



星光矿山
STAR LIGHT MINE

河南·鹤壁
Henan·Hebi

矿井提升机系列 矿用提升绞车系列

MINE HOIST SERIES/MINE HOISTING WINCH SERIES



鹤壁市星光矿山机械制造有限公司

Hebi Starlight Mining Machinery Manufacturing Co., Ltd.



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星光矿山
STARLIGHT MINE

矿用提升绞车 矿井提升机生产基地
Professional production base for mining hoists

公司简介

Company Profile

XINGGUANG MINE

鹤壁市星光矿山机械制造有限公司于1997年建厂，2007年3月23日成立公司，深耕提升机绞车行业近30年，技术成熟、设备工艺完善，各型号安标证书齐全。主要生产制造JTP、2JTP型单绳缠绕式矿用提升绞车，JK、2JK型单绳缠绕式矿井提升机，JKM、JKMD型多绳摩擦式提升机，JZ凿井绞车、JKZ凿井提升机，JTK型块式制动的提升绞车，以及与绞车提升机相配套的电控系统、井架、配件等设备。已取得ISO9001、体系认证证书、MA、KA国家安标认证证书二十余年。设备已销售全国各地，赢得了用户的好评。2015年又打入国际市场例如东南亚、中亚、非洲等国家地区。

Hebi Xingguang Mining Machinery Manufacturing Co., Ltd. was established in 1997 and established on March 23, 2007, with nearly 30 years of deep cultivation in the hoist winch industry, with mature technology, perfect equipment and technology, and complete safety standard certificates for all models. It mainly produces and manufactures JTP and 2JTP single-rope winding mining hoists, JK, 2JK single-rope winding mine hoists, JKM, JKMD multi-rope friction hoists, JZ drilling winches, JKZ drilling hoists, JTK block brake lifting winches, as well as electronic control systems, derricks, accessories and other equipment matching the winch hoist. It has obtained ISO9001, system certification, MA, and KA national safety standard certification for more than 20 years. The equipment has been sold all over the country and won praise from users. In 2015, it entered the international market, such as Southeast Asia, Central Asia, Africa and other countries and regions.



我公司位于河南省鹤壁市山城区汤鹤路中段石林北工业区，占地面积38000平方米，建筑面积11000平方米，拥有固定资产净值9000万元，注册资金1680万元，公司员工198人，各类专业技术人员86名，其中具有工程师以上职称者17名。

Our company is located in Shilin North Industrial Zone, the middle section of Tanghe Road, Shancheng District, Hebi City, Henan Province. It covers an area of 38,000 square meters with a construction area of 11,000 square meters, holding a net fixed asset value of 90 million yuan, a registered capital of 16.8 million yuan, 198 employees, and 86 professional and technical personnel of various types, including 17 with professional titles above engineer.

公司拥有产品进行装配、铆焊、机械加工等生产用标准厂房，主要生产设备186余台，绞车和提升机的主轴装置等主要关键件完全由本公司加工制造和进行总装。产品出厂检测设备（仪表）齐全，生产工序控制严格，制造周期短，产品质量符合国家标准要求。

The company has standard workshops for production processes such as assembly, riveting and welding, and mechanical processing, with more than 186 main production equipment. Key components of winches and hoists, such as main shaft devices, are completely processed, manufactured, and assembled by the company itself. It is equipped with complete ex-factory testing equipment (instruments), strictly controls production processes, ensures short manufacturing cycles, and ensures product quality meets national standards.

本公司以生产矿用提升绞车和矿井提升机为主导产品，多年来生产的各种规格型号的矿用提升绞车、矿井提升机及其配套设备销售全国各地，在全国各地建立了较完善的营销服务体系。由于产品质量稳定可靠，售后服务及时周到，深受广大用户的欢迎，销售市场不断扩大，企业获得了较好的经济效益。

Focusing on mining hoisting winches and mine hoists, the company has sold various specifications and models of mining hoisting winches, mine hoists, and supporting equipment across the country for many years, establishing a relatively complete marketing service system nationwide. Due to stable and reliable product quality and timely and thoughtful after-sales service, the products are deeply welcomed by users, the sales market continues to expand, and the enterprise has achieved good economic benefits.

经过多年来的拼搏，为企业培养了一支技术精英、专业能力强的生产技术骨干队伍，积累了丰富的技术、生产、管理、供应、销售、服务经验为公司今后的更大发展奠定了良好的基础。

Through years of hard work, the company has cultivated a team of technical elites and production technical backbones with strong professional capabilities, accumulating rich experience in technology, production, management, supply, sales, and service, laying a solid foundation for the company's future development.

双轮驱动： 智慧矿山与全球服务

Two-wheel drive: smart mine and global service

致力于推进智慧矿山建设

Committed to promoting the construction of smart mines

随着国家大力推进各行各业信息化、智能化，煤炭人工智能已被提到国家战略的高度，随着互联网和人工智能技术的普及和大规模应用，智慧矿山日益成为矿山建设发展趋势与必然方向。星光矿山与科技公司等密切合作，共同开发智慧矿山建设项目，采用自动化、信息化、数字化、智能化、网络通讯(5G)以及云平台(工业互联网)计算、大数据中心等一系列现代化技术，逐步改造现有系统、建设部分新系统，建立统一的网络传输系统、数据管理系统，在此基础上搭建智能一体化控平台，通过平台的监控集成、智能联动、融合分析等功能，实现监控、生产、维护、安全等环节无人或少人，减少在矿井生产、建设中冗余环节与重复工作，使矿井智能化建设水平达到智能化建设标准，实现矿山的智慧化建设目标。

As the country vigorously promotes the informatization and intellectualization of various industries, coal artificial intelligence has been elevated to the height of national strategy. With the popularization and large-scale application of the Internet and artificial intelligence technologies, smart mines have increasingly become the development trend and inevitable direction of mine construction. Xingguang Mine has carried out close cooperation with technology companies and other partners to jointly develop smart mine construction projects. A series of modern technologies such as automation, informatization, digitization, intellectualization, network communication (5G), cloud platform (industrial Internet) computing, and big data centers are adopted to gradually transform existing systems, build some new systems, and establish a unified network transmission system and data management system. On this basis, an intelligent integrated control platform is built. Through the functions of monitoring integration, intelligent linkage, and integrated analysis of the platform, unmanned or minimal - man operation in links such as monitoring, production, maintenance, and safety is realized. This reduces redundant links and repetitive work in mine production and construction, enables the mine's intelligent construction level to meet the intelligent construction standards, and achieves the goal of intelligent construction of the mine.

星光矿山机械可以为用户提供完整系统的智慧矿山建设方案，利用计算机网络系统、通信系统、控制系统等构成的矿山数字神经，实现矿业资源、矿山生产与经营运作过程的数字化，通过信息的智能化分析处理实现矿山生产过程的实时监控、管理与优化。具体建设内容包括矿井管理网络、矿井控制网络、行政通信系统、调度通信系统、矿井无线通信、矿井广播、调度指挥控制中心、数据中心、信息系统安全、矿井综合监控集成平台系统软、硬件平台建设、矿井安全生产各子系统接入、煤炭产量监测、胶轮车运输监控、喷雾降尘监控、安全监控、井下作业人员管理、矿山压力监测、束管监测、工业电视、分布式光纤测温、生产执行层系统和经营管理及决策层系统，以及其它需要的矿山子系统建设。

Xingguang Mining Machinery can provide users with a complete and systematic smart mine construction solution. It utilizes the mine's digital nervous system composed of computer network systems, communication systems, and control systems to digitize mineral resources, mine production, and operational processes. Through intelligent analysis and processing of information, it realizes real-time monitoring, management, and optimization

of the mine production process. The specific construction contents include the mine management network, mine control network, administrative communication system, dispatching communication system, mine wireless communication, mine broadcasting, dispatching command and control center, data center, information system security, the construction of software and hardware platforms for the mine integrated monitoring and integration platform system, the access of various subsystems for mine safety production, coal output monitoring, rubber-tired vehicle transportation monitoring, spray dust reduction monitoring, safety monitoring, underground operation personnel management, mine pressure monitoring, beam tube monitoring, industrial television, distributed optical fiber temperature measurement, production execution layer system, operation management and decision-making layer system, as well as the construction of other required mine subsystems.

销售服务网络

Sales and service network

我们构建了覆盖国内外市场的全方位销售服务网络，实现内贸与外贸协同发展，为全球客户提供高效便捷的支持。国内市场依托广泛布局的服务网点，能快速响应客户从咨询、购买到售后的全流程需求；国际市场则通过多地设立的服务站点，确保海外客户获得同样专业的服务保障。从项目初期的方案规划，到设备销售、安装调试，再到后期的维护保养、配件供应及技术升级，我们的服务贯穿项目全周期。同时，我们严格执行快速响应机制，承诺2小时内明确解决方案、12小时内抵达现场、24小时内解决产品故障，以精细化服务链保障客户项目平稳高效运营，致力于为全球客户提供优质贴心的矿山机械产品与服务。

of the mine production process. The specific construction contents include the mine management network, mine control network, administrative communication system, dispatching communication system, mine wireless communication, mine broadcasting, dispatching command and control center, data center, information system security, the construction of software and hardware platforms for the mine integrated monitoring and integration platform system, the access of various subsystems for mine safety production, coal output monitoring, rubber-tired vehicle transportation monitoring, spray dust reduction monitoring, safety monitoring, underground operation personnel management, mine pressure monitoring, beam tube monitoring, industrial television, distributed optical fiber temperature measurement, production execution layer system, operation management and decision-making layer system, as well as the construction of other required mine subsystems.



公司荣誉及认证证书

Company Honors and Certification Certificates





匠心是一种态度，更是一种责任
Ingenuity is not just an attitude, but also a responsibility.

the XINGGUANG OF COMPANY CULTURE

企业宗旨：以质量求生存，靠创新求发展；以顾客为中心，靠诚信创市场。

企业文化：诚信为本是企业兴盛之路，员工忠诚企业，企业取信客户，用诚信肩负起社会责任心，以诚信构筑双赢的桥梁。

客户至上：拥有客户就拥有企业的未来，客户永远是企业的上帝。将客户的理念与追求变为现实，是企业最大的满足。

Enterprise tenet: to survive by quality, to develop by innovation; Customer-centric, relying on integrity to create a market.

Corporate culture: Honesty is the road to prosperity of the enterprise, employees are loyal to the enterprise, the enterprise wins the trust of customers, shoulders social responsibility with integrity, and builds a win-win bridge with integrity.

Customer first: With customers, we have the future of the enterprise, and the customer is always the god of the enterprise. Turning the customer's ideas and pursuits into reality is the greatest satisfaction of the enterprise.



