本参数	钻孔深度 Drilling Depth	50m	
	钻孔直径 Borehole Diameter	56mm	
	钻杆直径 Drill Rod Diameter	按钻孔选配 Match with borehole	
动力头参数 Power Unit Parameters		1 挡 Gear 1	2 挡 Gear 2
	输出转速（正反） Output Rotation Speed (Forward and Reverse)	0~350r/min	0~700r/min
	额定输出最大扭矩 Rated Maximum Output Torque	430N·m	
	动力头上下给进行程 Vertical Feed Stroke	1300mm	
动力参数 Power Parameters	电动机型号 Motor Model	Y160L-4	
	功率 Power	15kW	
	使用转速 Rotation Speed	1460r/min	

1.3.5.3 ZDY—1550G 煤矿坑道钻机

1.3.5.3 Underground Hydraulic Drill Rig, Type ZDY-1550G

ZDY1550 坑道钻机

产品简介

ZDY1550G 全液压煤矿坑道钻机是针对小型隧道，特别是煤矿坑道的施工特点，研制的高速型液压钻机，可广泛用于煤矿、水电、铁路的瓦斯抽放、超前勘探、灌浆孔及管棚施工。

Product Introduction

ZDY1550G underground hydraulic drill rig is a high-speed hydraulic drilling rig. It takes the construction features of small tunnels, especially coal mine tunnels into consideration. This drilling rig can be widely used for the gas drainage, advanced exploration, grout hole construction and pipe shed construction of coal mines, hydropower stations and railways.

主要技术参数

Main tech parameter

基本参数 Basic Parameters	钻孔深度 Drilling Depth	200m			
	钻孔直径 Borehole Diameter	Φ75mm			
	钻杆直径 Drill Rod Diameter	按钻孔选配 Match with borehole (mm)			
动力头参数 Power Unit Parameters		1 挡 Gear 1	2 挡 Gear 2	3 挡 Gear 3	4 挡 Gear 4
	输出转速（正反）Output Rotation Speed (Forward and Reverse)	75r/min	150r/min	255r/min	510r/min
	额定输出最大扭矩 Rated Maximum Output Torque	1550N.m			
	动力头给进行程 Vertical Feed Stroke	850mm			
动力参数 Power Parameters	电动机型号 Motor Model	Y180M-4			
	功率 Power	18.5kW			
	使用转速 Rotation Speed	1470r/min			

1.4 水井地热油气钻机
1.4 Well/ geothermal oil and gas drilling rig

1.4.1 SPS 系列水井地热油气钻机
1.4.1 SPS Series Water Well Drills

SPS1000

SPS2600

产品简介

SPS 系列水井钻机为机械传动、机械操纵的散装转盘式钻机，主要用于深层地下水的开采、浅层地热、浅层石油、天然气以及盐井的开发。其主要特点有：钻井能力大；转速范围广；工艺适用性强，既适合空气潜孔锤钻进、牙轮钻进，又适于一般钻井方法；配备机械或液压猫头；柴油机与电动机两种动力任选；配备水刹车系统。

Product Introduction

SPS Series Water Well Drills are mechanical driven and controlled turntable drills with parts and items in bulk. It is mainly used to exploit deep ground water, shallow geothermal energy, surface oil, natural gas and salt. It has following characters: large capacity; wide rotate speed range; strong technical applicability, being adapted to air pressed hammer drilling and tooth-like wheel drilling, as well as conventional method; being matched with mechanical and hydraulic framework; two drive forms, diesel and electric motor for customers choice; being equipped with hydraulic brake system.

主要技术参数
Main tech parameter

型号 Model	SPS-600	SPS-1000	SPS-2000	SPS-2600
钻进能力（m) Depth capacity	600	1000 ～ 1300	1600 ～ 2000	2200 ～ 2600
钻杆规格 (mm) Rod	ϕ73， ϕ89	ϕ73， ϕ89, ϕ127	ϕ73， ϕ89, ϕ127	ϕ73， ϕ89, ϕ127
转盘 Turntable				
通径 (mm) Open Dias	ϕ605	ϕ435	ϕ520、 ϕ670	ϕ445
转速 (rpm) Rotate Speed	42,75,134	48,69,110,190	25,37.3,55.5,87.3， 130.2,193.7	43,63,93,156
额定扭矩 (kN.m) Rating. Torque		18、12.5、8、4.5	25	30,22,16,9
卷扬机 Hoist				
单绳提升能力 (kN) Hoist Capacity (Single Line)	35	80	85	105
钢丝绳直径 (mm) Cable Diameter	ϕ20 ～ 21.5	6 x 19(mm)24	6 x 19(mm)24	24.5
大钩额定提升能力 (kN) Big Hook Capacity	210	800	680	1050
大钩提升速度 (m/s) Hoisting Speed of Hook	0.15 ～ 0.47	0.11、0.24、0.41	0.105、0.155、0.23	0.11、0.24、0.41
动力机 Power unit				
电动机 Electric Motor	Y225S4; 37kW; 1500rpm	Y315S—4： 110kw/1500rpm	Y315S4; 110kW; 1500rpm	2xY280M—4:2 x90 KW/1500r/min
柴油机 Diesel Engine		6135AN—1:150HP /1500rpm	WD615T1; 120kW; 1500rpm	2x6135AN—2:2 x150HP/1500r/min
重量（kg)(不含动力机） Weight	5500	7000	7500	9960

1.4.2 RPS3200 水井钻机
1.4.2 Well Drilling Rig, Type RPS3200

RPS3200

产品简介

RPS3200 型钻机是散装平铺式，机械传动，气控操作的水文水井钻机，主要用于3000米以上深层地热井的钻凿，中、浅层石油、天然气的开采，深层地质钻孔。

Product Introduction

RPS3200 well drilling rig, adopting bulk and tiled structure, mechanical drive and pneumatic control operation, is mainly used for the drilling of deep geothermal well over 3000 meters, the exploitation of middle and shallow oil and natural gas, and also be used for deep geological drilling.

主要技术参数
Main tech parameter

参数 Parameters (m)	钻孔深度 Drilling Depth	2200-3200m
	使用钻杆 Drill Rod	ϕ 89 ϕ 127mm
	转盘型号 Rotary Table	ZPI75
	额定静负荷 Rated Static Load	272t
	最高转速 Maximum Rotation Speed	350r/min
	开口直径 Borehole Diameter	ϕ 445mm
	传动比 Transmission Ratio	3.75
		转速正反 Forward and Reverse Rotation Speed 33, 58, 75, 132r/min
	转盘额定最大扭矩 Rated Maximum Torque of Rotary Table	40kN·m
	卷扬机型式 Winch Type	气胎离合器提升，双抱闸刹车 Pneumatic clutch lifting, double band-type brake stopping
	单绳额定提升力 (双动力机)(二层) Rated Single Rope Hoisting Capacity (Double Engines) (Second Floor)	130kN
	钢丝绳直径 Rope Diameter	ϕ 26mm
	容绳量 (六层时)Rope Capacity (Sixth Floor)	350m
单绳提升力与提升速度 (双动力机)(二层) Single Rope Hoisting Capacity and Hoisting Speed (Double Engines) (Second Floor)	档位 Gear	Ⅰ Ⅱ Ⅲ Ⅳ
	卷筒转速 Reel Rotation Speed	52.8 92.8 120 211r/min
	单绳提升力 Single Rope Hoisting Capacity	130 74 57 33kN
	单绳提升速度 Single Rope Hoisting Speed	1.377 2.42 3.13 5.51m/s
	大钩型式 Hook	5 × 6 滑轮组 Pulley Block
大钩提升速度与最大提升能力 (双动力机) (二层) Hook Hoisting Speed and Hoisting Capacity (Double Engines) (Second Floor)	档位 Gear	Ⅰ Ⅱ Ⅲ Ⅳ
	提升能力 Hoisting Capacity	1300KN 747 KN 573 KN 326 KN
	提升速度 Hoisting Speed	0.138 m/s 0.24 m/s 0.313m/s 0.55m/s
	猫头轮型式 Cathead Wheel	双猫头 Double Catheads
	猫头轮直径 Cathead Wheel Diameter	ϕ 300mm
	转 速 Rotation Speed	70r/min 123r/min 159r/min 280r/min
	动力机型式 Engine	两台 Y315S-4 电动机并车 (可根据需要柴油机动力装置) Two Y315S-4 electric motors, Twin-engine Incorporation
	功 率 Power	单机 Single Engine 110kW/1480r/min
		双机并车 Twin-engine Incorporation 220kW/1480r/min
	主机重量 Main Engine Weight	19t
	整机重量 Overall unit Weight	22.5t
	外型尺寸 Dimension	8410mm × 3075mm × 1880mm

1.4.3 ZP 系列电传动地热钻机
1.4.3 Hydrogeological Drilling Rig, Type ZP series

ZP—30DB

产品简介

ZP 系列转盘式电传动深孔钻机可钻深 3000 ～ 4000m，大口径全面钻进，广泛应用于地热钻采、浅层石油、煤层气、页岩气参数井等领域。

Product Introduction

Hydrogeological Drilling Rig, Type ZP series, which adopts rotary table and variable frequency electric drive, is mainly used for the construction of geothermal well, oil and gas stratigraphic test well and hot dry rock well in depth of 3,000~4,000 meters.

主要技术参数
Main tech parameter

parameters	ZP30DB	ZP40DB
名义钻深（API 89 钻杆） Drilling depth (API 89drill pipe)	3000m	4000m
最大钩载 Maximum hook load	1350kN	170KN
钻柱重量 Weight of the drill string	750kN	960KN
提升绳系 Wireline lifting	4×5	5×6
钢绳直径 Diameter of steel rope	ϕ26mm	ϕ29mm
升降系统 Elevator system	300kW	450kW
快绳拉力 Pulling force	12kN	15kN
回转系统 Rotational system	ZP175(444.5mm)	ZP205(520.8mm)
泥 浆 泵 Mud pump	3NB350DB	2x3NB500DB
平台井架 Platform derrick	常规 K 塔；液压直升，井架可选 Conventional K tower, hydraulic lift, optional derrick	
平台高度 Platform height	2m、2.8m、4.5m、5.5m、7.5m 任意选配 optional	
立管压力 Riser pressure	4″ ×35MPa	
气罐容量 Gas tank capacity	≥1.5m3	
工作压力 Working pressure	1MPa	

1.4.4 ZJ–30／40DB 系列电传动石油钻机
1.4.4 ZJ-30/40DB Series Electric Transmission Oil Rig

ZJ30／40DB 系列电传动石油钻机

产品简介

ZJ30／1700DB 交流变频钻机，额定钻井深度 3000 米（41／2″ 钻杆），适合于 3000 米以内油、气、水井钻探作业。ZJ40／2250DB 交流变频钻机，额定钻井深度 3000 米（41／2″ 钻杆），适合于 4000 米以内油、气、水井钻探作业。

Product Introduction

With 41/2"drill pipe and ZJ30/1700DB AC frequency conversion drilling rig, it is suitable for oil, gas and water wells drilling within 3000 meters, and ZJ40/2250DB AC is suitable for oil, gas and water well drilling operations within 4000 meters.

主要技术参数
Main tech parameter

产品型号 specification	ZJ30/1700DB	ZJ40/225DB
名义钻探深度 Drilling depth m	3000（4 1/2″ 钻杆）	4000(4 1/2″ 钻杆）
	2500（5″ 钻杆）	3200（5″ 钻杆）
最大钩载 Maximum hook load kN	1700	2250
游车轮系 Traveling block	5×6	5×6
钢丝绳直 Diameter of steel rope mm	Φ32（1 1/4″ ）	Φ32（1 1/4″ ）
水龙头通径 I.D. of swivel stem mm	75	75
绞车功率 Power of draw work kW	500	2×800
绞车驱动方式 Driving Mode of draw work	交流调速电机驱动 AC speed- regulation of electric drive	交流调速电机驱动 AC speed- regulation of electric drive
大钩起升速度 m/s	0 ～ 1.3m/s	0 ～ 1.3m/s
转盘开口直径 Dia. Of opening mm	520.7（20 1/2″ ）	520.7（20 1/2″ ）
转盘功率 Power of rotary tables kW	300	400
转盘驱动方式 Driving Mode of rotary tables	交流调速电机驱动 AC speed- regulation of electric drive	交流调速电机驱动 AC speed- regulation of electric drive
泥浆泵 Mud pump	2×F-1000	2×F-1300
机泵驱动方式 Driving Mode of Pump	交流调速电机驱动 AC speed- regulation of electric drive	交流调速电机驱动 AC speed- regulation of electric drive
井架结构型式 Derrick	K 型直立式 Vertical K-type derrick	K 型直立式 Vertical K-type derrick
最大负荷 Maximum load kN	1700	2250
有效高度 height of mast m	41	43
钻台高度 Height of drill floor	7.5	7.5/9
起升方式 Raising & lowering mast	整体安装、机械起升 Integral Installation and Mechanical Lifting	整体安装、机械起升 Integral Installation and Mechanical Lifting
最大抗风能力 wind load capacity km/h	130（无载荷，无立根 no hook load, no stand ）	130（无载荷，无立根 no hook load, no stand）
相对湿度 Relative humidity	98%	98%
温度 Temperature ℃	-40~45	-40~45
主机质量 Weight t	167	

1.5 钻探配套设备
1.5 Associated Drilling Equipment & Accessories

1.5.1 工程地质钻探用泥浆泵
1.5.1 Mud Pumps for Engineering and Geologic exploration Associated Drilling Equipment & Accessories

BW—250

BW—600/10

BW—1500/12

BW—2500/16

产品简介

BW 系列泥浆泵为卧式活塞泵，具有单缸、双缸、三缸、单作用与双作用等几种结构形式，适用于地质钻进过程中输送泥浆或水等冲洗液，是岩心钻进、工程勘察、水文水井钻进与油气井钻进的主要辅助设备之一，也可用于石油、化工、食品加工等领域的多种介质输送。

Product Introduction

BW Series Pumps feature a structure of horizontal piston pump with single, double and triplex-piston, single and double-acting respectively. They are mainly used for conveying mud and water in the drilling process and play an important role in the drilling of core, engineering exploration, hydrology and water well, oil and gas well. They can also be used for conveying different liquids in petroleum, chemistry and food processing industries.

主要技术参数
Main tech parameter

型号 Model	BW-150	BW-250		BW—320		BW—300/12
型式 Type	三缸单作用活塞泵 Single-Acting Triplex-Piston			三缸单作用柱塞泵 Single-Acting Triplex-Piston		三缸单作用活塞泵 Single-Acting Triplex-Piston
行程 (mm) Stroke	70	100		110		110
缸径 (mm) Liner Dia	70	80	65	80	60	75
泵速 (min-1) Pump Speed	222 130 86 57 183 107 71 47	200 116 72 42		214 153 109 78	214 153 109 78	206 151 112 82
流量 (l/min) Displacement	150 90 58 38 125 72 47 32	250 145 90 52	166 96 60 35	320 230 165 118	180 130 92 66	300 220 160 120
输出压力 (Mpa) Discharge Pressure	1.8 3.2 4.8 7.0 2 .3 4.0 6.0 7.0	2.5 4.5 6.0 6.0	4.0 6.0 7.0 7.0	4..0 5.0 6.0 8.0	6.0 8.0 9.0 10.0	6.0 8.0 10.0 12.0
驱动功率 （kW) Input Power	7.5	15		30		45
吸水管直径 (mm) Suction Pipe Dia	50	76		75		76
排水管直径 (mm) Discharge Pipe Dia	32	51		50		51
重量 (kg)	516 (电动机 } With Motor	500		1000 (柴油机) With Diesel		750
适合钻进深度 (m) Depth Capacity	金刚石钻进 <1500 Diamond Core Drilling<1500	金刚石钻进 <1500, 硬质合金钻进 <1000 Diamond Core Drilling <1500 Conventional Core Drilling <1000		金刚石钻进 <3000. 硬质合金钻进 <2000 Diamond Core Drilling <3000 Conventional Core Drilling <2000		金刚石钻进 <1500, 硬质合金钻进 <1000, 与非开挖钻机配套使用。 Diamond Core Drilling<1500, Conventional Core Drilling <1000 Directional Drilling
外型尺寸 Dimensions (mm)	1840x795x995	1100x995x650		1280x855x750		2013x940x1130

型号 Model		BW-150/1.5	BW-180/2	BW-160H	HBW-150/10	BWF400/10
型式 Type		双缸单作用活塞泵 Single-Acting Duplex-Piston		单缸双作用 活塞泵 Duplex-Acting Single-Piston	三缸单作用 柱塞泵 Single-Acting Triplex-Piston	三缸单作用 活塞泵 Single-Acting Triplex-Piston
行程 (mm) Stroke		80		90	100	110
缸径 (mm) Liner Dia		80		95	60	85
泵速 （min-1) Pump Speed		207， 145	249,175	147	189 126 94 62	49 79 137 220
流量 (1/min) Displacement		150,105	180， 125	160	152 101 75 50	85 140 242 400
输出压力 (Mpa) Discharge Pressure		1.0,1-5	1.5,2.0	1.3	3.3 5.0 6.7 10.0	10.0 6.2 3.6 2.2
驱动功率 （kw) Input Power		4	7.5	5.15	11	22
吸水管直径 (mm) Suction Pipe Dia		50		51	51	92
排水管直径 （mm) Discharge Pipe Dia		32		38	32	38
质量 (kg) Mass	泵 Pump	150		130		1080
	泵组 Group	220 (柴油机 } With Diesel		280 (柴油机 } With Diesel		
适合钻进深度 (m) Depth Capacity		<100	<150	<150	非开挖钻进 Directional Drilling	非开挖钻进 Directional Drilling
外型尺寸 (mm) Dimensions		1320x540x680	1370x540x680			1220x1100x1300

型号 Model	BW-600/10	BW-1500/12	BW-2500/16
型式 Type	卧式三缸单作用活塞泵 horizontal type triple-cylinder and single-acting piston reciprocating pump		卧式五缸单作用往复式塞泵 horizontal type five-cylinder and single-acting piston reciprocating pump
行程 (mm) Stroke	110	150	150
缸径 (mm) Liner Dia	100	150	150
泵速 (min-1) Pump Speed	232 162 109 76	195 145 107 72 45 27	189 147 115 89 70 55 42 33
流量 d/min) Displacement	600 415 280 195	1500 1100 820 550 340 200	2500 1950 1520 1180 925 720 560 430
输出压力 (MPa) Discharge Pressure	5 10	5.8 7.5 10 12 12 12	4.8 6 8 10.2 13 16 16 16
驱动功率（kW) Input Power	55	179	264
吸水管直径 (mm) Suction Pipe Dia	89	152	203
排水管直径 (mm) Discharge Pipe Dia	51	76	100

1.5.2 砂浆泵
1.5.2 Grouting Pump

BWS—200/10

产品简介

砂浆泵主要用于水库、河道的土坝、土石坝体坝基的裂缝、松散层、溶洞进行压力灌浆以及锚杆管住水泥砂浆以达到固结、防渗漏的目的，也可以用于其它水利设施建设过程中输送石灰浆、水泥浆、粘土砂浆等固液相混合浆液。

Product Introduction

The mortar pump is mainly used for the pressure grouting of the earth dam, the earth dam foundation of the reservoir, the earth and rock dam foundation, the loose layer and the karst cave, and the anchors pipe cement mortar to achieve the purpose of consolidation and seepage prevention. It can also be used in the construction process of other water conservancy facilities to transport lime slurry, cement slurry, clay mortar and other solid liquid mixture slurry.

主要技术参数
Main tech parameter

型号 Model	HBW50/1.5	BWH100/5	BWS-200/10
型式 Type	卧式单缸往复单作用柱塞泵 Horizontal single cylinder and single acting piston reciprocating pump		卧式三缸往复单作用柱塞泵 horizontal type triple-cylinder and single-acting piston reciprocating pump
柱塞行程 Stroke	90	120	100mm
柱塞直径 Liner dia	Φ85	Φ110	Φ65
泵速 Pump speed (min)	115	108	201,151,101,77
流量 (L/min)	50	100	200,150,100,75
额定排出压力 (MPa)	1.5	5.0	5.0,6.5,10.0,10.0
排出管直径 (mm)	51	40	51
进浆管直径 (mm)	75	75	76
水平输送距离 (m)	≤150	250	
垂直输送距离 (m)	≤40	120	
输送浆液固相粒度 (mm)	≤Φ3	＜ Φ7	一般粒径 <Φ3，最大粒径 <Φ7 (含量少于 5%) Content is less than 5%
功率 (Kw)	5.5	15	22
质量 (Kg)	180	700	940（含电机 /Including electromotor）

1.5.3 高压泵
1.5.3 Grouting Pump

BGP100 高压注浆泵

产品简介

高压泵是高压喷射注浆施工的关键设备，主要适用于地基处理的高压旋喷注浆、帷幕灌浆、挡土围堰、矿山堵漏、井涌护壁、边坡锚固等领域，既可泵送清水，也可泵送高粘度、大比重水泥浆液。衡探高压泵采用电磁调速电机，可以实现流量无级调节，从而保证工程质量，节约能源。

Product Introduction

High pressure pump is the key equipment of high pressure jet grouting construction, which is mainly suitable for high pressure jet grouting, curtain grouting, retaining cofferdam, mine plugging, well surge wall, slope anchorage and so on. It can pump water and pump high viscosity and large proportion cement slurry. The high speed pump of the weighing probe adopts the electromagnetic speed regulating motor, which can realize the stepless regulation of the flow, thereby ensuring the engineering quality and saving energy.

主要技术参数
Main tech parameter

型式 type	卧式三缸往复单作用柱塞泵 Horizontal, triplex, reciprocating, single acting plunger pump					
型号 Model	BGP90/50-90	BGP70/45-75	BGP80/40-75	BGP100/30-75	BGP80/30-55	BGP90/35-75
最大流量 Max displacement（1/min）	90	70	80	100	80	90
最大压力 Max pressure	50	45	40	30	30	35
进水管径（mm） Suction pipe dia	51	51	51	51	51	51
排水管径（mm） discharge pipe dia	16	16	16	19	19	19
功率（kW） Motor power	90	75	75	75	55	75
重量（KG） Mass	3000	3000	3000	3000	3000	3000
外形尺寸（mm） Dimensions	2570 × 1750 × 1680	2570 × 1750 × 1680	2570 × 1750 × 1680	2570 × 1750 × 1680	2570 × 1750 × 1680	2570 × 1750 × 1680

1.5.4 营房车
1.5.4 trailers

营房车

产品简介

营房车的种类有二人间，四人间、六人间、八人间、十二人间、会议室、厨房、公厕、洗浴、餐厅、修理间等种类齐全， 适合于丘陵、沙漠和亚热带地区等各类复杂地形和严酷的气候条件下使用。

Product Introduction

The types of trailers are two-person, four-person, six-person, eight-person, twelve-person, conference rooms, kitchens, public toilets, baths, restaurants, repair rooms, etc. They are suitable for all kinds of complex terrain and harsh weather conditions such as hills, deserts and subtropics.

主要技术参数
Main tech parameter

整车尺寸 Vehicle size（mm)	9960*2950*3780
最大设计质量 design quality	营房车 trailers 6680kg
	炊事住宿 cooking and accommodation car 6880kg
厢体热传导系数 Heat transfer coefficient（w/m^2.k)	0.33
防火等级 Fire-proof level	氧指数 Oxygen Index26
厢体内部尺寸 interior size（mm)	7504*2804*2350
车轴 / 数量 Axle number	13 吨桥 ton/2
轮胎规格 / 数量 Tire specifications	9.00-20/8
最高车速 Maximum speed	40km/h

1.5.5 固控设备
1.5.5 Drilling Fluid Solid Control Equipment

固控设备

产品简介

固控设备是一套高效节能的钻井液净化处理系统，可以根据不同的处理量（每小时方量）、处理程度（清洁度、固相含水率）进行定制。处理后出水清澈透明，看不出有悬浮物存在，固体物去除率＞ 99.7%，泥饼含水率＜ 30%。

Product Introduction

Drilling fluid solid control equipment is a set of purification treatment system of drilling fluid which is highly efficient and energy saving. It can be customized according to different treatment volumes and treatment degrees (cleanliness, water content in solid). The output water after treatment looks clear and transparent and no suspended substances can be observed. The removal rate of solid substances is more than 99.7% and the final water content of mud cake is less than 30%.

主要技术参数
Main tech parameter

参数 parameter:	NC-40	NC-100
处理量（m3/h）Treatment Volume(m3/h)	40	100
进料浓度 Feed Concentration	15%	15%
处理级数 Treatment Stage	3 ～ 4 级 stages	
输出状态 Output State	干料可堆放，含水率 ≤40%；流体为目测清水 Dry materials can be stacked and water content is no more than 40%; Fluid is visual clear water.	
功率 Power（kW）	120kW	180kW
控制系统 Control System	变频控制 Variable Frequency Control	

1.5.6 井口设备
1.5.6 RIG TOOLS

1.5.6.1 动力钳
1.5.6.1 Hydraulic power tongs

SQ130/10 液压动力钳

产品简介

SQ 系列地质钻探用液压动力钳是在起下钻作业时提供钻杆拧卸的专用液压钳。适配地勘单位在用的所有岩心钻探设备（立轴式、全液压、顶驱式岩心钻机）、全液压钻机；适用各种规格的地质钻杆、绳索钻杆、水井钻杆和套管拧卸。

Product Introduction

Hydraulic power tongs, Type series are specially used to unscrew drill rods during drilling operations of lifting and lowering loads. They can match with all kinds of core drilling equipment including vertical shaft, full hydraulic and top-drive core drilling rigs and are suitable for the screwing and unscrewing of various specifications of geological drill rods, wire line drill rods, water well drill rods and casings.

主要技术参数
Main tech parameter

参数 parameter:	SQ114/8	SQ130/10	SQ140/12
管柱范围 Rod Size	Φ50 ～ Φ114mm	Φ50 ～ Φ130mm	Φ50 ～ Φ140mm
低档扭矩 Low-gear Torque	8 kN·m	10 kN·m	12 kN·m
高档转速 High-gear Speed	85 r/min	85 r/min	72 r/min
钳头开口 Tong Opening Diameter	120 mm	135mm	145mm
重量 Weight	230 kg	270 kg	450kg

1.5.6.2 拧管机
1.5.6.2 Drill Pipe Screwing and Unscrewing Tools

NY–100 拧管机

产品简介

液压拧管机用于拧松钻具，可降低钻井工人劳动强度，提高钻井效率。其中 NY–100 型拧管机适用于 600 米以内各种液压钻机。NY–800 型主要用于 600 ～ 2000m 钻探倒杆作业中拧卸钻杆。

Product Introduction

Hydraulic pipe screwing and unscrewing machine is used to screw and unscrew drilling tools, which can reduce the labor intensity of drilling workers and increase drilling efficiency. NY-100 pipe twisting machine is suitable for various hydraulic drilling rigs within 600m. NY-800 pipe twisting machine is used to unscrew drill rod during rod retraction works of 600m~2000m drilling.

主要技术参数
Main tech parameter

基本参数 Basic parameters	NY-100
拧管范围（mm）Pipe Screwing Diameter (mm)	Φ42~Φ50
最大拧力 (kN)Maximum Screwing Force (kN)	100
拧管速度 (r /min)Screwing Speed (r/min)	100

1.5.6.3 拔管机
1.5.6.3 Hydraulic Casing Puller

BG—60 拔管机

产品简介

BG—60A 拔管机是将孔内套管拔出的专用设备。适用于灌注桩施工、旋喷钻进施工、钻小孔径而得到大直径砼桩等，采用跟管钻进工艺施工的工程。

Product Introduction

BG-60A hydraulic casing puller is special equipment for pulling out casings inside the holes. It's suitable for cast-in-place pile construction, jet grouting drilling, small diameter drilling into large diameter concrete piles and casing drilling constructions.

主要技术参数
Main tech parameter

拔管范围（mm）Casing Pulling Diameter (mm)	Φ42~Φ108~Φ200
最大起拔力 (kN) Maximum Pulling Force (kN)	600
油缸行程 (mm) Oil Cylinder Piston Stroke (mm)	500/300

2 钻采工具
2 Drilling TOOLS

2.1 石油钻采工具
2.1 Oil drilling tools

2.1.1 抽油杆及配套短节、接箍等
2.1.1 Steel Sucker Rod AND Pony Rod, Couplings

抽油杆头

接箍

抽油杆短节

产品简介

抽油杆采用优质合金钢制成，具有强度适中、塑性大、耐腐蚀性好等特点，并有配套短节、光杆、加重杆、接箍等。

Product Introduction

The sucker rods are made of high-quality alloy steel, with moderate strength, great plasticity and good corrosion resistance etc. Other products here also include pony rod, polished rod, sinker bars and couplings.

主要技术参数
Main tech parameter

级别 Grade	C	K	D*	KD	HL	HY	KH
材质 Material	25CrMnVA AISI 1526	20Ni2MoA AISI 4621	20CrMoA AISI 4119	25NiMnCrMoA AISI 3130	30CrMoA AISI 4130	30CrMoA AISI 4130	30CrNi2MoA AISI 4330
机械性能 Mechanical Properties							
抗拉强度 Rm（MPa）	621~793	621~793	793~965	793~965	965~1195	965~1195	965~1195
屈服强度 Rel（MPa）	≥414	≥414	≥586	≥586	≥795	≥795	≥620
延伸率 A（%）	≥12	≥12	≥10	≥10	≥10	--	≥10
断面收缩率 Z（%）	≥55	≥55	≥50	≥50	≥50	--	≥50
硬度 HRC	16~23	16~23	23~32	23~32	32~36	表面：≥42	32~36
颜色标记 Color	白 White	浅蓝 Light blue	黄 Yellow	桔黄 Orange	红 Red	绿 Green	深蓝 Deep blue

一般尺寸和公差 General dimensions and tolerances					
规格 Specifications（in）	5/8	3/4	7/8	1	1 1/8
杆体直径 Rod diameter DR（mm）	15.88 (+0.18,-0.36)	19.05 (+0.20,-0.41)	22.23 (+0.20,-0.41)	25.40 (+0.23,-0.46)	28.58 (+0.25,-0.51)
螺纹公称直径 Nominal thread diameter(in)	15/16	1 1/16	1 3/16	1 3/8	1 9/16
外螺纹台肩直径 External thread shoulder diameter DF(mm)	31.75 (+0.13,-0.25)	38.10 (+0.13,-0.25)	41.28 (+0.13,-0.25)	50.80 (+0.13,-0.25)	57.15 (+0.38,-0.38)
扳手方宽度 Width of wrench square (mm)	22.2±0.79	25.4±0.79	25.4±0.79 28.5±0.79 (HY 级)	33.3±0.79	38.1±0.79
扳手方最小长度 Minimum length of wrench square (mm)	31.75	31.75	31.75	38.10	41.28
凸缘直径 Flange diameter Du(mm)	30.96 (+0.13,-3.18)	35.72 (+0.13,-3.18)	38.10 (+0.13,-3.18)	48.42 (+0.13,-4.76)	55.56 (+0.13,-4.76)
A(±3.175)	47.63	57.15	66.68	76.20	85.73
C (+1.59，-0.40)	3.18	3.18	4.76	4.76	4.76
应力槽直径 D1(+0.127，-0.127)	20.07	23.24	26.42	31.17	35.92
应力槽长度 L_R(+0.79， 0)	13.11	15.09	17.07	20.24	22.23
外螺纹长度 Ls（+1.59,0）	31.75	36.51	41.28	47.63	53.98
抽油杆长度 L_K ±50（mm）	API：9042 7518 国内：9900 7900				
短杆长度 L_Y ±50（mm）	API：3556 2946 2337 1727 1118 508 国内：3900 3400 2900 2400 1900 1400 900				

2.1.2 扶正抽油杆
2.1.2 Centralized sucker rod

扶正抽油杆及扶正器

产品简介

扶正抽油杆也被成为导向抽油杆，与抽油杆的区别是：在抽油杆杆体上注塑或安装了多个尼龙扶正块，这些尼龙扶正块有助于保持杆体在油管中央，避免抽油杆或接箍和油管之间产生磨损而导致油管、抽油杆和接箍的损坏，被广泛用于倾斜、弯曲和定向的油井中。扶正抽油杆中抽油杆的螺纹和性能与常规抽油杆完全相同，根据需要可以制造成 C、K、D、KD、HL、HY、KH 等级别。

Product Introduction

Centralized sucker rod, also kNown as orientating sucker rod, is a kind of special rod. The only structural difference between centralized sucker rod and ordinary one is that there are multiple nylon rod guides molded or installed on the centralized sucker rod. In operation, those nylon rod guides can help keep the rod in the middle of the oil pipe, avoiding abrasion between sucker rod or coupling and oil pipe, which may lead to damage in the oil pipe, sucker rod or coupling. Therefore, centralized sucker rods are widely used in oblique, bended or oriented oil well. The threads and properties of main rod of the centralized sucker rod are the same with ordinary sucker rods. Per request, Grade C, K, D, KD, HL, HY, KH centralized sucker rod can be manufactured.

主要技术参数
Main tech parameter

规格 Size	扶正块类型 Type of Centralizer	扶正块外径 Centralizer OD（mm）	扶正块长度 Centralizer Length（mm）	适应油管内径 Tubing IDin（mm）	工作温度 Service Temperature ℃
FZ46 × 15/16	注塑型、卡箍式 molded centralizer、clamp centralizer	46	90 100 120 130 160	2（50）	75 ~ 140
FZ46 × 1-1/16					
FZ58 × 15/16		58		2-1/2（62）	
FZ58 × 1-1/16					
FZ58 × 1-3/16					
FZ70 × 1-1/16		70		2-7/8（73）	
FZ70 × 1-3/16					
FZ70 × 1-3/8					
FZ70 × 1-9/16	注塑型 molded centralizer				

注：注塑型扶正块材质为增强尼龙（PA66+30%GF）；卡箍式扶正块材质为超高分子量聚乙烯（UHMW–PE）

Note: The molded centralizer is made of reinforced nylon (PA66+30% GF); The clamp centralizer is made of ultra-high molecular weight polyethylene (UHMW-PE).

2.1.3 光杆
2.1.3 Polished Rod

产品简介

光杆具有两种型式，普通型光杆和一端镦粗型光杆。材料均采用优质合金钢冷拔圆钢，具有强度高、韧性好、表面光滑、使用寿命长等特点。普通型光杆按照 API Spec 11B 规范设计，两端具有相同的光杆外螺纹（9° 锥度），规格包括 1—1/8、1—1/4、1—1/2 三种。在使用时，普通型光杆与光杆接箍连接。一端镦粗型光杆按照 SY/T5029 标准设计，规格包括 1、1—1/8、1—1/4 三种，镦粗端与抽油杆相同。使用时，镦粗端与抽油杆接箍连接。

Product Introduction

There are two types of polished rods: general polished rod and end upset polished rod. All polished rods are made of high-quality alloy cold-draw steel, with great strength and toughness, smooth surfaces and extended lifespan. General polished rods comply with API Spec 11B Standard, with the same exterior threads at both ends (cone angle=9°), including three specifications: 1-1/8", 1-1/4" and1-1/2".End upset polished rods comply with SY/T5029 Standard, including three specifications: 1", 1-1/8" and 1-1/4". The upset ends are the same with those of sucker rods. In application, the upset ends are connected with the couplings of sucker rods.

主要技术参数
Main tech parameter

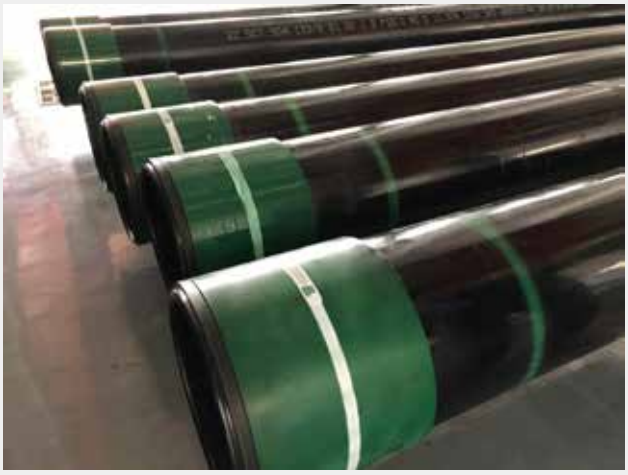
光杆材料规范 Material Specification for Polished Rod

类型 Grade	材质 Material	化学成分 Chemical Composition (wt.%)									
		碳（C）	锰（Mn）	硅（Si）	铬（Cr）	钼（Mo）	镍（Ni）	钒（V）	硫（S）	磷（P）	铜（Cu）
普通型 General	42CrMoA (AISI 4142)	0.38~0.45	0.50~0.80	0.17~0.37	0.90~1.20	0.15~0.25	≤0.30	≤0.07	≤0.025	≤0.025	≤0.20
镦粗型 End upset	30CrMoA (AISI 4130)	0.26~0.33	0.40~0.70	0.17~0.37	0.80~1.10	0.15~0.25	≤0.30	≤0.07	≤0.025	≤0.025	≤0.20
抗腐蚀功能 resistance to corrosion	30CrMnNi2MoVA (AISI 4330)	0.30~0.35	0.80~1.10	0.15~0.35	0.80~1.10	0.20~0.30	1.65~2.00	0.05~0.1	≤0.025	≤0.025	≤0.20

光杆机械性能 Mechanical Property for Polished Rod

级别 Grade	普通型 General type	一端镦粗型 End upset type			
	合金钢级 Alloy steel	D	HL	HY	KH
抗拉强度 Rm（MPa）	655~1103 (95000~160000psi)	793~965 (115000~140000psi)	965~1195 (140000~173000psi)	965~1195 (140000~173000psi)	965~1195 (140000~173000psi)

2.1.4 石油套管
2.1.4 API STANDARD CASING FOR OIL WELLS



石油套管

产品简介

石油套管用作油气井的井壁，主要产品有符合 API Spec 5CT、API Spec 5B 的石油套管，口径从 114.30 到 339.72 之间都可以批量定制生产。

Product Introduction

API standard casing is used for sidewall. The main products are oil casings that meet API Spec 5CT and API Spec 5B standards. The caliber can be customized from 114.30 to 339.72.