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FOCUS ON IMPROVING THE SUPERB QUALITY OF THE INDUSTRY

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JKM/JKMD

多绳摩擦式矿井提升机

JKM/JKMD multi-rope friction mine hoist



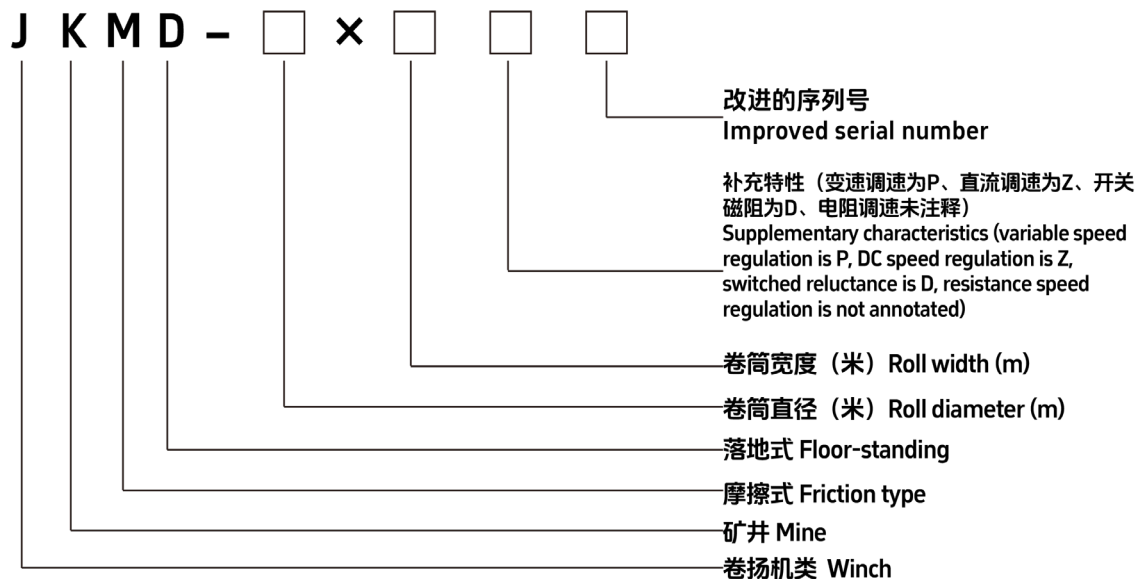
JKM 型号 (Type)



JKMD 型号 (Type)

产品型号

Product Model



产品简介

Product Introduction

JKM/JKMD系列矿井提升机属于多绳摩擦式提升设备，专为煤矿、金属矿山及非金属矿山的深井（深度可达2000米）设计，主要用于立井中的矿物提升、人员升降及设备运输。其核心原理是通过钢丝绳与摩擦轮衬垫之间的摩擦力驱动容器运动。

该设备具有提升能力大、钢丝绳直径小、摩擦轮尺寸紧凑等特点。其设计符合《煤矿安全规程》以及AQ1036-2007、GB/T10599-2023等标准。设备分为井塔式（JKM系列）和落地式（JKMD系列）两种类型，机房分别位于井筒塔顶或地面。

JKM/JKMD series mine hoists are multi-rope friction hoisting equipment, designed for deep wells (up to 2,000 meters deep) in coal mines, metal mines and non-metallic mines, and are mainly used for mineral hoisting, personnel lifting and equipment transportation in vertical shafts. Its core principle is to drive the container movement through the friction between the wire rope and the friction wheel pad.

It has the characteristics of large lifting capacity, small wire rope diameter and compact friction wheel size. Its design complies with the "Coal Mine Safety Regulations" and AQ 1036-2007, GB/T 10599-2023 and other standards. It is divided into two types: well tower type (JKM series) and floor type (JKMD series). The machine room is located on the top tower or ground of the shaft.

核心结构和设计特点

Core Structure and Design Features

● 主轴装置：

摩擦轮采用低合金钢焊接结构，摩擦衬块用固定块和固定压块压紧，固定在摩擦轮上；同主轴采用双法兰、双夹板、双面平面摩擦联接，他靠两夹板与摩擦轮主轴间的摩擦力传递扭矩。两端配置双列调心滚子轴承。传动效率≥90%。

● 制动系统：

盘式制动器：后置油缸设计，制动力由蝶形弹簧提供，由液压站驱动（响应时间<0.3秒），制动力矩≥最大静扭矩的3倍；支持二级制动和电液比例调节，断电时自动触发安全制动。

● 传动系统：

减速机：可选行星齿轮或圆柱齿轮减速机，硬化齿面设计（材料20CrMnTi渗碳淬火），传动平稳，噪音低。

调速系统：支持变频调速（节能30%以上）或电阻调速，兼容PLC控制，实现远程监控。

Main Shaft Device:

The friction wheel adopts a low-alloy steel welded structure. The friction lining blocks are pressed tightly by fixing blocks and fixing pressure blocks and fixed on the friction wheel. It is connected to the main shaft through a double-flange, double-splint, and double-sided plane friction connection, and transmits torque relying on the friction force between the two splints and the main shaft of the friction wheel. Double-row spherical roller bearings are arranged at both ends. The transmission efficiency is $\geq 90\%$.

Brake System:

Disc Brake: Designed with a rear-mounted cylinder, the braking force is provided by disc springs and driven by a hydraulic station (response time < 0.3 seconds). The braking torque is ≥ 3 times the maximum static torque. It supports secondary braking and electro-hydraulic proportional adjustment, and automatically triggers safety braking when power is cut off.

Transmission System:

Reducer: Optional planetary gear or cylindrical gear reducer, with a hardened tooth surface design (material: 20CrMnTi carburized and quenched), featuring stable transmission and low noise.

Speed Regulation System: Supports variable frequency speed regulation (energy saving of over 30%) or resistance speed regulation, compatible with PLC control to achieve remote monitoring.

安全保护功能

Technical features

实时监控：集成超速、超绕、绳索松动、制动器磨损、弹簧疲劳等传感器，与主电机联锁进行控制。

双深度指示：机械型与数字型相结合，定位精度误差 $< 0.5\text{m}$ 。

应急机构：断电自动制动、断轴保护和紧急制动冗余设计，符合GB16423安全规定。

Real-time Monitoring: Integrate sensors for overspeed, overwinding, rope slack, brake wear, spring fatigue, etc., and interlock with the main motor for control.

Dual Depth Indicators: Combination of mechanical type and digital type, with positioning accuracy error $< 0.5\text{m}$.

Emergency Mechanism: Redundant design for power-off automatic braking, shaft breakage protection, and emergency braking, complying with GB 16423 safety regulations.

产品应用

Product Application

适用场景：多绳摩擦提升机在煤矿或金属矿的竖井，既可作主井提升又可作为副井提升，可用于双箕斗双罐笼提升系统，也可用于带平衡锤的单容器提升系统。

使用限制：双容器提升系统，只适用于单水平提升；带平衡锤的单容器提升系统，可用于多水平提升。

Applicable scenarios: Multi-rope friction hoists are applicable to vertical shafts in coal mines or metal mines, serving as both main shaft hoisting and auxiliary shaft hoisting. They can be used in double skip-double cage hoisting systems and single-container hoisting systems with balance weights.

Usage Limitations: The double-container hoisting system is only suitable for single-level hoisting; the single-container hoisting system with a balance weight can be used for multi-level hoisting.

JKM/JKMD 多绳摩擦式矿井提升机产品参数

Product Parameters of JKM/JKMD Multi-rope Friction Mine Hoist

技术参数 Technical Parameters												
型号 Model	摩擦 轮直 径 Friction wheel diameter	钢丝 绳数 量 Number of wire ropes	钢丝绳 最大静 张力差 Maximum static tension difference of wire rope	钢丝 绳最 大静 张力 Maximum static tension of wire rope	钢丝 绳最 大直 径 Maximum wire rope diameter	钢丝 绳间 距 Wire rope spacing	最大 提升 速度 Maximum lifting speed	导向 轮直 径 Guide wheel diameter	机器变 位重量 (不包 括电 机) Machine displacement weight (excluding motor)	导向轮 变位重 量 Guide wheel displacement weight	机器重 量 (不 含电 气 设备) Machine weight (without electrical equipment)	外形尺寸 (长×宽× 高) Dimensions (length x width x height)
	m	根	KN	KN	mm	mm	m/s	m	kg	kg	kg	m
JKM-1.3×4(I)	1.3	4	40	/	/	200	5	/	2100	/	17400	7.2×7.8×1.9
JKM-1.6×4(I)	1.6	4	50	/	/	200	8	/	4000	/	/	7.8×8×2.0
JKM-1.85×4(I)	1.85	4	50/60	160	20	200	10	1.85	5300	1.9	18000	8×8×2.2
JKM-2.25×4(I)	2.25	4	80	230	24	200	10	2.25	6500	2100	33847	7.4×8×2.3
JKM-2.8×4(I)	2.8	4	140	340	28	250	15	2.8	9820	2480	45300	8.5×10×2.65
JKM-2.8×6(I)	2.8	6	180	510	28	250	15	2.8	12700	3840	69000	8×8.5×2.68
JKM-3.25×4(I)	3.25	4	180	520	36	300	15	3.25	12700	3840	72000	8.9×8.9×2.98
JKM-3×4(I)	3	4	180	450	32	300	15	3	/	/	60300	8.9×8.5×2.6
JKM-3.5×4(I)	3.5	4	220	590	38	300	15	3.5	13500	4060	75000	9×9×3.2
JKMD-2.25×4(I)	2.25	4	65	215	22	250	10	2.25	6500	2300×2	46350	6.8×9.5×2.3
JKMD-2.8×4(I)	2.8	4	95	335	28	300	15	2.8	11000	4100×2	63000	8.5×10×2.67
JKMD-3.25×4(I)	3.25	4	180	520	36	300	15	2.8	12700	4060×2	98008	8.9×9.5×3
JKMD-3×4(I)	3	4	180	450	32	300	15	3	/	/	71300	8.9×8.5×2.6
JKMD-3.5×4(I)	3.5	4	140	525	38	300	15	3.5	17600	5500×2	101410	8.9×9.5×3

JK(B)/2JK(B)

单绳缠绕式矿井提升机

JK(B)/2JK(B) single-rope winding mine hoist

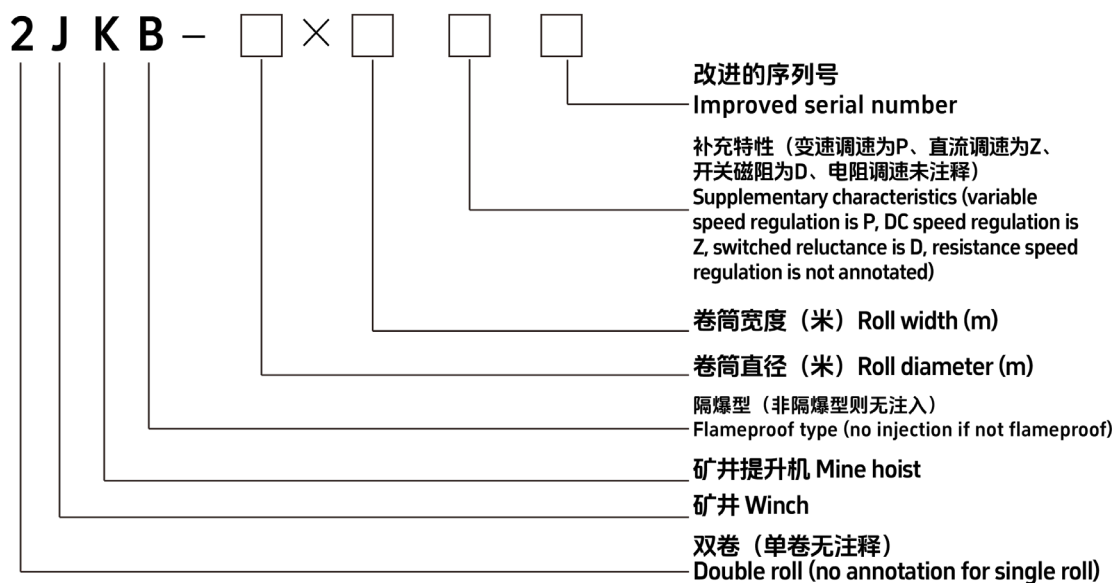


JK 型号 (Type)



2JK 型号 (Type)

产品型号 Product Model



产品简介 Product Introduction

JK(B)/2JK(B) 矿井提升机是一种单绳缠绕提升设备，主要应用于煤矿、金属矿和非金属矿的垂直或斜井，实现矿石、人员、设备等物料的安全升降。其设计符合《煤矿安全规程》和行业标准AQ1035-2007、JB/T7889-2010，具有结构紧凑、起重能力强、运行平稳等特点。该系列设备支持变频调速和PLC控制，适用于高频、重负荷的矿山作业，特别适用于年产量低于120万吨、深度小于400米的矿山。

JK(B)/2JK(B) series mine hoists are double-drum single-rope winding hoisting equipment, mainly used in vertical or inclined shafts of coal mines, metal mines and non-metallic mines, and undertake the lifting and lowering tasks of ore, gangue, equipment and personnel. Its design complies with the "Coal Mine Safety Regulations" and AQ 1035-2007, GB/T 20961-2007 and other standards. It has the characteristics of compact structure, strong lifting capacity and stable operation. It is especially suitable for small and medium-sized mines with an annual output of less than 1.2 million tons and a depth of less than 400 meters.