主要技术参数
Main tech parameter

API 5CT PSL1 套管　API 5CT PSL1 casing

钢级 Steel grade	规格范围 specification			执行标准 standard
	外径 Outer diameter /mm	壁厚 wall thickNess /mm	长度 length /m	
H40 J55 K55	114.30 ～ 339.72	5.21 ～ 12.19	R1 ～ R3	API 5CT
M65 N80-1 N80Q R95 L80-1 C90-1 T95-1 C110 P110 Q125-1	114.30 ～ 339.72	5.21 ～ 15.88	R1 ～ R3	

API 5CT PSL2 套管　API 5CT PSL2 casing

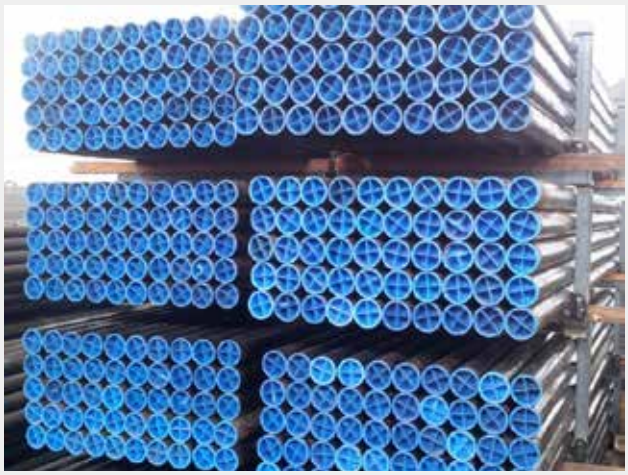
钢级 Steel grade	规格范围 specification			执行标准 standard
	外径 Outer diameter / mm	壁厚 wall thickNess /mm	长度 length /m	
J55 K55 N80-1	114.30 ～ 339.72	5.21 ～ 12.19	R1 ～ R3	API 5CT
M65 N80Q R95 L80-1 C90-1 T95-1 P110 Q125-1	114.30 ～ 339.72	5.21 ～ 15.88	R1 ～ R3	

API 5CT PSL3 套管　API 5CT PSL3 casing

钢级 Steel grade	规格范围 specification			执行标准 standard
	外径 Outer diameter / mm	壁厚 wall thickNess /mm	长度 length /m	
J55 K55	114.30 ～ 339.72	5.21 ～ 15.88	R1 ～ R3	API 5CT
M65 N80Q R95 L80-1 C90-1 T95-1 P110 Q125-1				

2.2 钻探工具
2.2 Drilling Tools

2.2.1 岩心钻探工具
2.2.1 Coring Drill Tools



绳索钻杆

钻具

产品简介

绳索取心钻具是一种不提钻而从钻杆内捞取岩心的钻探工具，具有钻进效率高、岩心采取率高、钻头寿命长、劳动强度小等优点，随着钻孔深度的加深，其优势更为明显。整套钻具包括钻具总成、钻杆、提引器、打捞器、绳索绞车和金刚石自由钳等。

Product Introduction

Wire-line coring tools can lift core without picking up the bit. Its advantages are higher drilling efficiency, higher core recovery ratio, longer bit life and lower labor intensity. Wire-line coring tools include core barrel assembly, overshot assembly, drill rod, holding dog, circle wrench etc.

主要技术参数
Main tech parameter

国际标准绳索取芯钻杆 Wire-line coring tools

规格 Specification	系列 Series	杆体尺寸 Drill Rod Dimension	螺纹标准 Thread Standard	热处理方式 Heat Treatment Method	杆体材质 Drill Rod Material	接头材质 / 处理工艺 Joint Material / Processing Technology	使用深度 Using Depth (m)
BC	Q 系列钻杆 Q-Series Drill Rod	55.6 × 4.8	国际标准 International Standard	钻杆整体调质 Drill Rod: Overall Quenching and Tempering	ZT850	自接式钻杆，螺纹表面硬化处理 Self-connecting drill rod; Surface hardening treated thread	2000
NC		70.1 × 5			ZT850		1500
HC		89 × 5.6			ZT850		1000
PC/ PHD		114.3 × 6.35		螺纹硬化处理 Thread: Hardening Treatment	45MnMoB		800

国际标准绳索取芯钻具 Wire-line coring tools

系列 Series	规格 Specification	钻头 Bit		扩孔器 Reaming Shell O.D	外管 Outer Tube		内管 Inner Tube		钻杆规格 Drill Rod Parameters
		O.D	I.D		O.D	I.D	O.D	I.D	
Q 系列钻杆 Q-Series Drill Tools	BC	59.5	36.5	60	57.2	42	42.9	38.1	BC
	NC/NC3	75.3	47.6/45	75.8	73	60.3	55.6	50	NC
	HC/HC3	95.6	63.5/61.1	96	92.1	77.8	73	66.7	HC
	PC/PC3	122	85/83	122.6	117.5	103.2	95.6	88.9	PC

2.2.2 超硬材料制品
2.2.2 Ultra Hard Materials and Products

2.2.2.1 金刚石钻头与扩孔器
2.2.2.1 Diamond Bit and reaming shell

孕镶金刚石钻头

金刚石扩孔器

产品简介

金刚石钻头使用天然金刚石或人工合成金刚石等，采用表镶与孕镶等形式满足不同地层钻进要求。金刚石扩孔器和钻头配合使用。主要功能为保持孔径，改善钻进的稳定性及保护钻头过度磨损。

Product Introduction

The diamond bits are Surface set with high-quality nature and polycrystalline diamond, good-design impregnated with optimum parameters provide you reliable products to meet drillings for different formations. Diamond reaming shells are important tools to be used together with bits. Its main functions are maintaining bore-hole gage, improving drill string stability and protecting lower drill string from excessive wear.

主要技术参数
Main tech parameter

孕镶钻头扩孔器规格 Impregnated Diamond Bits and Reaming Shells Sizes

规格 Description 外径 OD（mm）		钻头 Core Bit		扩孔器 Reaming Shell
		内径 ID（mm）	外径 OD（mm）	
国际标准 International Standard	BC	59.5	36.4	59.8
	NC	75.3	47.6	75.5
	HC	95.5	63.6	95.9
	PC	122.1	85	122.4
	BC3	59.5	33.4	59.8
	NC3	75.3	45	75.5
	HC3	95.5	61	95.9
	PC3	122.1	83	122.4
	T2-56	56	42	56.5
	T2-76	76	62	76.5
	T2-86	86	72	86.5
	T2-101	101	84	101.5
	T6-76	76	57	76.5
	T6-86	86	67	86.5
	T6-101	101	79	101.5
	T6-131	131	108	131.5

2.2.2.2 套管靴
2.2.2.2 Casing shoe

套管靴

产品简介

套管靴一般用于钻探开孔作业。

Product Introduction

Casing shoe most can be used for drilling job during opening hole.

主要技术参数
Main tech parameter

规格 Description	外径 OD（mm）	内径 ID（mm）
AW	59.5	48.3
BW	75.2	60.2
NW	91.8	76
HW	117.4	99.8
PW	143.6	123.4
SW	172.4	146.8
56	56	47
76	76	67
86	86	77
101	101	88

2.2.2.3 表镶金刚石钻头
2.2.2.3 Surface Set Diamond Core Bit

表镶金刚石钻头

产品简介

表镶金刚石钻头通过变换金刚石的类型、粒度和品级、胎体和唇面，就可在各种坚硬和均质岩层内满意的钻进和取芯。此类钻头不适用于破碎和松散地层。

Product Introduction

Surface set diamond core bits can be used with any type of core barrels. By varying the diamond grade, size, quality and matrix hardness and crown shapes, the users can satisfy with drill and core hard and homogeneous formations. This kind of bits cannot be used in broken or loose formations.

主要技术参数
Main tech parameter

表镶金刚石等级 Grade	粗粒 Coarse	中粒 Medium	细粒 Fine	特细粒 Very Fine
粒度（粒 / 克拉） Size(stones/carat)	15-25	25-40	40-60	60-100
岩层 Rock formation	中硬 Medium-hard	中硬—硬 Medium-hard and hard	硬 Hard	硬—坚硬 Hard and very hard

2.2.2.4 金刚石复合片钻头
2.2.2.4 PDC Drill Bit

金刚石复合片钻头

产品简介

金刚石复合片钻头使用复合片镶嵌在钻头胎体部分，适用于相对较软地层、耐研磨地层以及松散的沉积地层。

Product Introduction

PDC bits use larger cylindrical shaped cutters that consist of a layer of micron-sized synthetic diamond particles that are bonded on a tungsten-carbide substrate. They are recommended for using when drilling in relatively soft , abrasive, unconsolidated sedimentary formations.

主要技术参数
Main tech parameter

钻头类型 Bit Type	钻头规格 Bit Description	备注 Remarks
全断面钻头 Full-face bit	Φ56、Φ66、Φ75、Φ91、 Φ110、Φ130、Φ150、Φ171	可根据用户要求加工各类异形钻头 Other size products can be customized according to customers´ requirements
取芯钻头 Coring Bit	Φ56、Φ59、Φ75、Φ91、 Φ110、Φ130、Φ150	

2.2.2.5 硬质合金
2.2.2.5 Carbide Cutting Tools

硬质合金

产品简介

我们生产切削加工，地质钻探、石油、煤炭开采、建筑工程用硬质合金制品，以及拉伸、机械、化工等行业的硬质合金耐磨腐蚀零件，制品具有很高的硬度和耐磨性，同时在高温工作时能保持正常的产品性能。牌号包括YG3、YG3X、YG4C、YG6A、YG6X、YG8N、YT5、YT14、YW1 等。

Product Introduction

We produce carbide products used for cutting machining, geological drilling, oil and coal exploitation and construction engineering as well as wear and corrosion resistant carbide parts used in machinery and chemical industries. Our products show high hardness and wear resistance and can keep formal performance when working at high temperature. The grades include YG3, YG3X, YG4C, YG6A, YG6X, etc.

主要技术参数
Main tech parameter

牌号 Grade	相当于（ISO）	物理机械性能 Physical and Mechanical Properties		用途介绍 Application
		抗弯强度 Bending Strength ≥N/mm2	硬度 Hardness ≥HRA	
YG3X	K01	1078	91.5	适于铸铁，有色金属及其合金的精加工。也可用于合金钢、淬火钢的精加工，拉丝模及地质针状合金。 YG3X carbide products are suitable for the finish machining of cast iron, nonferrous metals and their alloys. They can also be used for the finish machining of alloy steel, quenched steel, wire drawing die and geological acicular alloy.
YG6A	K10	1372	91.5	适用于硬铸铁，有色金属及其合金的加工，也用于高锰钢，淬火钢半精加工，中等负荷的拉丝模具。 YG6A carbide products are suitable for machining of hard cast iron, nonferrous metals and their alloys and can also be used for semi-finish machining of high manganese steel and quenched steel. Besides, they can be used for manufacturing of medium load drawing dies.
YG6	K20	1421	89.5	适于铸铁、有色金属及其合金连续切削的粗车，间断切削的半精车。 YG6 carbide products are suitable for the rough turning of cast iron, nonferrous metals and their alloys during continuous cutting and semi-finish turning during intermittent cutting.
YG8	K30	1470	89	适于铸铁、有色金属、非金属材料的加工，不锈钢加工。地质勘探工具，人造金刚石顶锤及其他耐磨零件。 YG8 carbide products are suitable for the machining of cast iron, nonferrous metals, non-metallic materials and stainless steel. Meantime, they can also be used for geological exploring tools, artificial diamond anvils and other wear-resistant parts.
YG11C	G20	2058	86.5	适用于重型凿岩机凿坚硬岩石的钎头。压缩率大的钢管和钢棒拉拔模具、冲压模具等。 YG11C carbide products are suitable for heavy drills used bits to drill hard rock formations. They can also be used for drawing dies of steel tubes and steel rods with high compression ratio and stamping dies.
YG15	G30	2058	87	适于人造金刚石压缸，凿岩机钎头，压缩率大的钢棒和钢管拉拔模具、冲击模具等。 YG15 carbide products are suitable for artificial diamond pressure cylinders, drill bits, drawing dies of steel tubes and steel rods with high compression ratio and stamping dies.
YG20	G40	2254	85	适于制造在冲击负荷很大和产生大应力条件下使用的冲压模具（如清边，切断、穿孔、延伸，镦锻等模具与工具）。 YG20 carbide products are suitable to be made into stamping dies used in conditions of high impact load and large stress (such as dies and tools of trimming, cutting, boring, extending and upsetting).
YT15	P10	1127	91	适用于碳素钢与合金钢加工中，连续切削时的粗车，半精车及精车，间断切削时的小端面精车，旋风车丝，连续面的半精铣与精铣，孔为粗扩与精扩。 In carbon steel and alloy steel machining, YT15carbide products are suitable for the rough turning, semi-finish turning and finish turning during continuous cutting, small section finish turning, whirlwind turning during intermittent cutting, semi-finish milling and finish milling of continuous end, rough reaming and finish reaming of holes.
YT30	P01.2	882	92.5	适用于碳素钢与和精钢工件的精加工。如小端面精车、精镗、精扩等。 YT30 carbide products are suitable for the finish machining of carbon steel and fine steel workpieces, such as small section finish turning, fine boring and fine reaming.
YW2	M20	1323	90.5	适用于耐热钢、高锰钢、不锈钢以及高级合金钢等特殊难加工钢材的加工，普通钢材和铸铁的加工。 YW2 carbide products are suitable for the machining of very intractable steel materials such as heat resistant steel, high manganese steel, stainless steel and high-grade alloy steel, ordinary steel materials and cast iron.

2.3 非开挖工具
2.3 Directional Drilling Tools

整体加厚式非卡挖钻杆

摩擦焊非卡挖钻杆

产品简介

包括非开挖钻杆、非开挖钻具及非开挖钻头等。非开挖钻杆分为整体管端加厚的自接式钻杆和摩擦焊接的钻杆。整体管端加厚的自接式钻杆规格有 φ50、φ60、φ73、φ89，其钻杆的长度及连接的螺纹可根据用户的需求定制，一般常规的长度为 3 米。摩擦焊接的钻杆规格有 φ89×10、φ114×8.56、φ127×9.19，其螺纹标准为 API 标准，分别是数字型接头螺纹 NC31、NC38、NC50。

Product Introduction

Directional Drilling Tools include HDD drill pipes, directional drilling accessories,directional drilling reamer and hole opener. HDD drill pipes are divided into integrated directional drilling pipes and friction welding drilling pipes. Integrated directional drilling pipes have specifications of φ50, φ60, φ73 and φ89. Their length and connecting threads can be customized according to customers' requirements and generally the normal length is 3m. Friction welding drill pipes have specifications of φ89×10, φ114×8.56 and φ127×9.19. The thread standard is API standard and their threads are digital joint threads NC31, NC38 and NC50, respectively.

主要技术参数
Main tech parameter

整体加厚式非开挖钻杆 Integrated directional drilling pipes

参数 Parameters	单重 Single Weight kg /pcs	钢级 Steel Grade	配套钻机 Matching Drilling Rig
Φ50*1.5m	15	G105	VermeerD100, Keyes 6010
Φ50*2m	18	G105	VermeerD100, Keyes 6010
Φ50*3m	25	G105	VermeerD100, Keyes 6010
Φ60*2m	25	G105	VermeerD24*40, Keyes 6130
Φ60*3m	35	G105	VermeerD40*40, Keyes 6130
Φ73*3m	45	G105	VermeerD50*100
Φ73*4.5m	66	G105	VermeerD50*100
Φ89*4.5m	100	G105	VermeerD80*100
Φ89*6m	130	G105	Vermeer D80*100

摩擦焊式非开挖钻杆 Friction Welding Drill Pipe

描述 Description		外径 OD(mm)	壁厚 Wall ThickNess (mm)	杆体外径 ODI (mm)	最小弯曲半径 Min bend Radius (m)	最大扭矩 Max Torque(KNM)	回拖力 Pull back(T)
公制 mm	英制 Inch						
89	3 1/2	88.9	10	92	72	20	150
73	2 7/8	73.0	8	79	62	15	110
60	2 3/8	60	7.5	67	40	6.0	70
50	2	50	6.5	57	37	4.8	60

3. 物探仪器
3 Geophysical Instrument

3.1 重力仪器

3.1.1 ZSM–6 数字重力仪
3.1.1 ZSM-6 digital gravimeter

ZSM–6 重力仪

产品简介

ZSM–6 型数字重力仪的基本原理是采用零点读数法测量重力加速度的相对变化，设计采用了全新熔融石英弹性传感器系统，同时引进高精度恒温测温技术，高精度倾角测量技术、极低噪声电路处理技术、高精度测量技术、数据智能化自动处理等诸多先进技术。该仪器可广泛应用于重力普查、详查、区域重力测定、军事测量等领域，也可以应用于地震监测等相关部门。

Product Introduction

The ZSM-6 digital gravimeter detects relative changes of gravitational acceleration by zero reading. The gravimeter is equipped with the latest fused quartz elastic sensor system, high-accuracy constant temperature detection, inclination measurement, low-noise circuit processing, high-accuracy measurement technique and intelligent auto data processing etc. The digital gravimeter can be widely used in gravity survey, high-precision gravity survey, local gravity measurement and military measurement. It can also help earthquake monitoring.

主要技术参数
Main tech parameter

读数分辨率 Density Resolution	±0.001 毫伽 (mgal)
观测精度 Precision	±0.01 毫伽 (mgal)
最小直读范围 Min Direct Reading Range	7000 毫伽 (mgal)
残余长期漂移 Residual Long-term Drift	≤±0.03 毫伽 / 天 (mgal/day)
功耗 Power Consumption	≤10 瓦 (w)（环境温度 25 度时）(t=25℃))
工作温度范围 Temperature Range	-20 ～ 45℃
仪器重量（不含三脚架）Weight	≤10kg
仪器尺寸（不含三脚架）Size	260mm × 240mm × 350mm
包装箱和仪器总重量 Total Weight(Packaging Box & Gravimeter)	28kg
包装箱尺寸 Size Of Packaging Box	570mm × 430mm × 490mm

3.1.2 Z400 型机械重力仪
3.1.2 Z400 Gravimeter

Z400 重力仪

产品简介

Z400 重力仪用于测量重力加速度的相对变化。Z400 重力仪的传感器由石英制成，使用零点读数，并配备精密的温度补偿装置。Z400 重力仪可广泛用于地质构造和矿山行业的重力测量，包括重力测量、高精度重力测量和局部重力测量。

Product Introduction

Z400 gravimeter is used to measure the relative changes of gravitational acceleration. The sensor of Z400 gravimeter is made of quartz. The gravimeter uses zero reading and is equipped with delicate temperature compensation devices. Z400 gravimeters can be widely used for gravity survey in geological structure and mine industries, including gravity survey, high-precision gravity survey and local gravity measurement.

主要技术参数
Main tech parameter

读数分辨率 Density resolution	±0.01mgal
观测精度 Precision	±0.03 mgal
直读范围 Direct reading range	0 ～ 3999.9 格 /400 毫伽； 0 ～ 3999.9 division /400mgal
格值 Scale value	0.09 ～ 0.11 毫伽 / 格； 0.09 ～ 0.11 mgal/division
测程范围 Measurement range	5000 mgal
亮线灵敏度 Light sensitivity	1.6 ～ 2.0 mgal
混合零点位移 Compound drift	≤±0.1 mgal/h
格值线性度 Linearity of scale value	≤ 1/1000
仪器重量 Weight	4.5 kg
包装箱尺寸 Size of packaging box	300 mm × 285 mm × 570mm
包装箱和仪器总重量 Total weight (packaging box & gravimeter)	10 kg

3.2 磁法仪器
3.2 Magnetometer

3.2.1 CTM–DI(B) 磁力仪
3.2.1 high accuracy magnetometer

CTM–DI(B) 型磁力仪

产品简介

CTM–DI(B) 磁力仪可以精确测定地磁偏角 D 和地磁倾角 I，并可在地磁台站和野外兼用，可广泛用于地磁科研、资料收集、编图、国防、地震预测、石油及多种矿物探测、航空航海定向等诸多领域，在固定台站或野外测点实施地磁观测。

Product Introduction

The CTM-DI(B) high accuracy magnetometer can precisely measure the geomagnetism declination angle (D) and geomagnetic inclination angle(I). The magnetometer can be used in geomagnetic observatories and in the wild. The CTM-DI(B) magnetometer can be widely used for geomagnetic science research, data collection, national defense, earthquake prediction, exploration of oil and minerals and navigation for ships and airplanes etc. The magnetometer can practice measurement in a geomagnetic observatory or at a wild observation spot.

主要技术参数
Main tech parameter

观测分量 Observed component	D, I
使用范围 Application environment	台站、野外兼用 Observatory & in the wild
基线值观测标准偏差 Standard deviation against baseline	σDB≤±0.1′，σIB≤±0.1′
观测准确度 Accuracy	ΔD≤0.20′，ΔI≤0.20′
换向差 Diversionary Error	ΔD, ΔI ＜ 10′
三方位基线值与平均值的最大差值 Maximum difference between baseline and average value	ΔD, ΔI≤0.20′

3.2.2 便携式数字磁通门磁力仪
3.2.2 portable fluxgate magnetometer

CTM/BS—1 便携式数字磁通门磁力仪

产品简介

便携式数字磁通门磁力仪探头由三个相互垂直的磁通门传感器（D、H、Z）组成，其中H、Z两个传感器外加磁补偿线圈，可大范围补偿H、Z方向的磁场，三个磁通门传感器测量的是地磁场以及干扰磁场在其轴线上投影的"向量"值，整套系统用于测量空间任一点磁场强度的变化量。

Product Introduction

The probe of portable fluxgate magnetometer is composed of three fluxgate sensors (D, H, Z) orthogonal to each other. There are magnetic compensating coils around H and Z sensors, which can widely compensate the magnetic fields in the directions of H and Z component. The fluxgate sensors measure the vector values of geomagnetic field and magnetic interfering field projected on their components. The entire system is used to measure the magnetic field intensity changes of any spot.

主要技术参数
Main tech parameter

传感器 Sensor	D、H、Z 三分量； D, H, Z three-component sensor
三分量正交度 Three component orthogonality	≤20″
测量动态范围 Dynamic measurement range	±2500nT, ±2.5%
读数分辨率 Density resolution	0.1nT
地磁场补偿范围 Geomagnetic compensation range	Z: 0~50000nT,H: 0~50000nT

3.2.3 CZM–5 质子磁力仪
3.2.3 proton precession magnetometer

CZM–5 型质子磁力仪

产品简介

CZM–5 质子磁力仪是利用氢质子磁矩在地磁场中自由旋进的原理制成的高灵敏度弱磁测量装置，广泛用于地球磁场绝对场强的观测，地质、石油、冶金、煤炭等部门的地面磁法勘探以及海洋和航空磁测的地面日变站、地震预报工作中地磁台站的磁变观测等。

Product Introduction

CZM-5 is a highly sensitive low-intensity magnetic measuring instrument which is built on the principle that the magnetic moment of hydrogen proton processes freely in the geomagnetic field. The proton precession magnetometers are widely used for observation of absolute intensity of geomagnetic field, ground magnetic prospecting of industries such as geology, oil, metallurgy and coal etc., naval and aviation magnetic observation by geomagnetic diurnal variation measuring station, and magnetic measurement for earthquake prediction in geomagnetic observatories.

主要技术参数
Main tech parameter

测程范围 Measure range	2000nT ～ 100000nT
分辨率 Intensity resolution	0.1nT
测程精度 Accuracy	总场绝对强度 50000nT 时 ±1Nt;±1nT (total absolute field intensity= 50000nT)
梯度允许范围 Allowable gradient	≤5000nT/m
环境温度 Environment temperature	-15˚C ~+50˚C
环境湿度 Environment humidity	≤95% (25˚C)
数据存储量 Data storage	日变方式：不少于 200 天（在最短读数间隔为 5 秒时，一天 24 小时），点测方式：不少于 10 万个点 Daily variation: no less than 200 days (min. reading interval=5s, 24 h/day) Stationary measurement: no less than 100,000 spots
电源 Power	锂离子电池：12.8V ～ 16.8V/5 Ah，连续工作不少于 17 小时（日变方式下，典型读数间隔为 10 秒时） Lithium ion battery: 12.8V~16.8V/5 Ah, continuously operating for no less than 17 hours,(when in daily variation mode, typical reading interval is 10s)
主机外形尺寸 Size	(L × W × H): 260 × 100 × 230 (mm)
主机重量 Weight	About 2Kg
探头外形尺寸及重量 Size and weight of probe	ϕ 74 × 150 (mm), 0.8Kg

3.3 电法仪器
3.3 GEO-ELECTRIAL INSTRUMENT

3.3.1 DZD–8 多功能全波形直流电法仪
3.3.1 Full Waveform DC IP Meter, Type DZD-8

DZD–8 多功能全波形直流电法仪

产品简介

DZD–8 多功能全波形直流电法仪是集电流电位全波形记录、32 位 A/D、大功率控制、嵌入式实时操作系统现场可编程阵列逻辑等当今最新电子技术研制的新一代多功能直流电法仪，仪器的体积和重量均显著缩小，在各种野外复杂环境下能获得更高质量的原始数据。可广泛应用于金属与非金属矿产资源勘查，地下水／地热资源勘察等方面；亦可用于水利水电工程的坝基、大堤隐患位置，公路／铁路的桥梁隧道调查等工程地质勘察中，还能应用于城市物探。

Product Introduction

we develop full wave DC electrical instrument, a new generation multifunction DC electrical method instrument with the latest electronic technologies, e.g. full wave recording of current and potential, 32bit A/D, high power control, embedded real-time operation system and FPGA etc. The volume and weight of the instrument are obviously reduced. The instrument can obtain better raw data in complicated environments than other similar instruments. Full wave DC electrical instruments are widely used for exploration of metal and nonmetal mineral resources, detection of underground water and geothermal resources, search for hidden defects in dam foundation and dike, investigation of tunnels of highways and railways and urban geophysical prospecting.

主要技术参数
Main tech parameter

接收部分 RECEIVER	
电流、电位全波形记录 Full wave recording of current and potential	
测量电压范围 Measuring voltage range	±40V （32 位 A/D） ±40V (32bit A/D)
测量电压分辨率 Measuring voltage resolution	5nV
测量电压精度 Voltage measure accuracy：	电压＞ 3mV 时精度 ≤0.1%； 电压 ≤3mV 时精度 ±1uV； When U ＞ 3mV, accuracy≤0.1%; when U≤3mV, accuracy=±1uV
视极化率测量精度 Apparent polarizability accuracy	相对误差 ≤±0.2%； Relative error≤±0.2%
电流测量范围 Measuring current range	0 -6000 mA (32bit A/D) 0 -6000 mA（32 位 A/D）
测量电流分辨率 Measuring current resolution	10nA
测量电流精度 Current measure accuracy	当 Ip≥10mA 时， ±0.1%； When Ip≥10mA， ±0.1%
输入阻抗 Input impedance	≥50MΩ
输入保护电压 Input protection voltage	1000V
对 50Hz 工频干扰压制 Interference Suppression on 50Hz Power Frequency	＞ 120dB
SP 补偿 SP compensation range	±40V 全量程实时自动追踪数字补偿 ±40V(real-time automatic digital compensation at the whole range)
发射部分 Transmitter	
最大供电电压 Maximum power supply voltage	1400V
最大供电电流 Maximum power supply current	6A
最大输出功率 Maximum power	7500W
正供时间 Power supply time	1-64s
停供时间 Power suspension time	1-64s
保护 Protection	具有过压过流保护 Overvoltage & overcurrent
其他部分 Other parts	
处理器 Processor	ARM Cortex-A8
操作系统 Operation system	嵌入式 Linux 实时系统 Embedded Linux real-time system
显示 Screen	6.4 寸 24 位真彩 LCD 6.4-inch 24bit true-color LCD
液晶亮度 LCD brightness	1200cd/m2， 日光可见 1200cd/m2, visible in daylight
存储容量 Storage capacity	16G-128G 可选 16G-128G optional
数据传输 Data Transmission	USB 2.0
电池容量 Battery capacity	16.8V 12.5Ah, 可连续工作 16 小时 continuously working for 16h
电源接口 Power interface	External battery or adapter 外接电池或适配器
防水等级 Waterproof level	IP66
工作温度 working temperature	-10-+50℃
外形尺寸 Volume	300 x 225 x 132 mm
重量 Weight	5.6kg

3.3.2 DZD–6A 多功能直流电法（激电）仪
3.3.2 DZD-6A Multi-Function DC Resistivity & IP Instruments

DZD–6A 多功能直流电法仪

产品简介

DZD–6A 多功能直流电法（激电）仪利用视电阻率法和激发极化法的有关参数，寻找地下水，进行水文、工程与环境地质勘查，矿产资源与能源勘探，城市物探等。

Product Introduction

Using parameters from apparent resistivity method and electrical polarizability, Multi-Function DC Resistivity & IP Instruments are widely used for exploration of underground water resources, metal and nonmetal mineral resources and investigation of hydrological, engineering and environmental geology.

主要技术参数
Main tech parameter

电压测量范围 Measuring Voltage Range	-6000mV~+6000mV
电流测量范围 Measuring Current Range	0~5000mA
测量精度 Measuring Voltage Accuracy	±1% ±1 个字 ±1% ±1digital
自然电位补偿范围 SP Compensation Range	±1000Mv
输入阻抗 Input impedance	≥50MΩ
对 50Hz 工频限制 Interference Suppression on 50Hz Power Frequency	优于 80dB Better than 80dB
最大供电电压 Maximum Power Supply Voltage	900V
最大供电电流 Maximum Power Supply Current	5A
供电脉冲宽度 Power Pulse Width	1~59s，占空比例 1:1 Duty Cycle 1:1
整机工作温度 Working Temperature	-10℃ to +50℃，95%Rh
体积 Volume	305 × 200 × 202 mm
重量 Weight	8 kg

3.3.3 DUK 系列高密度电法测量系统
3.3.3 DUK Multi-Electrode Resistivity Survey System (ERT System)

产品简介

DUK 系列高密度电法测量系统可观测视电阻率和视极化率等参数并形成 2D/3d 视电阻率／视极化率断面，能直观准确地反映地下目标体的电性异常分布形态。

Product Introduction

The DUK multi-electrode resistivity survey system can observe apparent resistivity and polarizability and then form 2D/3D sections of apparent resistivity and polarizability. It can directly and accurately demonstrate the abnormal electrical property distribution of underground objects.

3.3.3.1 DUK—2A 高密度电法测量系统
3.3.3.1 DUK-2A Multi-Electrode Resistivity Survey System

产品简介

DUK—2A 高密度电法测量系统由测控主机（DZD—6A 多功能直流电法仪）、DUK—2A 多路电极转换器（60 道或 120 道）、大线电缆、电极，数据处理软件等相关附件组成。

Product Introduction

DUK-2A Multi-Electrode Resistivity Survey System consist of a main measure and control machine (DZD-6A Multi-Function DC Resistivity & IP Instrument), DUK-2A multiple electrode convertor (60 or 120 channels), large cables, electrodes, data processing software and related accessories.

主要技术参数
Main tech parameter

测控主机参数 main measure and control machine parameter	参见前述 3.3.2DZD-6A 多功能直流电法（激电）仪 see 3.3.2 DZD-6A Multi-Function DC Resistivity & IP Instrument
多路电极转换器参数 multiple electrode convertor parameter	
转换电极总数 Conversion Electrodes	60 道或 120 道 (60channels or 120 channels)
操作方式 Operating modes	LCD 显示屏，人机对话模式 LCD display, man-machine dialogue operation
承受最大电流 Maximum Allowable Current	2A
承受最大电压 Maximum Withstand Voltage	500V
绝缘性能 Insulating Property	500MΩ
整机工作温度 Working Temperature	-10℃ ~ +50℃，95%Rh
体积 Volume	365 × 269.5 × 169mm(60 道) 342 × 211 × 258mm(120 道) 365 × 269.5 × 169mm (60 channels), 342 × 211 × 258mm (120 channels)
重量 Weight	7kg（60 道）8.5kg（120 道） 7 kg (60 channels), 8.5kg (120 channels)

3.3.3.2 DUK—2B 高密度电法测量系统
3.3.3.2 DUK-2B Multi-Electrode Resistivity Survey System

DUK—2B 高密度电法测量系统

产品简介

DUK—2B 高密度电法测量系统将 DZD—6A 多功能直流电法仪和多路电极转换器合二为一，由 DUK—2B 主机、大线电缆、电极、数据处理软件等相关附件组成。

Product Introduction

DUK-2B multi-Electrode resistivity survey system integrate DZD-6A Multi-Function DC Resistivity & IP Instrument and multiple electrode convertor, the system consist of DUK-2B main machine, cables, electrodes, data processing software and related accessories.

主要技术参数
Main tech parameter

转换电极总数 Conversion Electrodes	60 道 60channels
电压测量范围 Measuring Voltage Range	±6V
测量精度 Measuring Voltage Accuracy	±1%, ±1 个字 ±1% ±1digital
电流测量范围 Measuring Current Range	0~2000mA, 0~5000mA (分两档)
最大供电电压 Maximum Power Supply Voltage	500V (高密度模式 high density mode) 900V(常规电法模式 VES mode)
最大供电电流 Maximum Power Supply Current	2A(高密度模式 high density mode)) 5A(常规电法模式 VES mode)
自然电位补偿范围 SP Compensation Range	±1000mV
输入阻抗 Input impedance	20 MΩ 100 MΩ
对 50Hz 工频压制 Interference Suppression on 50Hz Power Frequency	≥80dB
整机工作温度 Working Temperature	-10˚C ~ +50˚C , 93%Rh
体积 Volume	324 × 240 × 245mm
重量 Weight	8.5 kg

3.3.3.3 DUK—4 超级高密度电法系统
3.3.3.3 DUK-4 multi-electrode resistivity survey system

产品简介

DUK—4 超级高密度电法系统以 DZD—8 多功能全波形直流电法仪为测控主机，可通过选配分布式高密度电缆、电极，实现分布式二维、三维高密度电阻率及激电的测量；也可选配 MIS—60A 阵列集中式多路电极转换器、集中式高密度电缆、电极，实现集中式二维、三维高密度电阻率及激电的测量；还可以选配 MIS—10A 级联式多路电极转换器、级联式高密度电缆，实现级联式二维、三维高密度电阻率及激电的测量。

Product Introduction

With a full wave DC electrical method instrument as main controller, the DUK-4 multi-electrode resistivity survey system can be equipped with distributed high density cables and electrodes to conduct measurement of distributed 2D, 3D high density resistivity and induced polarization. The instrument can also be equipped with MIS-60A array centralized multiple electrode convertor, centralized high density cables and electrodes to conduct centralized 2D, 3D high density resistivity and induced polarization. And the instrument can be equipped with MIS-10A multiple electrode convertor, cascaded high density cables to conduct centralized 2D, 3D high density resistivity and induced polarization.

主要技术参数
Main tech parameter

1. 测控主机参数 main measure and control machine parameter
   参见前述 3.3.1DZD-8 多功能直流电法（激电）仪
   See 3.3.1 DZD-8 Multi-Function DC Resistivity & IP Instrument

2. 分布式高密度电阻率 / 激电电缆 Distributed high density resistivity cable & IP cable

电极盒数量 Number of electrode boxes	10 道 / 串（5-256 道 / 串，可任意定制） 10 electrodes/cable(5-256 electrodes/cable optional)
道间距 Distance between electrode boxes	5 米和 10 米（1 -20 米，可任意定制） 5m and 10m (1-20m optional)
供电功率 Power supply	1000V/4A
供电内阻 Power supply impedance	50Ω/km
电缆直径 Diameter	6mm
电缆重量 Weight	4kg（10 道 / 串 ,10 米 / 道）(10 electrodes/cable,10m/electrode)
抗拉强度 Tensile strength	2000kN
绝缘强度 Insulation	A、B 供电线间及其与低压线间 ≥1000MΩ/1000V (between AB power supply line and low voltage lines)
防水等级 Waterproof	IP67
电极盒尺寸 Electrode box volume	Φ17mm*62mm(电极端 electrode)， Φ 24mm*158mm（最大体积 maximum volume）
电极盒抗压强度 Electrode box compression strength	50Kg/cm2
开关寿命 Switch lifespan	10 万次 100,000 times
电极盒功耗 Electrode box power consumption	18mW
编码方式 Coding	自动编码 Automatically coding
级联方式 Cascade connection	任意电缆组合 Random cables
收发电极 Receive and transmit electrode Automatically	自动分离 / 闭合（可自动选择电阻率和极化率） separation/closure (resistivity and polarizability can be chosen automatically)
工作温度 Working temperature	-20℃ ～ +60℃

3. MIS-60A 多路电极转换器 MIS-60A multiple electrode convertor

转换器 Convertor	60 道 / 台 60 electrodes/convertor
供电功率 Power supply	800V/4A
编码方式 Coding	自动编码 Automatically coding
级联方式 Cascade connection	可通过多路电极转换器任意级 Random cascade connection through multiple electrode convertor
工作温度 Working temperature	-20˚C ～ +60˚C
体积 Volume	27 × 24.6 × 12.4cm
重量 Weight	2.6kg

4. 集中式高密度电缆 Centralized high density cable

电缆电极数 Number of electrodes	30 道 / 条 30 electrodes/ cable
电极间距 Distance between electrodes	5m/10m 间距（可定制）(customization available)
绝缘强度 Insulation	A, B 供电线间及其与低压线间 ≥500MΩ/1000V (between AB power supply line and low voltage lines)
防水等级 Waterproof	IP67
电缆材质 Material	聚氨酯外皮 Polyurethane sheath
电缆外径 Outer diameter	7mm

5.MIS-10A 多路电极转换器 MIS-10A multiple electrode convertor

转换器 Convertor	10 道 / 台 10 electrodes/ convertor
供电功率 power supply	800V/4A
编码方式 Coding	自动编码 Automatically coding
级联方式 Cascade connection	可通过多路电极转换器任意级联 Random cascade connection through multiple electrode convertor
工作温度 Working temperature	-20˚C ～ +60˚C
体积 Volume	Φ46mm*218mm
重量 Weight	0.4kg

6. 级联式高密度电缆 Cascaded high density cable

电缆电极数 Number of electrodes	10 道 / 条 10 electrodes/ cable
电极间距 Distance between electrodes	5m/10m 间距（可定制）(customization available)
绝缘强度 Insulation	A, B 供电线间及其与低压线间 ≥500MΩ/1000V (between AB power supply line and low voltage lines)
防水等级 Waterproof	IP67
电缆材质 Material	聚氨酯外皮 Polyurethane sheath
电缆外径 Outer diameter	7mm

3.3.4 CLEM–V 大功率多功能电磁法系统

3.3.4 CLEM-V high-power multi-function electromagnetic method instrument

CLEM 大功率多功能电磁系统

产品简介

CLEM–V 大功率多功能电磁法系统由 KD30–1 整流源，CLEM–T30 大功率电磁法发射机，CLEM–R5 列阵电磁法接收机，磁传感器，处理软件等相关附件组成，可用于深部金属与非金属矿产资源勘查，地热资源、地下水资源勘查，石油及天然气资源勘查，煤炭采空区、岩溶发育期及人防工程勘察，活断层调查、地壳及地震研究，公路、铁路路基，隧道勘查等。

Product Introduction

The CLEM-V high-power multi-function electromagnetic method instrument is composed by a KD30-1 rectifier, a CLEM-T30 high power electromagnetic method transmitter, a CLEM-R5 array electromagnetic method receiver, magnetic sensor and processing software etc. It can be widely used for exploration of deep underground metal and nonmetal mineral resources., Exploration of geothermal and groundwater resources, exploration of oil and gas resource, Investigation of mined-out area of coal mine, Karst development and civil air defense construction, Investigation of active faults and research in crust and earthquake, inspection of highway and railway subgrades and so on.

主要技术参数
Main tech parameter

1.CLEM-T30 大功率电磁法发射机 CLEM-T30 high power electromagnetic method transmitter

频率范围 Frequency Range	8000Hz~1/128Hz
高密度频点 High density frequency	每频率数量级 20 个频点 20 frequencies per magnitude order
最高电压 Maximum voltage	1000V
最大电流 Maximum current	30A
最大功率 Maximum power	30kW
供电波形 Power waveform	多频、单频 Multi-frequency, single-frequency
工作模式 Operating modes	自动或手动 automatic or manual
保护功能 Protection function	过压、过流、过热 Overvoltage, overcurrent and overheat protection
GPS 同步精度	UTC±20nS
恒温晶体同步精度	4μS/h ±0.081μS
体积 Volume	660*440*440mm
重量 Weight	43kg

2. CLEM-R5 阵列电磁法接收机 CLEM-R5 array electromagnetic method receiver

频率范围 Frequency Range	32kHz ~ 1/128Hz
通道数 Channels number	1~8 道可选 1 to 8 optional
控制器 Controller	PC-104,300M 主频 PC-104,300M main frequency
储存介质 Storage Media	2GB
GPS 同步精度 GPS Synchronization Accuracy	UTC ± 20nS
恒温晶体同步精度	4μS/h ±0.081μS
通道增益 Channel Gain	1,4,16,64,256 前放增益 pre-amp gains 1,2,4,8 主放增益 main-amp gains
体积 Volume	340*210*250mm
重量 Weight	7.5kg

3.3.5 DDC—8 电子自动补偿（电阻率）仪
3.3.5 Electrical resistivity measuring instrument, Type DDC-8

DDC—8 电子自动补偿（电阻率）仪

产品简介

DDC—8 电子自动补偿（电阻率）仪直接用于电阻率法的测量，可直接显示测得的参数值，如视电阻率（Rs）、电流（I）和电压（V）的平均值，广泛适用于水文、环保、工程物探、金属与非金属矿产资源勘探等。

Product Introduction

Electrical resistivity measuring instrument, Type DDC-8 uses apparent resistivity and can directly demonstrate the measured values, e.g. resistivity (Rs), average current (I) and average voltage (V). Electrical resistivity measuring instruments can be used in hydrology, environment protection, engineering geophysics and the exploration of metal and nonmetal mineral resources.

主要技术参数
Main tech parameter

最大供电电压 Maximum Power Supply Voltage	700V
最大供电电流 Maximum Power Supply Current	4A
电压测量范围 Voltage Measuring Range	±4V
电压测量精度 Voltage Measurement Accuracy	±1% ±1 个字
电流测量范围 Current Measuring Range	0~4A
电流测量精度 Current Measurement Accuracy	±1% ±1 个字
自然电位补偿范围 SP Compensation Range	-1000mV ~ +1000mV
输入阻抗 Instrument Input Impedance	＞ 8MΩ
工作温度 Working Temperature	-10℃ ~50℃
外形尺寸 Volume	300 × 200 × 120mm

3.3.6 DDS–6 数字甚低频电磁仪
3.3.6 Low Frequency Electromagnetic Meter, Type DDS-6

DDS–6 数字甚低频电磁仪

产品简介

DDS–6 数字甚低频电磁仪是用来测定甚低频电磁场多种参数的一种小型轻便化仪器。在普查找矿或水文地质、工程地质中，该仪器能圈定矿体、岩溶发育带、地下河、含水或矿化断裂带、隐伏构造，以及进行快速电阻率填图。并可以探测地下管道、地下线缆的位置。

Product Introduction

DDS-6 low frequency electromagnetic meter is a small and light instrument used to measure multiple parameters of very low frequency electromagnetic fields. In mineral mass screening, hydrological geology or engineering geology, the instrument can locate orebodies, Karst development zones, underground rivers, water-cut or mineralized fault zones and subsurface structures. It can also quickly perform resistivity mapping, and locate underground pipelines and cables.

主要技术参数
Main tech parameter

工作频率 Operation frequency	17.4 kHz、22.3 kHZ
测量参数 Measuring parameter	电场水平分量 Horizontal electric field component(EX) 磁场水平分量 horizontal magnetic field component (HY) 磁场垂直分量 Hz vertical magnetic field component (Hz), 极化椭圆倾角 elliptic polarization obliquity (D)
磁场 Magnetic field	0.28m γ ～ 56m γ
电场 Electrical field	5 ～ 1000 μ V
极化椭圆倾角测量范围 Elliptical polarization inclination measure range	±45°
测量磁场强度分辨率 Magnetic field intensity resolution	0.02m γ
测量电场强度分辨率 Electrical field intensity resolution	0.0331 μ V
倾角读数误差 Inclination reading error	≤±1°
天线灵敏度 Antenna sensitivity	≥1.8 μ V/ m γ
仪器放大倍率 Magnification	3300
输入阻抗 Input impedance	≥1MΩ
内部噪声 Internal noise	＜ 20 个字（折合仪器输入端 <0.5 μ V） (Together with input noise< 0.5 μ V)
供电电压 Power voltage	11.1V
使用环境温度 Operating temperature	0℃ ～ +45℃，相对湿度 85% relative humidity85%
外形尺寸 Volume	260 × 95 × 190mm
重量 Weight	3.5kg

3.3.7 DJF 5–20 大功率数字直流激电测量系统
3.3.7 High Power DC Electrical Measuring System, Type DJF 5-20

产品简介

DJF 大功率数字直流激电测量系统由 DZ–2 整流电源（5–15kW 任选）、DJF–2 直流激电发射机（5–15kW 任选）、DJS–9 直流激电接收机或 DJR–2 全波形激电接收机任选（一台或多台）、AB 供电线／电极、数据处理软件等相关附件组成，可用于金属与非金属矿产资源大面积普查及详查，地下水资源勘探等。

Product Introduction

High Power DC Electrical Measuring System, Type DJF consists of a DZ-2 rectification power supply (5-15kW optional), a DJF-2 DC electrical transmitter (5-15kW optional), one or multiple DJS-9 DC electrical receivers or DJR-2 waveform electrical receivers, AB power lines/ electrodes, data processing software and related accessories. DJF high power DC electrical measuring systems are widely used for mass screening and detailed detection of metal and nonmetal mineral resource survey, high-precision mineral resource survey and the exploration of underground water resources.

3.3.7.1 DJS–9 直流激电接收机
3.3.7.1 DJS-9 DC electrical receiver

DJR–2 全波形激电接收机

主要技术参数
Main tech parameter

测量电压最大值 Maximum measuring voltage	±2.5V
测量电压分辨率 Measuring voltage resolution	0.01mV
测量电压精度 Measurement Accuracy	±1%（＞ 10mV 时）when ＞ 10mV ±0.2mV（3mV~10mV 时）when 3mV~10mV
自然电位补偿范围 SP Compensation Range	±1000mV
同步方式 Synchronization modes	GPS 同步、高精度石英钟同步、软件同步 GPS, high accuracy quartz clock, software
适应供电时间 Adapt power-on line	1~60 秒任选 1~60s Optional
叠加次数 Superposition Times	1~10 可选 1~10 optional
断电延时时间 Instrument Delay Time	100ms ~1000ms 可选 optional
对 50Hz 工频限制 Interference Suppression on 50Hz Power Frequency	优于 60dB Better than 60dB
输入阻抗 Instrument Input Impedance	＞ 5 MΩ
电源 Power	7.2V 8.8Ah 可充电锂电池（连续工作 50 小时） 7.2V8.8Ah chargeable lithium battery (continuously powering for 50 hours)
体积 Volume	240 × 95 × 240mm
重量 Weight	1.5kg

3.3.7.2 DJR–2 全波形激电接收机
3.3.7.2 DJR waveform DC electrical receiver

DJS–9 直流激电接收机

主要技术参数
Main tech parameter

测量电压最大值 Maximum measuring voltage	±2.5V
测量电压分辨率 Measuring voltage resolution	0.01mV
测量电压精度 Measurement Accuracy	±1%（＞ 10mV 时）when ＞ 10mV ±0.2mV（3mV~10mV 时）when 3mV~10mV
自然电位补偿范围 SP Compensation Range	±1000mV
同步方式 Synchronization modes	GPS 同步、高精度石英钟同步、软件同步 GPS, high accuracy quartz clock, software
适应供电时间 Adapt power-on line	1~60 秒任选 1~60s Optional
叠加次数 Superposition Times	1~10 可选 1~10 optional
断电延时时间 Instrument Delay Time	100ms ~1000ms 可选 optional
对 50Hz 工频限制 Interference Suppression on 50Hz Power Frequency	优于 60dB Better than 60dB
输入阻抗 Instrument Input Impedance	＞ 5 MΩ
电源 Power	7.2V 8.8Ah 可充电锂电池（连续工作 50 小时） 7.2V8.8Ah chargeable lithium battery (continuously powering for 50 hours)
体积 Volume	240 × 95 × 240mm
重量 Weight	1.5kg

3.3.7.3 DZ–2 整流电源
3.3.7.3 DZ-2 rectification power supply

10KW 发射机

主要技术参数
Main tech parameter

指标 / 型号 Parameter/Type	DZ5-2 5kW	DZ10-2 10kW
最大输出功率 Maximum output power	5kW	10kW
最大输出电流 Maximum output currency	6A	10A
最大输出电压 Maximum output voltage	1000V	
输入电源 Input power	AC 220V/50Hz	
工作温度 Working Temperature	10℃ ～ +50℃ , 95%Rh	
体积 Volume	600*370*340mm	600*370*340mm
重量 Weight	57kg	80kg

3.3.7.4 DJF–2 直流激电发射机
3.3.7.4 DJF-2 DC electrical generator

10Kw 整流源

主要技术参数
Main tech parameter

指标 / 型号 Parameter/Type	DJF5-2 5kW	DJF10-2 10kW
最大发射功率 Maximum Transmitting Power	5kW	10kW
最大发射电流 Maximum Power Supply Current	6A	10A
最大发射电压 Maximum Power Supply Voltage	±1000V	
同步方式 Synchronization modes	GPS 同步、高精度石英钟同步、软件同步 GPS, high accuracy quartz clock, software	
输出波形 Output waveform	双极性方波，占空间比例 1:1，脉冲宽度 1~60 秒 Bipolar square wave; duty ratio=1:1; pulse width=1 ～ 60s	
电流数据存储 Current Data Storage	不少于 8000 组，时间间隔可编程，最短 1 分钟 At least 8,000 set; time interval programmable; minimum interval=1 min	
工作温度 Working Temperature	-10℃ ～ +45℃ , 93%Rh	
体积 Volume	580*450*360mm	580*450*360mm
重量 Weight	22kg	22kg

3.3.8 DJF20–1 大功率数字直流激电测量系统
3.3.8 High Power DC Electrical Measuring System, Type DJF 20-1

产品简介

DJF20–1 大功率数字直流激电测量系统整流电源（10 kW 或 20 kW）一台，发送机 20 kW 一台，接收机一台或多台（3 ～ 5 台），模拟器、假负载、AB 电极、AB 供电线、绕线架、测量电极等相关附件，可用于金属与非金属矿产资源大面积普查及详查，地下水资源勘探等。

Product Introduction

High power DC electrical measuring system, Type DJF 20-1 consists of a rectification power supply (10 kW or 20 kW), a 20 kW generator, one or multiple (3~5) receivers, stimulators, dummy loads, AB electrodes, AB power lines, reels, measure electrodes and other accessories. DFF20-1 high power DC electrical measuring systems are widely used for metal and nonmetal mineral resource survey, high-precision mineral resource survey and the exploration of underground water resources.

3.3.8.1 DJS–9 直流激电接收机
3.3.8.1 DJS-9 DC electrical receiver

DJR–2 全波形激电接收机

主要技术参数
Main tech parameter

测量电压最大值 Maximum measuring voltage	±2.5V
测量电压分辨率 Measuring voltage resolution	0.01mV
测量电压精度 Measurement Accuracy	±1%（＞ 10mV 时）when ＞ 10mV ±0.2mV（3mV~10mV 时）when 3mV~10mV
自然电位补偿范围 SP Compensation Range	±1000mV
同步方式 Synchronization modes	GPS 同步、高精度石英钟同步、软件同步 GPS, high accuracy quartz clock, software
适应供电时间 Adapt power-on line	1~60 秒任选 1~60s Optional
叠加次数 Superposition Times	1~10 可选 1~10 optional
断电延时时间 Instrument Delay Time	100ms ~1000ms 可选 optional
对 50Hz 工频限制 Interference Suppression on 50Hz Power Frequency	优于 60dB Better than 60dB
输入阻抗 Instrument Input Impedance	＞ 5 MΩ
电源 Power	7.2V 8.8Ah 可充电锂电池（连续工作 50 小时） 7.2V8.8Ah chargeable lithium battery (continuously powering for 50 hours)
体积 Volume	240 × 95 × 240mm
重量 Weight	1.5kg

3.3.7.2 DJR–2 全波形激电接收机
3.3.8.2 DJR waveform DC electrical receiver

DJS–9 直流激电接收机

主要技术参数
Main tech parameter

测量电压最大值 Maximum measuring voltage	±2.5V
测量电压分辨率 Measuring voltage resolution	0.01mV
测量电压精度 Measurement Accuracy	±1%（＞ 10mV 时）when ＞ 10mV ±0.2mV（3mV~10mV 时）when 3mV~10mV
自然电位补偿范围 SP Compensation Range	±1000mV
同步方式 Synchronization modes	GPS 同步、高精度石英钟同步、软件同步 GPS, high accuracy quartz clock, software
适应供电时间 Adapt power-on line	1~60 秒任选 1~60s Optional
叠加次数 Superposition Times	1~10 可选 1~10 optional
断电延时时间 Instrument Delay Time	100ms ~1000ms 可选 optional
对 50Hz 工频限制 Interference Suppression on 50Hz Power Frequency	优于 60dB Better than 60dB
输入阻抗 Instrument Input Impedance	＞ 5 MΩ
电源 Power	7.2V 8.8Ah 可充电锂电池（连续工作 50 小时） 7.2V8.8Ah chargeable lithium battery (continuously powering for 50 hours)
体积 Volume	240 × 95 × 240mm
重量 Weight	1.5kg

3.3.8.3 DKG 系列整流电源
3.3.8.3 DKG rectification power supply

20KW 大功率发射机

主要技术参数
Main tech parameter

参数 / 规格 Parameter/Specification	5A/2000V	10A/2000V
交流输入电压 AC voltage	单相 Single-phrase 220V	三相 Three-phrase 380V
电网频率 Power frequency	工频 50HZ	工频 50HZ
输出电压 Output voltage	2000VDC	2000VDC
输出电流 Output current	5A	10A
重量 Weight	50kg	83kg
外形尺寸 Volume	560*320*500(mm)	800*400*600(mm)
最大输出功率 Maximum output power	10kW	20kW

3.3.8.4 DJF20—1 20 kW 发射机
3.3.8.4 DJF20-1 20 kW transmitter

整流源

主要技术参数
Main tech parameter

输出电压范围 Output voltage range	0--2000V；
输出电流 Output current	0.1A—10A；
供电电流指示精度 Accuracy of power supply current	≥ ±1%；
仪器工作电源 Battery/Input power	1、内置 12V 锂电或者外接 12V 电瓶； 1.Battery Built-in 12V lithium battery or out-connected 12V battery 2、接配套整流电源或者外接 220V 交流电源； 2. out-connected DKG rectification power supply or 220V AC power supply
同步方式 Synchronization modes	GPS 同步、石英钟同步、软件同步 GPS, quartz clock, software
输出波形 Output waveform	双极性，占空间比例 1:1，脉宽 1 ～ 60 秒 Bipolar square wave; duty ratio=1:1; pulse width=1 ～ 60s
重量 Weight	35kg
体积 Volume	560mm × 320mm × 500mm

3.4 地震仪器
3.4 Seismometer

3.4.1 DZQ12—2A 工程地震面波仪 /DZQ24/48—2A 高分辨地震仪
3.4.1 Geological Seismometer, Type DZQ12/24/48-2A

DZQ6—2A 工程地震波速仪

DZQ6—2A 工程地震波速仪

产品简介

DZQ 地震仪可利用锤击、电火花或爆炸等作为激发震源，勘探深度从几米到上千米，也可以使用延时功能获取地下更深部底层的地震资料。广泛应用于水利、电力、铁路、桥梁、城建、交通等领域工程地质勘探，也适用于石油、煤田、铀矿及地下水等领域资源勘探。DZQ 地震仪主要由采集系统和处理系统两大部分组成；采集系统主要由采集主机、检波器、震源、大线及其配套设施共同组成；处理系统主要是由各种方法的解释处理软件组成。

Product Introduction

Type DZQ geological seismometers can used hammering and explosion as artificial seismic sources. Measuring depth ranges from a few to thousands of meters. Operators can also use the delay function to acquire seismic data of deeper underground zones. Type DZQ geological seismometers are widely used for engineering geological investigation of hydraulic engineering, electricity, railways, bridges, civil construction and traffic etc. They can also be used for resource exploration of oil, coal, uranium and underground water etc. The seismometer is mainly made of two parts: collecting system and processing system. Collecting system mainly consists of a Type DZQ geological seismometer, a geophone, seismic source, seismic cables and other supporting facilities. Processing system mainly consists of interpretation and processing software of various methods.

主要技术参数
Main tech parameter

计算机及配置 Computer and configuration	军品级 PC104 控制计算机 P3（733MHz); 内存 256MB；4GB DOM 电子盘；Military level PC104 control computer P3 (733MHz); 256MB RAM; 4GB DOM DOC
显示屏 Screen	1024X768、超高亮度 TFT(真彩) 液晶显示器 ultra-bright TFT (true-color) LCD
输入设备 Input equipment	仪器面板配有适合野外使用的薄膜键盘、触摸屏，也可接 PS/2 计算机键盘和鼠标；手持鼠标 Panel is equipped with field use membrane keyboard and touch screen. The panel can also connect to PS/2 computer keyboard and mouse.
接口 Interface	双 USB 接口、PS/2 键盘、鼠标接口等 Double USB interfaces, PS/2 keyboard, mouse interface
移动存储 Removable storage	U 盘或配接移动硬盘 USB flash disk or mobile hard disk
通道数 Number of channel	48/24/12 in total;1,2,3,4,6,12,24,48 modes optional
采样率 Sampling rate	31.25μs、62.5μs、125μs、250μs、500μs、1ms、2ms、4ms、8ms、16ms、32ms 到 400ms 若干档 31.25μs,62.5μs,125μs,250μs,500μs,1ms,2ms,4ms,8ms,several options between 16ms and 400ms
采样点数 Sampling number	512,1024,2048,4096,8192,16384 ～ 32768
频率响应 Frequency response	0.1Hz-4kHz
噪音 Noise	全频状态下小于 1 μV； Less than 1μV at full frequency
采样延时 Sampling delay	0 ～ 9999ms
幅度一致性 Amplitude consistency	优于 ±0.2% Better than ±0.2%
相位一致性 Phrase consistency	优于 ±0.01ms Better than ±0.01ms
动态范围 Dynamic range	优于 144dB Better than 144dB
信号叠加增强 Signal superposition enhancement	32 bits
数据格式 Data Format	SEG-2，SEG-Y，CSP 可选 SEG-2, SEG-Y, CSP optional
触发 Trigger	内、外触发可用锤击开关触发，也可断线或接通触发 Hammer switch or disconnection/connection
时钟 Clock	年度计时钟，文件记录的时间随参数存入文件 Annual timer. Time and values are recorded together.
工作温度 Operating temperature	-10 ～ 55℃

3.4.2 EPS 便携式数字地震仪
3.4.2 EPS Portable Seismograph

EPS 便携数字地震仪

产品简介

EPS 便携式数字地震仪用于传统的地震勘探，地震台站预报系统、瞬态多点瑞雷波勘探·土建工程质量检测、场地长时间微动测量、爆破振动监测等。

Product Introduction

EPS Portable Seismograph can be widely used for traditional seismic prospecting and earthquake prediction systems in seismic stations; Quality inspection of civil engineering; Measurement of long-time ground micro-vibration; Monitoring explosion vibration.

主要技术参数
Main tech parameter

仪器尺寸 Volume	ϕ 140 × 170mm；
仪器重量 Weight	3 kg
罐体涂色 Color	黄色 / 红色等多色可选 Yellow, red etc.
防水深度 Waterproof depth	1m
通道数 Channel	3 分量速度检波器 3 for velocity geophone
连续工作时长 Continuous operation duration	>20 天 days
检波器频带 Geophone frequency bandwidth	0.2 Hz ~ 200 Hz
动态范围 Dynamic range	> 120 dB
道间幅度一致性 Amplitude consistency between channels	＜ 5%
道间相位差 Phrase consistency between channels	＜ 0.1ms
道间串音抑制 Crosstalk suppression between channels	＞ 100db
横向振动抑制 Lateral vibration suppression	优于 0.1% Better than 0.1%
自噪声水平 Self-noise	整个频段低于 NHNM 曲线 ;5s ～ 1Hz 低于 NLNM 曲线 Below NHNM curve; below NLNM curve when 5s~1Hz
整机功耗 Power consumption	0.2 w
外部电源 External power supply	5V ～ 12V，可充电 chargeable
采样率 Sampling rate	1000，500，250，100 ，50 sps；
内置高精度时钟 Internal high accuracy clock	OCXO, 0.5 PPM@4℃
自储存容量 Storage capacity	32 GB（可扩展 64 GB） 32 GB (64GB extendable)
数据格式 Data format	MINISEED (可转为 SAC、SEGY 等格式) (SAC, SEGY etc. convertible)
仪器状态设置 Setting	Bluetooth、USB、RS232
地震数据传输 Da ta transmission	USB2.0

3.4.3 CZS 一体化宽频带数字地震仪
3.4.3 CZS Digital Broadband Seismograph

CZS 一体化宽频带数字地震仪

产品简介

CZS 一体化宽频带数字地震仪用于传统的地震勘探，地震台站预报系统、瞬态多点瑞雷波勘探、土建工程质量检测、场地长时间微动测量、爆破振动监测等。

Product Introduction

CZS digital broadband seismograph can be used for traditional seismic prospecting and earthquake prediction systems in seismic stations, quality inspection of civil engineering, measurement of long-time ground micro-vibration and Monitoring explosion vibration.

主要技术参数
Main tech parameter

Frequency bandwidth 频带宽度	CZS- Ⅰ -2 (0.1Hz~150Hz), CZS- Ⅰ (0.05Hz~100Hz), CZS- Ⅱ (0.03Hz~100Hz) , CZS- Ⅲ (0.0167Hz~80Hz)
自噪声水平 Self-noise	整个频段低于 NHNM 曲线，10s ～ 10Hz 低于 NLNM 曲线； Below NHNM curve; below NLNM curve when 10s~10Hz
整机灵敏度 Sensitivity	1.1e+9 Cnt/m/s
时间稳定度 Time stability	5 × 10-8s
道间幅度一致性 Amplitude consistency between channels	＜ 5%
道间相位差 Phrase consistency between channels	＜ 0.1ms
道间串音抑制 Crosstalk suppression between channels	＞ 100db
横向振动抑制 Lateral vibration suppression	Better than 0.1%
整机功耗 Power consumption	自主工作模式 Automatic mode: ＜ 400mW@100sps; WIFI 工作模式 WIFI mode: ＜ 600mW@100sps; Zigbee 工作模式 Zigbee mode: ＜ 700mW@100sps; Ethernet 工作模式 Ethernet mode: ＜ 800mW@100sps
采样率 Sampling rate	5~500 optional
外部电源 External power supply	9V~15V, 单电源供电（充电）；single power supply
显示 Screen	LCD & LED
工作温度 Operating temperature	-25℃ ~ ＋ 55℃
自主工作时间 Automatic mode duration	＞ 30 days
动态范围 Dynamic range	＞ 120dB
存储容量 Storage capacity	32GB (可插拔 SD 卡 removable SD card)
数据格式 Data format	MSD (可转换为 SAC 等格式)SAC etc. convertible)
接口 Interface	Ethernet 网口、Zigbee、WIFI、USB 接口以及 RS232 串口，通过无线、有线网络可实现远程控制及数据传输；Ethernet interface, Zigbee, WIFI, USB interface and RS232 serial interface; remote control and data transmission via wired and wireless network
防水深度 Waterproof depth	≥1m
外形尺寸 Volume	ϕ 188 × 246 mm
重量 Weight	约 9 Kg Approximately 9Kg

3.4.4 海底地震仪 OBS
3.4.4 Ocean Bottom Seismometer

便携式海底地震仪

短周期四通道海底地震仪

宽频带长周期四通道海底地震仪

产品简介

海底地震仪（ocean bottom seismometer，OBS）是一种将检波器直接放置在海底的地震观测系统，在海洋地球物理调查和研究中，既可以用于对海洋人工地震剖面的探测，也可以用于对天然地震的观测，其探测和观测结果可以用于研究海洋地壳和地幔的速度结构及板块俯冲带、海沟、海槽演化的动力学特征，也可以用于研究天然地震的地震层析成像以及地震活动性和地震预报等，广泛应用于油气勘探、地球深部结构探测等领域。

Product Introduction

Ocean bottom seismometer (OBS) is a kind of seismic observation system that place geophone directly at sea bottom. In marine geophysical investigation and research, OBS can be used to observe both artificial and natural seismic profile. The observation results can be used to study the velocity structure of marine earth crust and mantle and kinetic characteristics of subduction zone, trench and trough evolution. The results can also be used to study the seismic tomography of natural earthquakes, seismicity and earthquake prediction etc. OBS are widely used in oil exploration and investigation of deep structure of the earth etc.

主要技术参数
Main tech parameter

型号 Specification		宽频带长周期四通道 OBS Narrowband long-term 4-channel OBS	便携式短周期四通道 OBS Portable short-term 4-channel OBS	短周四通道 OBS Short-term 4-channel OBS
重量 Weight	仪器重量 Instrument	90 kg	25Kg	44 kg
	沉耦架重量 Seismic anchor	25 kg	10 ~ 15 kg	20 ~ 25 kg
尺寸 Size	仪器尺寸 Instrument	600 × 600 × 1200(mm)	400x400x600	600 × 600 × 700
	包含沉耦架尺寸 Seismic anchor included	900 × 900 × 1500(mm)	700x700x800	900 × 900 × 1000
仪器耐压 Deployment depth limit		6000m, 9000m,12000m	6000m	6000 m、9000m
通道数 Channels		4（3 分量速度检波器，1 通道水听器；3 for velocity geophone and 1 for hydrophone)		
连续工作时间 Working time		10 ~ 15 个月 10 ~ 15months	2 个月 2months	10 个月 10months
最大回收周期 Max recycling time		24 个月 months	6 个月 months	15 个月 months
检波器 Geophone	地震检波器频带 Bandwidth	60 s ~ 50 Hz，电容换能地震计 (60 s ~ 50 Hz, 可选 120 s、60 s 和 30 s ~ 50Hz 任意带宽 60 s ~ 50 Hz, capacitance transduce seismometer(60 s ~ 50 Hz 120 s, 60 s and 30 s ~ 50Hz optional	1 Hz ~ 200 Hz、0.1Hz、2Hz、4.5Hz~ 200 Hz 可选 1 Hz ~ 200 Hz 0.1 Hz, 2 Hz , 4.5Hz~ 200 Hz optional	0.1 Hz ~ 100 Hz；0.1 Hz、0.2 Hz、0.5 Hz、1 Hz、2 Hz ~ 100 Hz 可选 0.1 Hz ~ 100 Hz optional; 0.1 Hz, 0.2 Hz, 0.5 Hz, 1 Hz, 2 Hz ~ 100 Hz optional
	地震检波器灵敏度 Sensitivity	100V/(M*S-1)		
水听器 Hydrophone	水听器频带 Bandwidth	0.01 Hz ~ 20k Hz 或 2Hz ～ 30kHz 0.01 Hz ~ 20k Hz or 2Hz ～ 30kHz		
	水听器灵敏度 Sensitivity	-165 dB re: 1 V/ μ Pa		
整机功耗 Power consumption		0.15 W		
动态范围 Dynamic range		>120dB		
采样率 Sampling rate		250，100，50 sps	500,250,100sps	500，250，100sps

3.4.5 GOBS 组合式海底地震仪
3.4.5 Group Ocean Bottom Seismometer

GOBS 节点式海底地震仪

产品简介

GOBS 组合式海底地震仪主要利用人工震源探查海底沉积层和深部地质构造。各采集节点由软性线缆进行连接，高密度布放，适用于二维、三维复杂海底地震勘探。

Product Introduction

The combined ocean bottom seismograph GOBS are mainly use the artificial seismic source to investigate the seabed sediments and deep geological structures. All collection nodes are connected via flexible cables and are distributed at high density, suitable for seismic observation in complicated ocean bottom.

主要技术参数
Main tech parameter

仪器尺寸 Volume	ϕ 300mm × 150mm
耐压水深 Deployment depth limit	1500 m (可定制，如 G100、G700、G1000、G2000 等 ;customization available, e.g. G100, G700, G1000, G2000 etc.)
通道数 Channel	4（3 分量速度检波器、1 通道水听器）；4(3 for velocity geophone and 1 for hydrophone)
连续工作时长 Continuous operation duration	30 days
检波器频带 Geophone frequency bandwidth	1 ~ 300Hz
采样率 Sampling rate	1000, 500, 250, 100 sps
内置高精度时钟 Internal high accuracy clock	OCXO, 0.01 PPM@4˚C
自存储容量 Storage capacity	32GB (extendable via SD card) 32GB（可扩充更大容量 SD 卡）
数据传输 Data transmission	TCP/IP 协议、以太网接口；TCP/IP , Ethernet interface
仪器重量 Weight	23kg (耐压水深不同，外壳材质有所差异，故仪器重量略有差异 Different deployment depth limits and case materials may cause weight differences.)
可改制为沉浮式 GOBS，配浮桶、沉耦架和声学释放器。 GOBS can be converted into floating combined ocean bottom seismometer with floating buckets, seismograph anchors and acoustic release transponders.	

3.4.6 OBEM 标准宽频带电磁场一体机
3.4.6 OBEM Ocean Bottom Electromagnetic Meter

OBEM 标准宽频带电磁场一体机

产品简介

海底电磁场仪（Ocean Bottom Electromagnetic Meter 简称 OBEM）是用于接收和记录海底电磁场信号的一种海洋地球物理观测与勘探设备，内置小型低频磁通门传感器和填充式电传感器，根据搭载传感器可分为海底电场仪（OBE）、海底磁场仪（OBM）、海底电磁场仪（OBEM）等型号，已广泛应用于大洋调查、海洋资源勘查、海底构造研究与防灾减灾、海底 MT 和人工大地电磁测深等方面。

Product Introduction

Ocean bottom electromagnetic meters are a kind of marine geophysical observation and exploration instrument that is used to receive and record ocean bottom electromagnetic signal. There are internal small low frequency fluxgate sensors and filling electric sensors inside OBEM. According to the equipped sensors, ocean bottom electromagnetic meters can be divided into ocean bottom electrical meter (OBE), ocean bottom magnetic meter (OBM) and ocean bottom electromagnetic meter (OBEM). Ocean bottom electromagnetic meters are widely used for marine survey, marine resource exploration, ocean bottom structure research and disaster prevention, mitigation, marine geophysical instrument, observation technology marine magnetotelluric and artificial magnetotelluric sounding.

主要技术参数
Main tech parameter

仪器尺寸 Volume	600 × 600 × 700 mm
投放尺寸 (含沉耦架) Deployment volume (seismic anchor included)	900 × 900 × 1000 mm
电极臂展 Electrode extend length	5 m
耐压水深 Deployment depth limit	6000 m
通道数 Channel	五通道（磁场 3 分量，电场 2 分量）5 (3 for magnetic and 2 for electric)
连续工作时长 Continuous operation duration	2 个月 2 months
最大回收周期 Maximum retrieve period	4 个月；4 months
磁感计带宽 Magnetometer bandwidth	DC~500 Hz
磁感计噪声 Magnetometer noise	6pT / sqrt (Hz) @1Hz
磁感计测量范围 Magnetometer measuring range	±100 μT
电压噪声 Voltage noise	1nV / sqrt (Hz) @1Hz
电极类型 Electrode type	AgCl
动态范围 Dynamic range	>120 dB
整机功耗 Power consumption	0.25 W
采样率 Sampling rate	1000, 500, 250, 100 sps
仪器重量（不含沉耦架） Weight (seismic anchor not included)	50kg
沉耦架重量 Seismic anchor weight	25

3.5 测井仪器
3.5 Logging Instrument

3.5.1 JGS—6 综合数字测井系统
3.5.1 Integrated Digital Logging System

JGS—6 综合数字测井系统

产品简介

JGS—6 综合数字测井系统是新一代多参数综合数字测井设备，可测试电、磁、放射性、声学、井径、井温、井斜等各种参数，广泛应用于煤田、核工业、金属矿产、地热、油气资源、水文地质与工程地质等相关领域的综合测井勘探。

Product Introduction

JGS-6 integrated digital logging system is a new generation of multi-parameter integrated digital logging equipment. Widely used in coalfield, nuclear industry, metal mineral, geothermal, oil and gas resources, hydrogeology and engineering geology and other related fields of comprehensive logging exploration.

主要技术参数
Main tech parameter

数据传输方式 Data transmission method	双向数字传输 two-way digital transmission
数字信号传输频率 Digital signal transmission frequency	11520bit/s
A/D	16
测程 Measuring range	-10V ～ +10V
脉冲记数通道频率范围 Pulse counting channel frequency range	0.1Hz ～ 2.5MHz
连续一次采集深度 Continuous acquisition depth	≤3200M
采样间隔 sampling interval	2cm ～ 10m
深度显示范围 Depth display range	0 ～ 9999.99m
深度误差 Depth error	≤0.4‰
工作电源 Working power	AC220V±20%，50Hz±10%
井下探管耐压 Downhole probe pressure resistance	≤45MPa
井下探管耐温 Downhole probe temperature resistance	≤120℃
配套绞车规格 Winch types	300—3000m

3.5.2 JGS–1B 智能工程测井系统
3.5.2 Intelligent Well Logging System

JGS–1B 智能工程测井系统

绞车

井口滑轮

马龙头

探管

产品简介

JGS–1B 智能工程测井系统可接收数字信号、模拟信号，可选择散装或车载，由采集主机、绞车及电缆、各种井下探管及工作软件等组成，探管测量参数多，适用范围广；绞车系列丰富，可选择手动或电动方式，深度 300–3000 米。

Product Introduction

JGS-1B intelligent well logging system can receive digital and stimulated signals. The system can be vehicle-mounted or unattached. It consists of main collection unit, winch, cables and all kinds of borehole probes. Probes can measure multiple parameters with a wide application range. There is a wide range of winch options, manual or electrical, from 300m to 3000m.

主要技术参数
Main tech parameter

A/D	12 位，放大倍数 0.5~128 12bit, Magnification K=0.5~128
计数通道频率 Counting Channel	≤2MHz
数字信号传输频率 Digital Signal Transmission Frequency	9600bit/s
电法供电周期 Power Supply Cycle	400ms
电法供电电流 Current	2mA~500mA 可选 optional 2,5,10,20,50,100,200,500 mA 可选 optional
模拟信号输入范围 Signal Input Range	≤±10V
测井速度 Logging Speed	0~30m/min 可调（根据采样间隔而定） adjustable (according to sampling interval)
深度测量误差 Depth Measurement Error	≤0.4‰
深度显示范围 Display of Depth Range	0~9999.99m
工作电源 Operating Power Supply	AC220V±10% 50Hz ±5%
功耗 Power Consumption	<200W
工作温度 Working Temperature	-10℃ ~ +50℃
体积 Volume	420*260*210mm（JGS-1B），,
重量 Weight	7kg(JGS-1B),
连续工作时间 Continuous operation duration	≤24h

3.5.3 JGSB—1 轻便工程测井系统
3.5.3 Intelligent Well Logging System

JGSB—1 轻便工程测井系统

产品简介

JGSB—1 轻便工程测井系统由采集主机、工作软件、笔记本电脑、绞车及电缆、各种井下探管组成，广泛应用于水利水电、铁路、公路、市政、电力、交通、城建勘测等行业浅、中深度水文地质、工程地质综合数字测井。

Product Introduction

JGSB-1 portable well logging system consists of main collection unit, operating software, laptop, winch, cables and all kinds of borehole probes. Portable well logging systems are widely used for shallow and medium depth digital logging of hydrogeology and engineering geology in industries such as hydraulic and hydroelectric projects, railway, highway, municipal administration, electric power, traffic, unban construction survey.