核心结构和设计特点 Core Structure and Design Features

● 主轴装置：

卷筒采用整体式或分体式结构（用于井下安装），采用低合金钢制成，表面压有工程塑料螺旋绳槽，减少钢丝绳磨损；主轴与轮毂过盈配合，然后通过高强度螺栓组件与卷筒联结。两端配置双列调心滚子轴承，传动效率≥90%。

制动系统：

● 盘式制动器：后置油缸设计，制动力由蝶形弹簧提供，由液压站驱动（响应时间<0.3秒），制动力矩≥最大静扭矩的3倍；支持二级制动和电液比例调节，断电时自动触发安全制动。

传动系统：

● 减速机：可选行星齿轮或圆柱齿轮减速机，硬化齿面设计（材料20CrMnTi渗碳淬火），传动平稳，噪音低；调速系统：支持变频调速（节能30%以上）或电阻调速，兼容PLC控制，实现远程监控。

Main Shaft Device:

The drum adopts an integral or split structure (for underground installation), made of low-alloy steel. The surface is pressed with an engineering plastic spiral rope groove to reduce wire rope wear. The main shaft is in an interference fit with the hub and then connected to the drum through high-strength bolt assemblies. Double-row self-aligning roller bearings are configured at both ends, with a transmission efficiency of $\geq 90\%$.

Brake System:

Disc Brake: With a rear-mounted cylinder design, the braking force is provided by disc springs and driven by a hydraulic station (response time < 0.3 seconds). The braking torque is ≥ 3 times the maximum static torque. It supports two-stage braking and electro-hydraulic proportional adjustment, and automatically triggers safety braking in case of power failure.

Transmission System:

Reducer: Optional planetary gear or cylindrical gear reducer with hardened tooth surfaces (material: 20CrMnTi carburized and quenched), featuring smooth transmission and low noise.

Speed Regulation System: Supports variable frequency speed regulation (with over 30% energy saving) or resistance speed regulation, compatible with PLC control for remote monitoring.

安全保护功能

Technical features

实时监控：集成超速、超绕、绳索松动、制动器磨损、弹簧疲劳等传感器，与主电机联锁进行控制。

深度指示器：是通过齿轮转换形式变直线运动的传动装置。

应急机构：断电自动制动、断轴保护和紧急制动冗余设计，符合GB16423安全规定。

Real-time Monitoring: Integrates sensors for overspeed, overwinding, rope slack, brake wear, spring fatigue, etc., and interlocks with the main motor for control.

Depth Indicator: A transmission device that converts linear motion through gear shifting.

Emergency Mechanism: Designed with power failure automatic braking, shaft breakage protection, and emergency braking redundancy, complying with GB16423 safety regulations.

产品应用

Product Application

适用场景：在垂直或倾斜的矿井中运输矿石和人员（必须选择JKB系列的防爆型号）；在竖井开挖时悬挂吊板和水泵（负载 $\leq 160\text{kN}$ ）。

限制：严禁在含有气体/煤尘的爆炸性环境中使用非防爆型号；钢丝绳缠绕层数限制：竖井中人员一层、物料二层，斜井中人员二层、物料三层。

Applicable scenarios: Transporting ores and personnel in vertical or inclined mines (explosion-proof models of the JKB series must be selected); Suspending hanging plates and water pumps during shaft excavation (load $\leq 160\text{kN}$).

Restrictions: Non-explosion-proof models are strictly forbidden to be used in explosive environments containing gases/coal dust. Limitations on the number of wire rope layers: In vertical shafts: 1 layer for personnel hoisting, 2 layers for material hoisting. In inclined shafts: 2 layers for personnel hoisting, 3 layers for material hoisting.

JK/2JK 单绳缠绕式矿井提升机产品参数
Product parameters of JK/2JK single rope winding mine hoist

技术参数 Technical Parameters																			
型号 Model	卷筒 Reel				钢丝绳最大 张力 Maximum wire rope tension		钢丝绳最大 张力差值 Maximum wire rope tension difference		最大提升高度或运 输长度 Maximum lifting height or transport length			钢丝绳 Wire Rope		减速 比 Reduction ratio	平均 提升 速度 Average lifting speed	电动机 Electric Motor		外形尺寸 (长*宽*高) Dimensions (length x width x height)	主机理论 重量 Theoretical weight of the host
	个数 Number	直径 diameter	宽度 width	两卷 筒中 心距 离 Center distance between two rolls	载人 Manned	载物 Carrying	载人 Manned	载物 Carrying	一层 缠 绕 A layer of winding	二层 缠 绕 Double layer winding	三层 缠 绕 Three- layer winding	最大 直径 Maximum diameter	破断 拉力 总和 Total breaking force			转 速 Speed	最大 功率 Maximum Power		
	单位 unit	m			Kn				m			mm	Kn			M/s	r/min	KW	mm
JK-2×1.5p	1	2.0	1.5	/	44	61	44	61	334	672	1043	24	396.5	31.5	2.5	740	210	6664×3234×2600	27193
JK-2×1.8p	1	2.0	1.8	/	44	61	44	61	406	818	1264	24	396.5	31.5	2.5	740	210	7516×3234×2600	28230
JK-2.5×2p	1	2.5	2	/	69	83	69	83	447	901	1395	30	621	31.5	3	740	315	7575×3610×330	38827
JK-2.5×2.3p	1	2.5	2.3	/	69	83	69	83	520	1047	1617	30	621	31.5	3	740	315	8323×3610×3300	40585
JK-3×2.2p	1	3.0	2.2	/	100	135	100	135	447	887	1378	36	900	31.5	3.7	750	560	9665×4550×2800	52914
JK-3×2.5p	1	3.0	2.5	/	100	135	100	135	518	1030	1595	36	900	31.5	3.7	750	560	9965×4550×2800	54134
JK-3.5×2.5p	1	3.5	2.5	/	136	170	136	170	513	1017	/	42	1230	31.5	4.3	750	900	10695×5020×3050	69613
JK-3.5×2.8p	1	3.5	2.8	/	136	170	136	170	584	1161	/	42	1230	31.5	4.3	750	900	10995×5020×3050	70558
2JK-2×1p	2	2.0	1	1.09	44	61	40	40	312	427	672	24	396.5	31.5	2.5	720	132	7786×3032×2600	31247
2JK-2×1.25p	2	2.0	1.25	1.34	44	61	40	40	273	549	857	24	396.5	31.5	2.5	725	132	7846×3032×2600	33285
2JK-2.5×1.2	2	2.5	1.2	1.29	69	83	65	65	254	510	804	30	621	31.5	3	735	280	8265×3610×3300	47326
2JK-2.5×1.5p	2	2.5	1.5	1.59	69	83	65	65	326	657	1026	30	621	31.5	3	735	280	9008×3610×3300	49243
2JK-3×1.5p	2	3.0	1.5	1.59	100	135	90	90	282	553	873	36	900	31.5	3.7	750	400	10067×4550×2800	57210
2JK-3×1.8p	2	3.0	1.8	1.89	100	135	90	90	353	697	1090	36	900	31.5	3.7	750	400	10667×4550×2800	59539
2JK-3.5×1.7p	2	3.5	1.7	1.79	136	170	115	115	324	635	/	42	1230	31.5	4.3	750	630	11246×5020×3050	76754
2JK-3.5×2.1p	2	3.5	2.1	2.19	136	170	115	115	419	823	/	42	1230		4.3	750	630	12046×5020×3050	80356

JK(B)/2JK(B)

单绳缠绕式矿井提升机

JK(B)/2JK(B) single-rope winding mine hoist



2JKB 型号 (Type)

产品优势

Product Advantages

JKB/2JKB单绳缠绕式提升机在技术层面展现显著优势：卷筒采用Q345A钢板焊接结构，强度高且抗疲劳性能优异，适配不同负载工况；传动系统通过减速器与主轴装置协同，实现动力高效传递，搭配变频调速电机可精准控制提升速度；制动系统采用盘形制动器与液压站组合，兼具工作制动与安全制动功能，制动响应迅速且制动力矩稳定；深度指示器与测速装置实时监测运行位置与速度，保障提升精度；电气系统集成过载保护、限位开关等多重安全装置，符合GB/T20961等标准要求，整体结构紧凑且维护便捷，可满足矿山物料提升及人员运输的可靠性与安全性需求。

The JKB/2JKB single-rope winding hoist demonstrates remarkable technical advantages: The drum adopts a welded structure of Q345A steel plates, featuring high strength and excellent fatigue resistance to adapt to different load conditions. The transmission system, through the coordination of the speed reducer and main shaft device, achieves efficient power transmission, and combined with a frequency conversion speed-regulating motor, it can precisely control the hoisting speed. The braking system uses a combination of disc brakes and a hydraulic station, with both working braking and safety braking functions, ensuring rapid braking response and stable braking torque. The depth indicator and speed measuring device real-time monitor the operating position and speed to guarantee hoisting accuracy. The electrical system integrates multiple safety devices such as overload protection and limit switches, complying with standards like GB/T20961. With a compact overall structure and convenient maintenance, it meets the reliability and safety requirements for material hoisting and personnel transportation in mines.

JKB/2JKB 单绳缠绕式矿井提升机产品参数

Product parameters of JKB/2JKB single rope winding mine hoist

技术参数 Technical Parameters																			
型号 Model	卷筒 Reel				钢丝绳最大张力 Maximum wire rope tension		钢丝绳最大张力差值 Maximum wire rope tension difference		最大提升高度或运输长度 Maximum lifting height or transport length			钢丝绳 Wire rope		减速比 Reduction ratio	平均提升速度 Average lifting speed	电动机 Electric Motor		外形尺寸 (长*宽*高) Overall dimensions length*width*height	主机理论重量 Theoretical weight of the host
	个数 Number	直径 diameter	宽度 width	两卷筒中心距离 Center distance between two rolls	载人 Manned	载物 Carrying	载人 Manned	载物 Carrying	一层缠绕 A layer of winding	二层缠绕 Double layer winding	三层缠绕 Three-layer winding	最大直径 Maximum diameter	破断拉力总和 Total breaking force			转速 Speed	最大功率 Maximum Power		
	单位 unit	m			Kn		m			mm	Kn		M/s			r/min	KW		
JKB-2×1.5P	1	2.0	1.5	/	60				244	493	774	32	558	31.5	2.5	742	185	6664×3234×2600	27193
JKB-2×1.8P		2.0	1.8						299	604	942	32	558	31.5	2.5	742	185	7516×3234×2600	28230
JKB-2.5×2P		2.5	2		90				329	665	1041	40	747	31.5	3	742	315	7575×3610×3300	38827
JKB-2.5×2.3P		2.5	2.3						366	776	1210	40	747	31.5	3	742	315	8323×3610×3300	40585
JKB-3×2.2P		3.0	2.2		130				358	765	1174	50	1215	31.5	3.7	750	560	9665×4550×2800	52914
JKB-3×2.5P		3.0	2.5						414	878	1344	50	1215	31.5	3.7	750	560	9965×4550×2800	54134
JKB-3.5×2.5P		3.5	2.5		170				483	1024	/	50	1530	31.5	4.3	750	900	10695×5020×3050	69612
JKB-3.5×2.8P		3.5	2.8						549	1156	/	50	1530	31.5	4.3	750	900	10995×5020×3050	70558
2JKB-2×1P	2	2.0	1.0	1.09	60		40		165	363	591	32	540	31.5	4	750	185	13400×9800×2900	27600
2JKB-2×1.25P		2.0	1.25	1.34					222	477	763	32	540	31.5	4	750	185	13900×9800×2900	28600
2JKB-2.5×1.2P		2.5	1.2	1.29	90		55		228	489	787	40	810	31.5	4.8	750	315	14500×9300×2900	40500
2JKB-2.5×1.5P		2.5	1.5	1.59					302	638	1013	40	810	31.5	4.8	750	315	15100×9300×2900	42500
2JKB-3×1.5P		3.0	1.5			130		80		280	594	952	50	1170	31.5	6.5	750	560	15100×9700×3500
2JKB-3×1.8P		3.0	1.8	1.89	351					737	1169	50	1170	31.5	6.5	750	560	15700×9700×3500	62000
2JKB-3.5×1.7P		3.5	1.7	1.79	170		115		426	862	/	58	1530	31.5	8.6	750	900	17600×11600×4300	79000
2JKB-3.5×2.1P		3.5	2.1	2.19					462	915	/	58	1530	31.5	8.6	750	900	18400×11600×4300	85000