主要技术参数
Main tech parameter

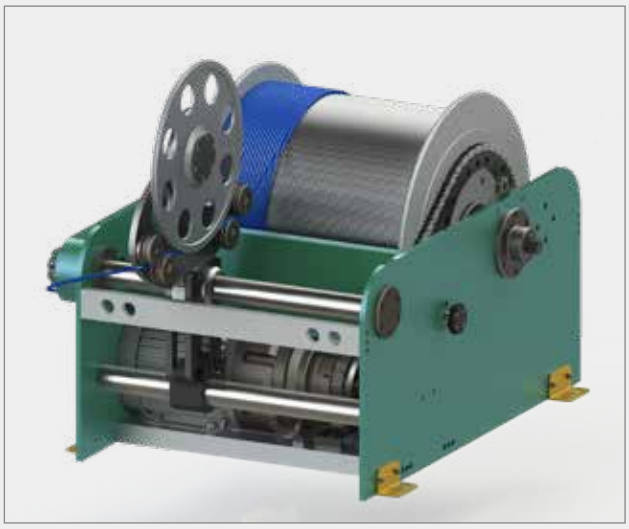
A/D	12 位，放大倍数 0.5~128 12bit, Magnification K=0.5~128
计数通道频率 Counting Channel	≤2MHz
数字信号传输频率 Digital Signal Transmission Frequency	9600bit/s
电法供电周期 Power Supply Cycle	400ms
电法供电电流 Current	2mA~500mA 可选 optional 2,5,10,20,50,100,200,500 mA 可选 optional
模拟信号输入范围 Signal Input Range	≤±10V
测井速度 Logging Speed	0~30m/min 可调（根据采样间隔而定）adjustable (according to sampling interval)
深度测量误差 Depth Measurement Error	≤0.4‰
深度显示范围 Display of Depth Range	0~9999.99m
工作电源 Operating Power Supply	AC220V±10% 50Hz ±5%
功耗 Power Consumption	<200W
工作温度 Working Temperature	-10℃ ~ +50℃
体积 Volume	365*270*170
重量 Weight	5.5
连续工作时间 Continuous working time	≤24h

3.5.4 JCH–3 绞车控制器
3.5.4 Winch Controller

绞车控制器

300 米绞车

500 米绞车



2000 米绞车

产品简介

JCH–3 绞车控制器配套深度大于等于 1000 米的绞车使用。

Product Introduction

JCH-3 winch controllers are used together with winches capable of logging boreholes over 1000 meters deep.

主要技术参数
Main tech parameter

1. 绞车控制器 winch controller

速度范围 Velocity Range	1~30m/min
恒速范围 Constant Velocity Range	0.5~20 m/min，误差 error±10%
深度范围 Depth Range	0~9999.99m 误差 error±0.4‰
工作电源 Power Supply	AC220V±10% 50Hz ±5%
连续工作时间 Continuous working time	≤24 h
深度脉冲当量 Deep Plus Equivalent	0.25mm/ 脉冲 plus
工作温度 Working Temperature	-10℃ ~ +70℃
体积 Volume	305*200*220mm
重量 Weight	<3kg

2. 绞车 winch

型号 Model	JCH-3000	JCH-2000	JCH-1000	JCW-500	JCS-300
可绕长度（米） (φ4.65mm) Maximum Coil Length (m)	3100	2200	1200	700 370（Φ7 橡皮电缆 rubber cable）	360
尺寸 Volume (mm)	940*800*720	920*680*700	710*620*670	540*400*380	560*490*360
重量 Net weight(kg)	150	120	110	18	25
电机功率 Engine power(kW)	2.2	1.5	1.1	手动	手动
编码器脉冲数 Encoder pulse	4000/ 主轮 1 圈 4000/main-wheel spin			无 N/A	4000/ 主轮 1 圈 4000/main-wheel spin
集流环芯数 Slip ring core	6 芯 cores	6 芯 cores	6 芯 cores	6 芯 cores	6 芯 cores
备注 Remark	变频自动绞车 Frequency conversion automatic winch			简易手动绞车 simple manual winch	自动排线绞车 automatic line arranging winch

3.5.5 JCX–3 三分量井中磁力仪
3.5.5 Three Component Borehole MAGNETOMETERS

JCX–3 三分量井中磁力仪

产品简介

JCX–3 三分量井中磁力仪由地面主机、井下探管、提升设备（手动或电动绞车）、数据处理软件等组成，用于寻找磁性矿物伴生矿床，判断地面磁异常及其性质，确定见矿矿体的产状，估算矿物品位，确定盲矿的深度及方向，指导布钻，配合地面磁测进行三维解释等。

Product Introduction

JCX-3 three component borehole magnetometer consists of a ground main unit, borehole probe, elevating equipment (manual or electrical winch), data processing software and related accessories. Three component borehole magnetometers can be used to search for magnetic mineral associated deposits, evaluate geological magnetic abnormality, evaluate orebody quality, estimate ore grade, determinate the depth and direction of blind orebodies, provide guidance for hole drilling and conduct 3D analysis together with geological magnetic measurement.

主要技术参数
Main tech parameter

测量范围 Measurement Range	-99999nT~+99999nT
水平分量 H 转向差 X,Y Sensitive Element to the Original	≤400nT
Z 磁敏元件转向差 Z Magnetic Sensor to the Original	≤300nT
倾角测量范围 Inclinometer Measurement Range	0~45°，误差小于 0.2° 0~45° ,Error ＜ 0.2°
方位角测量范围 Azimuth Angle Measurement Range	0~360°，误差小于 0.2°（倾角 ≥3°） 0~360° ,Error ＜ 0.2°（Vertex≥3°）
线性度 Linearity	≤2‰
探管尺寸 Probe Dimension	Φ42*1400mm
探管重量 Probe Weight	4.2kg
测量井深 Measured Well Depth	2000m（可定制 3000 米） （2000m, 3000m is customizable）
主机工作电源 Instrument Working Power Supply	DC12V/200mA
主机工作温度 Working Environment: Temperature	0℃ ~ 70℃，90%Rh
主机尺寸 Instrument Dimension	305*200*228mm
主机重量 Weight	4kg

3.5.6 JKX–4 钻孔全孔壁成像系统
3.5.6 Borehole Imaging System

JKX–4 钻孔全孔壁成像系统

产品简介

JKX–4 钻孔全孔壁成像系统能清晰地通过光学成像获得清晰真实的全孔壁信息，有助于准确确定岩性分类、调查地质结构、探测断层、裂缝和断裂带以及观察地下水活动等。 在工程建设中，可用于检查浇筑和灌浆质量，辅助地质力学试验，帮助监测和检测地质灾害，为地下设备安装提供指导，检查地下管线和隧道施工等。

Product Introduction

Borehole imaging system can get the images inside boreholes. The underground images generated via optical imaging are objective and authentic . The borehole imaging system can help accurately determine lithological classification, investigate geological structure, detect faults, fractures and fractured zones and observe underground water activity etc. In engineering construction, the borehole imaging system can be used to examine pouring and grouting quality, assist geological mechanic tests, help monitor and detect geological disasters, provide guidance for underground equipment installation, inspect underground pipelines and advanced detection for tunnel construction.

主要技术参数
Main tech parameter

采集模式 Collection mode	拼接模式，录像模式，拼接 + 录像模式； Mosaic mode, video mode, mosaic + video mode
拼接模式 Mosaic mode	上拉拼接，下降拼接；Pull-up mosaic, pull-down mosaic
CCD	1/3 寸，700 线无丢码高清；1/3 inch, 700 lines lossless HD
图像垂直分辨率 Image vertical resolution	0.1mm；
图像水平分辨率 Image horizontal resolution	1024 PPI
深度计数精度 Depth measurement accuracy	0.01m；
深度记录误差 Depth error	0.1%；
方位精度 Azimuth accuracy	±0.1°；
探头外径 Probe outer diameter	Φ60mm；
适应孔径 Appropriate borehole diameter	Φ70 ～ 300mm；
下放速度 Descending speed	2m/min ～ 8m/min；
线缆长度 Cable length	标配 300 米，可选配 150 米、600 米、800 米； 300m (150m, 600m, 800m optional)
电池有效工作时间 Battery life	300 米标配时工作 8 小时，可外接电池或适配器工作 8h for 300m (able to connect external battery or adapter)

3.5.7 JQX–2 轻便数字测斜仪
3.5.7 Portable Digital Inclinometer

JQX–2 轻便数字测斜仪

产品简介

JQX–2 轻便数字测斜仪由地面主机，井下探管，轻便手动绞盘等组成，用于各类非磁或弱磁地质钻孔的顶角和方位测量。

Product Introduction

JQX-2 portable digital inclinometer consists of main ground unit, borehole probe, portable manual winch and related accessories. Portable digital inclinometers are widely used in nonmagnetic and weak magnetic geological borehole vertex and azimuth measurement.

主要技术参数
Main tech parameter

倾角测量范围 Inclinometer Measurement Range	0~60°，精度小于等于 0.1° 0~60° ,Accuracy ≤0.1°
方位角测量范围 Azimuth Angle Measurement Range	0~360°
精度 Accuracy	±4°（顶角 ≥3°），±6°（2° ≤ 倾角 ≤ 3°） ±4°（Vertex≥3°），±6°（2° ≤Inclinometer≤ 3°）
工作温度 Operating Temperature	0℃ ~ 85℃
探管尺寸 Probe Dimension	Φ42*980mm
重量 Weight	2kg（加重棒 5kg）(2kg, weight-gained bar 5kg)
探管下井深度 Downhole Depth Probe	≤1000m
地面仪尺寸 Instrument Volume	240*95*140mm
重量 Weight	0.8kg

3.5.8 JTG—1 光纤陀螺测斜仪
3.5.8 Fiber Optic Gyro Inclinometer

JTG—1 光纤陀螺测斜仪

产品简介

JTG—1 光纤陀螺测斜仪由采集主机、工作软件及笔记本电脑、绞车及电缆、各种井下探管组成，采用高精度光纤陀螺作方位测量传感器，适用于磁性矿区、铁套管等铁磁干扰严重的环境下高精度测量钻孔斜度及方位。

Product Introduction

JTG-1 fiber optic gyro inclinometer consists of main collection unit, operation software, laptop, winch, cables and various borehole probes. Using high accuracy fiber optic gyro as azimuth measurement sensor, the fiber optic gyro inclinometers can be used to accurately measure borehole inclination and azimuth in environments of severe magnetic interference, e.g. magnetic mineral areas and iron casing pipes etc.

主要技术参数
Main tech parameter

倾角测量范围 Inclinometer Measurement Range	0~45°，误差小于等于 0.1° 0~45° ,Error ≤0.1°
方位角测量范围 Azimuth Angle Measurement Range	0~360°，误差 ≤4° （1° ≤ 倾角 ≤ 45° ） 0~360° ,Error ≤4° （1° ≤ Vertex ≤ 45° ）
静止飘移 Static Drift	≤2°，漂移的非线性：≤1° ≤2° , Drift of the nonlinear ≤1°
测量方式 Measurement mode	点测（频率 1 次 /140 秒）
探管尺寸 Probe Dimension	Φ40*1900mm
重量 Weight	4.2kg
测量井深 Measured Well Depth	≤2000m
主机工作电源 Instrument Working Power Supply	AC220V ± 10% 50Hz ± 5%
主机工作温度 Working Environment: Temperature	-10℃ ~ 70℃，90%Rh
主机尺寸 Instrument Volume	305*200*210mm
主机重量 Weight	3kg

3.6 放射性仪器

3.6.1 FD—803A γ 射线检测仪
3.6.1 γ Ray Surveying Instrument

FD—803A γ 射线检测仪

产品简介

FD—803A γ 射线检测仪可以直接测量放射性 γ 剂量率，可用于大面积伽马异常普查环境、探槽岩性编录，现场铀矿样半定量分析，环境及住宅建筑装饰材料放射性检测， 寻找地下水、测定固体物质密度，及坑道等。

Product Introduction

γ Ray Surveying Instrument can directly measure radioactivity γ energy or exposure rate. It can be used for fast γ abnormality survey over a large area, lithological logging of tunnels and trenches ,Semi-quantitative analysis of uranium mine samples in field, radioactivity survey of environment and residential construction and decorations, search for underground water and examination of building foundation.

主要技术参数
Main tech parameter

伽马射线能量 γ ray energy	不小于 30Kev；No less than 30Kev
灵敏度 Sensitivity	4ppmeu
测量 Measurement range	×1 档 0 ～ 9999 可用溢出报警扩大读数范围； ×1 Class: 0~9999 (Range can be extended by putting on an alarm)
探测器 Detector	NaI(TL) 晶体， ϕ30×25mm；NaI(TL) crystal, ϕ30×25mm
电源 Power supply	内置充电电池；Internal chargeable battery
工作环境温度 Operating temperature	10˚C ～ +50˚C
相对湿度 Relative humidity	85%
尺寸 Volume	204×200×46mm
重量 Weight	1kg

3.6.2 NP4—2 型微机多道伽玛能谱仪
3.6.2 Handheld Multichannel Gamma Ray Spectrometer

NP4—2 型微机多道伽玛能谱仪

产品简介

NP4—2 型微机多道伽玛能谱仪是 1024 通道 γ 能谱仪，能采集光谱信号进行现场处理，由主机和闪烁探头组成，可用于放射性矿物资源如铀、钍和钾的调查，地下水调查及住宅和建筑材料的 γ 射线能量分析。

Product Introduction

Handheld multichannel gamma ray spectrometer is a 1024-channel γ spectrometer capable of both spectral signal collection and field processing. The spectrometer consists of main unit and the scintillation probe. The spectrometer can be used to investigate of radioactive mineral resources, e.g. uranium (U), thorium (Th) and potassium (K),and investigation of underground water and γ ray energy analysis of residences and construction materials

主要技术参数
Main tech parameter

能量分辨率 Energy resolution	<9%（137Cs 点源 γ 射线）；< 9% (173Cs γ ray)
测量能量区域 Measurable energy range	总道 ≥30keV、K 道 1370 ～ 1565keV、U 道 1660 ～ 1880 keV、Th 道 2420 ～ 2810 keV； Total channel≥30keV; K channel: 1370 ～ 1565keV; U channel: 1660~1880 keV; Th channel: 2420 ～ 2810 keV
多道 Multichannel	多道： 可选 256、512、1024 道，每道计数最大容量为 65535； 256, 512, 1024 optional; Maximum enumeration of each channel is 65535.
测量时间 Measuring time	1 ～ 65535s 可选 optional
仪器使用环境 Operating temperature	-5 ～ 50℃，≤95% RH
探头外形尺寸 Probe volume	Φ100 × 400mm
探头重量 Probe weight	3.9kg
探头电源 Probe battery	3500mAh（可连续工作 12 小时）；3500mAh (continuously operating for 12h)
主机 PDA	多普达 T8288；Dopod T8288

4. 分析仪器
4 Analytical Instruments

4.1 原子荧光光度计
4.1 Atomic Fluorescence Spectrometer

原子荧光光度计 AFS

产品简介

原子荧光光度计（AFS）可以测量各种元素的含量，适用于环境保护、食品安全、疾病控制、医疗保健、农业、地质、矿产、化妆品、水土质量检测、出入境检验等与砷、汞、硒、铅、锑、锡、锑、镧、镉、铋、锌、金总含量检测要求相关的行业。

Product Introduction

Atomic fluorescence photometer (AFS) Atomic fluorescence spectrometers can measure contents of various elements, e.g. arsenic, mercury, selenium, lead, antimony, tin, antimony, antimony, cadmium, antimony, zinc, gold etc., in various industries, e.g. environmental protection, food safety, disease control, medical care, agriculture, mining, cosmetics, water and soil quality testing and exit-entry inspection etc.

型号差异
Differences Between Models

	AFS-9560	AFS-9750	AFS-9920	AFS-8510
通道数 Channel	2	2	4	2
灯位 Light point	4	2	4	2
流路控制 Flow control	双注射泵 Double injection pump	单注射泵 Single injection pump	单注射泵 Single injection pump	蠕动泵 Peristaltic pump
进样方式 Sample injection	顺序注射 Sequential injection			

主要技术参数
Main tech parameter

元素 Element	As、Se、Pb、Bi、Sb、Te、Sn	Hg、Cd	Zn	Ge	Au
检出限 Detection limit	<0.01μg/L	<0.001μg/L	<1.0μg/L	<0.05μg/L	<3.0μg/L
精密度 Relative standard deviation	<0.7%				
相关系数 Correlation coefficient	0.999				
线性范围 Linear range	0.1ng/kg ～ 100 ng/kg				
分析时间 Analysis time	10min				

4.2 液相色谱原子荧光联用仪
4.2 Liquid chromatography atomic fluorescence spectrometer

原子荧光光度计 AFS

产品简介

液相色谱原子荧光联用仪适用于环境保护、食品安全、疾病控制、医药医疗、农业、地矿、化妆品、水质土壤检测、出入境等行业相关领域对砷、汞、硒、铅、锗、锡、锑、铋、镉、碲、锌、金等元素总含量及形态分析的检测需求。

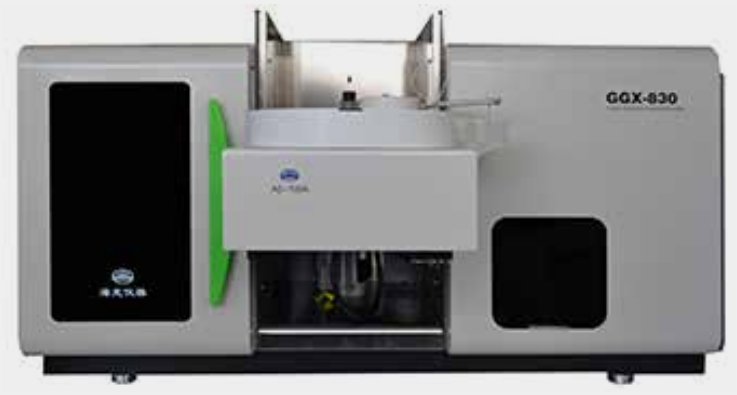
Product Introduction

Liquid chromatography atomic fluorescence spectrometers can measure contents of various elements, e.g. arsenic, mercury, selenium, lead, antimony, tin, antimony, antimony, cadmium, antimony, zinc, gold etc., in various industries, e.g. environmental protection, food safety, disease control, medical care, agriculture, mining, cosmetics, water and soil quality testing and exit-entry inspection etc.

主要技术参数
Main tech parameter

检测元素形态 Elemental speciation		最小检出量（ng） minimum detectable content	分析时间 (min) analysis time	精密度（RSD） Accuracy	线性范围 Linear range	相关系数 Correlation coefficient
As	As（III）	0.04	＜ 10	＜ 4.5%	10^3	＞ 0.999
	DMA	0.08				
	MMA	0.08				
	As（V）	0.2				
Se	SeCys	0.3	＜ 10			
	SeMeCys	1				
	Se（IV）	0.1				
	SeMet	2				
Hg	Hg（II）	0.05	＜ 12			
	MeHg	0.05				
	EtHg	0.05				
	PhHg	0.1				
Sb	Sb（V）	0.1	＜ 10			
	Sb（III）	0.5				

4.3 原子吸收分光光度计
4.3 ATOMIC ABSORPTION SPECTROPHOTOMETER



原子吸收分光光度计 GGX

产品简介

原子吸收分光光度计可检元素范围广，多达 70 种，同时对于常检元素砷、汞、硒、锑原子荧光有更好的检测精度。

Product Introduction

Atomic absorption spectrophotometer has a wide range or measurable elements (up to 70), and has better accuracy on frequent target elements, such as arsenic, mercury, selenium and tellurium.

型号差异
Differences Between Models

	GGX-830	GGX-900	GGX-600	GGX-200
原子化器 Atomizer	火焰、石墨炉原子化器 Flame, graphite furnace atomize	火焰原子化器 Flame atomizer	火焰原子化器 Flame atomizer	石墨炉原子化器 Graphite furnace atomizer
扣背景方式 Background deduction	氘灯 Deuterium lamp	塞曼 Zeaman	氘灯 Deuterium lamp	氘灯 Deuterium lamp

主要技术参数
Main tech parameter

波长范围 Wavelength Range	190-900nm
波长准确度 Wavelength Accuracy	±0.1nm
波长重复性 Wavelength Repeatability	≤0.1nm
光谱带宽偏差 Spectral Bandwidth Deviation	±0.02nm
基线漂移 Baseline Drift	≤±0.003A/30min
背景校正能力 Background Correction	≥60 times
检出限 Detection Limit	Cu≤0.003μg/ml（Flame atomizer）、Cd≤0.5pg（Graphite furnace atomizer）
测量精度 Relative Standard Deviation (RSD)	Cu≤0.6%（Flame atomizer）、Cd≤2.0%（Graphite furnace atomizer）

4.4 测汞仪
4.4 Mercury analyzer

HGA—100 直接进样测汞仪

产品简介

直接进样测汞仪适用于环境保护、食品安全、疾病控制、医药医疗、农业、地矿、化妆品、水质土壤检测、出入境等行业相关领域对汞含量的检测需求，尤其适用于环境检测、水质土壤研究及矿业。

Product Introduction

Mercury analyzers can measure contents of mercury in various industries, e.g. environmental protection, food safety, disease control, medical care, agriculture, mining, cosmetics, water and soil quality testing and exit-entry inspection etc., especially for environmental detection, water and soil survey and mining industry.

主要技术参数
Main tech parameter

样品检出限 Detection limit	＜ 0.009 ng
相对标准偏差 Relative standard deviation（RSD）	＜ 1.5%
相关系数 Correlation coefficient（r）	≥0.998（(long cuvette）≥0.997（short cuvette）
最大进样量 Maximum sample injection	1.5g（solid）、1.5ml（liquid）
线性范围 Linear range	0 ～ 15 ng（(long cuvette） 15 ～ 200 ng（short cuvette）
分析时间 Analysis time	5 min

4.5 全自动流动注射分析仪
4.5 Fully Automated Flow Injection Analyzer

测汞仪

产品简介

全自动流动注射分析仪用于地表水、地下水、饮用水、生活污水、工业废水及土壤样品中的总氰化物、挥发酚、氨氮、阴离子洗涤剂、硫化物、六价铬、总磷、总氮、COD（Mn）等项目的全自动分析。

Product Introduction

Fully automated flow injection analyzer can be used for automatic analysis of total cyanide, volatile phenol, ammonia nitrogen, anionic detergent, sulfide, hexavalent chromium, total phosphorus, total nitrogen and COD (Mn) in surface water, groundwater, drinking water, domestic sewage, industrial wastewater and soil samples.

主要技术参数
Main tech parameter

检测项目 Testing Items	方法原理 Test Method	线性范围（mg/l） Linear Range	检出限（mg/l） Detection Limit	精密度 (%) Accuracy
总氰化物 total cyanide	异烟酸 - 巴比妥酸分光光度法 Spectrophotometric method of isnicotinic acid-barbituric acid	0.001 ～ 0.2	≤0.0005	≤1
挥发酚 Volatile phenol	4- 氨基安替比林分光光度法 4-Amino Antipyrine Spectrophotometry	0.001 ～ 0.2	≤0.0005	≤1
阴离子表面活性剂 Anionic surfactant	亚甲基蓝分光光度法 Methylene blue spectrophotometry	0.02 ～ 1.5	≤0.005	≤2
氨氮 ammonia nitrogen	水杨酸分光光度法 Salicylic acid spectrophotometry	0.05 ～ 10	≤0.02	≤1
总磷 total phosphorus	组酸铵分光光度法 Ammonium Molybdate Spectrophotometry	0.04 ～ 5	≤0.01	≤1
总氮 total nitrogen	盐酸萘乙二胺分光光度法 Spectrophotometric Method of Naphthalene Ethylenediamine Hydrochloride	0.04 ～ 10	≤0.02	≤1

4.6 快速溶剂萃取仪
4.6 THE SOLVENT EXTRACTOR

快速溶剂萃取仪

产品简介

快速溶剂萃取仪主要用于固体或半固体样品中有机物的快速提取和净化，是与 GC、LC 以及色谱－质谱等检测设备配套的自动化前处理设备。

Product Introduction

The Solvent Extractor can be used for fast extraction and purification of organic substances in solid or semi-solid samples. It is an automatic pretreatment equipment matched with GC, LC, chromatography-mass spectrometry and other detection equipment.

主要技术参数
Main tech parameter

萃取方法 Extraction method	样品处理量（g） Sample throughput	溶剂消耗（mL） Solvent consumption	溶剂样品比（mL/g） Solvent/sample ratio	平均萃取时间 Extraction time
索氏提取 Soxhlet Extraction	10 ～ 30	300 ～ 500	16 ～ 30	4 ～ 48h
超声提取 Ultrasonic extraction	30	300 ～ 400	10 ～ 13	0.5 ～ 1h
微波萃取 Microwave extraction	5	30	6	0.5 ～ 1h
自动索氏萃取 Automatic Soxhlet Extraction	10	50	5	1 ～ 4h
快速溶剂萃取 Rapid solvent extraction	10 ～ 100	15 ～ 150	1.5	15min

5 环保装备
5 ENVIRONMENTAL PROTECTION EQUIPMENT

5.1 强力吸污车
5.1 SEWAGE TREATMENT VEHICLE

强力吸污车

产品简介

强力吸污处理车是现代城镇市政处理设施科技发展全新概念处理装备，改装备将原有固定的市政处理设施变为〝移动的模块化处理工厂〞，从而进一步解决了现代城镇建设大型固定处理设施选址难、建设投资大、运行成本高，运行管理人员必须专业配置等诸多问题。

主要技术参数

节省建设投资

节约用地

干湿分离效率是传统方式的 20 倍以上

可统筹处理直径 30 公里范围内的粪污

Product Introduction

The powerful sewage treatment vehicle is a new concept processing equipment for the development of modern urban municipal treatment facilities, and the equipment has changed the existing fixed municipal treatment facilities into a “mobile modular processing factory”, thus further solving the large-scale fixed treatment facilities for modern urban construction. Difficult location selection, large construction investment, high operating costs, operational management personnel must be professionally configured and many other issues.

Main tech parameter

Saving construction investment 80%-83%

Saving land by 90%

Dry and wet separation efficiency is more than 20 times that of the traditional method

Handling manure within a 30 km diameter

中国国机重工集团有限公司

China SINOMACH Heavy Industry Corporation

公司名称：中国国机重工集团有限公司

Company Name: China SINOMACH Heavy Industry Corporation

http://www.sinomach-hi.com

中国国机重工集团有限公司（国机重工）成立于 2011 年 1 月，是世界 500 强企业中国机械工业集团有限公司（国机集团）的二级子公司，是由国机集团旗下工程机械业务资源重组整合改制而成立的大型装备制造企业集团，总部设在北京。

国机重工主营业务涵盖工程机械及相关重工领域的研发制造、服务、工程承包和贸易等三大领域。现有 27 家控股和参股企业，其中 4 家海外公司。在天津、江苏常州、河南洛阳、四川泸州等地拥有大型产业基地。与工程机械行业世界知名企业韩国现代、日本小松等组建合资企业，合作机构遍布全球 100 多个国家和地区。

China SINOMACH Heavy Industry Corporation (SINOMACH Heavy Industry), founded in January 2011, is a wholly-owned subsidiary of China National Machinery Industry Corporation (SINOMACH), which is one of the Fortune 500 enterprises, and is also a large-scale equipment manufacturing group established through restructuring and reform of the resources of the construction machinery business of SINOMACH. Its headquarter is in Beijing, China.

SINOMACH Heavy Industry corporation covers three major businesses: they are R&D manufacture and service of construction machinery industry, engineering contracting and trade. Now it has held and participated in shareholding of 27 enterprises, in which there are four overseas companies, and four big industry bases in Tianjin, Changzhou(Jiangsu province), Luoyang(Henan province), and Luzhou(Sichuan province). Besides, SINOMACH Heavy Industry has established joint ventures in the construction machinery field with world famous enterprises such as Hyundai of South Korea, Komatsu of Japan, etc., with the joint ventures and cooperation enterprises located in more than 100 countries and regions all over the world .

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1 挖掘机
1 EXCAVATOR

产品简介

挖掘机广泛应用于水利工程、交通运输、电力工程和矿山采掘等机械施工中，它在减轻繁重的体力劳动，保证工程质量，加快建设速度以及提高劳动生产率方面起着十分重要的作用。国机重工汇集优势资源，自主创新，研发制造了标准化、模块化、系列化的 SINOMACH 履带式液压挖掘机，产品从 6 吨到 46 吨，满足多种工况需求，以 “高配、节能、可靠、舒适” 四大性能特点，成为市场的新宠。

Product Introduction

Excavating extensively Be applied to the marine hydraulic engineering, transportation and electric power machines, such as engineering and mineral mountain digging...etc. under construction, it is easing heavy manual labor, promise engineering quality, speed to constuct speed and exaltation labor rate of production to have a very important function. China SINOMACH Heavy Industry Corporation researches and develops standardized, modular and serialized SINOMACH crawler hydraulic excavator by pooling superior resources and innovating independently. From 6 tons to 46 tons, meets all working conditiongs. This product has become the new favorite of the market by its four performance characteristics of “high-level configuration, energy conservation, reliability, and comfort”.

1.1 挖掘机 ZG3465LC–9C
1.1 EXCAVATOR ZG3465LC-9C

主要性能参数

发动机：康明斯 QSM11（III）
额定功率：298kW/1800rpm
整机重量：47300kg
行走速度（高/低）：4.6/2.8km/h
标准铲斗容量：2.2m^3
整机总长：12040mm
整机总宽：3340mm
整机总高：3639mm

产品简介

原装进口发动机，动力强劲、高效节能、可靠耐用，满足国三排放要求；先进的负流量液压系统，操作舒适，作业效率高，性价比极佳；全功率控制，四种功率模式适应不同工况；全三维建模和有限元分析技术，保证了结构件的可靠性和稳定性。

出口业绩

近几年，出口独联体、非洲、中东、南美、东南亚等地区的 SINOMACH 挖掘机达数百台。

Main performance parameters

Engine: CUMMINS QSM11(III)
Rated power/speed: 298 kW/1800 rpm
Operatingweight:47300 kg
Traveling speed: 4.6/2.8 km/h
Bucket capacity:2.2 m^3
Overall length: 12040 mm
Overall width: 3340 mm
Overall height: 3639 mm

Product Introduction

The original imported engine is powerful, efficient, energy-saving, reliable and durable, which meets the emission standard of National III; the advanced negative flow hydraulic system is comfortable in operation, high in operation efficiency and excellent in cost performance; under full-power control, there are four power modes that adapt to different working conditions; and the reliability and stability of structural parts are ensured through the fully 3D modeling and finite-element analysis technology.

Export performance

In recent years, hundreds of excavators SINOMACH have been exported to many countries and areas, such as CIS, Africa, the Middle East, South America, Southeast Asia etc.

1.2 挖掘机 GE65H
1.2 EXCAVATOR GE65H

主要性能参数

发动机：洋马 4TNV94L—BVBKC
额定功率：36.2kW/2100rpm
整机重量：6180kg
行走速度（高／低）：4.0/2.3km/h
标准铲斗容量：0.22m^3
整机总长：5847mm
整机总宽：1940mm
整机总高：2618mm

产品简介

GE65H 液压挖掘机采用满足国 III 排放要求的洋马大功率发动机，低速扭矩大，燃油消耗低，作业效率高，可靠耐用；使用先进的负载敏感控制系统，快速灵活，控制精准；采用全新的外观设计和整机布局，优化了各保养、检修位置，改善了维修保养的便利性，可广泛应用于市政、道路、水利、管网、厂矿企业等工况。

出口业绩

近几年，出口独联体、非洲、中东、南美、东南亚等地区的 SINOMACH 挖掘机达数百台。

Main performance parameters

Engine: YANMAR 4TNV94L-BVBKC
Rated power/speed: 36.2 kW/2100 rpm
Operatingweight: 6180 kg
Traveling speed: 4.0/2.3 km/h
Bucket capacity: 0.22 m^3
Overall length: 5847 mm
Overall width: 1940 mm
Overall height: 2618 mm

Product Introduction

GE65H hydraulic excavator, equipped with a Yanmar high-power engine meeting the emission standard of National III, is large in torque at low speed, low in fuel consumption, high in operation efficiency, reliable and durable; the advanced load-sensitive control system is applied, which is quick, flexible and accurate in control; and the bran-new appearance design and layout of complete machine is used to optimize maintenance and overhauling positions and improve maintenance convenience, making the hydraulic excavator widely applied to municipal administration, roads, hydraulic engineering, pipe network, industrial and mining enterprises and other working conditions.

Export performance

In recent years, hundreds of excavators SINOMACH have been exported to many countries and areas, such as CIS, Africa, the Middle East, South America, Southeast Asia etc.

1.3 挖掘机 GE150H
1.3 EXCAVATOR GE150H

主要性能参数

发动机：康明斯 QSF3.8—C115
额定功率：86kW/2200rpm
整机重量：13890kg
行走速度（高／低）：5.3/3.1km/h
标准铲斗容量：0.6m^3
整机总长：7762mm
整机总宽：2510mm
整机总高：2983mm

产品简介

GE150H 液压挖掘机配备康明斯电喷发动机（符合三阶段排放法规），动力强劲、高效节能、可靠耐用；先进的川崎负流量液压系统，操作舒适，作业效率高，性价比极佳；全功率控制，四种功率模式适应不同工况；可靠、精准的燃油喷射系统，实时控制喷油量，使燃烧更加充分，燃油效率更高；全三维建模和有限元分析技术，保证了结构件的可靠性和稳定性。

出口业绩

近几年，出口独联体、非洲、中东、南美、东南亚等地区的 SINOMACH 挖掘机达数百台。

Main performance parameters

Engine: CUMMINS QSF3.8-C115
Rated power/speed: 86 kW/2200 rpm
Operatingweight: 13890 kg
Traveling speed: 5.3/3.1 km/h
Bucket capacity: 0.6 m^3
Overall length: 7762 mm
Overall width: 2510 mm
Overall height: 2983 mm

Product Introduction

GE150H hydraulic excavator, equipped with Commins electronic fuel injection engine (meeting Chinese emission standard at phase III), is powerful in power, efficient, energy-saving, reliable and durable; the advanced Kawasaki negative flow hydraulic system is comfortable in operation, high in operation efficiency and excellent in cost performance; under full-power control, there are four power modes that adapt to different working conditions; the reliable and accurate fuel injection system can control fuel-injection quantity in real time, ensuring more full combustion and higher fuel efficiency; and the reliability and stability of structural parts are ensured through the fully 3D modeling and finite-element analysis technology.

Export performance

In recent years, hundreds of excavators SINOMACH have been exported to many countries and areas, such as CIS, Africa, the Middle East, South America, Southeast Asia etc.

1.4 挖掘机 GE220H
1.4 EXCAVATOR GE220H

主要性能参数

发动机：康明斯 QSB7—C160
额定功率：124kW/2050rpm
整机重量：22300kg
行走速度（高／低）：5.2/3.5km/h
标准铲斗容量：1.0m³
整机总长：9600mm
整机总宽：2980mm
整机总高：3045mm

产品简介

GE220H 液压挖掘机配备康明斯发动机（符合三阶段排放法规），动力强劲、高效节能、可靠耐用；先进的负流量液压系统，操作舒适，作业效率高，性价比极佳；全功率控制，四种功率模式适应不同工况；可靠、精准的燃油电喷系统，实时控制喷油量，使燃烧更加充分，燃油效率更高；全三维建模和有限元分析技术，保证了结构件的可靠性和稳定性。

出口业绩

近几年，出口独联体、非洲、中东、南美、东南亚等地区的 SINOMACH 挖掘机达数百台。

Main performance parameters

Engine: CUMMINS QSB7-C160
Rated power/speed: 124 kW/2050 rpm
Operatingweight: 22300 kg
Traveling speed: 5.2/3.5 km/h
Bucket capacity: 1.0 m³
Overall length: 9600 mm
Overall width: 2980 mm
Overall height: 3045 mm

Product Introduction

GE220H hydraulic excavator, equipped with Commins electronic fuel injection engine (meeting Chinese emission standard at phase III), is powerful in power, efficient, energy-saving, reliable and durable; the advanced Kawasaki negative flow hydraulic system is comfortable in operation, high in operation efficiency and excellent in cost performance; under full-power control, there are four power modes that adapt to different working conditions; the reliable and accurate fuel injection system can control fuel-injection quantity in real time, ensuring more full combustion and higher fuel efficiency; and the reliability and stability of structural parts are ensured through the fully 3D modeling and finite-element analysis technology.

Export performance

In recent years, hundreds of excavators SINOMACH have been exported to many countries and areas, such as CIS, Africa, the Middle East, South America, Southeast Asia etc.

1.5 挖掘机 GE260H
1.5 EXCAVATOR GE260H

主要性能参数

发动机：康明斯 QSB7—C188
额定功率：140kW/2050rpm
整机重量：25820kg
行走速度：（高／低）6.2/3.2km/h
标准铲斗容量：1.3m³
整机总长：9982mm
整机总宽：3190mm
整机总高：3272mm

产品简介

GE260H 液压挖掘机配备康明斯发动机（符合三阶段排放法规），动力强劲、高效节能、可靠耐用；先进的负流量液压系统，操作舒适，作业效率高，性价比极佳；全功率控制，四种功率模式适应不同工况；可靠、精准的燃油电喷系统，实时控制喷油量，使燃烧更加充分，燃油效率更高；全三维建模和有限元分析技术，保证了结构件的可靠性和稳定性。

出口业绩

近几年，出口独联体、非洲、中东、南美、东南亚等地区的 SINOMACH 挖掘机达数百台。

Main performance parameters

Engine: CUMMINS QSB7-C188
Rated power/speed: 140kW/2050 rpm
Operatingweight: 25820 kg
Traveling speed: 6.2/3.2 km/h
Bucket capacity: 1.3 m³
Overall length: 9982 mm
Overall width: 3190 mm
Overall height: 3272 mm

Product Introduction

GE260H hydraulic excavator, equipped with Commins electronic fuel injection engine (meeting Chinese emission standard at phase III), is powerful in power, efficient, energy-saving, reliable and durable; the advanced Kawasaki negative flow hydraulic system is comfortable in operation, high in operation efficiency and excellent in cost performance; under full-power control, there are four power modes that adapt to different working conditions; the reliable and accurate fuel injection system can control fuel-injection quantity in real time, ensuring more full combustion and higher fuel efficiency; and the reliability and stability of structural parts are ensured through the fully 3D modeling and finite-element analysis technology.

Export performance

In recent years, hundreds of excavators SINOMACH have been exported to many countries and areas, such as CIS, Africa, the Middle East, South America, Southeast Asia etc.

1.6 挖掘机 GE300H
1.6 EXCAVATOR GE300H

主要性能参数

发动机：康明斯 QSB7—C227
额定功率：169kW/2050rpm
整机重量：31380kg
行走速度（高／低）：5.1/3.1km/h
标准铲斗容量：1.4m³
整机总长：10686mm
整机总宽：3280mm
整机总高：3546mm

产品简介

GE330H 液压挖掘机配备康明斯发动机（符合三阶段排放法规），动力强劲、高效节能、可靠耐用；先进的负流量液压系统，操作舒适，作业效率高，性价比极佳；全功率控制，四种功率模式适应不同工况；可靠、精准的燃油电喷系统，实时控制喷油量，使燃烧更加充分，燃油效率更高；全三维建模和有限元分析技术，保证了结构件的可靠性和稳定性。

出口业绩

近几年，出口独联体、非洲、中东、南美、东南亚等地区的 SINOMACH 挖掘机达数百台。

Main performance parameters

Engine: CUMMINS QSB7- C227
Rated power/speed: 169kW/2050 rpm
Operatingweight: 31380 kg
Traveling speed: 5.1/3.1 km/h
Bucket capacity: 1.4 m³
Overall length: 10686 mm
Overall width: 3280 mm
Overall height: 3546 mm

Product Introduction

GE330H hydraulic excavator, equipped with Commins electronic fuel injection engine (meeting Chinese emission standard at phase III), is powerful in power, efficient, energy-saving, reliable and durable; the advanced Kawasaki negative flow hydraulic system is comfortable in operation, high in operation efficiency and excellent in cost performance; under full-power control, there are four power modes that adapt to different working conditions; the reliable and accurate fuel injection system can control fuel-injection quantity in real time, ensuring more full combustion and higher fuel efficiency; and the reliability and stability of structural parts are ensured through the fully 3D modeling and finite-element analysis technology.

Export performance

In recent years, hundreds of excavators SINOMACH have been exported to many countries and areas, such as CIS, Africa, the Middle East, South America, Southeast Asia etc.

1.7 挖掘机 GE380H
1.7 EXCAVATOR GE380H

主要性能参数

发动机：康明斯 QSL9
额定功率：232/1900rpm
整机重量：37300kg
行走速度（高／低）：5.5/3.3km/h
标准铲斗容量：1.8m³
整机总长：11280mm
整机总宽：3280mm
整机总高：3656mm

产品简介

GE380H 液压挖掘机配备原装进口康明斯发动机（符合三阶段排放法规），动力强劲、高效节能、可靠耐用；先进的负流量液压系统，操作舒适，作业效率高，性价比极佳；全功率控制，四种功率模式适应不同工况；可靠、精准的燃油电喷系统，实时控制喷油量，使燃烧更加充分，燃油效率更高；全三维建模和有限元分析技术，保证了结构件的可靠性和稳定性；针对极端恶劣的矿山作业工况，标配重载强化型动臂、短斗杆和铲斗，标配加长加宽型重载底盘，优化箱形结构，工作稳定性好。

出口业绩

近几年，出口独联体、非洲、中东、南美、东南亚等地区的 SINOMACH 挖掘机达数百台。

Main performance parameters

Engine: CUMMINS QSL9
Rated power/speed: 232/1900 rpm
Operatingweight: 37300 kg
Traveling speed: 5.5/3.3 km/h
Bucket capacity: 1.8 m³
Overall length: 11280 mm
Overall width: 3280 mm
Overall height: 3656 mm

Product Introduction

GE380H hydraulic excavator, equipped with Commins electronic fuel injection engine (meeting Chinese emission standard at phase III), is powerful in power, efficient, energy-saving, reliable and durable; the advanced negative flow hydraulic system is comfortable in operation, high in operation efficiency and excellent in cost performance; under full-power control, there are four power modes that adapt to different working conditions; the reliable and accurate fuel injection system can control fuel-injection quantity in real time, ensuring more full combustion and higher fuel efficiency; and the reliability and stability of structural parts are ensured through the fully 3D modeling and finite-element analysis technology. Heavy-duty reinforced manipulator, short bucket rod and bucket and lengthened and broadened heavy-duty chassis are equipped as standard configuration, and the box-shaped structure is optimized against extremely severe mine working condition, achieving high working stability.

Export performance

In recent years, hundreds of excavators SINOMACH have been exported to many countries and areas, such as CIS, Africa, the Middle East, South America, Southeast Asia etc.

2 装载机
2 LOADER

产品简介

装载机可用于建筑、矿山、港口、水电、铁路、公路等的施工现场和料场，它主要用来装卸散装物料，清理场地和物料的短距离搬运。公司装载机产品系列完整，额定载重量从 3—9t。以使用可靠、作业高效、操纵舒适和安全、节能减排为产品目标，根据用户不同需求，整机可适应重载、高效、高温、严寒、沙尘、雨林等恶劣环境和不同工况，附属装置的多样性，更加扩大产品使用范围。在动力、传动、液压等关键系统，可配置国际知名品牌产品，品质更具保障。

Product Introduction

Loader can be used in the construction sites and stockyards of buildings, mine, harbor, hydropower, railway and highway. It is mainly used for handling bulk materials, clearing site and handling of materials in short-distance. The company has complete loader product line, with a rated loading capacity of 3-9t.In order to use reliable, efficient, comfortable and safe operation, energy saving and emission reduction as product objectives, according to different needs of users, the wheel loader can adapt to heavy load, high efficiency, high temperature, severe cold, dust, rainforest and other harsh environments and different working conditions, the diversity of ancillary devices, and expand the scope of product use. In power, transmission, hydraulic and other key systems, wheel loader can be equipped with internationally renowned brand products, quality is more guaranteed.

2.1 装载机 932
2.1 LOADER 932

主要性能参数

额定载重量：3000kg
额定斗容量：1.7m^3
操作重量：9600kg
最大掘起力：88±5kN
最大牵引力：85±5kN
最大卸载高度：2840mm
最高时卸载距离：915mm

产品简介

适合铲装松散物料，物流装卸的经典产品。该机可靠性行业领先，秉承公司3吨装载机所有优点，在用户中享有"3吨王"美誉。国内市场保有量第一，连续多年市场占有率第一，中国名牌产品，唯一一家两次荣获国家优质产品银质奖，连续21年被中质协评为"用户满意产品"。配件社会化程度高，维修成本低，性价比高，工作效率高，尤其是配备的抓车在木材、石油等区域广泛使用。

出口业绩

装载机系列涵盖额定载重量3吨至9吨的产品。近几年，出口俄罗斯、非洲、中东、南美等地区达千余台。

Main performance parameters

Rated load: 3000kg
Bucket capacity: 1.7m^3
Operation Weight: 9600kg
Max.drawing force: 88±5 kN
Max.towing force:85±5 kN
Max.dumping clearance: 2840mm
Dumping reach:915 mm

Product Introduction

The wheel loader reliability industry is leading, adhering to all the advantages of the company's 3 tons loader, enjoying the reputation of "3 tons King" among users. The domestic market holds the first volume, occupies the first market share for many consecutive years, and the only famous brand product in China has won the National Silver Prize for Quality Products twice. It has been appraised as "User Satisfaction Product" by the China Quality Association for 21 consecutive years. Parts have high degree of socialization, low maintenance cost, high cost performance, high efficiency, especially the equipped grab car is widely used in timber, oil and other areas.

Export performance

Wheel loader series cover models whose rated load ranges from 3 ton to 9 ton. In recent years, the amount exported to the countries of Russia, Africa, the Middle East, South America has been accumulated more than 1000 units.

2.2 装载机 933
2.2 LOADER 933

主要性能参数

额定载重量：3000kg

额定斗容量：1.7m³

操作重量：10200kg

最大掘起力：96±5kN

最大牵引力：115±5kN

最大卸载高度：2934mm

最高时卸载距离：1043mm

产品简介

采用 3 吨装载机的成熟结构和特点，进一步提高整机舒适性和可靠性，使该产品始终处于国内领先水平。特别指出的是常林 933 在恶劣环境下作业，如铲装石块、钢渣的作业工况，更能显示其出众的掘起力和地面提升力。

出口业绩

装载机系列涵盖额定载重量 3 吨至 9 吨的产品。近几年，出口俄罗斯、非洲、中东、南美等地区达千余台。

Main performance parameters

Rated load: 3000kg

Bucket capacity: 1.7m³

Operation Weight: 10200kg

Max.drawing force: 96±5 kN

Max.towing force:115±5 kN

Max.dumping clearance: 2934 mm

Dumping reach:1043 mm

Product Introduction

The mature structure and characteristics of 3 ton loader are adopted to further improve the comfort and reliability of the whole machine, so that the product is always in the leading level in China. It is especially pointed out that Changlin 933 works in harsh environments, such as shoveling stones and steel slag, which can better show its outstanding excavation and ground lifting power.

Export performance

Wheel loader series cover models whose rated load ranges from 3 ton to 9 ton. In recent years, the amount exported to the countries of Russia, Africa, the Middle East, South America has been accumulated more than 1000 units.

2.3 装载机 936T
2.3 LOADER 936T

主要性能参数

额定载重量：3000kg
额定斗容量：1.7m^3
操作重量：10200kg
最大掘起力：96±5kN
最大牵引力：115±5kN
最大卸载高度：2934mm
最高时卸载距离：1043mm

产品简介

936T 装载机是公司开发的新一代 3 吨级装载机，可靠性和舒适性进一步提升，是一款全能型产品，节油能力超强，铲装效率行业领先，是一款冠军产品。该产品实现了四大突破和十项技术升级，更适合在重载、恶劣环境下作业。整机牵引力大幅度提升，充分满足高强度的作业要求，在各种恶劣工况的表现将更加出众。更可靠整车管路接头采用双重密封结构，有效解决了行业内常见管路渗漏的难题。

出口业绩

装载机系列涵盖额定载重量 3 吨至 9 吨的产品。近几年，出口俄罗斯、非洲、中东、南美等地区达千余台。

Main performance parameters

Rated load: 3000kg
Bucket capacity: 1.7m^3
Operation Weight: 10200kg
Max.drawing force: 96±5 kN
Max.towing force:115±5 kN
Max.dumping clearance: 2934 mm
Dumping reach:1043 mm

Product Introduction

936T wheel loader is a new generation of 3-ton loader developed by the company. Its reliability and comfort are further improved. It is an all-round product with super fuel-saving ability and leading shoveling efficiency. It is a champion product. The product has achieved four breakthroughs and ten technical upgrades, and is more suitable for heavy-duty and harsh environment. The traction force of the whole machine has been greatly increased, which fully meets the requirements of high-strength operation and will be more outstanding in all kinds of bad working conditions. More reliable whole vehicle pipeline joints adopt double sealing structure, which effectively solves the problem of common pipeline leakage in the industry.

Export performance

Wheel loader series cover models whose rated load ranges from 3 ton to 9 ton. In recent years, the amount exported to the countries of Russia, Africa, the Middle East, South America has been accumulated more than 1000 units.

2.4 装载机 953N
2.4 LOADER 953N

主要性能参数

整机工作重量：16500(±5%)kg

额定斗容：2.8m^3

最大卸载高度：3136mm

最大卸载距离：1171mm

最大牵引力：170kN

最大掘起力：165kN

最小转弯半径：5970mm

产品简介

953N 轮式装载机是一款 5 吨经济型产品，主要针对国内外散户，用于低价格竞争。

出口业绩

装载机系列涵盖额定载重量 3 吨至 9 吨的产品。近几年，出口俄罗斯、非洲、中东、南美等地区达千余台。

Main performance parameters

Operation Weight: 16500(±5%) kg

Bucket capacity:2.8m^3

Max.dumping clearance:3136mm

Dumping reach:1171mm

Max.drawing force: 170 kN

Max.towing force: 165 kN

Min.steering radius: 5970mm

Product Introduction

953N wheel loader is a 5-ton economic product, mainly for domestic and foreign retail investors, for low price competition.

Export performance

Wheel loader series cover models whose rated load ranges from 3 ton to 9 ton. In recent years, the amount exported to the countries of Russia, Africa, the Middle East, South America has been accumulated more than 1000 units.

2.5 装载机 955T
2.5 LOADER 955T

主要性能参数

整机工作重量：16800(±5%)kg

额定斗容：2.8m³

最大卸载高度： 3136mm

最大卸载距离：1171mm

最大牵引力：170kN

最大掘起力：165kN

最小转弯半径：5970mm

产品简介

955T 轮式装载机是一款 5 吨高效全能型产品，该产品工作速度快，转弯半径更小，产品机动灵活，既能适应狭小场地的作业要求，又有长车体倾翻载荷大的优势，整机的承载能力强。节能降耗，适合于铲装松散物料，特别是煤场、货场使用。

出口业绩

装载机系列涵盖额定载重量 3 吨至 9 吨的产品。近几年，出口俄罗斯、非洲、中东、南美等地区达千余台。

Main performance parameters

Operation Weight: 16500(±5%) kg

Bucket capacity:2.8m³

Max.dumping clearance:3136mm

Dumping reach:1171mm

Max.drawing force: 170 kN

Max.towing force: 165 kN

Min.steering radius: 5970mm

Product Introduction

955T wheel loader is a 5-ton high-efficiency all-round product. It works fast, has smaller turning radius and is flexible. It can not only meet the operation requirements of narrow site, but also has the advantage of large overturning load of long body. The whole machine has strong bearing capacity. It embodies energy saving and consumption reduction, and is suitable for shoveling loose materials, especially in coal yards and cargo yards.

Export performance

Wheel loader series cover models whose rated load ranges from 3 ton to 9 ton. In recent years, the amount exported to the countries of Russia, Africa, the Middle East, South America has been accumulated more than 1000 units.

2.6 装载机 956T
2.6 LOADER 956T

主要性能参数

整机工作重量：17200(±5%)kg

额定斗容：2.8m³

最大卸载高度：3136mm

最大卸载距离：1121mm

最大牵引力：170kN

最大掘起力：175kN

最小转弯半径：6238mm

产品简介

956T 轮式装载机是一款 5 吨重载型产品，该机主要针对国内外中高端客户，可进行高端配置选配，其卓越的牵引性能，可轻松应对矿山、货场、港口码头等各种重载工况。

出口业绩

装载机系列涵盖额定载重量 3 吨至 9 吨的产品。近几年，出口俄罗斯、非洲、中东、南美等地区达千余台。

Main performance parameters

Operation Weight: 17200(±5%) kg

Bucket capacity: 3m³

Max.dumping clearance:3136mm

Dumping reach:1121mm

Max.drawing force: 170 kN

Max.towing force: 175 kN

Min.steering radius: 6238mm

Product Introduction

956T wheel loader is a 5-ton heavy-duty product. It is mainly aimed at high-end customers at home and abroad. It can carry out high-end configuration and selection. Its excellent traction performance can easily cope with various heavy-duty working conditions such as mines, cargo yards, ports and wharfs.

Export performance

Wheel loader series cover models whose rated load ranges from 3 ton to 9 ton. In recent years, the amount exported to the countries of Russia, Africa, the Middle East, South America has been accumulated more than 1000 units.

2.7 装载机 957H
2.7 LOADER 957H

主要性能参数

整机工作重量：17300(±5%)kg

额定斗容：3m³

最大卸载高度：3136mm

最大卸载距离：1121mm

最大牵引力：170kN

最大掘起力：175kN

最小转弯半径：6238mm

产品简介

957H 轮式装载机是一款 5 吨出口产品，高可靠的传动系统和液压系统，确保整机满足高标准要求。采用分流系统，整车管路接头采用 24° 锥 +O 型圈 ，大大降低系统的渗漏故障率。油缸的密封件都是采用了进口密封件、并与国产件通用，主要胶管选用进口。

出口业绩

装载机系列涵盖额定载重量 3 吨至 9 吨的产品。近几年，出口俄罗斯、非洲、中东、南美等地区达千余台。

Main performance parameters

Operation Weight: 17300(±5%) kg

Bucket capacity:3m³

Max.dumping clearance:3136mm

Dumping reach:1121mm

Max.drawing force: 170 kN

Max.towing force: 175 kN

Min.steering radius: 6238mm

Product Introduction

957H wheel loader is a 5 ton export product, high reliable transmission system and hydraulic system, to ensure that the whole machine meets the requirements of high standards. With shunt system and 24 degree cone+O ring for the whole vehicle pipeline joint, the leakage failure rate of the system is greatly reduced. The cylinder seals are all imported seals and are commonly used with domestic products. The main rubber hoses are imported.

Export performance

Wheel loader series cover models whose rated load ranges from 3 ton to 9 ton. In recent years, the amount exported to the countries of Russia, Africa, the Middle East, South America has been accumulated more than 1000 units.

2.8 装载机 957Z
2.8 LOADER 957Z

主要性能参数

整机工作重量：17200(±5%)kg

额定斗容：3m³

最大卸载高度：3136mm

最大卸载距离：1121mm

最大牵引力：170kN

最大掘起力：175kN

最小转弯半径：6238mm

产品简介

957Z 轮式装载机是一款 5 吨出口产品，高可靠的传动系统和液压系统，确保整机满足高标准要求。采用分流系统，整车管路接头采用 24° 锥 +O 型圈 ，大大降低系统的渗漏故障率。油缸的密封件都是采用了进口密封件、并与国产件通用，主要胶管选用进口。

出口业绩

装载机系列涵盖额定载重量 3 吨至 9 吨的产品。近几年，出口俄罗斯、非洲、中东、南美等地区达千余台。

Main performance parameters

Operation Weight: 17200(±5%) kg

Bucket capacity:2.8m³

Max.dumping clearance:3136mm

Dumping reach:1121mm

Max.drawing force: 170 kN

Max.towing force: 175 kN

Min.steering radius: 6238mm

Product Introduction

957Z wheel loader is a 5 ton export product, high reliable transmission system and hydraulic system, to ensure that the whole machine meets the requirements of high standards. With shunt system and 24 degree cone+O ring for the whole vehicle pipeline joint, the leakage failure rate of the system is greatly reduced. The cylinder seals are all imported seals and are commonly used with domestic products. The main rubber hoses are imported.

Export performance

Wheel loader series cover models whose rated load ranges from 3 ton to 9 ton. In recent years, the amount exported to the countries of Russia, Africa, the Middle East, South America has been accumulated more than 1000 units.

2.9 装载机 957S
2.9 LOADER 957S

主要性能参数

整机工作重量：17200(±5%)kg

额定斗容：3m³

最大卸载高度：3136mm

最大卸载距离：1121mm

最大牵引力：170kN

最大掘起力：175kN

最小转弯半径：6238mm

产品简介

957S 轮式装载机是一款 5 吨出口产品，高可靠的传动系统和液压系统，确保整机满足高标准要求。采用分流系统，整车管路接头采用 24° 锥 +O 型圈 ，大大降低系统的渗漏故障率。油缸的密封件都是采用了进口密封件、并与国产件通用，主要胶管选用进口。

出口业绩

装载机系列涵盖额定载重量 3 吨至 9 吨的产品。近几年，出口俄罗斯、非洲、中东、南美等地区达千余台。

Main performance parameters

Operation Weight: 17200(±5%) kg

Bucket capacity:3m³

Max.dumping clearance:3136mm

Dumping reach:1121mm

Max.drawing force: 170 kN

Max.towing force: 175 kN

Min.steering radius: 6238mm

Product Introduction

957S wheel loader is a 5 ton export product, high reliable transmission system and hydraulic system, to ensure that the whole machine meets the requirements of high standards. With shunt system and 24 degree cone+O ring for the whole vehicle pipeline joint, the leakage failure rate of the system is greatly reduced. The cylinder seals are all imported seals and are commonly used with domestic products. The main rubber hoses are imported.

Export performance

Wheel loader series cover models whose rated load ranges from 3 ton to 9 ton. In recent years, the amount exported to the countries of Russia, Africa, the Middle East, South America has been accumulated more than 1000 units.

2.10 装载机 966T
2.10 LOADER 966T

主要性能参数

整机工作重量：19500(±5%)kg

额定斗容：3.7m³

最大卸载高度：3325mm

最大卸载距离：1433mm

最大牵引力：190kN

最大掘起力：180kN

最小转弯半径：6240mm

产品简介

966T 轮式装载机是一款中大吨位产品，超大的牵引力和掘起力，广泛应用于码头、港口、钢铁、矿山、砂石料场。

出口业绩

装载机系列涵盖额定载重量 3 吨至 9 吨的产品。近几年，出口俄罗斯、非洲、中东、南美等地区达千余台。

Main performance parameters

Operation Weight: 19500(±5%) kg

Bucket capacity:3.7m³

Max.dumping clearance:3325mm

Dumping reach:1433mm

Max.drawing force: 190 kN

Max.towing force: 180 kN

Min.steering radius: 6240mm

Product Introduction

966T wheel loader is a medium and large tonnage product with super traction and excavation force, which is widely used in wharfs, ports, steel, mines, sand and gravel yards.

Export performance

Wheel loader series cover models whose rated load ranges from 3 ton to 9 ton. In recent years, the amount exported to the countries of Russia, Africa, the Middle East, South America has been accumulated more than 1000 units.

2.11 装载机 980H
2.11 LOADER 980H

主要性能参数

额定载重量：7500kg
额定斗容量：4.2m^3
操作重量：23500kg
最大掘起力：220±5kN
最大牵引力：222±5kN
最大卸载高度：3220mm
最高时卸载距离：1275mm

产品简介

该机主要配套件采用国际先进技术的部件，通过技术创新，实现各部件合理动力匹配，整机显示出较强的插入力和掘起力，显示出优越的作业性能。采用单级单相三元件形式的变矩器和采用电控操纵、定轴式动力换档，并可实现 KD 自动降速功能变速箱。采用限滑式差速器和多片圆盘湿式制动的驱动桥，大大提高了松软地带和沙地上的作业能力和提高轮胎的使用寿命，实现了制动器的免维修和保养。

出口业绩

装载机系列涵盖额定载重量 3 吨至 9 吨的产品。近几年，出口俄罗斯、非洲、中东、南美等地区达千余台。

Main performance parameters

Rated load: 7500kg
Bucket capacity:4.2m^3
Operation Weight: 23500kg
Max.drawing force: 220±5 kN
Max.towing force:222±5 kN
Max.dumping clearance:3220mm
Dumping reach:1275 mm

Product Introduction

The main supporting parts of the wheel loader adopt international advanced technology components, and carry out some technical treatment, so as to give full play to the ability of each component and reasonable power matching. The whole machine shows strong insertion force and excavation force, and shows superior operation performance. A single-stage single-phase three-element converter and a fixed-axis power shift are adopted, and the KD automatic speed reduction function gearbox can be realized. Using limited slip differential and driving axle of multi-disc wet brake, the operation ability of soft zone and sand ground is greatly improved, the service life of tire is increased, and the maintenance-free of brake is realized.

Export performance

Wheel loader series cover models whose rated load ranges from 3 ton to 9 ton. In recent years, the amount exported to the countries of Russia, Africa, the Middle East, South America has been accumulated more than 1000 units.

2.12 装载机 996
2.12 LOADER 996

主要性能参数

额定载重量：9000kg

额定斗容量：5.1m³

操作重量：31500kg

最大掘起力：261±5kN

最大牵引力：265±5kN

最大卸载高度：3300mm

最高时卸载距离：1400m

产品简介

公司在行业内率先推出9吨级装载机，配备康明斯QSM11—C335电控空空中冷增压发动机，扭矩储备系数达45%。德国ZF的4WG310变速器：单级双相三工作轮综合变矩器，手自一体的电控操纵定轴式变速箱，实现前后三档车速。ZF多片湿式制动驱动桥，差速器为100%自动差速锁。多项技术为国内首创，达到国际先进水准。

出口业绩

装载机系列涵盖额定载重量3吨至9吨的产品。近几年，出口俄罗斯、非洲、中东、南美等地区达千余台。

Main performance parameters

Rated load: 9000kg
Bucket capacity:5.1m³
Operation Weight: 31500kg
Max.drawing force: 261±5 kN
Max.towing force:265±5 kN
Max.dumping clearance:3300mm
Dumping reach:1400 mm

Product Introduction

The company takes the lead in introducing 9-ton loaders in the industry, equipped with Cummins QSM11-C335 air-cooled turbocharged engine, with a torque reserve factor of 45%. German ZF 4WG310 transmission: single-stage, dual-phase, three-wheel integrated torque converter, hand-in-hand electronic control of fixed-axle transmission, to achieve three-speed front and rear. ZF multi-plate wet brake drive axle, differential is 100% automatic differential lock. Many technologies are pioneered in China and have reached the international advanced level.

Export performance

Wheel loader series cover models whose rated load ranges from 3 ton to 9 ton. In recent years, the amount exported to the countries of Russia, Africa, the Middle East, South America has been accumulated more than 1000 units.

3 压路机
3 ROLLER

产品简介

压路机广泛应用于高等级公路、铁路、机场跑道、大坝、体育场等大型工程项目的填方压实作业，可以碾压沙性、半粘性及粘性土壤、路基稳定土及沥青混凝土路面层。公司积累了五十多年的压实机械产品研发和制造经验，拥有完善的性能试验和检测手段。2000 年以来，公司对压路机产品进行更新换代，推出了全液压单钢轮振动压路机，单钢轮振动压路机，全液压双钢轮振动压路机，轮胎压路机。在压实机械技术领域始终走在全国同行业的前列。

Product Introduction

The road roller is widely used in the filling and compacting of large-scale projects such as high-grade roads, railways, airport runways, dams and stadiums. It can crush sand, semi-stick and sticky soil. Subgrade stabilized soil and asphalt concrete pavement layer. The company has accumulated more than 50 years of experience in R&D and manufacturing of compacted machinery products, and has complete performance test and testing means.Since 2000, the company has updated the roller compactor products, and launched a full hydraulic single drum vibratory roller, a single drum vibratory roller, a full hydraulic double drum vibratory roller, and a tire roller. In the field of compaction machinery, it has always been at the forefront of the same industry in the country.

3.1 压路机 GYS22
3.1 ROLLER GYS22

主要性能参数

工作质量：22000 kg

静线载荷：516 N/cm

振动频率：28/35 Hz

名义振幅：2.0/1.0 mm

激振力：380/280 kN

发动机：潍柴 / 上柴

发动机功率：140/132 kW

产品简介

本系列产品是重型振动压路机，主要适合于基础层、次基础层和填方工程中砾石、碎石、砂石混合料、沙性土壤和岩石填方等非粘性材料的压实，是建设高等级公路、铁路、机场、港口、堤坝及工业场地的理想压实设备。

出口业绩

国机重工拥有全液压单钢轮振动压路机、全液压双钢轮振动压路机、全液压轮胎压路机、机械单钢轮振动压路机、机械单钢轮压路机、小型压路机等。国机重工压路机批量出口南美、独联体、中东、非洲、东南亚地区，数量达四百余台。

Main performance parameters

Operating mass: 22000 kg

Static linear load: 516 N/cm

Vibration frequency: 28/35 Hz

Vibration amplitude: 2.0/1.0 mm

Centrifugal force: 380/280 kN

Engine: WEICHAI/SHANGCHAI

Diesel engine power: 140/132 kW

Product Introduction

The heavy duty vibratory rollers are suitable for compaction of non-cohesive materials such as gravel, crushed stone, sand-macadam mixture, sandy soil and rock filling etc. on base course sub-base and embankment fill construction etc., which are ideal equipment for high-class highway, railway, airport, harbors, dams and large-scale industrial ground etc.

Export performance

Hydraulic vibratory single drum rollers, Hydraulic double drum vibratory rollers, Hydraulic Pneumatic Tire Rollers, Mechanical Single Drum Vibratory Rollers, Walk behind roller. SINOMACH Rollers exports to South America, CIS, Middle East, Africa, Southeast Asia in mass, the amount has been accumulated more than 400 units.

3.2 压路机 GYS30
3.2 ROLLER GYS30

主要性能参数

工作质量：30000 kg

静线载荷：691 N/cm

振动频率：28/35 Hz

名义振幅：2.0/1.0 mm

激振力：460/380 kN

发动机型号：上柴

发动机功率：162 kW

产品简介

本系列产品是重型振动压路机，主要适合于基础层、次基础层和填方工程中砾石、碎石、砂石混合料、沙性土壤和岩石填方等非粘性材料的压实，是建设高等级公路、铁路、机场、港口、堤坝及工业场地的理想压实设备。

出口业绩

国机重工拥有全液压单钢轮振动压路机、全液压双钢轮振动压路机、全液压轮胎压路机、机械单钢轮振动压路机、机械单钢轮压路机、小型压路机等。国机重工压路机批量出口南美、独联体、中东、非洲、东南亚地区，数量达四百余台。

Main performance parameters

Operating mass: 30000 kg

Static linear load: 691 N/cm

Vibration frequency: 28/35 Hz

Vibration amplitude: 2.0/1.0 mm

Centrifugal force: 460/380 kN

Diesel engine model: SHANG CHAI

Diesel engine power: 162 kW

Product Introduction

The heavy duty vibratory rollers are suitable for compaction of non-cohesive materials such as gravel, crushed stone, sand-macadam mixture, sandy soil and rock filling etc. on base course sub-base and embankment fill construction etc., which are ideal equipment for high-class highway, railway, airport, harbors, dams and large-scale industrial ground etc.

Export performance

Hydraulic vibratory single drum rollers, Hydraulic double drum vibratory rollers, Hydraulic Pneumatic Tire Rollers, Mechanical Single Drum Vibratory Rollers, Walk behind roller. SINOMACH Rollers exports to South America, CIS, Middle East, Africa, Southeast Asia in mass, the amount has been accumulated more than 400 units.

3.3 压路机 GYS392
3.3 ROLLER GYS392

主要性能参数

工作质量：39000 kg
静线载荷：1043 N/cm
振动频率：26/31 Hz
名义振幅：1.9/0.95 mm
激振力：770/625 kN
发动机型号：QSL8.9—C325
发动机功率：242 kW
外形尺寸：7310×2680×3270 mm

产品简介

本系列产品是重型振动压路机，主要适合于基础层、次基础层和填方工程中砾石、碎石、砂石混合料、沙性土壤和岩石填方等非粘性材料的压实，是建设高等级公路、铁路、机场、港口、堤坝及工业场地的理想压实设备。

出口业绩

国机重工拥有全液压单钢轮振动压路机、全液压双钢轮振动压路机、全液压轮胎压路机、机械单钢轮振动压路机、机械单钢轮压路机、小型压路机等。国机重工压路机批量出口南美、独联体、中东、非洲、东南亚地区，数量达四百余台。

Main performance parameters

Operating mass: 39000 kg
Static linear load: 1043 N/cm
Vibration frequency: 26/31 Hz
Vibration amplitude: 1.9/0.95 mm
Centrifugal force: 770/625 kN
Diesel engine model: QSL8.9-C325
Diesel engine power: 242 kW
Overall dimensions: 7310×2680×3270 mm

Product Introduction

The heavy duty vibratory rollers are suitable for compaction of non-cohesive materials such as gravel, crushed stone, sand-macadam mixture, sandy soil and rock filling etc. on base course sub-base and embankment fill construction etc., which are ideal equipment for high-class highway, railway, airport, harbors, dams and large-scale industrial ground etc.

Export performance

Hydraulic vibratory single drum rollers, Hydraulic double drum vibratory rollers, Hydraulic Pneumatic Tire Rollers, Mechanical Single Drum Vibratory Rollers, Walk behind roller. SINOMACH Rollers exports to South America, CIS, Middle East, Africa, Southeast Asia in mass, the amount has been accumulated more than 400 units.

3.4 压路机 8228T
3.4 ROLLER 8228T

主要性能参数

工作质量：22000 kg

静线压力：509 N/cm

振动频率：28/32 Hz

振幅：2.1/1.1 mm

激振力：390/270 kN

总压实力：61 t

产品简介

8228T 是针对国内高铁、城铁建设自主开发的一款双频双幅振动压路机。适用于道路、矿山、堤坝、机场、铁路等工程建设；尤其适用高铁、城铁、高速公路等客运专线建筑工程的基础压实和填方的压实。

出口业绩

国机重工拥有全液压单钢轮振动压路机、全液压双钢轮振动压路机、全液压轮胎压路机、机械单钢轮振动压路机、机械单钢轮压路机、小型压路机等。国机重工压路机批量出口南美、独联体、中东、非洲、东南亚地区，数量达四百余台。

Main performance parameters

Operating mass: 22000 kg

Static linear load: 509 N/cm

Vibration frequency: 28/32 Hz

Vibration amplitude: 2.1/1.1 mm

Centrifugal force: 390/270 kN

Total pressure strength: 61 t

Product Introduction

8228T is a double-frequency and double-amplitude vibratory roller which is developed independently against the construction of domestic G-series high-speed trains and urban subways. It is suitable for construction of roads, mines, dams, airports, railways and other works, and is particularly suitable for the foundation compaction and fill compaction of construction works of the G-series high-speed trains, urban subways, expressways and other passenger transport lines.

Export performance

Hydraulic vibratory single drum rollers, Hydraulic double drum vibratory rollers, Hydraulic Pneumatic Tire Rollers, Mechanical Single Drum Vibratory Rollers, Walk behind roller. SINOMACH Rollers exports to South America, CIS, Middle East, Africa, Southeast Asia in mass, the amount has been accumulated more than 400 units.

3.5 压路机 8268T
3.5 ROLLER 8268T

主要性能参数

工作质量：26000 kg

静线压力：602 N/cm

振动频率：28/32 Hz

振幅：2.1/1.1 mm

激振力：405/280 kN

总压实力：66.5 t

产品简介

8268T 是针对国内高铁、城铁建设自主开发的一款双频双幅振动压路机。适用于道路、矿山、堤坝、机场、铁路等工程建设；尤其适用高铁、城铁、高速公路等客运专线建筑工程的基础压实和填方的压实。

出口业绩

国机重工拥有全液压单钢轮振动压路机、全液压双钢轮振动压路机、全液压轮胎压路机、机械单钢轮振动压路机、机械单钢轮压路机、小型压路机等。国机重工压路机批量出口南美、独联体、中东、非洲、东南亚地区，数量达四百余台。

Main performance parameters

Operating mass: 26000 kg

Static linear load: 602 N/cm

Vibration frequency: 28/32 Hz

Vibration amplitude: 2.1/1.1 mm

Centrifugal force: 405/280 kN

Total pressure strength: 66.5 t

Product Introduction

8268T is a double-frequency and double-amplitude vibratory roller which is developed independently against the construction of domestic high-speed trains and urban subways. It is suitable for construction of roads, mines, dams, airports, railways and other works, and is particularly suitable for the foundation compaction and fill compaction of construction works of the high-speed trains, urban subways, expressways and other passenger transport lines.

Export performance

Hydraulic vibratory single drum rollers, Hydraulic double drum vibratory rollers, Hydraulic Pneumatic Tire Rollers, Mechanical Single Drum Vibratory Rollers, Walk behind roller. SINOMACH Rollers exports to South America, CIS, Middle East, Africa, Southeast Asia in mass, the amount has been accumulated more than 400 units.

3.6 压路机 YZ12HD
3.6 ROLLER YZ12HD

主要性能参数

工作质量：12100kg

激振力：274/171kN

振动频率：31/35 Hz

振幅：1.8/0.9 mm

爬坡能力：40%

振动轮宽度：2100mm

振动轮直径：1530mm

产品简介

本机是中型振动压路机，主要适合于基础层、次基础层和填方工程中砾石、碎石、砂石混合料、沙性土壤和岩石填方等非粘性材料的压实，是建设高等级公路、铁路、机场、港口、堤坝及工业场地的理想压实设备。

出口业绩

国机重工拥有全液压单钢轮振动压路机、全液压双钢轮振动压路机、全液压轮胎压路机、机械单钢轮振动压路机、机械单钢轮压路机、小型压路机等。国机重工压路机批量出口南美、独联体、中东、非洲、东南亚地区，数量达四百余台。

Main performance parameters

Operating mass: 12100kg

Centrifugal force: 274/171kN

Vibration frequency: 31/35 Hz

Vibration amplitude: 1.8/0.9 mm

Grade ability: 40%

Drum width: 2100 mm

Drum diameter: 1530 mm

Product Introduction

Heavy duty vibratory rollers are suitable for compaction of non-cohesive materials such as gravel, crushed stone, sand-macadam mixture, sandy soil and rock filling etc. on base course, sub-base and embankment fill construction etc., which are ideal equipment for high-class highway, railway, airport, harbors, dams and large-scale industrial ground etc.

Export performance

Hydraulic vibratory single drum rollers, Hydraulic double drum vibratory rollers, Hydraulic Pneumatic Tire Rollers, Mechanical Single Drum Vibratory Rollers, Walk behind roller. SINOMACH Rollers exports to South America, CIS, Middle East, Africa, Southeast Asia in mass, the amount has been accumulated more than 400 units.

3.7 压路机 YZ14HD
3.7 ROLLER YZ14HD

主要性能参数

工作质量：14200kg

激振力：292/182kN

振动频率：31/35 Hz

振幅：1.8/0.9 mm

爬坡能力：40%

振动轮宽度：2100mm

振动轮直径：1530mm

产品简介

本机是中型振动压路机，主要适合于基础层、次基础层和填方工程中砾石、碎石、砂石混合料、沙性土壤和岩石填方等非粘性材料的压实，是建设高等级公路、铁路、机场、港口、堤坝及工业场地的理想压实设备。

出口业绩

国机重工拥有全液压单钢轮振动压路机、全液压双钢轮振动压路机、全液压轮胎压路机、机械单钢轮振动压路机、机械单钢轮压路机、小型压路机等。国机重工压路机批量出口南美、独联体、中东、非洲、东南亚地区，数量达四百余台。

Main performance parameters

Operating mass: 14200kg

Centrifugal force: 292/182kN

Vibration frequency: 31/35 Hz

Vibration amplitude: 1.8/0.9 mm

Grade ability: 40%

Drum width: 2100 mm

Drum diameter: 1530 mm

Product Introduction

Heavy duty vibratory rollers are suitable for compaction of non-cohesive materials such as gravel, crushed stone, sand-macadam mixture, sandy soil and rock filling etc. on base course, sub-base and embankment fill construction etc., which are ideal equipment for high-class highway, railway, airport, harbors, dams and large-scale industrial ground etc.

Export performance

Hydraulic vibratory single drum rollers, Hydraulic double drum vibratory rollers, Hydraulic Pneumatic Tire Rollers, Mechanical Single Drum Vibratory Rollers, Walk behind roller. SINOMACH Rollers exports to South America, CIS, Middle East, Africa, Southeast Asia in mass, the amount has been accumulated more than 400 units.

3.8 双钢轮振动压路机 GYD122
3.8 ROLLER GYD122

主要性能参数

工作质量：12000 kg
静线载荷：282 N/cm
振动频率：40/50 Hz
名义振幅：0.74/0.35 mm
激振力：150×2/95×2 kN
发动机型号：QSB5.9
发动机功率：113 kW
外形尺寸：4960×2240×3100 mm

产品简介

本系列是采用国外先进技术并进口关键零部件生产的全液压双钢轮振动压路机，主要适用于路面工程的各类稳定土、沥青混凝土、干硬性混凝土等材料的压实，也可用于路基工程作业，是建设高等级公路、铁路、机场、港口、堤坝、市政工程及工业场地的理想压实设备。

出口业绩

国机重工拥有全液压单钢轮振动压路机、全液压双钢轮振动压路机、全液压轮胎压路机、机械单钢轮振动压路机、机械单钢轮压路机、小型压路机等。国机重工压路机批量出口南美、独联体、中东、非洲、东南亚地区，数量达四百余台。

Main performance parameters

Operating mass: 12000 kg
Static linear load: 282 N/cm
Vibration frequency: 40/50 Hz
Vibration amplitude: 0.74/0.35 mm
Centrifugal force: 150×2/95×2kN
Diesel engine model: QSB5.9
Diesel engine power: 113 kW
Overall dimensions: 4960×2240×3100 mm

Product Introduction

Hydraulic double drum vibratory rollers are manufactured according to international advanced technology and by use of imported main components abroad, suitable for compaction of various stabilized soils, bituminous concrete and rolling cement concrete (RCC) on road surface construction, also for compaction of road base course, which are universal compaction equipments for high-class highway, airport, harbors, dams, municipal road and industrial ground.