JTP(B)/2JTP(B)

矿用提升绞车

JTP/JTPB mining hoist winch



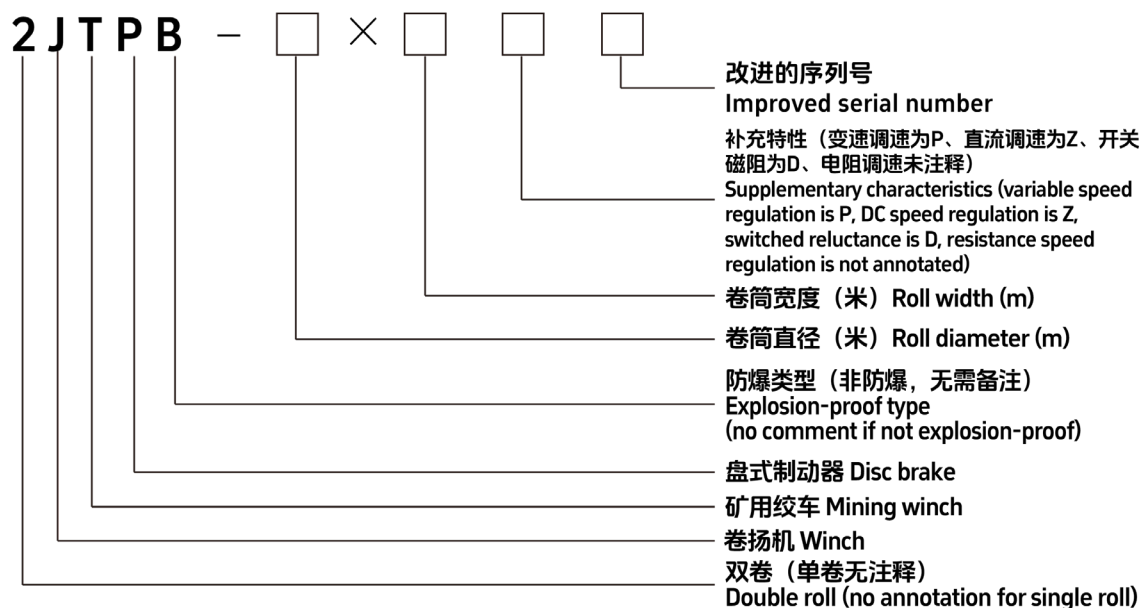
JTP 型号 (Type)



2JTP 型号 (Type)

产品型号

Product Model



产品简介

Product Introduction

JTP(B)/2JTP(B) 系列矿用提升绞车是单卷筒或双卷筒卷绕设备，专为煤矿、金属矿和非金属矿的倾斜隧道和小竖井而设计，主要用于物料提升（如矿石、脉石、设备）和人员运输。其设计符合《煤矿安全规程》和行业标准AQ1033-2007和JB/T7888-2010。它具有通用性高、结构紧凑、起重能力强等特点。它支持变频调速、PLC控制等先进技术，适用于年产量小于120万吨的中小型矿山。

JTP(B)/2JTP(B) series mining hoisting winches are single-drum or double-drum winding equipment, designed for inclined tunnels and small shafts in coal mines, metal mines and non-metallic mines, and are mainly used for material lifting (such as ore, gangue, equipment) and personnel transportation. Its design complies with the "Coal Mine Safety Regulations" and industry standards AQ 1033-2007 and JB/T 7888-2010. It has the characteristics of high versatility, compact structure, and strong lifting capacity. It supports advanced technologies such as variable frequency speed regulation and PLC control, and is suitable for small and medium-sized mines with an annual output of less than 1.2 million tons.

核心结构和设计特点

Core Structure and Design Features

● 主轴装置：

卷筒采用分体式或整体式设计，采用低合金钢制成，表面压有螺旋绳槽，减少钢丝绳磨损；主轴两端装有可调心的双列滚子轴承，传动效率 $\geq 90\%$ ，支持平面高扭矩摩擦连接。

制动系统：

● 盘式制动器：后置油缸设计，制动力由蝶形弹簧提供，由液压站驱动（响应时间 < 0.3 秒），制动力矩 $\geq$ 最大静扭矩的3倍；支持二级制动和电液比例调节，断电时自动触发安全制动。

传动系统：

● 减速机：行星齿轮或圆柱齿轮减速机，硬化齿面设计（材料20CrMnTi渗碳淬火），传动平稳，噪音低；调速系统：支持电阻调速、变频调速（节能30%以上）或直流调速，适配PLC控制，实现远程监控和故障诊断。

Main shaft device:

The reel adopts a split or integral design and is made of low-alloy steel. The surface is pressed with spiral rope grooves to reduce wear on the steel wire rope. Self-aligning double-row roller bearings are installed at both ends of the main shaft, with a transmission efficiency of $\geq 90\%$, supporting plane high-torque friction connection.

Braking system:

Disc brake: rear-mounted cylinder design, braking force is provided by disc springs, driven by hydraulic station (response time < 0.3 seconds), braking torque ≥ 3 times the maximum static torque; Supports secondary braking and electro-hydraulic proportional adjustment, and automatically triggers safety braking when power is off.

Transmission system:

Reducer: planetary gear or cylindrical gear reducer, hardened tooth surface design (material 20CrMnTi carburizing and quenching), smooth transmission and low noise; Speed regulation system: supports resistance speed regulation, variable frequency speed regulation (energy saving more than 30%) or DC speed regulation, adapted to PLC control to achieve remote monitoring and fault diagnosis.

安全保护功能

Technical features

实时监控：集成超速、超绕、绳索松动、制动器磨损、弹簧疲劳等传感器，与主电机联锁进行控制。

深度指示仪：是通过齿轮转换形式变直线运动的传动装置。

应急机构：断电自动制动，断轴保护和冗余制动设计，符合GB16423安全规定。

Real-time monitoring: Integrated sensors such as overspeed, overwinding, rope loosening, brake wear, and spring fatigue, which are interlocked with the main motor for control.

Depth indicator: It is a transmission device that changes linear motion through gear conversion.

Emergency mechanism: automatic braking for power off, shaft protection and redundant brake design, in line with GB16423 safety regulations.

产品应用

Product Application

适用场景：斜井物料输送（如煤、脉石）、竖井人员升降，斜井物料输送（如煤、脉石）或竖井人员升降），竖井开挖时悬挂吊板、水泵和其他设备（载荷 $\leq 160\text{kN}$ ）。

限制：非防爆型号（JTP型）严禁在含有气体/煤尘的易爆环境中使用；钢丝绳缠绕层数限制：载人轴单层，货物双层；双层用于载人轴，三层用于货物。

Applicable scenarios: inclined shaft material transportation (such as coal, gangue), shaft personnel lifting, inclined shaft material transportation (such as coal, gangue) or shaft personnel lifting), hanging plates, water pumps and other equipment (load $\leq 160\text{kN}$) during shaft excavation.

Restrictions: Non-explosion-proof models (JTP type) are strictly prohibited from being used in explosive environments containing gas/coal dust; Limitations on the number of wire rope winding layers: single layer for manned shafts and double layers for cargo; double layers for manned shafts and three layers for cargo.

JTP(B)/2JTP(B) 矿用提升绞车产品参数

JTP(B)/2JTP(B) mining hoisting winch product parameters

技术参数 Technical Parameters																			
型号 Model	卷筒 Reel				钢丝绳最大 张力 Maximum wire rope tension		钢丝绳最大 张力差值 Maximum wire rope tension difference		最大提升高度或运输长度 Maximum lifting height or transport length			钢丝绳 Wire rope		减速比 Reduction ratio	平均提升 速度 Average lifting speed	电动机 Electric Motor		外形尺寸 (长*宽*高) Overall dimensions length*width*height	主机 理论 重量 Theoretical weight of the host
	个数 Number	直径 diameter	宽度 width	两卷筒 中心距 Center distance between two rolls	载人 Manned	载物 Carrying	载人 Manned	载物 Carrying	一层缠绕 A layer of winding	二层缠绕 Double layer winding	三层缠绕 Three-layer winding	最大直径 Maximum diameter	破断拉力 总和 Total breaking force			转速 Speed	最大功率 Maximum Power		
	unit	m			Kn				m			mm	Kn		M/s	r/min	KW	mm	Kg
JTP-1.2×1p	1	1.2	1	/	15	21	15	21	218	440	681	14	137	31.5	2	968	75	3867×3000×1800	9675
JTP-1.2×1.2p		1.2	1.2	/	15	21	15	21	230	500	790	14	137	31.5	2	968	75	4689×300×1800	10800
JTP-1.6×1.2p		1.6	1.2	/	31	42	31	42	251	506	786	20	279	31.5	2.58	975	132	5692×3000×2200	12910
JTP-1.6×1.5p		1.6	1.5	/	31	42	31	42	290	610	970	20	279	31.5	2.58	975	132	6023×3000×2200	15860
2JTP-1.2×0.8p	2	1.2	0.8	0.87	15	21	15	20	171	344	536	14	137	31.5	2	968	75	5527×3000×1800	11915
2JTP-1.2×1p		1.2	1	1.07	15	21	15	20	218	439	680	14	137	31.5	2	968	75	5815×3000×1800	13134
2JTP-1.6×0.9p		1.6	0.9	0.97	31	42	30	30	182	367	576	20	279	31.5	2.58	975	110	6203×3000×2000	18800
2JTP-1.6×1.2p		1.6	1.2	1.27	31	42	30	30	251	505	786	20	279	31.5	2.58	975	110	6860×300×2200	20936
JTPB-1×0.8p	1	1	0.8	/	/	22	/	/	159	323	491	16	143	23.34	2.2	980	45	3100×2800×1800	5800
															1.7	750	37	5000×5000×2750	
JTPB-1×1p		1	1						198	403	613	20	270	31.5	1.7	980	37	3300×2800×1800	6000
															1.3	750	30		
JTPB-1.2×1p		1.2	1	/	30	/	/	/	134	297	472	26	405	23.34	2.5	985	75	5000×5000×2750	9562
															2	735	55		
JTPB-1.2×1.2p		1.2	1.2						168	371	582	26	405	31.5	1.9	985	55	5200×5000×2750	9585
															1.5	735	45		
JTPB-1.6×1.2p	1	1.6	1.2	/	45	/	/	/	172	382	601	26	405	20	4	990	180	6100×5000×2750	12068
														28	3	990	160		
JTPB-1.6×1.5p	1	1.6	1.5	/	45	/	/	/	226	491	767	26	405	31.5	2.5	988	130	6500×5000×2750	12305
															2	735	110		
2JTPB-1.2×0.8p	2	1.2	0.8	0.87	30	20	/	/	99	232	370	20	270	20	3	985	75	6400×5400×2900	13538
														23.34	2.5	735	55		
2JTPB-1.2×1p		1.2	1	1.07					134	297	472			31.5	1.9	985	55	6700×5400×2900	14128
															1.5	735	45		
2JTPB-1.6×0.9p	2	1.6	0.9	0.97	45	30	/	/	118	272	434	26	405	20	4	990	180	7100×5400×2900	16760
														28	3	990	160		
2JTPB-1.6×1.2p		1.6	1.2	1.27					172	382	601			31.5	2.5	988	130	7400×5400×2900	17370
															2	735	110		

JTK/2JTK

矿用提升绞车

JTK/2JTK mining hoist winch



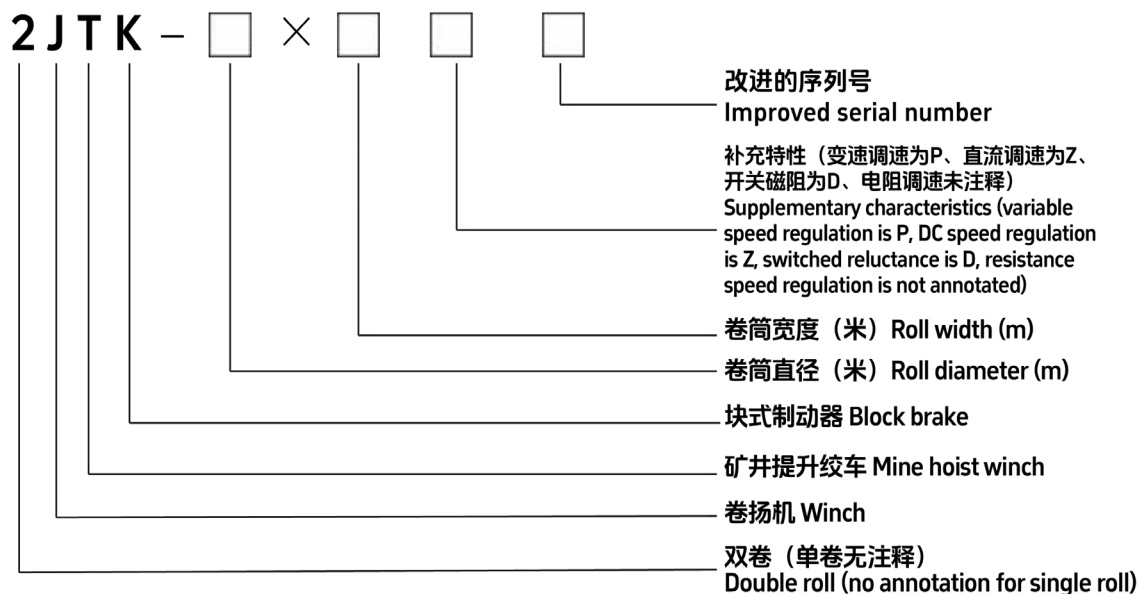
JTK 型号 (Type)



JTK 型号 (Type)

产品型号

Product Model



产品简介

Product Introduction

JTK/2JTK系列矿用提升绞车是一种单绳缠绕式设备，专为煤矿井下的倾斜隧道和小竖井而设计，金属矿山和非金属矿山，主要用于物料提升（如矿石、设备）和人员运输。它由主轴装置、制动器、深度指示器、减速器等核心部件构成，卷筒采用16Mn钢板焊接，制动依靠块式制动器，深度指示通过牌坊式装置实现，电气系统完备。该系列绞车结构简约，操作、维护、调整方便，多种型号适配不同作业工况。

The JTK/2JTK series of mine hoisting winches are single-rope winding equipment, specifically designed for inclined tunnels and small vertical shafts in underground coal mines, as well as metal and non-metal mines. They are mainly used for material hoisting (such as ore and equipment) and personnel transportation. It is composed of core components such as the main shaft device, brakes, depth indicator, and speed reducer. The drum is welded with 16Mn steel plates, braking is achieved by block brakes, depth indication is realized through a memorial archway - type device, and the electrical system is complete. The winches in this series feature a simple structure, making them easy to operate, maintain, and adjust. A variety of models are available to adapt to different working conditions.

核心结构和设计特点

Core Structure and Design Features

● 主轴装置：

采用整体式或分体式卷筒设计，卷筒壳采用低合金钢，表面压设螺旋绳槽，减少钢丝绳磨损；主轴两端配备双列调心滚子轴承，实现全滚动传动，机器整体效率 $\geq 90\%$ 。

制动系统：

● 配备工作制动器和重锤安全制动器，工作制动靠操作手柄来实现，发现紧急情况时，踩下脚踏开关，可以实现安全制动。

- **传动系统:**

可选行星齿轮减速器或圆柱齿轮减速器, 传动平稳, 噪音低; 控制方式支持电阻调速或变频调速, 节能30%以上, 低速重载启动性能优异。

Spindle device:

An integral or split drum design is adopted. The drum shell is made of low-alloy steel, and spiral rope grooves are pressed on the surface to reduce the wear of the steel wire rope. Double-row self-aligning roller bearings are equipped at both ends of the main shaft to realize full rolling transmission, and the overall efficiency of the machine is $\geq 90\%$.

Braking system:

It is equipped with a working brake and a heavy-hammer safety brake. The working brake is realized by operating the handle. In case of an emergency, stepping on the foot switch can realize the safety brake.

Transmission and control:

Optional planetary gear reducer or cylindrical gear reducer, smooth transmission and low noise; The control method supports resistance speed regulation or frequency conversion speed regulation, energy saving of more than 30%, and excellent low-speed heavy-load starting performance.

安全保护功能

Technical features

实时监控: 集成超速、超绕、绳索松动、制动器磨损、弹簧疲劳等传感器, 与主电机联锁进行控制。

深度指示器: 是通过齿轮转换形式变直线运动的传动装置。

紧急保护: 支持停电时自动制动和断轴保护, 符合GB16423安规规定。

Real-time monitoring: Integrates sensors for overspeed, overwinding, rope loosening, brake wear, spring fatigue, etc., and is interlocked with the main motor for control.

Depth indicator: It is a transmission device that converts linear motion through gear conversion.

Emergency protection: supports automatic braking and broken shaft protection in case of power failure, in compliance with GB 16423 safety regulations.

产品应用

Product Application

适用场景: 煤矿倾斜隧道中的物料运输; 在小型垂直井中提升人员。

限制: 严禁在含有气体/煤尘的爆炸性环境中使用非防爆型号; 钢丝绳缠绕层数限制: 竖井中人员一层、物料二层, 斜井中人员二层、物料三层。

Applicable scenarios: Material transportation in inclined tunnels in coal mines (such as JTK-1.6 $\times$ 1.2); Personnel lifting in small vertical shafts (explosion-proof models JTKB series must be selected).

Restrictions: It is strictly forbidden to use non-explosion-proof models in explosive environments containing gas/coal dust; Restrictions on the number of steel wire rope winding layers: for vertical shafts, one layer for personnel and two layers for materials; for inclined shafts, two layers for personnel and three layers for materials.

JTK 矿用提升绞车产品参数

Product parameters of JTK mining hoisting winch

技术参数 Technical Parameters								
型号 Model	卷筒 Reel			钢丝绳最大静张力 Maximum static tension of wire rope (KN)	钢丝绳最大直径 Maximum wire rope diameter (mm)	最大提升速度 Maximum lifting speed (m/s)	缠绕层数 Number of winding layers	最大提升高度或斜长 Maximum lifting height or inclined length (m)
	个数 Number	直径 Diameter (m)	宽度 Width (m)					
JTK-1×0.8	1	1	0.8	20	16	1.8	3	426
JTK-1.2×1	1	1.2	1	30	20	2.6	3	472
JTK-1.2×1.2	1	1.2	1.2	30	20	2.6	3	582
JTK-1.4×1.2	1	1.4	1.2	35	22	2.6	3	617
JTK-1.6×1.2	1	1.6	1.2	45	26	4.1	3	601
JTK1.6×1.5	1	1.6	1.5	45	26	4.1	3	767

2JTK 矿用提升绞车产品参数

Product parameters of 2JTK mining hoisting winch

技术参数 Technical Parameters									
型号 Model	卷筒 Reel			钢丝绳最大静张力 Maximum static tension of wire rope (KN)	两根钢丝绳最大静张力差 Maximum static tension difference between two wire ropes (KN)	钢丝绳最大直径 Maximum wire rope diameter (mm)	最大提升速度 Maximum lifting speed (m/s)	缠绕层数 Number of winding layers	最大提升高度或斜长 Maximum lifting height or inclined length (m)
	个数 Number	直径 Diameter (m)	宽度 Width (m)						
2JTK-1.2×0.8	2	1.2	0.8	30	20	20	2.6	3	370
2JTK-1.2×1	2	1.2	1	30	20	20	2.6	3	472
2JTK-1.4×1	2	1.4	1	35	25	22	2.6	3	505
2JTK-1.6×0.9	2	1.6	0.9	45	30	26	4.1	3	434
2JTK-1.6×1.2	2	1.6	1.2	45	30	26	4.1	3	601

JZ/JKZ

JZ 凿井绞车

JZ sinking winch

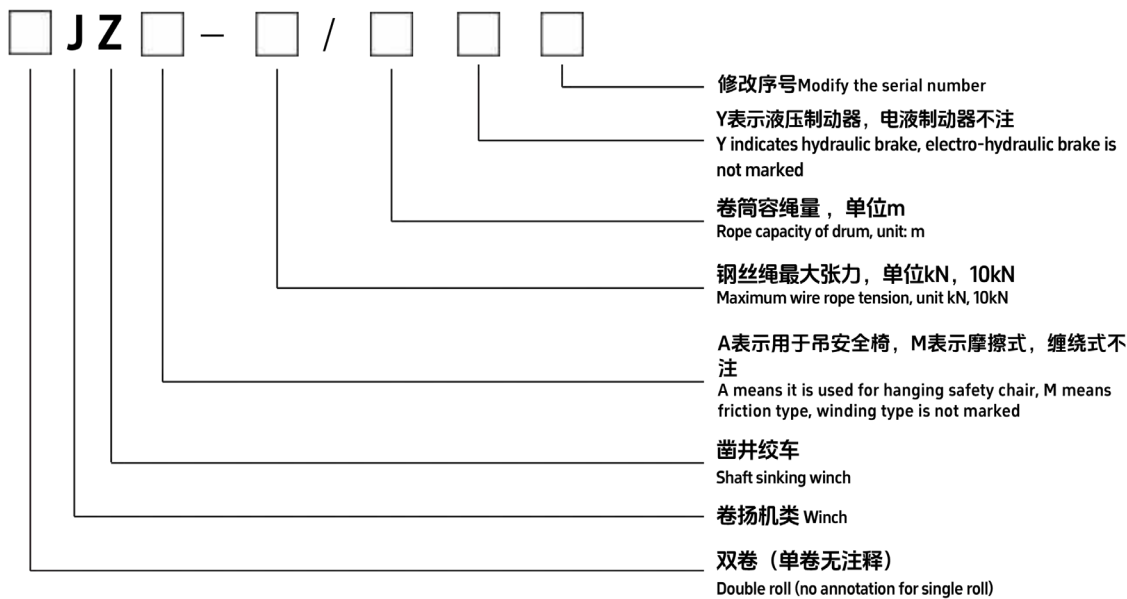


JZ 型号 (Type)



JZ 型号 (Type)

产品型号
Product Model



产品简介
Product Introduction

JZ系列凿井绞车是一种缠绕式矿山提升设备，专为煤矿、金属矿和非金属矿的立井掘进工程设计。它主要用于悬吊提升盘、水泵、风筒、注浆管等掘进设备，以及拉紧和稳定钢丝绳。其核心优势包括提升能力强、容绳量大、运行稳定，并且可适配双速、差速等功能，适用于井下和地面的重物提升场景。

JZ series shaft drilling winch is a winding mining hoisting equipment, specially designed for shaft excavation projects in coal mines, metal mines and non-metallic mines. It is mainly used for suspending excavation equipment such as hoisting plates, water pumps, air cylinders, grouting pipes, and tensioning and stabilizing ropes. Its core advantages include strong lifting capacity, large rope capacity, stable operation, and can be adapted to dual-speed, differential and other functions, suitable for underground and ground heavy object lifting scenarios.