Export performance

Hydraulic vibratory single drum rollers, Hydraulic double drum vibratory rollers, Hydraulic Pneumatic Tire Rollers, Mechanical Single Drum Vibratory Rollers, Walk behind roller. SINOMACH Rollers exports to South America, CIS, Middle East, Africa, Southeast Asia in mass, the amount has been accumulated more than 400 units.

3.9 轮胎压路机 GYR263／ GYR303
3.9 ROLLER GYR263/ GYR303

主要性能参数

最大工作质量：26000／30000 kg
最小工作质量：18000／25000 kg
最高前进速度：19.8／18 km／h
轮胎数量：5+6
柴油机型号：QSB5.9／ SC8DK180.2G3
柴油机功率：120／132 kW
外形尺寸（驾驶室）：5230×2890×3210 mm

产品简介

本系列是光面轮胎压路机，主要适合于路面工程中各种粘性和非粘性材料，如砂石、碎石、稳定土、沥青混凝土、干硬性混凝土等材料的压实，尤其适宜于高等级公路的沥青面层的最终处理，是建设高等级公路、机场、市政工程及工业场地的高性能压实设备。

出口业绩

国机重工拥有全液压单钢轮振动压路机、全液压双钢轮振动压路机、全液压轮胎压路机、机械单钢轮振动压路机、机械单钢轮压路机、小型压路机等。国机重工压路机批量出口南美、独联体、中东、非洲、东南亚地区，数量达四百余台。

Main performance parameters

Max. operating mass: 26000/30000 kg
Min. operating mass: 18000/25000 kg
Max. travel speed: 19.8/18 km/h
Tire number: 5+6
Diesel engine model: QSB5.9/ SC8DK180.2G3
Diesel engine power: 120/132 kW
Overall dimensions: 5230×2890×3210 mm

Product Introduction

Pneumatic smooth-tire rollers is suitable for compaction of various cohesive and non-cohesive materials such as sandy soil, crushed stone, stabilized soils, bituminous concrete and rolling cement concrete (RCC) on road surface construction, especially for final compaction of asphalt surface on high-class highway,which is super quality compaction equipments for high-class highway, airport and industrial ground.

Export performance

Hydraulic vibratory single drum rollers, Hydraulic double drum vibratory rollers, Hydraulic Pneumatic Tire Rollers, Mechanical Single Drum Vibratory Rollers, Walk behind roller. SINOMACH Rollers exports to South America, CIS, Middle East, Africa, Southeast Asia in mass, the amount has been accumulated more than 400 units.

3.10 轮胎压路机 GYR301／GYR351
3.10 ROLLER GYR301/GYR351

主要性能参数

最大工作质量：30000／35000 kg

最小工作质量：25000／30000 kg

最高前进速度：13／11.5 km/h

轮胎数量：5+6

柴油机型号：SC8DK180.2G3／QSB6.7—C220

柴油机功率：132／147 kW

外形尺寸（驾驶室）：5230×2890×3210/5524×3065×3270 mm

产品简介

本系列是光面轮胎压路机，主要适合于路面工程中各种粘性和非粘性材料，如砂石、碎石、稳定土、沥青混凝土、干硬性混凝土等材料的压实，尤其适宜于高等级公路的沥青面层的最终处理，是建设高等级公路、机场、市政工程及工业场地的高性能压实设备。

出口业绩

国机重工拥有全液压单钢轮振动压路机、全液压双钢轮振动压路机、全液压轮胎压路机、机械单钢轮振动压路机、机械单钢轮压路机、小型压路机等。国机重工压路机批量出口南美、独联体、中东、非洲、东南亚地区，数量达四百余台。

Main performance parameters

Max. operating mass: 30000/35000 kg

Min. operating mass: 25000/30000 kg

Max. travel speed: 13/11.5 km/h

Tire number: 5+6

Diesel engine model: SC8DK180.2G3/QSB6.7-C220

Diesel engine power: 132/147 kW

Overall dimensions: 5230×2890×3210/5524×3065×3270 mm

Product Introduction

Pneumatic smooth-tire rollers is suitable for compaction of various cohesive and non-cohesive materials such as sandy soil, crushed stone, stabilized soils, bituminous concrete and rolling cement concrete (RCC) on road surface construction, especially for final compaction of asphalt surface on high-class highway,which is super quality compaction equipments for high-class highway, airport and industrial ground.

Export performance

Hydraulic vibratory single drum rollers, Hydraulic double drum vibratory rollers, Hydraulic Pneumatic Tire Rollers, Mechanical Single Drum Vibratory Rollers, Walk behind roller. SINOMACH Rollers exports to South America, CIS, Middle East, Africa, Southeast Asia in mass, the amount has been accumulated more than 400 units.

3.11 轮胎压路机 GYR161
3.11 ROLLER GYR161

主要性能参数

最大工作质量：16000 kg

最小工作质量：10000 kg

最高前进速度：15 km/h

轮胎数量：4+5

柴油机型号：Cummins4BTA3.9

柴油机功率：93 kW

外形尺寸（驾驶室）：4770×2290×3162 mm

产品简介

本系列是光面轮胎压路机，主要适合于路面工程中各种粘性和非粘性材料，如砂石、碎石、稳定土、沥青混凝土、干硬性混凝土等材料的压实，尤其适宜于高等级公路的沥青面层的最终处理，是建设高等级公路、机场、市政工程及工业场地的高性能压实设备。

出口业绩

国机重工拥有全液压单钢轮振动压路机、全液压双钢轮振动压路机、全液压轮胎压路机、机械单钢轮振动压路机、机械单钢轮压路机、小型压路机等。国机重工压路机批量出口南美、独联体、中东、非洲、东南亚地区，数量达四百余台。

Main performance parameters

Max. operating mass: 16000 kg

Min. operating mass: 10000 kg

Max. travel speed: 15 km/h

Tire number: 4+5

Diesel engine model: Cummins4BTA3.9

Diesel engine power: 93 kW

Overall dimensions: 4770×2290×3162 mm

Product Introduction

Pneumatic smooth-tire rollers is suitable for compaction of various cohesive and non-cohesive materials such as sandy soil, crushed stone, stabilized soils, bituminous concrete and rolling cement concrete (RCC) on road surface construction, especially for final compaction of asphalt surface on high-class highway,which is super quality compaction equipments for high-class highway, airport and industrial ground.

Export performance

Hydraulic vibratory single drum rollers, Hydraulic double drum vibratory rollers, Hydraulic Pneumatic Tire Rollers, Mechanical Single Drum Vibratory Rollers, Walk behind roller. SINOMACH Rollers exports to South America, CIS, Middle East, Africa, Southeast Asia in mass, the amount has been accumulated more than 400 units.

3.12 压路机 GYS08
3.12 ROLLER GYS08

主要性能参数

工作质量：8000 kg

静线载荷：215 N/cm

振动频率：50 Hz

振幅：0.4 mm

激振力：70 kN

额定功率：48 kW

外形尺寸：5180×1880×2580 mm

产品简介

本系列是中型振动压路机，主要适合于基础层、次基础层和填方工程中砾石、碎石、砂石混合料、沙性土壤和岩石填方等非粘性材料的压实，是建设高等级公路、铁路、机场、港口、堤坝及工业场地的理想压实设备。

出口业绩

国机重工拥有全液压单钢轮振动压路机、全液压双钢轮振动压路机、全液压轮胎压路机、机械单钢轮振动压路机、机械单钢轮压路机、小型压路机等。国机重工压路机批量出口南美、独联体、 中东、非洲、东南亚地区，数量达四百余台。

Main performance parameters

Operating mass: 8000 kg

Static linear load: 215 N/cm

Vibration frequency: 50 Hz

Vibration amplitude: 0.4 mm

Centrifugal force: 70 kN

Rated power: 48 kW

Overall dimensions: 5180×1880×2580 mm

Product Introduction

The midsize duty vibratory rollers are suitable for compaction of non-cohesive materials such as gravel, crushed stone, sand-macadam mixture, sandy soil and rock filling etc. on base course sub-base and embankment fill construction etc., which are ideal equipment for high-class highway, railway, airport, harbors, dams and large-scale industrial ground etc.

Export performance

Hydraulic vibratory single drum rollers, Hydraulic double drum vibratory rollers, Hydraulic Pneumatic Tire Rollers, Mechanical Single Drum Vibratory Rollers, Walk behind roller. SINOMACH Rollers exports to South America, CIS, Middle East, Africa, Southeast Asia in mass, the amount has been accumulated more than 400 units.

4 平地机
4 MOTOR GRADER

产品简介

平地机是一种多功能，高作业效率的工程机械，广泛应用于道路、农林、市政、机场的修建、水利及矿山建设等方面。国机重工是中国第一台平地机诞生地（1962 年），产品涵盖从 120 马力到 557 马力多种规格，有世界上最大的全轮驱动平地机 DT660 和国内部队最早列装平地机 PY180。产品匹配合理、技术先进、节能环保，拥有液力传动、静液压传动、全轮驱动、有滚盘回转装置、工作装置保护等多项自主知识产权。

Product Introduction

The grader is a multi-functional, high-efficiency construction machine widely used in roads, agriculture, forestry, municipalities, airport construction, water conservancy and mine construction. China SINOMACH Heavy Industry Corporation is the birth place of the first motor grader (1962) and NO.one brand in China. The Company has the world largest all-wheel driven land leveler (DT660), and the earliest land leveler (PY180) provided for the troops.The grader machine has reasonable matching, advanced technology, energy conservation and environmental protection, and has a number of independent intellectual property rights such as hydraulic transmission, hydrostatic transmission, all-wheel drive, roller rotary device, and work device protection.

4.1 平地机 713H
4.1 MOTOR GRADER 713H

主要性能参数

整机工作质量：12000 kg

整机长度：8290 mm

整机宽度：2600 mm

整机高度：3465 mm

最小转弯半径：6600 mm

刀板长度：3658 mm

最大牵引力：62 kN

产品简介

713H 平地机，在延续公司平地机传统优势的基础上又做了一定的改进，全面消化吸收国外先进技术，该机在传动系统、液压系统、制动系统方面主要采用进口部件，可靠性较高，零部件具有较高的系列化、通用化特点，性价比高。

出口业绩

批量出口南美、独联体、中东、非洲地区，曾一次性出口阿根廷 140 台，喀麦隆 60 台，突尼斯 60 台，赞比亚 54 台，肯尼亚 18 台，被中国部队列装并参与联合国维和。

Main performance parameters

Operating weight: 12000 kg
Length: 8290 mm
Width: 2600 mm
Heigth: 3465 mm
Min.turning radius: 6600 mm
Blend length: 3658 mm
Max.tractive force:62 kN

Product Introduction

713H land leveller is improved on the basis of inheriting the company's traditional advantage of land leveller, absorbing foreign advanced technologies comprehensively. The machine is equipped with imported components and parts in transmission system, hydraulic system and brake system, which is high in reliability, and components and parts have the characteristics of high serialization and generalization and high cost performance.

Export performance

SINOMACH export to South America, CIS, Middle East, Africa in mass. Export 140 units to Argentina, 60 units to Cameroon, 60 units to Tunisia, 54 units to Zambia, 18 units to Kenya at one time which creates a precedent. Export to more than 60 countries and areas all over the world, especially favor by arms and United Nations Peace Keeping Forces. It is the top level brand of Chinese graders.

4.2 平地机 717T
4.2 MOTOR GRADER 717T

主要性能参数

整机工作质量：14500 kg
整机长度：8820 mm
整机宽度：2600 mm
整机高度：3420 mm
最小转弯半径：7300 mm
刀板长度：3658 mm
最大牵引力：74.6 kN

产品简介

717T 平地机，在延续公司平地机传统优势的基础上做了一定的改进，全面消化吸收国外先进技术，零部件具有较高的系列化、通用化特点，性价比高。

出口业绩

批量出口南美、独联体、中东、非洲地区，曾一次性出口阿根廷 140 台，喀麦隆 60 台，突尼斯 60 台，赞比亚 54 台，肯尼亚 18 台，被中国部队列装并参与联合国维和。

Main performance parameters

Operating weight: 14500 kg
Length: 8820 mm
Width: 2600 mm
Heigth: 3420 mm
Min.turning radius: 7300 mm
Blend length: 3658 mm
Max.tractive force:74.6 kN

Product Introduction

717T land leveller is improved on the basis of inheriting the company's traditional advantage of land leveller, absorbing foreign advanced technologies comprehensively. Components and parts have the characteristics of high serialization and generalization and high cost performance.

Export performance

SINOMACH export to South America, CIS, Middle East, Africa in mass. Export 140 units to Argentina, 60 units to Cameroon, 60 units to Tunisia, 54 units to Zambia, 18 units to Kenya at one time which creates a precedent. Export to more than 60 countries and areas all over the world, especially favor by arms and United Nations Peace Keeping Forces. It is the top level brand of Chinese graders.

4.3 平地机 718T
4.3 MOTOR GRADER 718T

主要性能参数

整机总重量：15500 kg

整机长度：8950 mm

整机宽度：2600 mm

整机高度：3420 mm

轴距：6100 mm

轮距：2120 mm

最大牵引力：79.7 kN

产品简介

718T 平地机，在延续公司平地机传统优势的基础上又做了一定的改进，全面消化吸收国外先进技术，针对新疆地区特点，动力输出全面优化，零部件具有较高的系列化、标准化、通用化特点，性价比高。

出口业绩

批量出口南美、独联体、中东、非洲地区，曾一次性出口阿根廷 140 台，喀麦隆 60 台，突尼斯 60 台，赞比亚 54 台，肯尼亚 18 台，被中国部队列装并参与联合国维和。

Main performance parameters

Operating weight: 15500 kg
Length: 8950 mm
Width: 2600 mm
Heigth: 3420 mm
Wheel base: 6100 mm
Tread: 2120 mm
Max.tractive force:79.7 kN

Product Introduction

718T land leveller is improved on the basis of inheriting the company's traditional advantage of land leveller, absorbing foreign advanced technologies comprehensively. Regarding the characteristics of Xinjiang region, power take-off is optimized comprehensively, and components and parts have the characteristics of high serialization, standardization and generalization and high cost performance.

Export performance

SINOMACH export to South America, CIS, Middle East, Africa in mass. Export 140 units to Argentina, 60 units to Cameroon, 60 units to Tunisia, 54 units to Zambia, 18 units to Kenya at one time which creates a precedent. Export to more than 60 countries and areas all over the world, especially favor by arms and United Nations Peace Keeping Forces. It is the top level brand of Chinese graders.

4.4 平地机 719T
4.4 MOTOR GRADER 719T

主要性能参数

整机总重量：15600 kg
整机长度：8950 mm
整机宽度：2600 mm
整机高度：3420 mm
轴距：6100 mm
轮距：2120 mm
最大牵引力：80.2 kN

产品简介

719T 平地机从性能、工作效率、操作舒适性、外观造型上都有较大的提升，该机在传动系统、液压系统、制动系统方面主要采用进口部件，可靠性较高，与公司系列平地机零部件的互换性较高，通用性好。

出口业绩

批量出口南美、独联体、中东、非洲地区，曾一次性出口阿根廷 140 台，喀麦隆 60 台，突尼斯 60 台，赞比亚 54 台，肯尼亚 18 台，被中国部队列装并参与联合国维和。

Main performance parameters

Operating weight: 15600 kg
Length: 8950 mm
Width: 2600 mm
Heigth: 3420 mm
Wheel base: 6100 mm
Tread: 2120 mm
Max.tractive force:80.2 kN

Product Introduction

719T land leveller is improved greatly in performance, working efficiency, operation comfort and appearance modeling. The machine is equipped with imported components and parts in transmission system, hydraulic system and brake system, and is high in exchangeability and universality with components and parts of company's series land levellers.

Export performance

SINOMACH export to South America, CIS, Middle East, Africa in mass. Export 140 units to Argentina, 60 units to Cameroon, 60 units to Tunisia, 54 units to Zambia, 18 units to Kenya at one time which creates a precedent. Export to more than 60 countries and areas all over the world, especially favor by arms and United Nations Peace Keeping Forces. It is the top level brand of Chinese graders.

4.5 平地机 720T
4.5 MOTOR GRADER 720T

主要性能参数

整机总重量：15700 kg

整机长度：8935 mm

整机宽度：2600 mm

整机高度：3370 mm

轴距：6100 mm

轮距：2120 mm

最大牵引力：80.8 kN

产品简介

720T 平地机从性能、工作效率、操作舒适性、外观造型上都有较大的提升，该机在传动系统、液压系统、制动系统方面主要采用进口部件，可靠性较高，与公司系列平地机零部件的互换性较高，通用性好。

出口业绩

批量出口南美、独联体、中东、非洲地区，曾一次性出口阿根廷 140 台，喀麦隆 60 台，突尼斯 60 台，赞比亚 54 台，肯尼亚 18 台，被中国部队列装并参与联合国维和。

Main performance parameters

Operating weight: 15700 kg
Length: 8935 mm
Width: 2600 mm
Heigth: 3370 mm
Wheel base: 6100 mm
Tread: 2120 mm
Max.tractive force:80.8 kN

Product Introduction

720T land leveller is improved greatly in performance, working efficiency, operation comfort and appearance modeling. The machine is equipped with imported components and parts in transmission system, hydraulic system and brake system, and is high in exchangeability and universality with components and parts of company's series land levellers.

Export performance

SINOMACH export to South America, CIS, Middle East, Africa in mass. Export 140 units to Argentina, 60 units to Cameroon, 60 units to Tunisia, 54 units to Zambia, 18 units to Kenya at one time which creates a precedent. Export to more than 60 countries and areas all over the world, especially favor by arms and United Nations Peace Keeping Forces. It is the top level brand of Chinese graders.

4.6 平地机 722T
4.6 MOTOR GRADER 722T

主要性能参数

整机总重量：16100 kg

整机长度：9235 mm

整机宽度：2600 mm

整机高度：3370 mm

轴距：6100 mm

轮距：2120 mm

最大牵引力：82.8 kN

产品简介

722T 平地机引进国外先进技术并吸取了现有成熟平地机的特点，整机零部件具有较大的通用性，在主要技术参数、部件配置、舒适性、维修性以及外观造型等都有较大的提升，并针对大功率平地机的作业特点，对工作装置结构、关键元件强度、整机牵引性能加以充分考虑，从而保证能够出色的完成高速公路、矿区道路、机场等地面平整、刮坡、挖沟等工作。

出口业绩

批量出口南美、独联体、中东、非洲地区，曾一次性出口阿根廷 140 台，喀麦隆 60 台，突尼斯 60 台，赞比亚 54 台，肯尼亚 18 台，被中国部队列装并参与联合国维和。

Main performance parameters

Operating weight: 16100 kg
Length: 9235 mm
Width: 2600 mm
Heigth: 3370 mm
Wheel base: 6100 mm
Tread: 2120 mm
Max.tractive force: 82.8 kN

Product Introduction

722T land leveller introduces foreign advanced technologies and absorbs the characteristics of the existing matured land levellers, and the components and parts of the complete machine are high in universality. The complete machine is improved greatly in main technical specification, configuration of components and parts, comfort, maintenance and appearance modeling, and the structure of the working device, the strength of key elements and the tractive performance of the complete machine are considered fully against the operating characteristics of high-power land levellers, thereby ensuring the ground levelling, slope scraping, trenching and other works of expressways, roads of mining districts, airports and other places can be completed with distinction.

Export performance

SINOMACH export to South America, CIS, Middle East, Africa in mass. Export 140 units to Argentina, 60 units to Cameroon, 60 units to Tunisia, 54 units to Zambia, 18 units to Kenya at one time which creates a precedent. Export to more than 60 countries and areas all over the world, especially favor by arms and United Nations Peace Keeping Forces. It is the top level brand of Chinese graders.

4.7 平地机 GP120M
4.7 MOTOR GRADER GP120M

主要性能参数

总体尺寸：7800×2400×3245mm

最大牵引力：47kN

最小转弯半径：6700mm

发动机（康明斯）：6BT5.9—C100

额定功率：100kW/136hp

整机重量：10650kg

铲刀（长 × 弦高）：3355×570mm

产品简介

SINOMACH 牌平地机是亚洲平地机生产的领航者，同时也是世界三大平地机生产商。在过去 100 年的创新和发展下完成了世界上最完善的生产线。M 系列平地机是公司全新机型，外观、内饰及内部配置进行了更合理的优化，保持了自己在行业内较为高端的形象。

出口业绩

批量出口南美、独联体、中东、非洲地区，曾一次性出口阿根廷 140 台，喀麦隆 60 台，突尼斯 60 台，赞比亚 54 台，肯尼亚 18 台，被中国部队列装并参与联合国维和。

Main performance parameters

Overall dimensions: 7800×2400×3245mm
Max.tractive force: 47kN
Min.turning radius: 6700mm
Engine(CUMMINS): 6BT5.9-C100
Rated power: 100kW/136hp
Operating weight: 10650kg
Blade(Length×chrod): 3355×570mm

Product Introduction

SINOMACH brand motor grader is one of the leaders in Asia, meanwhile it is also the one of the three major motor grader manufactures of the world. The most perfect production line was completed in the past 100 years of innovation and development.M series motor graders are the latest models of our company, having proceed more reasonable optimization from appearance, interior and internal configuration, maintaining a relatively high-end image in the industry.

Export performance

SINOMACH export to South America, CIS, Middle East, Africa in mass. Export 140 units to Argentina, 60 units to Cameroon, 60 units to Tunisia, 54 units to Zambia, 18 units to Kenya at one time which creates a precedent. Export to more than 60 countries and areas all over the world, especially favor by arms and United Nations Peace Keeping Forces. It is the top level brand of Chinese graders.

4.8 平地机 GP160M
4.8 MOTOR GRADER GP160M

主要性能参数

总体尺寸：8500×2600×3500 mm

最大牵引力：72 kN

最小转弯半径：7500 mm

发动机：上柴 SC7H170.1G3 ／康明斯 QSB5.9—C180—30

额定功率：125kW/170hp ／ 132kW/180hp

整机重量：13220 kg

铲刀（长 × 弦高）：3660×630mm

产品简介

SINOMACH 牌平地机是亚洲平地机生产的领航者，同时也是世界三大平地机生产商。在过去 100 年的创新和发展下完成了世界上最完善的生产线。M 系列平地机是公司全新机型，外观、内饰及内部配置进行了更合理的优化，保持了自己在行业内较为高端的形象。

出口业绩

批量出口南美、独联体、中东、非洲地区，曾一次性出口阿根廷 140 台，喀麦隆 60 台，突尼斯 60 台，赞比亚 54 台，肯尼亚 18 台，被中国部队列装并参与联合国维和。

Main performance parameters

Overall dimensions: 8500×2600×3500mm
Max.tractive force: 72 kN
Min.turning radius: 7500mm
Engine:SHANGCHAI SC7H170.1G3 /CUMMINS QSB5.9-C180-30
Rated power: 125kW/170hp / 132kW/180hp
Operating weight: 13220 kg
Blade(Length×chrod): 3660×630mm

Product Introduction

SINOMACH brand motor grader is one of the leaders in Asia, meanwhile it is also the one of the three major motor grader manufactures of the world. The most perfect production line was completed in the past 100 years of innovation and development.M series motor graders are the latest models of our company, having proceed more reasonable optimization from appearance, interior and internal configuration, maintaining a relatively high-end image in the industry.

Export performance

SINOMACH export to South America, CIS, Middle East, Africa in mass. Export 140 units to Argentina, 60 units to Cameroon, 60 units to Tunisia, 54 units to Zambia, 18 units to Kenya at one time which creates a precedent. Export to more than 60 countries and areas all over the world, especially favor by arms and United Nations Peace Keeping Forces. It is the top level brand of Chinese graders.

4.9 平地机 GP180M
4.9 MOTOR GRADER GP180M

主要性能参数

总体尺寸：8700×2600×3400 mm

最大牵引力：80 kN

最小转弯半径：7500 mm

发动机：上柴 SC7H190.1G3 ／ 康明斯 QSB5.9—C210—30

额定功率：140kW/190hp ／ 154kW/210hp

整机重量：15120 kg

铲刀（长 × 弦高）：3965×650 mm

产品简介

SINOMACH 牌平地机是亚洲平地机生产的领航者，同时也是世界三大平地机生产商。在过去 100 年的创新和发展下完成了世界上最完善的生产线。M 系列平地机是公司全新机型，外观、内饰及内部配置进行了更合理的优化，保持了自己在行业内较为高端的形象。

出口业绩

批量出口南美、独联体、中东、非洲地区，曾一次性出口阿根廷 140 台，喀麦隆 60 台，突尼斯 60 台，赞比亚 54 台，肯尼亚 18 台，被中国部队列装并参与联合国维和。

Main performance parameters

Overall dimensions: 8700×2600×3400 mm
Max.tractive force: 80 kN
Min.turning radius: 7500mm
Engine: SHANGCHAI SC7H190.1G3 / CUMMINS QSB5.9-C210-30
Rated power: 140kW/190hp / 154kW/210hp
Operating weight: 15120 kg
Blade(Length×chrod): 3965×650 mm

Product Introduction

SINOMACH brand motor grader is one of the leaders in Asia, meanwhile it is also the one of the three major motor grader manufactures of the world. The most perfect production line was completed in the past 100 years of innovation and development.M series motor graders are the latest models of our company, having proceed more reasonable optimization from appearance, interior and internal configuration, maintaining a relatively high-end image in the industry.

Export performance

SINOMACH export to South America, CIS, Middle East, Africa in mass. Export 140 units to Argentina, 60 units to Cameroon, 60 units to Tunisia, 54 units to Zambia, 18 units to Kenya at one time which creates a precedent. Export to more than 60 countries and areas all over the world, especially favor by arms and United Nations Peace Keeping Forces. It is the top level brand of Chinese graders.

4.10 平地机 GP200M
4.10 MOTOR GRADER GP200M

主要性能参数

总体尺寸：9100×2600×3400 mm

最大牵引力：82.5 kN

最小转弯半径：7900 mm

发动机：上柴 SC9DK200G3 ／康明斯 QSC8.3—C215

额定功率：147kW/200hp ／ 160kW/215hp

整机重量：15710 kg

铲刀（长 × 弦高）：3965×630 mm

产品简介

SINOMACH 牌平地机是亚洲平地机生产的领航者，同时也是世界三大平地机生产商。在过去 100 年的创新和发展下完成了世界上最完善的生产线。M 系列平地机是公司全新机型，外观、内饰及内部配置进行了更合理的优化，保持了自己在行业内较为高端的形象。

出口业绩

批量出口南美、独联体、中东、非洲地区，曾一次性出口阿根廷 140 台，喀麦隆 60 台，突尼斯 60 台，赞比亚 54 台，肯尼亚 18 台，被中国部队列装并参与联合国维和。

Main performance parameters

Overall dimensions: 9100×2600×3400 mm

Max.tractive force: 82.5 kN

Min.turning radius: 7900mm Engine:SHANGCHAI SC9DK200G3 / Cummins QSC8.3-C215

Rated power: 147kW/200hp / 160kW/215hp

Operating weight: 15710 kg

Blade(Length×chrod): 3965×630 mm

Product Introduction

SINOMACH brand motor grader is one of the leaders in Asia, meanwhile it is also the one of the three major motor grader manufactures of the world. The most perfect production line was completed in the past 100 years of innovation and development.M series motor graders are the latest models of our company, having proceed more reasonable optimization from appearance, interior and internal configuration, maintaining a relatively high-end image in the industry.

Export performance

SINOMACH export to South America, CIS, Middle East, Africa in mass. Export 140 units to Argentina, 60 units to Cameroon, 60 units to Tunisia, 54 units to Zambia, 18 units to Kenya at one time which creates a precedent. Export to more than 60 countries and areas all over the world, especially favor by arms and United Nations Peace Keeping Forces. It is the top level brand of Chinese graders.

4.11 平地机 GP240M
4.11 MOTOR GRADER GP240M

主要性能参数

总体尺寸：9100×2600×3500 mm

最大牵引力：86.6 kN

最小转弯半径：7800 mm

发动机：上柴 SC11CB ／ 康明斯 6CTA8.3—C230

额定功率：162kW/220hp ／ 169kW/230hp

整机重量：16500 kg

铲刀（长 × 弦高）：4270×650mm

产品简介

SINOMACH 牌平地机是亚洲平地机生产的领航者，同时也是世界三大平地机生产商。在过去 100 年的创新和发展下完成了世界上最完善的生产线。M 系列平地机是公司全新机型，外观、内饰及内部配置进行了更合理的优化，保持了自己在行业内较为高端的形象。

出口业绩

批量出口南美、独联体、中东、非洲地区，曾一次性出口阿根廷 140 台，喀麦隆 60 台，突尼斯 60 台，赞比亚 54 台，肯尼亚 18 台，被中国部队列装并参与联合国维和。

Main performance parameters

Overall dimensions: 9100×2600×3500 mm
Max.tractive force: 86.6 kN
Min.turning radius: 7800mm Engine: SHANGCHAI SC11CB / CUMMINS 6CTA8.3-C230
Rated power: 162kW/220hp / 169kW/230hp
Operating weight: 16500 kg
Blade(Length×chrod): 4270×650mm

Product Introduction

SINOMACH brand motor grader is one of the leaders in Asia, meanwhile it is also the one of the three major motor grader manufactures of the world. The most perfect production line was completed in the past 100 years of innovation and development.M series motor graders are the latest models of our company, having proceed more reasonable optimization from appearance, interior and internal configuration, maintaining a relatively high-end image in the industry.

Export performance

SINOMACH export to South America, CIS, Middle East, Africa in mass. Export 140 units to Argentina, 60 units to Cameroon, 60 units to Tunisia, 54 units to Zambia, 18 units to Kenya at one time which creates a precedent. Export to more than 60 countries and areas all over the world, especially favor by arms and United Nations Peace Keeping Forces. It is the top level brand of Chinese graders.

4.12 平地机 GP310M
4.12 MOTOR GRADER GP310M

主要性能参数

总体尺寸：10500×3140×3650 mm

铲刀（长 × 弦高）：4920×695mm

最小转弯半径：9300 mm

发动机：M11—C

额定功率：228kW/310hp

整机重量：24000kg/27500kg

产品简介

SINOMACH 牌平地机是亚洲平地机生产的领航者，同时也是世界三大平地机生产商。在过去 100 年的创新和发展下完成了世界上最完善的生产线。M 系列平地机是公司全新机型，外观、内饰及内部配置进行了更合理的优化，保持了自己在行业内较为高端的形象。

出口业绩

批量出口南美、独联体、中东、非洲地区，曾一次性出口阿根廷 140 台，喀麦隆 60 台，突尼斯 60 台，赞比亚 54 台，肯尼亚 18 台，被中国部队列装并参与联合国维和。

Main performance parameters

Overall dimensions: 10500×3140×3650 mm
Blade(Length×chrod): 4920×695 mm
Min.turning radius: 9300 mm
Engine: M11-C
Rated power: 228kW/310hp
Operating weight: 24000kg/27500kg

Product Introduction

SINOMACH brand motor grader is one of the leaders in Asia, meanwhile it is also the one of the three major motor grader manufactures of the world. The most perfect production line was completed in the past 100 years of innovation and development.M series motor graders are the latest models of our company, having proceed more reasonable optimization from appearance, interior and internal configuration, maintaining a relatively high-end image in the industry.

Export performance

SINOMACH export to South America, CIS, Middle East, Africa in mass. Export 140 units to Argentina, 60 units to Cameroon, 60 units to Tunisia, 54 units to Zambia, 18 units to Kenya at one time which creates a precedent. Export to more than 60 countries and areas all over the world, especially favor by arms and United Nations Peace Keeping Forces. It is the top level brand of Chinese graders.

4.13 平地机 GP350M
4.13 MOTOR GRADER GP350M

主要性能参数

总体尺寸：10800×3140×3650 mm

铲刀（长 × 弦高）：4920×695mm

最小转弯半径：9300 mm

发动机：QSM11

额定功率：257 kW/350ps

整机重量：27500kg

产品简介

SINOMACH 牌平地机是亚洲平地机生产的领航者，同时也是世界三大平地机生产商。在过去 100 年的创新和发展下完成了世界上最完善的生产线。M 系列平地机是公司全新机型，外观、内饰及内部配置进行了更合理的优化，保持了自己在行业内较为高端的形象。

出口业绩

批量出口南美、独联体、中东、非洲地区，曾一次性出口阿根廷 140 台，喀麦隆 60 台，突尼斯 60 台，赞比亚 54 台，肯尼亚 18 台，被中国部队列装并参与联合国维和。

Main performance parameters

Overall dimensions: 10800×3140×3650 mm
Blade(Length×chrod): 4920×695 mm
Min.turning radius: 9300 mm
Engine: QSM11
Rated power: 257 kW/350 ps
Operating weight: 27500 kg

Product Introduction

SINOMACH brand motor grader is one of the leaders in Asia, meanwhile it is also the one of the three major motor grader manufactures of the world. The most perfect production line was completed in the past 100 years of innovation and development.M series motor graders are the latest models of our company, having proceed more reasonable optimization from appearance, interior and internal configuration, maintaining a relatively high-end image in the industry.

Export performance

SINOMACH export to South America, CIS, Middle East, Africa in mass. Export 140 units to Argentina, 60 units to Cameroon, 60 units to Tunisia, 54 units to Zambia, 18 units to Kenya at one time which creates a precedent. Export to more than 60 countries and areas all over the world, especially favor by arms and United Nations Peace Keeping Forces. It is the top level brand of Chinese graders.

5 推土机
5 BULLDOZER

产品简介

推土机用于城市建筑、公路铁路施工、水利水电建设、露天采矿和国防施工等各种工程中，用来做推移积土、开渠、填土、清理场地等各种作业。80—120 马力系列推土机，采用独特传动技术和拥有自主知识产权的核心零部件，工作效率高、省油，多种变型产品适应不同工况需求，市场占有率处于行业领先地位；160—320 大马力推土机，在传承公司推土机技术基础上吸收国内外先进技术和经验开发而成，具有“节能、舒适、效率高”的特点，成为市场主流。

Product Introduction

Bulldozers are used in urban construction, highway and railway construction, water conservancy and hydropower construction, open-pit mining, national defense construction and other projects, and are used for shifting soil, opening canals, filling soil, clearing sites and other operations. Company bulldozer series from 80 to 120 horse power, adopt to unique transmission technology and own intellectual property rights of the core parts. with high efficiency, fuel saving advantages, a variety of variations of products to meet the needs of different working conditions, market share in the industry leading position; The 160-320 horse power bulldozer is developed on the basis of inheriting the company's bulldozer technology and absorbing the advanced technology and experience at home and abroad, With the characteristics of "energy saving, comfort and high efficiency", it has become the mainstream of the market.

5.1 推土机 GT80—3/GT80S—3
5.1 BULLDOZER GT80-3/GT80S-3

主要性能参数

整机重量：8600/9000kg

发动机型号：LR4A3Z—U22

发动机标定功率：70kW

接地比压：53/34kPa

外形尺寸：4200×2480×2740mm/4200×2934×2890mm

前进 1—4 档行驶速度：2.4—10.4km/h

后退 1—2 档行驶速度：4.9—8.9km/h

产品简介

本机为机械传动、半刚性悬挂履带式推土机。采用东方红 LR4A3ZU22/0662 国 III 排放发动机、干式主离合器、4F+2R 机械换挡变速箱、转向操纵液压助力、暖风系统等；具有动力强劲、性能可靠、便于维修等特点。可选装角铲、环卫铲、松土器等；适应于狭窄环境作业。湿地型适应于湿地、泥泞和松软工况环境作业。

出口业绩

批量出口南美、独联体、中东、非洲、东南亚地区。

Main performance parameters

Total weight: 8600/9000kg

Engine model: LR4A3Z-U22

Engine rated power: 70kW

Earth radio: 53/34kPa

Overall dimension: 4200×2480×2740mm/4200×2934×2890mm

Forward I-IV travel speed: 2.4-10.4km/h

BackWard I-II travel speed: 4.9-8.9km/h

Product Introduction

This machine is machanical transmission, semi-rigid suspension super-wetland crawler bulldozer. Adopts the YTO-LR4A3ZU22/0662 state III emission engine,dry clutch, 4F+2R mechanical shift gearbox, directional steering control hydraulic booster,warm air condition system etc. With strong power, reliable performance, easy maintenance and other characteristics. Optional angle of blade, sanitation shovel,ripper etc. Suitable for operation in narrow environment.Wetland crawler bulldozer is suitable for wetland, muddy and soft working environment.

Export performance

SINOMACH bulldozers exports to South America, CIS, Middle East, Africa, Southeast Asia in mass.

5.2 推土机 GT100—3/GT100S—3
5.2 BULLDOZER GT100-3/GT100S-3

主要性能参数

整机重量：10400/11360kg

发动机标定功率：81kW

接地比压：54.4/36.5kPa

外形尺寸：4190×2935×3020/4190×3240×3060mm

推土铲（宽 × 高）：2935×960/3240×878mm

前进 1—4 档行驶速度：2.6—10.4km/h

后退 1—2 档行驶速度：3.7—6.7km/h

产品简介

本机为机械传动、半刚性悬挂履带式推土机。采用东方红 LR6A3LR23/0810 国 III 排放发动机、干式主离合器、4F+2R 机械换挡变速箱、转向操纵液压助力、暖风系统等；具有动力强劲、性能可靠、便于维修等特点。可选装空调、直倾铲、环卫铲等。适应于土石方、水利建设、农田建设、矿山等多种工况；湿地型适用于水电工程，农田改造，河滩、池塘和垃圾场等湿地、泥泞和松软工况环境作业。

出口业绩

批量出口南美、独联体、中东、非洲、东南亚地区。

Main performance parameters

Total weight: 10400/11360kg
Engine rated power: 81kW
Earth radio: 54.4/36.5kPa
Overall dimension: 4190×2935×3020/4190×3240×3060mm
Blade (width×height): 2935×960/3240×878mm
Forward I-IV travel speed: 2.6-10.4km/h
Backward I-II travel speed: 3.7-6.7km/h

Product Introduction

This machine is machanical transmission, semi-rigid suspension super-wetland crawler bulldozer. Adopts the YTO-LR6A3LR23/0810 state III emission engine,dry clutch, 4F+2R mechanical shift gearbox, directional steering control hydraulic booster,warm air condition system etc. With strong power, reliable performance, easy maintenance and other characteristics. Optional air conditioning, straight tilt blade, sanitation shovel etc. Suitable for earthwork, water conservancy construction, construction of farmland ,mines and other working conditions. Wetland crawler bulldozer is suitable for hydropower projects, farmland reconstruction, river beach, pond and garbage dump and other wetland, muddy and soft working environment.