核心结构和设计特点
Core Structure and Design Features

● 主轴装置：

滚筒通过铜套和螺栓连接到齿轮和制动轮。主轴仅随滚筒旋转，不传递扭矩。钢丝绳设计为从顶部出来。材料采用高强度钢制成，绳索容量可达1800米（如JZ-40/1800）。

● 制动系统：

采用球面蜗轮副+初级速度齿轮，通过手柄切换快、慢速（快6m/min，慢速3m/min）。双滚筒型号（如2JZ-16/1320）配有差动系统，可调节两个滚筒的转速差，以满足悬挂设备的垂直要求。

● 传动系统：

工作制动器：垫式制动器，电机启动时液压推杆释放，机器停止时弹簧制动器。安全制动器：浮动垫式，依靠沉重的锤子的落锤触发断电保护，保证紧急制动的可靠性。

Spindle device: The drum is connected to the gear and brake wheel through copper sleeves and bolts. The spindle rotates only with the drum and does not transmit torque. The wire rope is designed to be out of the top. The material is made of high-strength steel, and the rope capacity can reach 1,800 meters (such as JZ-40/1800).

Reducer: Adopts spherical worm gear pair + primary speed gear, and switches the fast and slow speeds through the handle (fast 6m/min, slow 3m/min). Double-drum models (such as 2JZ-16/1320) are equipped with a differential system to adjust the speed difference of the two drums to meet the vertical requirements of the suspended equipment.

Braking system: Working brake: Pad brake, hydraulic pusher releases when the motor starts, and spring brakes when the machine stops. Safety brake: floating pad type, relying on the fall of the heavy hammer to trigger the power-off protection to ensure the reliability of emergency braking.

安全保护功能

Technical features

多重保护：集成过载保护、限位器、断电制动器等装置，实时监控钢丝绳张力和设备状态。

润滑要求：减速机使用HL-20齿轮油或HG-24气缸油，应每年更换一次；主轴轴承应每两年补充一次4号钙基润滑脂。

Multiple protections: integrated overload protection, limiter, power-off brake and other devices, real-time monitoring of wire rope tension and equipment status.

Lubrication requirements: The reducer uses HL-20 gear oil or HG-24 cylinder oil, which should be replaced once a year; The main shaft bearing should be supplemented with No. 4 calcium-based grease every two years.

产品应用

Product Application

适用场景：竖井开挖时悬挂吊板、灌浆管等设备（载荷 $\leq 400\text{kN}$ ）；在地面上举起重物或更换尾绳（如笼式连接）。

限制：严禁在含有气体/煤尘的爆炸性环境中使用非防爆型号；钢丝绳缠绕层数限制：人单层，竖井中物体双层；斜井中的物体允许有三层。

Applicable scenarios: Suspending hoisting plates, grouting pipes and other equipment during shaft excavation (load $\leq 400\text{kN}$); Lifting heavy objects on the ground or replacing tail ropes (such as cage connections).

Restrictions: It is strictly forbidden to use non-explosion-proof models in explosive environments containing gas/coal dust; Restrictions on the number of steel wire rope winding layers: one layer for personnel; two layers for objects in vertical shafts; and three layers are allowed for objects in inclined shafts.

JZ 凿井绞车产品参数
JZ sinking winch product parameters

技术参数 Technical Parameters															
型号 Model	钢丝绳最大静张力 Maximum static tension of wire rope (kN)	钢丝绳最大静张力允差 Maximum static tension tolerance of wire rope (kN)	液压系统额定工作压力 Rated working pressure of hydraulic system (MPa)	减速机速比 Speed ratio of reducer		卷筒容量绳 Drum capacity rope (m)	卷筒直径 Roll diameter (mm)	第一层钢丝绳速度 First layer wire rope speed (m/s)		钢丝绳直径 Wire rope diameter (mm)	绞车重量 Winch weight (t)				
				快速 fast	慢速 Slow			快速 fast	慢速 Slow						
JZ-10/800P	100	/	12	51		800	800	0.075		32	4.5				
JZ-10/1000P						1000					5.5				
JZ-16/1000P	160			76	152	1000	1000	0.075	0.04	40	12				
JZ-16/1300P						1300					14				
JZ-16/1500P						1500					16				
JZ-25/1300P	250			76	152	1300	1050			52	15				
JZ-25/1500P						1500					18				
JZ-25/1800P						1800					21				
JZ-40/1500P	400			76	152	1500	1250						60	24	

2JZ 凿井绞车产品参数
2JZ sinking winch product parameters

技术参数 Technical Parameters									
型号 Model	钢丝绳最大静张力 Maximum static tension of wire rope (kN)	卷筒容量绳 Rope capacity of drum (m)	钢丝绳速度 Wire rope speed (m/min)		钢丝绳直径 Wire rope diameter (mm)	电动机 Electric Motor		外形尺寸 (长宽高) Overall dimensions (length, width and height) (mm)	重量 weight
			快速 fast	慢速 Slow		功率 Power (Kv)	电压 Voltage (V)		
2JZ-10/800	2×100	2×800	6	3	32	42	380	4270×2923×1770	13560
2JZ-10/1000	2×100	2×1000	6	3	32	42	380	4270×3200×1770	14560
2JZ-16/1000	2×160	2×1000	6	3	40	55	380	5473×3690×2240	21072
2JZ-16/1300	2×160	2×1300	6	3	40	55	380	5473×4100×2500	27700

JZ/JKZ

JKZ 凿井提升机

JKZ sinking hoist



JKZ 型号 (Type)

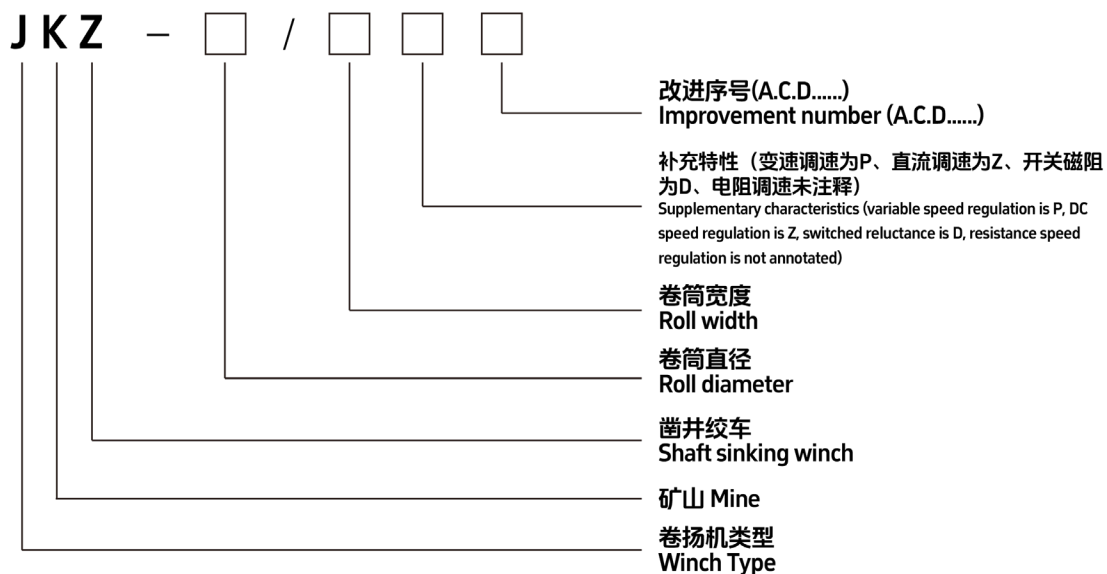
产品简介

Product Introduction

JKZ系列凿井提升机是专为煤矿、金属矿、非金属矿的井筒掘进作业打造的关键设备。它主要用于提升吊桶、运送人员，以及升降各类凿井机械设备、下放砌壁用混凝土等。该系列提升机结构形式与缠绕式提升机相近，却具备更强提升能力，通常由主轴装置、盘形制动装置、卷筒护板、液压站、深度指示器及传动装置、测速传动装置、润滑站、齿轮联轴器、减速器、弹性棒销联轴器、电动机以及各类底座等构成。其规格型号多样，能适配不同井深与井筒直径的作业需求，在整个井筒施工过程中，对保障提升作业安全、提升建井效率起着至关重要的作用。

The JKZ series shaft sinking hoists are key equipment specially designed for shaft excavation operations in coal mines, metal mines, and non-metal mines. They are mainly used for lifting skip buckets, transporting personnel, hoisting and lowering various shaft sinking machinery and equipment, and lowering concrete for shaft lining. The structural form of this series of hoists is similar to that of winding hoists, but they have stronger lifting capacity. They are typically composed of main shaft devices, disc braking devices, drum guards, hydraulic stations, depth indicators and transmission devices, speed measuring transmission devices, lubrication stations, gear couplings, reducers, elastic pin couplings, motors, and various bases. With a variety of specifications and models, they can adapt to the operational needs of different shaft depths and shaft diameters, playing a crucial role in ensuring the safety of hoisting operations and improving shaft construction efficiency throughout the shaft construction process.

产品型号 Product Model



JKZ 凿井提升机产品参数 JKZ sinking hoist product parameters

技术参数 Technical Parameters													
型号 Model	卷筒 Reel				钢丝绳最大静张力 Maximum static tension of wire rope	钢丝绳最大静张力差 The maximum static tension difference of the wire rope	钢丝绳最大直径 Maximum wire rope diameter	提升高度或运输长度 Lifting height or transport length			最大提升速度 Maximum lifting speed	优先选用减速器速比 The speed ratio of the reducer is preferred	电机转速（不大于） Motor speed (not greater than)
	个数 Number	直径 Diameter	宽度 Width	两卷筒中心距 Two reel center distances				一层缠绕 layer of winding	二层缠绕 Double layer winding	三层缠绕 Three-layer winding			
JKZ-2.8×2.2P	1	2.8	2.2	/	180	/	40	380	797	1259	5.68	15.5	600
JKZ-3.2×2.6P	1	3.2	2.6	/	200	/	42	515	1065	1663	6.48	15.5	600
JKZ-3.2×3P	1	3.2	3	/	200	/	42	595	1229	1919	6.48	15.5	600
JKZ-3.6×3P	1	3.6	3	/	220	/	44	633	1306	2038	7.3	15.5	600
JKZ-4×3P	1	4	3	/	285	/	50	611	1261	1976	7.85	16	600
JKZ-4×3.5P	1	4	3.5	/	285	/	50	728	1497	2332	7.85	16	600
2JKZ-3×1.8P	2	3	1.8	1.89	180	155	40	322	678	1080	6.08	15.5	600
2JKZ-3.6×1.85P	2	3.6	1.85	1.94	220	180	44	360	752	1199	7.3	15.5	600
2JKZ-4×2.65P	2	4	2.65	2.74	285	255	50	530	1097	1726	8.11	15.5	600

1. 主轴装置 Spindle device

单绳缠绕式主轴装置

Single-rope winding type main shaft device



产品简介

Product Introduction

主轴装置由主轴、卷筒、制动盘、轮毂、轴承、轴承座、塑衬等零部件组成；根据项目使用要求卷筒采用两剖分，制动盘采用剖分式活闸盘、双侧制动盘式。

主轴采用材质45#中碳钢锻件，经过两次无损探伤检测精车加工后而成，承载能力和扭矩均符合国家标准，保证使用性能可靠；

轴承采用双列调心滚子轴承，该轴承承载能力大运行平稳，油脂润滑。

卷筒材料采用Q345高强度低合金钢板材质，经卷板机卷筒后由立车精加工（防止卷筒偏心），回火，振动失效处理后装配该卷筒受力更均匀，应力更好，承受扭转强度及抗冲击拉力符合国家标准。卷筒焊接成型后，对焊缝进行探伤检测，合格后方可投入使用。

The main shaft device consists of components such as the main shaft, drum, brake disc, hub, bearing, bearing seat, and plastic liner. According to the project usage requirements, the drum is designed as a two-part split structure, and the brake disc adopts a split-type movable brake disc and a double-sided brake disc type.

The main shaft is made of 45# medium carbon steel forging. After two non-destructive testing and precision turning, its bearing capacity and torque meet national standards, ensuring reliable performance in use.

The bearing used is a double-row self-aligning roller bearing, which has a large bearing capacity, runs stably, and is lubricated with grease.

The drum is made of Q345 high-strength low-alloy steel plate. It is rolled by a plate rolling machine, then precision machined by a vertical lathe (to prevent drum eccentricity), tempered, and subjected to vibration aging treatment before assembly. This ensures the drum bears force more evenly with better stress performance, and its torsional strength and impact resistance meet national standards. After the drum is welded and formed, the welds are inspected by flaw detection, and it can be put into use only after passing the inspection.

多绳摩擦式主轴装置

Multi-rope friction type main shaft device



产品简介

Product Introduction

主轴装置是提升机的工作机构，也是提升机的主要承载部件，它承担提升机提升、下放载荷的全部扭矩，同时也承受着搭在摩擦轮上两侧的钢丝绳的拉力。

主轴装置由摩擦轮、制动盘、主轴、轴承、轴承座、摩擦衬垫与压块等零部件组成。

摩擦轮同主轴采用双法兰、双夹板、双面平面摩擦联接，他靠两夹板与摩擦轮主轴间的摩擦力传递扭矩。

主轴采45MnMo高强度中碳钢锻制，采取热处理调整内部组织，无损探伤证明无内部缺陷、机械性能试验等手段进行质量监控，保证各项性能，以确保主轴作为提升机主要件的使用可靠性。

摩擦轮结构：采用Q355低合金钢材料全焊接结构，该部件由筒壳、幅板、挡绳板、制动盘焊接而成。

The main shaft device is the working mechanism of the hoist and also the main load-bearing component of the hoist. It bears all the torque generated when the hoist lifts and lowers loads, and at the same time, it withstands the tension of the steel wire ropes on both sides that are draped over the friction wheel.

The main shaft device is composed of components such as a friction wheel, brake disc, main shaft, bearing, bearing seat, friction lining and pressure block.

The friction wheel and the main shaft are connected by a double-flange, double-clamp, double-sided planar friction connection, and it transmits torque through the friction force between the two clamps and the main shaft of the friction wheel.

The main shaft is forged from 45MnMo high-strength medium carbon steel. Heat treatment is carried out to adjust the internal structure, and quality control is performed through means such as non-destructive testing (to prove no internal defects) and mechanical performance testing to ensure various properties, so as to guarantee the reliable use of the main shaft as a key component of the hoist.

Structure of the friction wheel: It adopts an all-welded structure made of Q355 low-alloy steel, and this component is welded by a cylinder shell, web, rope guard and brake disc.

2. 盘形制动器 Disc brake

TP 系列盘形制动器

TP Series Disc Brake

产品简介

Product Introduction

采用ABB技术转化的油缸后置式双油路制动器，它具有惯量小、动作快、可调性能好、可靠性高、通用性高、基础简单、维修调整方便等优点。

新型盘形制动器装置与液压站组成了矿井提升机的制动系统，管路采用卡套式接头连接油缸、活塞及密封件借鉴国外产品(ABB)优化设计，活塞采用低温碳氮共渗(QPQ)技术，增强耐磨性，确保零泄漏，用于实现提升机的工作制动和安全制动，盘形制动器在矿井提升机上做工作制动和紧急制动用，其驱动和控制由单独的液压站完成。盘形制动器为双闸盘对称布置，根据需要可分别实现工作制动和安全制动，制动时的制动力矩均不得小于实际最大静力矩的三倍，制动器各部件的机械强度应有足够的安全系数，在各种情况下均能安全可靠地工作。

盘式制动器由液压控制，采用弹簧制动，液压松闸，反应迅速，制动安全可靠、制动力分布均匀，制动力矩调节性能好，制动力传输效率高。

The oil cylinder rear-mounted dual-oil-circuit brake transformed with ABB technology features small inertia, fast action, excellent adjustability, high reliability, strong universality, simple foundation, and convenient maintenance and adjustment.

The new disc brake device and the hydraulic station form the braking system of the mine hoist. The pipeline adopts a ferrule-type joint for connection. The oil cylinder, piston and seals are optimally designed with reference to foreign products (ABB). The piston adopts low-temperature carbonitriding (QPQ) technology to enhance wear resistance and ensure zero leakage. It is used to realize the working braking and safety braking of the hoist. The disc brake is used for working braking and emergency braking on the mine hoist, and its driving and control are completed by a separate hydraulic station.

The disc brakes are symmetrically arranged with dual brake discs, capable of achieving both service braking and safety braking as required. During braking, the braking torque shall not be less than three times the actual maximum static torque. All components of the brake shall have sufficient safety factors in mechanical strength to ensure safe and reliable operation under all conditions.

The disc brakes are hydraulically controlled, featuring spring-applied and hydraulically released mechanisms. They offer rapid response, safe and reliable braking, uniform distribution of braking force, excellent adjustability of braking torque, and high efficiency in braking force transmission.



3. 减速机 Reducer

行星减速机 Planetary reducer

产品简介

Product Introduction



行星减速机是全硬齿面行星齿轮减速机，高速级为平行轴齿轮传动中间级和低速级为行星齿轮传动，行星轮、太阳轮及平行轴传动的大小齿轮均采用低碳合金钢渗碳淬火热处理工艺及磨齿加工工艺，外齿轮精度为6级精度，内齿轮精度为7级精度，齿根喷丸强化，提高齿根弯曲强度。

The planetary reducer is an all-hardened gear planetary gear reducer. The high-speed stage adopts parallel shaft gear transmission, while the intermediate and low-speed stages adopt planetary gear transmission. The planetary gears, sun gears, and large and small gears of the parallel shaft transmission are all processed using carburizing and quenching heat treatment technology for low-carbon alloy steel

and gear grinding technology. The external gears reach grade 6 precision, and the internal gears reach grade 7 precision. The tooth roots are shot-peened to enhance the bending strength of the tooth roots.

行星齿轮传动的主要特点如下：传动比大、传动效率高、运动平稳、抗冲击和振动能力较强、体积小、重量轻、结构紧凑，传动功率大、承载能力高。

The main characteristics of planetary gear transmission are as follows: large transmission ratio, high transmission efficiency, stable movement, strong resistance to shock and vibration, small size, light weight, compact structure, large transmission power and high bearing capacity.

平行轴减速机 Parallel shaft reducer

产品简介

Product Introduction

平行轴减速机齿轮采用高强度低碳合金钢经渗碳淬火而成，齿轮硬度达HR58-62，齿轮均采用磨齿工艺，精度高，接触性好。

The gears of the parallel shaft reducer are made of high-strength low-carbon alloy steel through carburizing and quenching processes, with a hardness of HRC58-62. All gears are processed using the gear grinding technique, featuring high precision and excellent contact performance.

性能特点

Performance characteristics

1. 采用齿轮飞溅润滑方式，不需要加强制性润滑站。
2. 本产品采用双圆弧齿形圆柱齿轮，两级传动。
3. 减速器承载能力大、使用寿命长。
4. 工作平稳，噪音低、密封性能好。
5. 安全可靠、安装使用方便。

1. Gear splash lubrication method is adopted, and there is no need to add a compulsory lubrication station.
2. This product adopts double arc toothed cylindrical gear, two-stage transmission.
3. The reducer has a large bearing capacity and a long service life.
4. Stable work, low noise and good sealing performance.
5. Safe and reliable, easy to install and use.



圆柱齿轮减速机

Cylindrical gear reducer

产品简介

Product Introduction

圆柱齿轮减速机是按国家专业标准ZBJ19004生产的合渐开斜齿圆柱齿轮减速机，起到传动与减速之作用。由于箱体结构为水平分割全封闭式，具有机械性能好，工作可靠，维护方便等优秀特点。

The cylindrical gear reducer is a cylindrical gear reducer with involute helical teeth ZBJ19004 produced according to national professional standards, which plays the role of transmission and deceleration. Because the box structure is horizontally divided and fully enclosed, it has excellent characteristics such as good mechanical properties, reliable work and convenient maintenance.



性能特点

Performance characteristics

1. 机械传动效率高，单级大于96.5%，双级大于93%，三级大于90%。
2. 工体积小，重量轻，使用寿命长，承载能力高。
3. 齿轮采用精滚磨齿工艺，精度高，接触性好。
4. 运转平稳，噪音低。
5. 易于拆卸，易于安装。

1. High mechanical transmission efficiency, single-stage is greater than 96.5%, two-stage is greater than 93%, and three-stage is greater than 90%.
2. Small size, light weight, long service life and high bearing capacity.
3. The gear adopts fine hobbing and grinding process, with high precision and good contact.
4. Smooth operation and low noise.
5. Easy to disassemble and easy to install.

4. 液压站 Hydraulic station

恒减速液压站

Constant deceleration hydraulic station

产品简介

Product Introduction

结构型式：恒减速液压站为单站双泵、独立双回路，一使一备。液压站油泵采用液下安装。液压站采用齿轮泵、比例阀、溢流阀、电动阀等使用阿斯托或其他进口品牌。

Structural type: The constant deceleration hydraulic station is a single station with dual pumps and independent dual circuits, one in use and one standby. The oil pump of the hydraulic station is installed under the liquid. The gear pumps, proportional valves, overflow valves, electric valves, etc. used in the hydraulic station are of Astor or other imported brands.



主要功能

Product Introduction

制动功能主要分为工作制动、井中恒减速安全制动、井中二级安全制动和井口一级安全制动四大制动功能。控制功能主要分为卸荷功能、调压功能、蓄能器充油功能、压力保护功能、温度保护功能和液位保护功能。

The braking functions are mainly divided into four major types: working braking, constant deceleration safety braking in the well, two-stage safety braking in the well, and first-stage safety braking at the wellhead. The control functions are mainly divided into unloading function, pressure regulating function, accumulator oil charging function, pressure protection function, temperature protection function and liquid level protection function.

恒力矩液压站

Constant torque hydraulic station

产品简介

Product Introduction

结构型式：单箱体、双电机、双油泵、双调压装置、双系统带冗余，双回路，一用一备。液压站采用比例阀式调压，全部为板式集成块结构，液压元件全部安装在台面上，控制阀组采用外装，方便安装与维修。液压站采用电气延时二级制动，延时时间在0~10s可调。液压站采用齿轮泵、比例阀、溢流阀、电动阀等使用阿斯托或其他进口品牌。

Structural type: single tank, dual motors, dual oil pumps, dual pressure regulating devices, dual systems with redundancy, dual circuits, one in use and one standby. The hydraulic station adopts proportional valve type pressure regulation, all with plate-type integrated block structure. All hydraulic components are installed on the table top, and the control valve group is externally mounted for easy installation and maintenance. The hydraulic station adopts electric delay two-stage braking, with the delay time adjustable within 0-10s. The gear pumps, proportional valves, overflow valves, electric valves, etc. used in the hydraulic station are of Astor or other imported brands.