Export performance

SINOMACH bulldozers exports to South America, CIS, Middle East, Africa, Southeast Asia in mass.

5.3 推土机 GT100L—3
5.3 BULLDOZER GT100L-3

主要性能参数

整机重量：10750kg

发动机标定功率：81kW

接地比压：24.5kPa

外形尺寸：4400×3200×3100mm

推土铲（宽 × 高）：3200×970mm

前进 1—4 档行驶速度：2.98—11.8km/h

后退 1—2 档行驶速度：4.24—7.67km/h

产品简介

本机为机械传动、半刚性悬挂、超湿地型履带式推土机。采用东方红 LR6A3LR23/0810 国Ⅲ排放发动机、干式主离合器、4F+2R 机械换挡变速箱、转向操纵液压助力、暖风系统等。具有动力强劲、性能可靠、便于维修等特点。可选装空调、直倾铲、环卫铲等。适用于水电工程、农田改造、河滩、池塘和垃圾场等湿地、泥泞和松软工况环境作业。

出口业绩

批量出口南美、独联体、中东、非洲、东南亚地区。

Main performance parameters

Total weight: 10750kg

Engine rated power: 81kW

Earth radio: 24.5kPa

Overall dimension: 4400×3200×3100mm

Blade (width×height): 3200×970mm

Forward I-IV travel speed: 2.98-11.8km/h

Backward I-II travel speed: 4.24-7.67km/h

Product Introduction

This machine is machanical transmission, semi-rigid suspension super-wetland crawler bulldozer. Adopts the YTO-LR6A3LR23/0810 state Ⅲ emission engine,dry clutch, 4F+2R mechanical shift gearbox, directional steering control hydraulic booster, warm air condition system etc. With strong power, reliable performance, easy maintenance and other characteristics. Optional air conditioning, straight tilt blade, sanitation shovel etc. Suitable for hydropower projects, farmland reconstruction, river beach, pond and garbage dump and other wetland, muddy and soft working environment.

Export performance

SINOMACH bulldozers exports to South America, CIS, Middle East, Africa, Southeast Asia in mass.

5.4 推土机 GT120—3／GT120S—3
5.4 BULLDOZER GT120-3/GT120S-3

主要性能参数

整机重量：13000／13500kg

发动机标定功率：93kW

接地比压：51／37kPa

外形尺寸：4535×3135×3190／4610×3450×3230mm

推土铲（宽 × 高）：3135×970／3450×1060mm

前进 1—4 档行驶速度：2.4 ～ 10.6km/h

后退 1—2 档行驶速度：3.8 ～ 7.0km/h

产品简介

本机为机械传动、半刚性悬挂履带式推土机。采用东方红 LR6A3LR20／0930 国 III 排放发动机、干式主离合器、4F+2R 机械换挡变速箱、转向操纵液压助力、暖风系统等；具有动力强劲、性能可靠、便于维修等特点。可选装空调、直倾铲、环卫铲等。适应于土石方、水利建设、农田建设、矿山等多种工况；湿地型适用于水电工程，农田改造，河滩、池塘和垃圾场等湿地、泥泞和松软工况环境作业。

出口业绩

批量出口南美、独联体、中东、非洲、东南亚地区。

Main performance parameters

Total weight: 13000/13500kg
Engine rated power: 93kW
Earth radio: 51/37kPa
Overall dimension: 4535×3135×3190/4610×3450×3230mm
Blade (width×height): 3135×970/3450×1060mm
Forward I-IV travel speed: 2.4~10.6km/h
Backward I-II travel speed: 3.8~7.0km/h

Product Introduction

This machine is machanical transmission, semi-rigid suspension crawler bulldozer. Adopts the YTO-LR6A3LR20/0930 state III emission engine,dry clutch, 4F+2R mechanical shift gearbox, directional steering control hydraulic booster, warm air condition system etc.With strong power, reliable performance, easy maintenance and other characteristics. Optional air conditioning, straight tilt blade, U-shaped blade, angle of blade, sanitation shovel,ripper and anti-overturning frame etc. Suitable for earthwork, water conservancy construction, mines and other working conditions. wetland crawler bulldozer is suitable for hydropower projects, farmland reconstruction, river beach, pond and garbage dump and other wetland, muddy and soft working environment.

Export performance

SINOMACH bulldozers exports to South America, CIS, Middle East, Africa, Southeast Asia in mass.

5.5 推土机 GT160—5
5.5 BULLDOZER GT160-5

主要性能参数

整机重量：17000kg

发动机标定功率：131kW

接地比压：67kPa

外形尺寸：5140×3390×3100mm

推土铲（宽 × 高）：3390×1160mm

前进档行驶速度：2.67 ～ 11.13km/h

后退档行驶速度：3.48 ～ 9.92km/h

产品简介

本机为机械传动、刚性悬挂履带式推土机。采用潍柴WP10G178E355 国III排放发动机，液压助力湿式主离合器，5F+4R 机械换挡变速箱，液压操纵湿式转向离合器，液压助力双向带式制动器，直倾铲，牵引装置，配置六面体驾驶室，暖风系统；可选装空调，半U铲、U形铲、角铲、环卫铲、防翻架等；适应于土石方、沙漠、油田、电力、矿山等多种工况作业。

出口业绩

批量出口南美、独联体、中东、非洲、东南亚地区。

Main performance parameters

Total weight: 17000kg

Engine rated power:131kW

Earth radio: 67kPa

Overall dimension: 5140×3390×3100mm

Blade (width×height): 3390×1160mm

Forward travel speed: 2.67~11.13km/h

Backward travel speed:3.48~9.92km/h

Product Introduction

This machine is machanical transmission, rigid suspension crawler bulldozer.Adopts Weichai WP10G178E355 state III emission engine, hydraulic booster wet clutch, 5F +4R mechanical shift gearbox, hydraulic control wet steering clutch, hydraulic booster two-way belt brake, straight tilt blade, traction device, configuration six-sided cab, warm air condition system; Optional air conditioning, semi-U blade, U-shaped blade, angle of blade, sanitation shovel, anti-overturning frame etc. Suitable for earthwork, desert, oil field, electric power, mines and other working conditions.

Export performance

SINOMACH bulldozers exports to South America, CIS, Middle East, Africa, Southeast Asia in mass.

5.6 推土机 GT160S—5
5.6 BULLDOZER GT160S-5

主要性能参数

整机重量：17700kg

发动机标定功率：131kW

接地比压：27kPa

外形尺寸：5250×4150×3206mm

推土铲（宽 × 高）：4150×960mm

前进档行驶速度：2.67 ～ 11.13km/h

后退档行驶速度：3.48 ～ 9.92km/h

产品简介

本机为机械传动、刚性悬挂、湿地型履带式推土机。采用潍柴 WP10G178E355 国 III 排放发动机，液压助力湿式主离合器，5F+4R 机械换挡变速箱，液压操纵湿式转向离合器，液压助力双向带式制动器，可选装空调，环卫铲，1100mm 履带板等，适应于围海造田、滩涂开发、海水养殖、水利工程等工况作业。

出口业绩

批量出口南美、独联体、中东、非洲、东南亚地区。

Main performance parameters

Total weight: 17700kg

Engine rated power:131kW

Earth radio: 27kPa

Overall dimension: 5250×4150×3206mm

Blade (width×height): 150×960mm

Forward travel speed: 2.67~11.13km/h

Backward travel speed:3.48~9.92km/h

Product Introduction

This machine is machanical transmission, rigid suspension wetland crawler bulldozer. Adopts Weichai WP10G178E355 state III emission engine, hydraulic booster wet clutch, 5F +4R mechanical shift gearbox, hydraulic control wet steering clutch, hydraulic booster two-way belt brake,Optional air conditioning, sanitation shovel, 1100mm track board etc. Suitable for reclamation, beach development, seawater breeding, and water Conservancy projects working conditions.

Export performance

SINOMACH bulldozers exports to South America, CIS, Middle East, Africa, Southeast Asia in mass.

5.7 推土机 GTY160—5
5.7 BULLDOZER GTY160-5

主要性能参数

整机重量：17000kg

发动机标定功率：131kW

接地比压：67kPa

外形尺寸：5140×3390×3100mm

推土铲（宽 × 高）：3390×1160mm

前进 1—3 档行驶速度：3.29—9.63km/h

后退 1—3 档行驶速度：4.28—12.53km/h

产品简介

本机为液力传动、刚性悬挂、动力换挡履带式推土机。采用潍柴 WP10G178E355 国 III 排放发动机，单级、单相、三元件液力变矩器，3F+3R 动力换挡变速箱，液压操纵湿式转向离合器，液压助力双向带式制动器，直倾铲刀，牵引装置，配置六面体驾驶室，暖风系统；可选装空调，半 U 铲、U 形铲、角铲、环卫铲、绞盘、防翻架等；适应于土石方、沙漠、油田、电力、矿山等多种工况作业。

出口业绩

批量出口南美、独联体、中东、非洲、东南亚地区。

Main performance parameters

Total weight: 17000kg

Engine rated power:131kW

Earth radio: 67kPa

Overall dimension: 5140×3390×3100mm

Blade (width×height): 3390×1160mm

Forward I-III travel speed: 3.29-9.63km/h

Backward I-III travel speed:4.28-12.53km/h

Product Introduction

This machine is hydraulic transmission, rigid suspension, power shift track bulldozer. Adopts Weichai WP10G178E355 state III emission engine, hydraulic booster wet clutch, 3F +3R power shift gearbox, hydraulic control wet steering clutch, hydraulic booster two-way belt brake, equipped with hexahedral cab, warm air-conditioning system;Optional air conditioning,semi-U blade ,U-shaped blade , angle of blade, sanitation shovel,winch, anti-overturning frame etc. Suitable for earthwork, desert, oil field, electric power, mining and other operating conditions.

Export performance

SINOMACH bulldozers exports to South America, CIS, Middle East, Africa, Southeast Asia in mass.

5.8 推土机 GTY160S—5
5.8 BULLDOZER GTY160S-5

主要性能参数

整机重量：18460kg

发动机标定功率：131kW

接地比压：27kPa

外形尺寸：5250×4150×3206mm

推土铲（宽 × 高）：4150×960mm

前进 1—3 档行驶速度：3.29—9.63km/h

后退 1—3 档行驶速度：4.28—12.53km/h

产品简介

本机为液力传动、刚性悬挂、湿地型履带式推土机。采用潍柴 WP10G178E355 国 III 排放发动机，单级、单相、三元件液力变矩器，3F+3R 动力换挡变速箱，液压操纵湿式转向离合器，液压助力双向带式制动器，直倾铲，牵引装置，配置六面体驾驶室，暖风系统；可选装空调，环卫铲，1100mm 履带板等，适应于围海造田、滩涂开发、海水养殖、水利工程等工况作业。

出口业绩

批量出口南美、独联体、中东、非洲、东南亚地区。

Main performance parameters

Total weight: 18460kg

Engine rated power:131kW

Earth radio: 27kPa

Overall dimension: 5250×4150×3206mm

Blade (width×height): 4150×960mm

Forward I-III travel speed: 3.29-9.63km/h

Backward I-III travel speed:4.28-12.53km/h

Product Introduction

This machine is hydraulic transmission, rigid suspension wetland crawler bulldozer. Adopts Weichai WP10G178E355 state III emission engine, hydraulic booster wet clutch, 3F +3R power shift gearbox, hydraulic control wet steering clutch, hydraulic booster two-way belt brake, equipped with hexahedral cab, warm air-conditioning system;Optional air conditioning, sanitation shovel, 1100mm track board etc. Suitable for reclamation, beach development, seawater breeding, and water Conservancy projects working conditions.

Export performance

SINOMACH bulldozers exports to South America, CIS, Middle East, Africa, Southeast Asia in mass.

5.9 推土机 GTY160F—5
5.9 BULLDOZER GTY160F-5

主要性能参数

整机重量：17000kg

发动机标定功率：131kW

接地比压：67kPa

外形尺寸：5140×3390×3100mm

推土铲（宽 × 高）：3390×1160mm

前进 1—3 档行驶速度：3.29—9.63km/h

后退 1—3 档行驶速度：4.28—12.53km/h

产品简介

本机为液力传动、刚性悬挂、伐木型履带式推土机。采用潍柴 WP10G178E355 国 III 排放发动机，单级、单相、三元件液力变矩器，3F+3R 动力换挡变速箱，液压操纵湿式转向离合器，液压助力双向带式制动器，直倾铲，牵引装置，配置防滚翻驾驶棚；可选装角铲、绞盘、驾驶室等，适应于森林伐木、土地开垦等工况作业。

出口业绩

批量出口南美、独联体、中东、非洲、东南亚地区。

Main performance parameters

Total weight: 17000kg

Engine rated power:131kW

Earth radio: 67kPa

Overall dimension: 5140×3390×3100mm

Blade (width×height): 3390×1160mm

Forward I-III travel speed: 3.29-9.63km/h

Backward I-III travel speed:4.28-12.53km/h

Product Introduction

This machine is hydraulic transmission, rigid suspension, forest type track bulldozer. Adopts Weichai WP10G178E355 state III emission engine, single-stage, single-phase, three-component hydraulic torque converter, 3F+3R power shift transmission, hydraulic control wet steering clutch, hydraulic power two-way belt brake, working device servo control, straight tile blade, Traction device, Configure anti-roll driving shed;Optional, angle of shovel, winch,cabin etc. suitable for forest logging, land reclamation and other working conditions.

Export performance

SINOMACH bulldozers exports to South America, CIS, Middle East, Africa, Southeast Asia in mass.

5.10 推土机 GTY230
5.10 BULLDOZER GTY230

主要性能参数

整机重量：24220kg

发动机标定功率：179/180kW

接地比压：76kPa

外形尺寸：5590×3725×3380mm

推土铲（宽 × 高）：3725×1395mm

前进 1—3 档行驶速度：3.8—11.3km/h

后退 1—3 档行驶速度：4.9—13.6km/h

产品简介

本机为液力传动、半刚性悬挂、液压伺服操纵履带式推土机。采用康明斯 QSNT—C240/ 潍柴 WP12G245E303 国 III 排放发动机，单级、单相、三元件液力变矩器，3F+3R 动力换挡变速箱，液压操纵湿式转向离合器，液压助力双向带式制动器，工作装置采用伺服操纵，直倾铲，牵引装置，配置六面体驾驶室，暖风系统。可选装空调，半 U 铲、U 形铲，单齿、三齿松土器，绞盘、防翻架等，适应于大型土石方、沙漠、油田、电力、矿山等多种工况作业。

出口业绩

批量出口南美、独联体、中东、非洲、东南亚地区。

Main performance parameters

Total weight: 24220kg

Engine rated power:179/180kW

Earth radio: 76kPa

Overall dimension: 5590×3725×3380mm

Blade (width×height): 3725×1395mm

Forward I-III travel speed: 3.8-11.3km/h

Backward I-III travel speed:4.9-13.6km/h

Product Introduction

This machine is hydraulic transmission, semi-rigid suspension, hydraulic servo control track bulldozer. Adopts Cummings QSNT-C345/ Weichai WP12G245E303 state III emission engine, single-stage, single-phase, three-component hydraulic torque converter, 3F +3R power shift transmission, hydraulic control wet steering clutch, hydraulic power two-way belt brake, working device servo control, straight tile blade, Traction device, equipped with hexahedral cab, warm air-conditioning system. Optional air-conditioning system, semi-U blade,U-blade,single tooth or three-tooth ripper, winch, anti-overturning frame etc. Suitable for Large earthwork, desert, oil field, electric power, mining and other operating conditions.

Export performance

SINOMACH bulldozers exports to South America, CIS, Middle East, Africa, Southeast Asia in mass.

5.11 推土机 GTY230S
5.11 BULLDOZER GTY230S

主要性能参数

整机重量：26000kg

发动机标定功率：179/180kW

接地比压：41kPa

外形尺寸：6060×4365×3435mm

推土铲（宽 × 高）：4365×1248mm

前进 1—3 档行驶速度：3.8—11.3km/h

后退 1—3 档行驶速度：4.9—13.6km/h

产品简介

本机为液力传动、半刚性悬挂、液压伺服操纵、湿地型履带式推土机。采用康明斯 QSNT—C240/ 潍柴 WP12G245E303 国 III 排放发动机，单级、单相、三元件液力变矩器，3F+3R 动力换挡变速箱，液压操纵湿式转向离合器，液压助力双向带式制动器，工作装置采用伺服操纵，直倾铲，牵引装置，配置六面体驾驶室，暖风系统。可选装空调，环卫铲，防缠绕装置，集中润滑，履带自动涨紧等，适应于环卫、水利工程等工况作业。

出口业绩

批量出口南美、独联体、中东、非洲、东南亚地区。

Main performance parameters

Total weight: 26000kg

Engine rated power:179/180kW

Earth radio: 41kPa

Overall dimension: 6060×4365×3435mm

Blade (width×height): 4365×1248mm

Forward I-III travel speed: 3.8-11.3km/h

Backward I-III travel speed:4.9-13.6km/h

Product Introduction

This machine is hydraulic transmission, semi-rigid suspension, hydraulic servo control wetland crawler bulldozer. Adopts Cummings QSNT-C345/ Weichai WP12G245E303 state III emission engine, single-stage, single-phase, three-component hydraulic torque converter, 3F +3R power shift transmission, hydraulic control wet steering clutch, hydraulic power two-way belt brake, working device servo control, straight tile blade, Traction device, equipped with hexahedral cab, warm air-conditioning system. Optional air-conditioning system, sanitation blade,anti-winding device,centralized lubrication,crawler automatic tensioning deviceetc. Suitable for sanitation, water conservancy projects and other working conditions.

Export performance

SINOMACH bulldozers exports to South America, CIS, Middle East, Africa, Southeast Asia in mass.

5.12 推土机 GTY230F
5.12 BULLDOZER GTY230F

主要性能参数

整机重量：24220kg

发动机标定功率：179/180kW

接地比压： 76kPa

外形尺寸：5590×3725×3380mm

推土铲（宽 × 高）：3725×1395mm

前进 1—3 档行驶速度：3.8—11.3km/h

后退 1—3 档行驶速度：4.9—13.6km/h

产品简介

本机为液力传动、半刚性悬挂、液压伺服操纵、伐木型履带式推土机。采用康明斯 QSNT—C240/ 潍柴 WP12G245E303 国 III 排放发动机，单级、单相、三元件液力变矩器，3F+3R 动力换挡变速箱，液压操纵湿式转向离合器，液压助力双向带式制动器，工作装置采用伺服操纵，直倾铲，牵引装置，配置防滚翻驾驶棚。可选装绞盘、驾驶室、集中润滑等，适应于森林伐木、土地开垦等工况作业。

出口业绩

批量出口南美、独联体、中东、非洲、东南亚地区。

Main performance parameters

Total weight: 24220kg

Engine rated power:179/180kW

Earth radio: 76kPa

Overall dimension: 5590×3725×3380mm

Blade (width×height): 3725×1395mm

Forward I-III travel speed: 3.8-11.3km/h

Backward I-III travel speed:4.9-13.6km/h

Product Introduction

This machine is hydraulic transmission, semi-rigid suspension, hydraulic servo control forest type track bulldozer. Adopts Cummings QSNT-C240/ Weichai WP12G245E303 state III emission engine, single-stage, single-phase, three-component hydraulic torque converter, 3F +3R power shift transmission, hydraulic control wet steering clutch, hydraulic power two-way belt brake, working device servo control, straight tile blade, Configure anti-roll driving shed. Optional Winch, cabin , centralized lubrication, etc. Suitable for forest logging, land reclamation and other working conditions.

Export performance

SINOMACH bulldozers exports to South America, CIS, Middle East, Africa, Southeast Asia in mass.

5.13 推土机 GTY320
5.13 BULLDOZER GTY320

主要性能参数

整机重量：37200kg

发动机标定功率：257kW

接地比压：105kPa

外形尺寸：6550×4130×3640mm

推土铲（宽 × 高）：4130×1590mm

前进 1—3 档行驶速度：3.6—11.5km/h

后退 1—3 档行驶速度：4.49—13.5km/h

产品简介

本机为液力传动、半刚性悬挂、液压伺服操纵履带式推土机。采用康明斯 QSNT—C345 国 III 排放发动机，单级、单相、三元件液力变矩器，3F+3R 动力换挡变速箱，液压操纵湿式转向离合器，液压助力双向带式制动器，工作装置采用伺服操纵，半 U 直倾铲刀，牵引装置，配置六面体驾驶室，空调系统。可选装，U 形铲，单齿、三齿松土器、防翻架、集中润滑等，适应于大型土石方、沙漠、油田、电力、矿山等多种工况作业。

出口业绩

批量出口南美、独联体、中东、非洲、东南亚地区。

Main performance parameters

Total weight: 37200kg

Engine rated power:257kW

Earth radio: 105kPa

Overall dimension: 6550×4130×3640mm

Blade (width×height): 4130×1590mm

Forward I-IV travel speed: 3.6-11.5km/h

Backward I-II travel speed:4.49-13.5km/h

Product Introduction

This machine is hydraulic transmission, semi-rigid suspension, hydraulic servo control track bulldozer. Adopts Cummings QSNT-C345 state III emission engine, single-stage, single-phase, three-component hydraulic torque converter, 3F +3R power shift transmission, hydraulic control wet steering clutch, hydraulic power two-way belt brake, working device servo control,semi- U straight tile blade, Traction device, hexahedral cab, air-conditioning system. Optional U-shaped shovel, single tooth or three-tooth ripper, anti-overturning frame, centralized lubrication, etc. Suitable for large earthwork, desert, oil fields, electricity, mines and other working conditions.

Export performance

SINOMACH bulldozers exports to South America, CIS, Middle East, Africa, Southeast Asia in mass.

5.14 推土机 GTQ170
5.14 BULLDOZER GTQ170

主要性能参数

整机重量：17600kg

发动机标定功率：140kW

接地比压：54kPa

外形尺寸：5300×3440×3160mm

推土铲（宽 × 高）：3400×1200mm

前进档行驶速度：0—10km/h

后退档行驶速度：0—10km/h

产品简介

本机为全液压履带式推土机，采用双回路电控静液压传动、行星式轮边减速、工作装置液压先导控制、高性能CAN仪表电子监控系统、符合人机工程学原理的操控系统、全密封六面体驾驶室、冷暖空调系统等。适应于公路、铁路、机场、水利建设、土地开发及厂矿作业。

出口业绩

批量出口南美、独联体、中东、非洲、东南亚地区。

Main performance parameters

Total weight: 17600kg

Engine rated power:140kW

Earth radio: 54kPa

Overall dimension: 5300×3440×3160mm

Blade (width×height): 3400×1200mm

Forward travel speed:0-10km/h

Backward travel speed:0-10km/h

Product Introduction

This machine is full hydraulic track bulldozer, Adopts dual-loop electric control hydrostatic drive, planetary wheel edge deceleration, hydraulic pilot control of working device, high-performance CAN instrument electronic monitoring system, and control system that conforms to the principles of ergonomics, fully sealed hexahedral cab, cold and warm air conditioning system etc.Suitable for roads, railways, airports, water Conservancy construction, land development, factories and mines working conditions.

Export performance

SINOMACH bulldozers exports to South America, CIS, Middle East, Africa, Southeast Asia in mass.

6 摊铺机
6 PAVER

产品简介

摊铺机是一种主要用于高速公路上基层和面层各种材料摊铺作业的施工设备。公司系列摊铺机采用康明斯电喷发动机，马力强劲，功率储备系数大，低噪音、低污染，经济性好，低温起动性能好。微电子控制，分别实现刮板输送、螺旋供料左右独立驱动，可实现自动供料，保持熨平板前物料均匀，调平系统响应速度快，调平精度高。作业装置配置有机械式和液压伸缩式熨平板，振幅可调，对不同摊铺材料可取得最佳的预压实密度。熨平板加热方式有丙烷气加热、柴油加热、电加热等多种方式，可供用户灵活选择。

Product Introduction

The paver is a construction equipment mainly used for paving various materials on the base and surface of the expressway.The company series paver adopts Cummins EFI engine with strong horsepower, large power reserve coefficient, low noise, low pollution, good economy and good low temperature starting performance. The micro-electronic control realizes the scraper conveying and the spiral feeding separately driving independently, which can realize automatic feeding, keep the material uniform before the screed, and the leveling system has fast response speed and high leveling precision. The work unit is equipped with mechanical and hydraulic telescopic screeds with adjustable amplitude for optimum pre-compacting density for different paving materials. The screed heating method includes propane gas heating, diesel heating, electric heating, etc., which can be flexibly selected by users.

6.1 摊铺机 GYA4200
6.1 PAVER GYA4200

主要性能参数

基本摊铺宽度：1.8m

最大摊铺宽度：4.2m

最大摊铺厚度：200mm

摊铺速度：0—20m/min

理论生产率：200t/h

料斗容量：10t

行走方式：履带

加热方式：丙烷气加热

产品简介

产品配置康明斯 93Kw 电喷发动机，功率强劲，可靠性高；低温启动性能好，适用地区广泛。可用于市政道路，室内作业，小区道路与园艺道路施工等，作业质量完美。结构紧凑，操作方便，折叠型料斗在狭小空间内满足最大容量的施工需求。全液压自动伸缩熨平板，摊铺宽度无级可调。振捣系统无极调速，保证摊铺密实度。

出口业绩

国机重工摊铺机批量出口印尼、菲律宾、阿根廷、俄罗斯等国。

Main performance parameters

Basic paving width:1.8m

Max paving width: 4.2m

Max paving thickness: 200mm

Working speed: 0-20m/min

Theoretic productivity: 200t/h

Hopper capacity: 10t

Walking style: Crawler

Heating mode: Propane gas heating

Product Introduction

The product is equipped with Cummins 93Kw EFI engine, which has strong power and high reliability, good low temperature starting performance and wide application area. It can be used for municipal roads, indoor work, residential roads and horticultural road construction, etc. The quality of operation is perfect. Compact structure, easy operation, folding hopper in a narrow space to meet the construction needs of maximum capacity. Full hydraulic automatic telescopic Screed plate with stepless adjustable paving width. The infinite speed regulation of the vibration system ensures the paving compactness.

Export performance

SINOMACH pavers export to Indonesia, Philippines, Argentina, Russia and etc.

6.2 摊铺机 GYA4500
6.2 PAVER GYA4500

主要性能参数

基本摊铺宽度：1.8m

最大摊铺宽度：4.5m

最大摊铺厚度：200mm

摊铺速度：0—20m/min

理论生产率：200t/h

料斗容量：10t

行走方式：履带

加热方式：丙烷气加热

产品简介

产品配置康明斯 93Kw 电喷发动机，功率强劲，可靠性高；低温启动性能好，适用地区广泛。可用于市政道路，室内作业，小区道路与园艺道路施工等，作业质量完美。结构紧凑，操作方便，折叠型料斗在狭小空间内满足最大容量的施工需求。全液压自动伸缩熨平板，摊铺宽度无级可调。振捣系统无极调速，保证摊铺密实度。

出口业绩

国机重工摊铺机批量出口印尼、菲律宾、阿根廷、俄罗斯等国。

Main performance parameters

Basic paving width:1.8m

Max paving width: 4.5m

Max paving thickness: 200mm

Working speed: 0-20m/min

Theoretic productivity: 200t/h

Hopper capacity: 10t

Walking style: Crawler

Heating mode: Propane gas heating

Product Introduction

The product is equipped with Cummins 93Kw EFI engine, which has strong power and high reliability, good low temperature starting performance and wide application area. It can be used for municipal roads, indoor work, residential roads and horticultural road construction, etc. The quality of operation is perfect. Compact structure, easy operation, folding hopper in a narrow space to meet the construction needs of maximum capacity. Full hydraulic automatic telescopic Screed plate with stepless adjustable paving width. The infinite speed regulation of the vibration system ensures the paving compactness.

Export performance

SINOMACH pavers export to Indonesia, Philippines, Argentina, Russia and etc.

6.3 摊铺机 GYA12000／GYA12000E
6.3 PAVER GYA12000/GYA12000E

主要性能参数

基本摊铺宽度：2.5m

最大摊铺宽度：12m

最大摊铺厚度：450mm

摊铺速度：0—20m/min

理论生产率：1200t/h

料斗容量：18t

行走方式：履带

加热方式：丙烷气加热 / 电加热

产品简介

产品采用康明斯 194kw 电控发动机，马力强劲，功率储备系数大，低温起动性能好。微电子控制，分别实现刮板输送、螺旋供料左右独立驱动，可实现自动供料，保持熨平板前物料均匀。调平系统响应速度快，调平精度高。螺旋分料器加装反向叶片，有效减少物料离析。配置双振捣、偏心振动机械加长熨平板，能够满足稳定土大厚度摊铺作业要求，振幅可调，对不同摊铺材料可取得最佳的预压实密度。

出口业绩

国机重工摊铺机批量出口印尼、菲律宾、阿根廷、俄罗斯等国。

Main performance parameters

Basic paving width: 2.5m
Max paving width: 12m
Max paving thickness: 450mm
Working speed: 0-20m/min
Theoretic productivity: 1200t/h
Hopper capacity: 18t
Walking style: Crawler
Heating mode: Propane gas heating/Electric heating

Product Introduction

The product adopts Cummins 194kw electronic control engine, which has strong horsepower, large power reserve coefficient and good low temperature starting performance. Microelectronic control can realize scraper conveying and screw feeding independently. It can realize automatic feeding and keep the material uniform before ironing. The leveling system has fast response speed and high leveling accuracy. The screw distributor is equipped with reverse vanes to effectively reduce material segregation. With double vibration ramming and eccentric vibration machine lengthening Screed plate, the requirement of large thickness paving of stabilized soil can be met, and the optimum pre-compaction density can be obtained for different paving materials with adjustable amplitude.

Export performance

SINOMACH pavers export to Indonesia, Philippines, Argentina, Russia and etc.

6.4 摊铺机 GYA6000L
6.4 PAVER GYA6000L

主要性能参数

基本摊铺宽度：2.5m
最大摊铺宽度：6.0m
最大摊铺厚度：150mm
摊铺速度：0—15m/min
理论生产率：400t/h
料斗容量：12t
行走方式：轮胎后轮驱动
加热方式：柴油加热

产品简介

产品采用康明斯 93kw 电喷发动机，功率强劲，可靠性高。螺旋布料系统和刮板供料系统均为独立控制，原装进口液压元件匹配合理，能够适应任何稳定土及沥青混合料的输送、摊铺。行驶轮胎式驱动，微电脑控制，摊铺速度采用恒速自动控制技术。轮式行走，方便快速转场、机动性能强、工作效率高，具有专利保护的独特的双重制动保护装置，制动安全可靠。标准配置单振单捣液压伸缩熨平板，振幅可调，对不同摊铺材料可取得最佳的预压实密度。

出口业绩

国机重工摊铺机批量出口印尼、菲律宾、阿根廷、俄罗斯等国。

Main performance parameters

Basic paving width: 2.5m
Max paving width: 6.0m
Max paving thickness: 150mm
Working speed: 0-15m/min
Theoretic productivity: 400t/h
Hopper capacity: 12t
Walking style: Tire rear-wheel drive
Heating mode: Diesel heating

Product Introduction

The product adopts Cummins 93 kW EFI engine with strong power and high reliability. The screw feeding system and scraper feeding system are independently controlled. The original imported hydraulic components match reasonably and can adapt to the transportation and paving of any stabilized soil and asphalt mixture. Tyre driving, micro-computer control, paving speed using constant speed automatic control technology. Wheeled walking, convenient and fast turning, strong maneuverability, high efficiency, with patent protection of the unique dual brake protection device, braking safety and reliability. Standard single-vibrator single-tamping hydraulic expansion Screed plate with adjustable amplitude can achieve the best pre-compaction density for different paving materials.

Export performance

SINOMACH pavers export to Indonesia, Philippines, Argentina, Russia and etc.

6.5 摊铺机 GYA6000LB
6.5 PAVER GYA6000LB

主要性能参数

基本摊铺宽度：2.5m
最大摊铺宽度：6.0m
最大摊铺厚度：150mm
摊铺速度：0—15m/min
理论生产率：400t/h
料斗容量：12t
行走方式：轮胎全轮驱动
加热方式：柴油加热 / 电加热

产品简介

产品采用康明斯 93kw 电喷发动机，功率强劲，可靠性高。螺旋布料系统和刮板供料系统均为独立控制，原装进口液压元件匹配合理，能够适应任何稳定土及沥青混合料的输送、摊铺。行驶轮胎式驱动，微电脑控制，摊铺速度采用恒速自动控制技术。全轮驱动行走，提供更大的牵引力，满足重载及较松软路基下的作业状况。具有专利保护的独特的双重制动保护装置，制动安全可靠。标准配置单振单捣液压伸缩熨平板，振幅可调，对不同摊铺材料可取得最佳的预压实密度。

出口业绩

国机重工摊铺机批量出口印尼、菲律宾、阿根廷、俄罗斯等国。

Main performance parameters

Basic paving width: 2.5m
Max paving width: 6.0m
Max paving thickness: 150mm
Working speed: 0-15m/min
Theoretic productivity: 400t/h
Hopper capacity: 12t
Walking style: Tire full wheel drive
Heating mode: Diesel heating/Electric heating

Product Introduction

The product adopts Cummins 93 kW EFI engine with strong power and high reliability. The screw feeding system and scraper feeding system are independently controlled. The original imported hydraulic components match reasonably and can adapt to the transportation and paving of any stabilized soil and asphalt mixture. Tyre driving, micro-computer control, paving speed using constant speed automatic control technology. Full-wheel driving provides greater traction and satisfies the working conditions under heavy load and soft roadbed. The unique dual brake protection device with patent protection ensures safe and reliable braking. Standard single-vibrator single-tamping hydraulic expansion Screed plate with adjustable amplitude can achieve the best pre-compaction density for different paving materials.

Export performance

SINOMACH pavers export to Indonesia, Philippines, Argentina, Russia and etc.

6.6 摊铺机 GYA9000
6.6 PAVER GYA9000

主要性能参数

基本摊铺宽度：2.5m
最大摊铺宽度：9.0m
最大摊铺厚度：450mm
摊铺速度：0—20m/min
理论生产率：1000t/h
料斗容量：16t
行走方式：履带
加热方式：丙烷气加热

产品简介

产品采用康明斯 194kw 电控发动机，马力强劲，功率储备系数大，低温起动性能好。微电子控制，分别实现刮板输送、螺旋供料左右独立驱动，可实现自动供料，保持熨平板前物料均匀。调平系统响应速度快，调平精度高。螺旋分料器加装反向叶片，有效减少物料离析。配置双振捣、偏心振动机械加长熨平板，能够满足稳定土大厚度摊铺作业要求；振幅可调，对不同摊铺材料可取得最佳的预压实密度。

出口业绩

国机重工摊铺机批量出口印尼、菲律宾、阿根廷、俄罗斯等国。

Main performance parameters

Basic paving width: 2.5m
Max paving width: 9.0m
Max paving thickness: 450mm
Working speed: 0-20m/min
Theoretic productivity: 1000t/h
Hopper capacity: 16t
Walking style: Crawler
Heating mode: Propane gas heating

Product Introduction

The product adopts Cummins 194kw electronic control engine, which has strong horsepower, large power reserve coefficient and good low temperature starting performance. Microelectronic control can realize scraper conveying and screw feeding independently. It can realize automatic feeding and keep the material uniform before ironing. The leveling system has fast response speed and high leveling accuracy. The screw distributor is equipped with reverse vanes to effectively reduce material segregation. With double vibration ramming and eccentric vibration machine lengthening Screed plate, the requirement of large thickness paving of stabilized soil can be met, and the optimum pre-compaction density can be obtained for different paving materials with adjustable amplitude.

Export performance

SINOMACH pavers export to Indonesia, Philippines, Argentina, Russia and etc.

6.7 摊铺机 GYA9000S／GYA9000SE
6.7 PAVER GYA9000S/GYA9000SE

主要性能参数

基本摊铺宽度：3m
最大摊铺宽度：9m
最大摊铺厚度：350mm
摊铺速度：0—20m/min
理论生产率：1000t/h
料斗容量：16t
行走方式：履带
加热方式：丙烷气加热 / 电加热

产品简介

产品采用康明斯 194kw 电控发动机，马力强劲，功率储备系数大，低温起动性能好。微电子控制，分别实现刮板输送、螺旋供料左右独立驱动，可实现自动供料，保持熨平板前物料均匀。调平系统响应速度快，调平精度高。螺旋分料器加装反向叶片，有效减少物料离析。配置液压伸缩双振捣熨平板，加热速度快，加热均匀，加热系统安全可靠，能够满足稳定土大厚度摊铺作业要求；振幅可调，对不同摊铺材料可取得最佳的预压实密度。

出口业绩

国机重工摊铺机批量出口印尼、菲律宾、阿根廷、俄罗斯等国。

Main performance parameters

Basic paving width: 3m
Max paving width: 9m
Max paving thickness: 350mm
Working speed: 0-20m/min
Theoretic productivity: 1000t/h
Hopper capacity: 16t
Walking style: Crawler
Heating mode: Propane gas heating/ Electric heating

Product Introduction

The product adopts Cummins 194kw electronic control engine, which has strong horsepower, large power reserve coefficient and good low temperature starting performance. Microelectronic control can realize scraper conveying and screw feeding independently. It can realize automatic feeding and keep the material uniform before ironing. The leveling system has fast response speed and high leveling accuracy. The screw distributor is equipped with reverse vanes to effectively reduce material segregation. It is equipped with hydraulic expansion double vibration Screed plate, which has fast heating speed, uniform heating, safe and reliable heating system, and can meet the requirements of large thickness paving of stabilized soil. The amplitude can be adjusted to obtain the best pre-compaction density for different paving materials

Export performance

SINOMACH pavers export to Indonesia, Philippines, Argentina, Russia and etc.

6.8 摊铺机 GYA9500
6.8 PAVER GYA9500

主要性能参数

基本摊铺宽度：2.5m
最大摊铺宽度：9.5m
最大摊铺厚度：450mm
摊铺速度：0—20m/min
理论生产率：1100t/h
料斗容量：16t
行走方式：履带
加热方式：丙烷气加热 / 电加热

产品简介

产品采用康明斯 194kw 电控发动机，马力强劲，功率储备系数大，低温起动性能好。微电子控制，分别实现刮板输送、螺旋供料左右独立驱动，可实现自动供料，保持熨平板前物料均匀。调平系统响应速度快，调平精度高。螺旋分料器加装反向叶片，有效减少物料离析。配置液压伸缩双振捣熨平板，加热速度快，加热均匀，加热系统安全可靠，能够满足稳定土大厚度摊铺作业要求；振幅可调，对不同摊铺材料可取得最佳的预压实密度。

出口业绩

国机重工摊铺机批量出口印尼、菲律宾、阿根廷、俄罗斯等国。

Main performance parameters

Basic paving width: 2.5m
Max paving width: 9.5m
Max paving thickness: 450mm
Working speed: 0-20m/min
Theoretic productivity: 1100t/h
Hopper capacity: 16t
Walking style: Crawler
Heating mode: Propane gas heating/Electric heating

Product Introduction

The product adopts Cummins 194kw electronic control engine, which has strong horsepower, large power reserve coefficient and good low temperature starting performance. Microelectronic control can realize scraper conveying and screw feeding independently. It can realize automatic feeding and keep the material uniform before ironing. The leveling system has fast response speed and high leveling accuracy. The screw distributor is equipped with reverse vanes to effectively reduce material segregation. It is equipped with hydraulic expansion double vibration Screed plate, which has fast heating speed, uniform heating, safe and reliable heating system, and can meet the requirements of large thickness paving of stabilized soil. The amplitude can be adjusted to obtain the best pre-compaction density for different paving materials.

Export performance

SINOMACH pavers export to Indonesia, Philippines, Argentina, Russia and etc.

7 挖掘装载机
7 BACKHOE LOADER

产品简介

挖掘装载机是一种小型多用途、高效率工程机械，俗称〝两头忙〞。同时具备基本的装载和挖掘功能，适用于开挖沟渠、装卸土方，物料搬运、或者进行基础回填等，尤其适应于在狭小场地作业，还可以选配液压锤、液压夯等多种附件，可以满足多种施工要求，具有适应范围广、效率高、经济性好的特点，是高速公路、桥梁、自来水、燃气管道、电力建设、输油管线维护和各种市政抢修工程的理想设备。

Product Introduction

Backhoe loader, usually called two head busy, is a multipurpose and efficient engineering machinery of small size. The product, having the basic function of loading and excavate at the same time, is suitable for digging canals and ditches, loading and unloading earthwork, carrying materials or backfilling fundamentally, etc. what's more, it's especially fit for working in small areas. And it can select various accessories, such as hydraulic hammer, hydraulic pressure, and so on, which can meet the needs of different construction situation. The product is characterized of wide suitability, high efficiency and high economy.

7.1 挖掘装载机 630A
7.1 BACKHOE LOADER 630A

主要性能参数

整机长度：7085 mm

整机宽度：2313 mm

整机高度：3424 mm

整机质量：7600 kg

额定功率：74 kW

装载最大提升能力：34 kN

最大掘起力：>60kN

产品简介

1、配国三排放潍柴 WP4.1G100E311 发动机，CARRARO 变速箱及前后桥传动部件。

2、整体式车架，正转八连杆装载工作装置，中置式挖掘工作装置，展翼式支腿设计。

3、全液压湿式制动。

4、符合 ROPS/FOPS 全视野封闭驾驶室。

出口业绩

近几年，出口俄罗斯、非洲、中东、南美等地区的挖掘装载机达 515 台。

Main performance parameters

Overall length: 7085mm

Overall width: 2313

Overall Height: 3424mm

Operating weight: 7600kg

Rated power: 74kW

Max. lifting capacity : 34 kN

Max. digging force: >60kN

Product Introduction

1.equipped with China's third stage emission Weichai WP4.1G100E311 engine, CARRARO gearbox and front and rear axle transmission components.

2.integral frame, loading working device of positive rotating eight-link, middle excavating working device, flanking leg design.

3.full hydraulic wet braking.

4.in accordance with ROPS/FOPS full view closed cab.

Export performance

In recent years, the amount of backhoe loaders exported to the countries of Russia, Africa, the Middle East, South America has been accumulated as 515.

7.2 挖掘装载机 620CH
7.2 BACKHOE LOADER 620CH

主要性能参数

整机长度：5835 mm

整机宽度：2313 mm

整机高度：3548 mm

整机质量：8000 kg

额定功率：70 kW

装载最大提升能力：34 kN

最大掘起力：>60kN

产品简介

1、配二阶段排放潍柴道依茨 WP4G95E221 发动机，CARRARO 变速箱及前后桥传动部件。

2、整体式车架，正转八连杆装载工作装置，侧移式挖掘工作装置，H 型支腿设计。

3、全液压湿式制动。

4、符合 ROPS/FOPS 全视野封闭驾驶室。

出口业绩

近几年，出口俄罗斯、非洲、中东、南美等地区的挖掘装载机达 515 台。

Main performance parameters

Overall length: 5835mm

Overall width: 2313

Overall Height: 3548mm

Operating weight: 8000kg

Rated power: 70kW

Max. lifting capacity : 34 kN

Max. digging force: >60kN

Product Introduction

1.equipped with two-stage emission Weichai DEUTZ WP4G95E221 engine, CARRARO gearbox and front and rear axle transmission components.

2.integral frame, loading working device of positive rotating eight-link, side-shift excavating working device, H type leg design.

3.full hydraulic wet braking.

4.in accordance with ROPS/FOPS full view closed cab.

Export performance

In recent years, the amount of backhoe loaders exported to the countries of Russia, Africa, the Middle East, South America has been accumulated as 515.

8 汽车起重机
8 TRUCK CRANE

产品简介

汽车起重机具有起吊重量大、机动性好、能快速转移、长距离行驶等特点，可广泛应用于车站、码头、矿山、铁路、公路、建筑、水利、石化等建设及搬运作业场所，提高工作效率，减轻劳动强度，加快作业进度。国机重工 40 余年工程起重机械研发制造的技术沉淀，追踪国际国内发展趋势，通过引进消化、自主创新模式，研发制造了 8—12 吨"QY"系列、20—130 吨"LT"系列汽车起重机、LTM1160 型 160 吨级和 CAC220 型 220 吨级全地面起重机。

Product Introduction

Truck crane possesses characteristics such as strong lifting capacity, good motility, fast transfer capacity, long-distance traveling, and can be widely used in station, wharf, mine, railway, highway, buildings, water conservancy, petrochemical construction and handling operation sites; it can enhance the working efficiency, reduce the labor intensity, and accelerate the operation progress. China SINOMACH Heavy Industry Corporation has accumulated more than 40 years of technical precipitation in the research and development of engineering lifting machinery and always tracks the development trend at home and abroad. Through the introduction of digesting and independent innovation mode, it has developed and manufactured 8-12 ton "QY" series, 20-130 ton "LT" series truck cranes, LTM1160 160t class and CAC220 220t class all terrain cranes.

8.1 起重机 TTC100G2—V
8.1 TRUCK CRANE TTC100G2-V

主要性能参数

最大额定总起重量：100t

基本臂长度：12.8m

全伸臂最大起升高度：57.3m

最小转弯半径：12 m

最大爬坡度：40 %

最大行驶速度：80 km/h

产品简介

该汽车起重机是在消化移植国内、外先进技术的基础上，结合我公司创新技术而全新开发研制的全回转、六节臂单缸顺序伸缩式、先导操纵、排放符合国 V 标准的汽车起重机产品。其专用底盘、多桥转向系统（带应急助力）、液压系统、恒功率柱塞变量系统、"U"形截面起重臂、程序控制顺序伸缩系统、上车独立发动机、电气系统、安全装置和整机性能充分体现了先进性、可靠性、经济性和高效性，整机综合性能指标处于国内领先水平。

出口业绩

国机重工汽车起重机批量出口南美、独联体、中东、非洲、东南亚地区。

Main performance parameters

Maximum lifting weight: 100t

Base boom length: 12.8m

Max.lifting height of fully extended: 57.3m

Min. turning radius: 12 m

Max. gradeability: 40%

Max. traveling speed: 80 km/h

Product Introduction

TTC100G2-V Truck Crane is full rotation product with 6-section single cylinder sequential telescopic boom, pilot operation and complying China national emission standard V , which is developed by our company on the basis of adopting domestic and oversea advanced technology and combining our innovative technologies. Its special chassis with Multi-axles steering system (with emergency booster), hydraulic system, constant power plunger variable system, "U" type boom, Program control sequential telescoping system, independent engine for superstructure, electric system, safety device and overall performance embody its advanced nature, reliability, economy and high efficiency. The comprehensive performance of this truck crane is in the international advanced level.

Export performance

SINOMACH Truck crane exports to South America, CIS, Middle East, Africa, and Southeast Asia in mass.

8.2 起重机 TTC070G2—V
8.2 TRUCK CRANE TTC070G2-V

主要性能参数

最大额定总起重量：70t

基本臂长度：11.6m

全伸臂最大起升高度：43.91m

最小转弯半径：12 m

最大爬坡度：41 %

最大行驶速度：84 km/h

产品简介

该汽车起重机是在消化移植国内、外先进技术的基础上，结合我公司创新技术而开发研制的全回转、五节伸缩臂式、先导操纵、排放符合国Ⅳ标准的汽车起重机产品。其专用底盘、液压系统、恒功率柱塞变量系统、″U″形起重臂、同步伸缩系统、上车独立发动机、电气系统、安全装置和整机性能充分体现了先进性、可靠性、经济性和高效性，整机综合性能指标处于国内领先水平。

出口业绩

国机重工汽车起重机批量出口南美、独联体、中东、非洲、东南亚地区。

Main performance parameters

Maximum lifting weight: 70t

Base boom length: 11.6m

Max.lifting height of fully extended: 43.91m

Min. turning radius: 12 m

Max. gradeability: 41%

Max. traveling speed: 84 km/h

Product Introduction

TTC070G2-V Truck Crane is full rotation product with 5-section telescopic boom, pilot operation and complying China national emission standard V , which is developed by our company on the basis of adopting domestic and oversea advanced technology and combining our innovative technologies. Its special chassis, hydraulic system, constant power plunger variable system, “U” type boom, synchronous telescoping system, independent engine for superstructure, electric system, safety device and overall performance embody its advanced nature, reliability, economy and high efficiency. The comprehensive performance of this truck crane is in the international advanced level.

Export performance

SINOMACH Truck crane exports to South America, CIS, Middle East, Africa, and Southeast Asia in mass.

8.3 起重机 TTC055G2—V
8.3 TRUCK CRANE TTC055G2-V

主要性能参数

最大额定总起重量：55t

基本臂长度：11.1m

全伸臂最大起升高度：42.14m

最小转弯半径：12 m

最大爬坡度：48 %

最大行驶速度：80 km/h

产品简介

该汽车起重机是在消化移植国内外先进技术的基础上，结合我公司创新技术而开发研制的全回转、五节伸缩臂式、先导操纵、排放符合国 V 标准的汽车起重机产品。其专用底盘、液压系统、十边形起重臂、双缸伸缩系统、电气系统、安全装置和整机性能充分体现了先进性、可靠性、经济性和高效性，整机综合性能指标处于国内领先水平。

出口业绩

国机重工汽车起重机批量出口南美、独联体、中东、非洲、东南亚地区。

Main performance parameters

Maximum lifting weight: 55t

Base boom length: 11.1m

Max.lifting height of fully extended: 42.14m

Min. turning radius: 12 m

Max. gradeability: 48%

Max. traveling speed: 80 km/h

Product Introduction

TTC055G2-V Truck Crane is full rotation product with 5-section telescopic boom, pilot operation and complying China national emission standard V , which is developed by our company on the basis of adopting domestic and oversea advanced technology and combining our innovative technologies. Its special chassis, hydraulic system, constant power plunger variable system, decagon shap boom, double-cylinder telescoping system, electric system, safety device and overall performance embody its advanced nature, reliability, economy and high efficiency. The comprehensive performance of this truck crane is in the international advanced level.

Export performance

SINOMACH Truck crane exports to South America, CIS, Middle East, Africa, and Southeast Asia in mass.

8.4 起重机 TTC036G2—V
8.4 TRUCK CRANE TTC036G2-V

主要性能参数

最大额定总起重量：36t

基本臂长度：11m

全伸臂最大起升高度：41m

最小转弯半径：11 m

最大爬坡度：52 %

最大行驶速度：77 km/h

产品简介

该汽车起重机是在消化移植国内、外先进技术的基础上，结合我公司创新技术而开发研制的全回转、五节伸缩臂式、液压比例控制、排放符合国Ⅴ标准的汽车起重机产品。其专用底盘、液压系统、八边形起重臂、顺序和同步伸缩系统、电气系统、安全装置和整机性能充分体现了先进性、可靠性、经济性和高效性，整机综合性能指标处于国内领先水平。

出口业绩

国机重工汽车起重机批量出口南美、独联体、中东、非洲、 东南亚地区。

Main performance parameters

Maximum lifting weight: 36t

Base boom length: 11m

Max.lifting height of fully extended: 41m

Min. turning radius: 11 m

Max. gradeability: 52%

Max. traveling speed: 77 km/h

Product Introduction

TTC036G2-V Truck Crane is full rotation product with 5-section telescopic boom, pilot operation and complying China national emission standard V , which is developed by our company on the basis of adopting domestic and oversea advanced technology and combining our innovative technologies. Its special chassis, hydraulic system, constant power plunger variable system, octagon shap boom, sequential and synchronous system, electric system, safety device and overall performance embody its advanced nature, reliability, economy and high efficiency. The comprehensive performance of this truck crane is in the international advanced level.

Export performance

SINOMACH Truck crane exports to South America, CIS, Middle East, Africa, and Southeast Asia in mass.

8.5 起重机 TTC025G2—V
8.5 TRUCK CRANE TTC025G2-V

主要性能参数

最大额定总起重量：25t

基本臂长度：10.5m

全伸臂最大起升高度：40m

最小转弯半径：10 m

最大爬坡度：37 %

最大行驶速度：90 km/h

产品简介

该汽车起重机是在消化移植国内、外先进技术的基础上，结合我公司创新技术而开发研制的全回转、五节伸缩臂式、液压比例控制、排放符合国Ⅴ标准的汽车起重机产品。其专用底盘、液压系统、八边形起重臂、顺序和同步伸缩系统、电气系统、安全装置和整机性能充分体现了先进性、可靠性、经济性和高效性，整机综合性能指标处于国内领先水平。

出口业绩

国机重工汽车起重机批量出口南美、独联体、中东、非洲、 东南亚地区。

Main performance parameters

Maximum lifting weight: 25 t

Base boom length: 10.5 m

Max.lifting height of fully extended: 40m

Min. turning radius: 10 m

Max. gradeability: 37 %

Max. traveling speed: 90 km/h

Product Introduction

TTC025G2-V Truck Crane is full rotation product with 5-section telescopic boom, pilot operation and complying China national emission standard V , which is developed by our company on the basis of adopting domestic and oversea advanced technology and combining our innovative technologies. Its special chassis, hydraulic system, constant power plunger variable system, octagon shap boom, sequential and synchronous system, electric system, safety device and overall performance embody its advanced nature, reliability, economy and high efficiency. The comprehensive performance of this truck crane is in the international advanced level.

Export performance

SINOMACH Truck crane exports to South America, CIS, Middle East, Africa, and Southeast Asia in mass.

8.6 起重机 TTC012A2— Ⅵ
8.6 TRUCK CRANE TTC012A2-VI

主要性能参数

最大额定总起重量：12t

基本臂长度：9.5m

全伸臂最大起升高度：31.4m

最小转弯半径：9 m

最大爬坡度：41 %

最大行驶速度：90 km/h

产品简介

该汽车起重机是在消化移植国内外先进技术的基础上，结合我公司创新技术而开发研制的全回转、四节八边形伸缩臂式、手动拉杆操纵、排放符合国 V 标准的汽车起重机产品。其通用底盘、液压系统、同步伸缩系统、电气系统、安全装置和整机性能充分体现了先进性、可靠性、经济性和高效性，整机综合性能指标处于国内领先水平。

出口业绩

国机重工汽车起重机批量出口南美、独联体、中东、非洲、 东南亚地区。

Main performance parameters

Maximum lifting weight: 12t

Base boom length: 9.5m

Max.lifting height of fully extended: 31.4m

Min. turning radius: 9 m

Max. gradeability: 41 %

Max. traveling speed: 90 km/h

Product Introduction

TTC012A2-VI Truck Crane is full rotation product with 4-section telescopic boom, Manual lever control and complying China national emission standard V , which is developed by our company on the basis of adopting domestic and oversea advanced technology and combining our innovative technologies. Its special chassis, hydraulic system, constant power plunger variable system, octagon shap boom, synchronous telescoping system, electric system, safety device and overall performance embody its advanced nature, reliability, economy and high efficiency. The comprehensive performance of this truck crane is in the domestic advanced level.

Export performance

SINOMACH Truck crane exports to South America, CIS, Middle East, Africa, and Southeast Asia in mass.

8.7 起重机 TTC008A2— VI
8.7 TRUCK CRANE TTC008A2-VI

主要性能参数

最大额定总起重量：8t

基本臂长度：8.1m

全伸臂最大起升高度：26.6m

最小转弯半径：8 m

最大爬坡度：30 %

最大行驶速度：90 km/h

产品简介

该汽车起重机是公司创新技术而开发研制的全回转、四节伸缩臂式、手动拉杆操纵、排放符合国 V 标准的汽车起重机产品。其通用底盘、液压系统、同步伸缩系统、电气系统、安全装置和整机性能充分体现了先进性、可靠性、经济性和高效性，是国内同类产品中的佼佼者。

出口业绩

国机重工汽车起重机批量出口南美、独联体、中东、非洲、 东南亚地区。

Main performance parameters

Maximum lifting weight: 8 t

Base boom length: 8.1 m

Max.lifting height of fully extended: 26.6m

Min. turning radius: 8 m

Max. gradeability: 30 %

Max. traveling speed: 90 km/h

Product Introduction

TTC008A2-VI Truck Crane is full rotation product with 4-section telescopic boom, Manual lever control and complying China national emission standard V , which is developed by our company on the basis of combining our innovative technologies. Its special chassis, hydraulic system, constant power plunger variable system, octagon shap boom, synchronous telescoping system, electric system, safety device and overall performance embody its advanced nature, reliability, economy and high efficiency. It is the best of same kind product in Chinese market.

Export performance

SINOMACH Truck crane exports to South America, CIS, Middle East, Africa, and Southeast Asia in mass.

8.8 起重机 GTC080 651
8.8 TRUCK CRANE GTC080 651

主要性能参数

最大额定总起重量：80t

基本臂长度：12m

全伸臂最大起升高度：54.4m

最小转弯半径：11 m

最大爬坡度：40 %

最大行驶速度：82 km/h

产品简介

GTC080 651 是在消化移植国内、外先进技术的基础上，结合我公司创新技术而开发研制的全回转、六节伸缩臂式、先导操纵、排放符合国 V 标准的汽车起重机产品。其专用底盘、液压系统、恒功率柱塞变量系统、″U″形起重臂、同步伸缩系统、安全装置和整机性能充分体现了先进性、可靠性、经济性和高效性，整机综合性能指标处于国内领先水平。

出口业绩

国机重工汽车起重机批量出口南美、独联体、中东、非洲、 东南亚地区。

Main performance parameters

Max. lifting weight: 80t

Base boom length: 12m

Max.lifting height of fully extended: 54.4m

Min. turning radius: 11 m

Max. gradeability: 40 %

Max. traveling speed: 82 km/h

Product Introduction

GTC080 651 Truck Crane is full rotation product with 6-section telescopic boom, pilot operation and complying China national emission standard V, which is developed by our company on the basis of adopting domestic and oversea advanced technology and combining our innovative technologies.Its special chassis, hydraulic system, constant power plunger variable system, “U” type boom, synchronous telescoping system, safety device and overall performance present its advanced nature, reliability, economy and high efficiency. The comprehensive performance of this truck crane is in the international advanced level.

Export performance

SINOMACH Truck crane exports to South America, CIS, Middle East, Africa, and Southeast Asia in mass.

8.9 起重机 GTC055 651
8.9 TRUCK CRANE GTC055 651

主要性能参数

最大额定总起重量：55t

基本臂长度：11.2m

全伸臂最大起升高度：49.5m

最小转弯半径：10.5 m

最大爬坡度：46 %

最大行驶速度：90 km/h

产品简介

GTC055 651 汽车起重机是在消化移植国内外先进技术的基础上，结合我公司创新技术而开发研制的全回转、六节伸缩臂式、先导操纵、排放符合国 V 标准的汽车起重机产品。其专用底盘、液压系统、恒功率柱塞变量系统、“U”形起重臂、多级缸伸缩系统、电气系统、安全装置和整机性能充分体现了先进性、可靠性、经济性和高效性，整机综合性能指标处于国内领先水平。

出口业绩

国机重工汽车起重机批量出口南美、独联体、中东、非洲、 东南亚地区。

Main performance parameters

Max. lifting weight: 55t

Base boom length: 11.2m

Max.lifting height of fully extended: 49.5m

Min. turning radius: 10.5 m

Max. gradeability: 46 %

Max. traveling speed: 90 km/h

Product Introduction

GTC055 651 Truck Crane is full rotation product with 6-section telescopic boom, pilot operation and complying China national emission standard V, which is developed by our company on the basis of adopting domestic and oversea advanced technology and combining our innovative technologies.Its special chassis, hydraulic system, constant power plunger variable system, “U” type lifting boom, multistage cylinder telescoping system, safety device and overall performance present its advanced nature, reliability, economy and high efficiency. The comprehensive performance of this truck crane is in the international advanced level.

Export performance

SINOMACH Truck crane exports to South America, CIS, Middle East, Africa, and Southeast Asia in mass.

9 旋挖钻机
9 ROTARY DRILLING RIG

产品简介

旋挖钻机主要用于工民建施工，铁路、桥梁的基础施工。液压系统采用负载敏感系统、先导控制回路，实现各工况负荷下的最佳匹配。液压泵、液压马达、减速机、各种液压阀均采用国际品牌产品，实现了系统的高可靠性。平行四边形变幅机构确保钻具准确定位，成熟的电控系统，能够实现自动调垂和孔深监测，并实现对整机的时时监控。履带伸缩式专用底盘功率大，重心低，钻机稳定性好。

Product Introduction

Rotary drilling rig is mainly used in civil and industrial construction, railway and bridge foundation construction. Hydraulic system adopts load sensing system and pilot control circuit to realize the best matching under various working conditions. Hydraulic pumps, hydraulic motors, reducers and various hydraulic valves all adopt international brand products to achieve high reliability of the system. Parallel quadrilateral deformation amplitude mechanism ensures accurate positioning of drilling tools, mature electronic control system can realize automatic sagging and hole depth monitoring, and realize time-to-time monitoring of the whole machine. The special caterpillar telescopic chassis has high power, low gravity center and good stability of the drilling rig.

9.1 旋挖钻机 DT215／ DT218／DT222
9.1 ROTARY DRILLING RIG DT215/DT218/DT222

主要性能参数

最大输出扭矩：150／180／220kN.m

钻孔速度：7—26r／min

最大加压力：150／150／180kN

发动机额定功率：126／194／213kW

最大钻孔深度：54／60／65m

最大钻孔直径：1500／1800／2000mm

总重量（包括标准钻杆）：47／60／65t

外形尺寸（运输状态）：13055×3000×2895／14260×3120×3305／15200×3000×2400mm

产品简介

旋挖钻机主要用于工民建施工，铁路、桥梁的基础施工。液压系统采用负载敏感系统、先导控制回路，实现各工况负荷下的最佳匹配。液压泵、液压马达、减速机、各种液压阀均采用国际品牌产品，实现了系统的高可靠性。平行四边形变幅机构确保钻具准确定位，成熟的电控系统，能够实现自动调垂和孔深监测，并实现对整机的时时监控。履带伸缩式专用底盘功率大，重心低，钻机稳定性好。

Main performance parameters

Torque: 150/180/220kN.m

Drilling seepd: 7-26r/min

Max. crowd force: 150/150/180kN

Engine rated power: 126/194/213kW

Max. drilling depth: 54/60/65m

Max. drilling diameter: 1500/1800/2000mm

Total weigth: 47/60/65t

Overall dimension: 13055×3000×2895/14260×3120×3305/15200×3000×2400mm

Product Introduction

Rotary drilling rig is mainly used in civil and industrial construction, railway and bridge foundation construction. Hydraulic system adopts load sensing system and pilot control circuit to realize the best matching under various working conditions. Hydraulic pumps, hydraulic motors, reducers and various hydraulic valves all adopt international brand products to achieve high reliability of the system. Parallel quadrilateral deformation amplitude mechanism ensures accurate positioning of drilling tools, mature electronic control system can realize automatic sagging and hole depth monitoring, and realize time-to-time monitoring of the whole machine. The special caterpillar telescopic chassis has high power, low gravity center and good stability of the drilling rig.

10 垃圾压实机
10 LANDFILL COMPACTOR

产品简介

垃圾压实机是垃圾填埋场必备的设备，具有对垃圾挤碎、压实的功能，有利于节约土地、保护环境，延长填埋场的使用寿命。

Product Introduction

The landfill compactors are essential equipments for refuse landfill site. It has the functions of spreading, pulverizing demolishing and compacting the refuse. Using this refuse compactor will help to save the land, protect the environmental and extend the operating life of the refuse landfill site.

10.1 垃圾压实机 GYL263
10.1 LANDFILL COMPACTOR GYL263

主要性能参数

整机重量：26000kg

最高前进速度：10.87km/h

最大爬坡能力：100%

推铲高度 × 宽度：1880×3800mm

离地间隙：490mm

碾压宽度：3425mm

额定功率：192kW

外形尺寸（推铲）：8150×3800×3650 mm

遥控距离：≥ 1000 m

产品简介

本系列产品是垃圾填埋场专用的压实设备，通过对垃圾进行有效的推平、分离、挤碎，并利用自重对垃圾填方充分压实，使垃圾达到更高的密度，有效减少对空间的占用和对覆土的需求，从而延长垃圾填埋场的使用寿命，降低运营成本。

出口业绩

近几年，垃圾压实机产品已出口到俄罗斯、非洲、中东、南美等地区。

Main performance parameters

Operating mass: 26000kg

Max.forward speed: 10.87km/h

Gradeability: 100%

Dozer blade height×width: 1880×3800mm

Clearance: 490mm

Rolling width: 3425mm

Engine power: 192kW

Overall dimensions at dozer blade: 8150×3800×3650 mm

Remote distance: ≥1000 m

Product Introduction

This series of products is a special compaction equipment for landfills. By effectively leveling, separating, and crushing the garbage, and fully compacting the waste filling by its own weight, it achieves higher density of garbage, effectively reduces the occupation of space and the need for covering soil, thereby extending the service life of landfills and reducing operating costs.

Export performance

In recent years, Landfill compactor have been exported to Russia, Africa, the Middle East, South America and other regions.

10.2 垃圾压实机 GYL203/GYL233
10.2 LANDFILL COMPACTOR GYL203/ GYL233

主要性能参数

整机重量：20000/23000kg

最高前进速度：10.0km/h

推铲高度 × 宽度：1650×3000mm

碾压宽度：2910mm

额定功率：147kW

外形尺寸（推铲）：7355×3000×3600 mm

产品简介

本系列产品是垃圾填埋场专用的压实设备，通过对垃圾进行有效的推平、分离、挤碎，并利用自重对垃圾填方充分压实，使垃圾达到更高的密度，有效减少对空间的占用和对覆土的需求，从而延长垃圾填埋场的使用寿命，降低运营成本。

出口业绩

近几年，垃圾压实机产品已出口到俄罗斯、非洲、中东、南美等地区。

Main performance parameters

Operating mass: 20000/23000kg

Max.forward speed: 10.0km/h

Dozer blade height×width: 1650×3000mm

Rolling width: 2910mm

Engine power: 147kW

Overall dimensions at dozer blade:7355×3000×3600 mm

Product Introduction

This series of products is a special compaction equipment for landfills. By effectively leveling, separating, and crushing the garbage, and fully compacting the waste filling by its own weight, it achieves higher density of garbage, effectively reduces the occupation of space and the need for covering soil, thereby extending the service life of landfills and reducing operating costs.

Export performance

In recent years, Landfill compactor have been exported to Russia, Africa, the Middle East, South America and other regions.

10.3 全液压垃圾压实机 GYL302／GYL332
10.3 LANDFILL COMPACTOR GYL302/GYL332

主要性能参数

整机重量：30000／33000kg

最高前进速度：8km／h

最大爬坡能力：100%

推铲高度 × 宽度：1980 × 4000mm

离地间隙：610mm

碾压宽度：3800mm

额定功率：250kW

外形尺寸（推铲）：8250 × 4000 × 3750 mm

产品简介

本系列产品是垃圾填埋场专用的压实设备，通过对垃圾进行有效的推平、分离、挤碎，并利用自重对垃圾填方充分压实，使垃圾达到更高的密度，有效减少对空间的占用和对覆土的需求，从而延长垃圾填埋场的使用寿命，降低运营成本。

出口业绩

近几年，垃圾压实机产品已出口到俄罗斯、非洲、中东、南美等地区。

Main performance parameters

Operating mass: 30000/33000kg

Max.forward speed: 8km/h

Gradeability: 100%

Dozer blade height×width: 1980×4000mm

Clearance: 610mm

Rolling width: 3800mm

Engine power: 250kW

Overall dimensions at dozer blade: 8250×4000×3750 mm

Product Introduction

This series of products is a special compaction equipment for landfills. By effectively leveling, separating, and crushing the garbage, and fully compacting the waste filling by its own weight, it achieves higher density of garbage, effectively reduces the occupation of space and the need for covering soil, thereby extending the service life of landfills and reducing operating costs.

Export performance

In recent years, Landfill compactor have been exported to Russia, Africa, the Middle East, South America and other regions.

11 垃圾转运车
11 GARBAGE TRUCK

产品简介

自装卸式垃圾车和深埋式垃圾桶组成一站式直运垃圾收运系统，由深埋式垃圾桶作为垃圾收集容器，通过自装卸式垃圾车直接运往垃圾终端处理点的一种新型垃圾收运模式。该模式在经济、环保、灵活及安全性上均优于现有中转站垃圾收运模式。

Product Introduction

Self-loading garbage truck and deep buried dustbin make up the direct shipment garbage collector system,by the deep buried dustbin as garbage collection container, through the Self-loading garbage truck directly to the terminal disposal point of a new type of garbage collector. The pattern on the economy, environmental protection, flexibility and security were superior to the existing transit garbage collector mode.

11.1 自装卸式垃圾车 CHL5160ZZZD5
11.1 SELF-LOADING GARBAGE TRUCK CHL5160ZZZD5

主要性能参数

总质量：15800 kg

额定载质量：2605/3565 kg

整 车 长 × 宽 × 高：8200，8280，8360×2500，2550×3400，3540 mm

吊机型号：SQ6.3Z

最大起重量：6300 kg

最大作业范围：10 m

箱体装载体积：8 m^3

压实密度：≥0.75 t/m^3

产品简介

自装卸式垃圾车和深埋式垃圾桶组成一站式直运垃圾收运系统，由深埋式垃圾桶作为垃圾收集容器，通过自装卸式垃圾车直接运往垃圾终端处理点的一种新型垃圾收运模式。该模式在经济、环保、灵活及安全性上均优于现有中转站垃圾收运模式。

Main performance parameters

The total mass:15800 kg

Rated load:2605/3565 kg

Overall dimension(L×W×H):8200,8280,8360×2500,2550×3400,3540 mm

Crane model:SQ6.3Z

Maximum lifting load:6300 kg

Maximum operating range:10 m

Box loading volume:8 m^3

Compacted density:≥0.75 t/m^3

Product Introduction

Self-loading garbage truck and deep buried dustbin make up the direct shipment garbage collector system,by the deep buried dustbin as garbage collection container, through the Self-loading garbage truck directly to the terminal disposal point of a new type of garbage collector. The pattern on the economy, environmental protection, flexibility and security were superior to the existing transit garbage collector mode.

12 掘进机
12 ROADHEADER

产品简介

EBZ 系列掘进机能实现连续切割、装载、运输作业。适用于煤巷、半煤岩巷的巷道掘进，也可在铁路、公路、水利工程等隧道施工中使用。

Product Introduction

EBZ series roadheader can carry out continuous operation of cutting, loading and transporting. Suitable for the tunneling of coal tunnels and mixed coal-rock tunnels construction, also can be used in the tunneling of railway,highway and water projects.

12.1 悬臂式掘进机 EBZ135
12.1 CANTILEVER ROADHEADER EBZ135

主要性能参数

总体长度：9.1 m

总体宽度：2.6 m

总体高度：1.5 m

总重：39 t

供电电压：AC114 0/660 V

总功率：210 kW

适应坡度：±18°

接地比压：0.13 MPa

产品简介

EBZ135 悬臂式掘进机，装机总功率 210kW，截割功率 135kW，经济切割煤岩硬度 80MPa。该机集截割、装运、行走、手动操作等功能于一体，主要用于井下任意形状断面的半煤岩巷道的掘进。

Main performance parameters

Total length: 9.1 m

Total width: 2.6 m

Total height: 1.5 m

Weight: 39 t

Voltage: AC1140/660 V

Total power: 210 kW

Working slope: ±18°

Ground pressure: 0.13 MPa

Product Introduction

EBZ135 cantilever roadheader, installed total power 210 kW, cutting power 135 kW, economic cutting coal rock hardness 80 MPa. The machine integrates the functions of cutting, loading, walking and manual operation, and is mainly used for the excavation of semi-coal and rock roadways with arbitrary cross-section in underground mine.

12.2 悬臂式掘进机 EBZ160
12.2 CANTILEVER ROADHEADER EBZ160

主要性能参数

总体长度：9.42 m

总体宽度：2.9 m

总体高度：1.65 m

总重：43.5 t

供电电压：AC1140/660 V

总功率：250 kW

适应坡度：±18°

接地比压：0.14 MPa

产品简介

EBZ160 悬臂式掘进机，装机总功率 250kW，截割功率 160kW，经济切割煤岩硬度 80MPa。该机集截割、装运、行走、手动操作等功能于一体，主要用于井下任意形状断面的半煤岩巷道的掘进。

Main performance parameters

Total length: 9.42 m

Total width: 2.9 m

Total height: 1.65 m

Weight: 43.5 t

Voltage: AC1140/660 V

Total power: 250 kW

Working slope: ±18°

Ground pressure: 0.14 MPa

Product Introduction

EBZ160 cantilever roadheader, installed total power 250 kW, cutting power 160 kW, economic cutting coal rock hardness 80 MPa. The machine integrates the functions of cutting, loading, walking and manual operation, and is mainly used for the excavation of semi-coal and rock roadways with arbitrary cross-section in underground mine.

12.3 悬臂式掘进机 EBZ200
12.3 CANTILEVER ROADHEADER EBZ200

主要性能参数

总体长度：10.6 m

总体宽度：3.2 m

总体高度：1.8 m

总重：55 t

供电电压：AC1140/660 V

总功率：310 kW

适应坡度：±18°

接地比压：0.14 MPa

产品简介

EBZ200 悬臂式掘进机，装机总功率 310kW，截割功率 200kW，经济切割煤岩硬度 90MPa。该机集截割、装运、行走、手动操作等功能于一体，主要用于井下任意形状断面的半煤岩巷道的掘进。

Main performance parameters

Total length: 10.6 m

Total width: 3.2 m

Total height: 1.8 m

Weight: 55 t

Voltage: AC1140/660 V

Total power: 310 kW

Working slope: ±18°

Ground pressure: 0.14 MPa

Product Introduction

EBZ200 cantilever roadheader, installed total power 310 kW, cutting power 200 kW, economic cutting coal rock hardness 90 MPa. The machine integrates the functions of cutting, loading, walking and manual operation, and is mainly used for the excavation of semi-coal and rock roadways with arbitrary cross-section in underground mine.

12.4 悬臂式掘进机 EBZ220
12.4 CANTILEVER ROADHEADER EBZ220

主要性能参数

总体长度：10.4 m

总体宽度：3.2 m

总体高度：1.72 m

总重：58 t

供电电压：AC1140/660 V

总功率：310 kW

适应坡度：±18°

接地比压：0.16 MPa

产品简介

EBZ220 悬臂式掘进机，装机总功率 310kW，截割功率 220kW，经济切割煤岩硬度 85MPa。该机集截割、装运、行走、手动操作等功能于一体，主要用于井下任意形状断面的半煤岩巷道的掘进。

Main performance parameters

Total length: 10.4 m

Total width: 3.2 m

Total height: 1.72 m

Weight: 58 t

Voltage: AC1140/660 V

Total power: 310 kW

Working slope: ±18°

Ground pressure: 0.16 MPa

Product Introduction

EBZ220 cantilever roadheader, installed total power 310 kW, cutting power 220 kW, economic cutting coal rock hardness 85 MPa. The machine integrates the functions of cutting, loading, walking and manual operation, and is mainly used for the excavation of semi-coal and rock roadways with arbitrary cross-section in underground mine.

12.5 悬臂式掘进机 EBZ260H
12.5 CANTILEVER ROADHEADER EBZ260H

主要性能参数

总体长度：11.6 m

总体宽度：3.6 m

总体高度：1.89 m

总重：95 t

供电电压：AC1140/660 V

总功率：420 kW

适应坡度：±18°

接地比压：0.17 MPa

产品简介

EBZ260H 悬臂式掘进机，装机总功率 420kW，截割功率 260kW，经济切割煤岩硬度 110MPa。该机集截割、装运、行走、手动操作等功能于一体，主要用于井下任意形状断面的半煤岩巷道的掘进。

Main performance parameters

Total length: 11.6 m

Total width: 3.6 m

Total height: 1.89 m

Weight: 95 t

Voltage: AC1140/660 V

Total power: 420 kW

Working slope: ±18°

Ground pressure: 0.17 MPa

Product Introduction

EBZ260H cantilever roadheader, installed total power 420 kW, cutting power 260 kW, economic cutting coal rock hardness 110 MPa. The machine integrates the functions of cutting, loading, walking and manual operation, and is mainly used for the excavation of semi-coal and rock roadways with arbitrary cross-section in underground mine.

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