防爆液压站

Explosion-proof hydraulic station

产品简介

Product Introduction

防爆液压站是专为易燃易爆环境（如瓦斯矿和扬尘高风险区域）设计的液压动力装置。通过防爆材料、密封结构和电气防爆技术，消除了液压系统运行过程中可能产生的电火花、高温或机械摩擦引起的爆炸风险。在矿井提升机中，防爆液压站主要用于驱动制动系统，控制提升机的启动和停止，以及紧急制动。它们是确保矿山安全的核心设备之一。

Explosion-proof hydraulic station is a hydraulic power unit designed for flammable and explosive environments (such as gas mines and dust high-risk areas). Through explosion-proof materials, sealing structures and electrical explosion-proof technology, it eliminates the risk of explosion caused by electric sparks, high temperatures or mechanical friction that may be generated during the operation of the hydraulic system. In mine hoists, explosion-proof hydraulic stations are mainly used to drive the braking system, control the start and stop of the hoist, and emergency braking. They are one of the core equipment to ensure mine safety.



润滑站

Lubrication station

产品简介

Product Introduction

润滑站是矿井提升机中的关键辅助系统。主要用于为提升机的运动部件提供持续均匀的润滑，以减少摩擦和磨损，确保设备的高效和安全运行。润滑站为双泵系统，油泵互为备用，并应有完善的监测保护，如温度，油压，过滤器污染及油管阻塞等。噪音符合国家环保标准。应有管式冷却器，加热装置，并配带润滑管路。

The lubrication station is a key auxiliary system in mine hoists. It is mainly used to provide continuous and uniform lubrication for the moving parts of the hoist, so as to reduce friction and wear and ensure the efficient and safe operation of the equipment. The lubrication station is a dual-pump system, where the oil pumps are standby for each other, and should be equipped with complete monitoring and protection functions, such as monitoring for temperature, oil pressure, filter contamination, and oil pipe blockage. The noise meets national environmental protection standards. It should be equipped with a tube cooler, a heating device, and lubrication pipelines.



5. 电机 Motor

TBVF 系列防爆永磁同步电动机

TBVF Series Explosion-Proof Permanent Magnet Synchronous Motor

产品简介

Product Introduction

TBVF系列防爆永磁同步电动机专为严苛工况设计，防爆等级达Exd I Mb，适用于存在甲烷与煤尘爆炸性混合物的煤矿井下等危险环境。该系列电机可直接驱动提升机滚筒，摒弃传统异步电机搭配减速机的模式，极大缩短传动链。采用水冷冷却方式，具备温升低、损耗小的优势，运行可靠且基本免维护。其启动转矩大，能轻松应对重载启动，对电网无冲击；空载时可自动降低运行速度，减少皮带和托辊磨损，延长其使用寿命。同时，便于集中控制，支持无人值守运行，并设有预警与预动功能，有效避免启动时的意外事故，在煤矿、铁矿、石油等行业广泛应用，助力企业提升生产效率、降低运营成本。



The TBVF series explosion-proof permanent magnet synchronous motor is specially designed for harsh working conditions. With an explosion-proof grade of Exd I Mb, it is suitable for hazardous environments such as underground coal mines where explosive mixtures of methane and coal dust exist. This series of motors can directly drive the hoist drum, eliminating the traditional mode of asynchronous motors paired with reducers, thus greatly shortening the transmission chain. It adopts a water-cooling method, featuring low temperature rise, small loss, reliable operation and basically maintenance-free performance. It has a large starting torque, which can easily handle heavy-load starting without impacting the power grid; when under no-load, it can automatically reduce the operating speed, reducing wear on belts and idlers and extending their service life. Meanwhile, it is convenient for centralized control, supports unattended operation, and is equipped with early warning and pre-actuation functions, which can effectively avoid accidents during startup. It is widely used in industries such as coal mines, iron mines, and petroleum, helping enterprises improve production efficiency and reduce operating costs.

核心结构

Core Structure

磁性系统：具有F/H级绝缘的NdFeB永磁体

防爆：铸铁/钢外壳，火焰路径间隙为 $\leq 0.2\text{mm}$

冷却方式：水冷式（0.3–0.8MPa，2.8t/h流量）

Magnetic System: NdFeB permanent magnets with F/H class insulation

Explosion Protection: Cast iron/steel housing with $\leq 0.2\text{mm}$ flame path gaps

Cooling: Water-cooled (0.3–0.8MPa, 2.8t/h flow)

YB 系列防爆电机

YB Series Explosion-Proof Motor

产品简介

Product Introduction

YB系列防爆电机是适应易燃易爆环境的专用电机，防爆等级符合相关标准，能在含有爆炸性气体或粉尘的危险场所安全运行。其结构设计坚固，采用可靠的防爆措施，确保电机运行时不会引发周围环境的爆炸风险。该系列电机效率高、运行稳定，具有良好的起动性能和过载能力，广泛应用于石油、化工、煤矿等存在易燃易爆隐患的工业领域，为各类机械设备提供安全可靠的动力支持。

The YB series explosion-proof motors are specialized motors designed for flammable and explosive environments. They meet relevant standards for explosion-proof grades and can operate safely in hazardous locations containing explosive gases or dust. With a robust structural design and reliable explosion-proof measures, these motors ensure that their operation will not trigger explosion risks in the surrounding environment. Boasting high efficiency, stable operation, excellent starting performance, and strong overload capacity, the YB series is widely used in industrial fields with flammable and explosive hazards such as petroleum, chemical industry, and coal mines, providing safe and reliable power support for various mechanical equipment.



YTS 系列变频电动机

YTS Series Variable Frequency Motor

产品简介

Product Introduction

YTS系列变频电动机是专为提升机类负载实际工况研发的专用电机，由变频器供电，在3至50Hz范围实现恒转矩调速。它启动转矩大，能轻松应对重载启动，过载能力强，可在复杂工况下稳定运行，调速过程平稳顺滑，运行可靠且噪音低，适配低频启动、额定频率下运行的机械设备，是提升机类设备实现无级调速与智能化控制的理想选择。

YTS series variable frequency motors are specially developed for the actual working conditions of hoist-type loads. Powered by an inverter, they achieve constant torque speed regulation in the range of 3 to 50Hz. With large starting

torque, they can easily handle heavy-load starting and have strong overload capacity, enabling stable operation under complex working conditions. They feature smooth speed regulation, reliable operation and low noise, making them suitable for mechanical equipment that starts at low frequencies and operates at rated frequencies. They are an ideal choice for hoist-type mechanical equipment to achieve stepless speed regulation and intelligent control.

6. 联轴器 Coupling

CL 齿式联轴器

CL Gear Coupling

产品简介

Product Introduction

主轴装置与减速机采用齿式联轴器联接传递扭矩，联轴器主要由外齿轴套、内齿圈、防尘密封圈等组成，其主要特点是传递转矩大，并可较好地补偿两轴的微量偏斜和不同轴度。材质 ZG310-570。

The spindle device and the reducer are connected by a gear coupling to transmit torque, and the coupling is mainly composed of an external gear sleeve, an internal gear ring, a dustproof sealing ring, etc., which is mainly characterized by a large transmission torque, and can better compensate for the slight deflection of the two shafts and different axialities. Material: ZG310-570.



弹性棒销联轴器

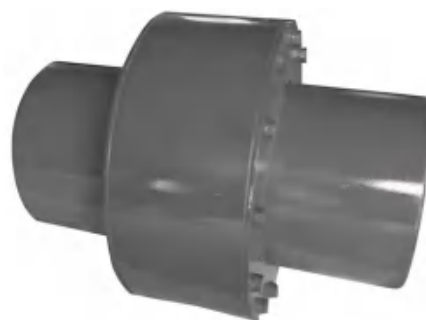
Elastic rod pin coupling

产品简介

Product Introduction

减速机与电机采用弹性棒销联轴器联接传递扭矩，联轴器是由半联轴器、柱销、挡板等组成，由于柱销的缓冲减速作用，因而具有传动平稳、噪声小、寿命长等特点。材质 ZG310-570。

The reducer and the motor are connected by an elastic rod pin coupling to transmit torque, and the coupling is composed of a half coupling, a pin and a baffle, etc., due to the buffering and deceleration effect of the pin pin, it has the characteristics of stable transmission, low noise and long life. Material: ZG310-570.



蛇形弹簧联轴器

Serpentine spring coupling

产品简介

Product Introduction

蛇形弹簧联轴器其主要结构是由两个半联轴节，两个半外罩，两个密封圈及蛇形弹簧片组成，它是靠蛇簧嵌入两半联轴节的齿槽内来传递扭矩。

The main structure of the serpentine spring coupling is composed of two half-coupling joints, two half-covers, two sealing rings and serpentine spring sheets, which are embedded in the cogging of the two halves of the coupling to transmit torque.



7. 深度指示器 Depth indicator

深度指示器

Depth indicator



产品简介

Product Introduction

矿井提升机中的深度指示器是保障提升作业精准与安全的关键装置，能实时显示提升容器在井筒中的位置及运行速度，通过机械或电子方式将深度信号传递给操作人员，同时具备过卷保护功能，当提升容器接近井口或井底极限位置时，可触发报警或制动装置，防止过卷事故，确保提升机高效、安全运行。

The depth indicator in a mine hoist is a key device ensuring the accuracy and safety of hoisting operations. It can display the real-time position and operating speed of the hoisting container in the shaft, transmit depth signals to operators through mechanical or electronic means, and is equipped with an overwinding protection function. When the hoisting container approaches the limit position of the wellhead or bottom, it can trigger an alarm or braking device to prevent overwinding accidents, thus ensuring the efficient and safe operation of the hoist.

8. 电机制动器 Motor brakes

电机制动器

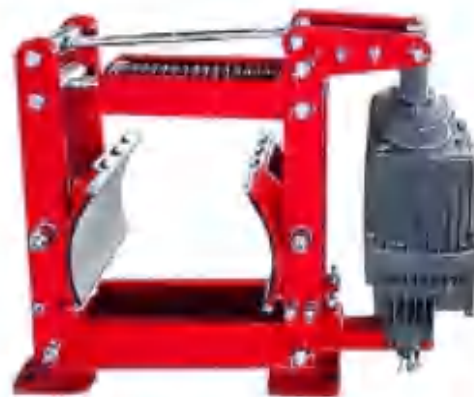
Motor brakes

产品简介

Product Introduction

我公司选用YZW型电力液压块式制动器作为电机制动器。该制动器可以吸收电动机的转子转动惯量，克服电动机的转动惯性对减速机的冲击，可以很好的保护减速机。

The depth indicator in a mine hoist is a key device ensuring the accuracy and safety of hoisting operations. It can display the real-time position and operating speed of the hoisting container in the shaft, transmit depth signals to operators through mechanical or electronic means, and is equipped with an overwinding protection function. When the hoisting container approaches the limit position of the wellhead or bottom, it can trigger an alarm or braking device to prevent overwinding accidents, thus ensuring the efficient and safe operation of the hoist.



电控装置系统 Electronic control system

提升机变频电控装置

Elevator frequency conversion electronic control device



产品简介

Product Introduction

用于矿井提升机中的提升机变频电控装置，是以变频调速技术为核心的智能控制设备，能通过调节电机供电频率实现提升机的无级调速与精准启停，同时集成电气保护、运行状态监测及自动控制等功能，可实时监控设备运行参数，在突发状况下快速响应并启动保护机制，有效提升矿井提升机运行的安全性、稳定性与高效性，是保障矿井提升系统智能化运作的关键装置。

The frequency conversion electronic control device for hoists is an intelligent electrical control equipment based on variable frequency speed regulation technology, mainly used for the drive and control of lifting equipment such as mine hoists, elevators, and cranes. Its core function is to adjust the power supply frequency of the motor through a frequency converter, achieving stepless speed regulation, precise start-stop, and operational status control of the hoist. At the same time, it integrates functions such as electrical protection, data monitoring, and automatic control to enhance the safety, reliability, and efficiency of equipment operation.

矿井提升机变频电控装置的PLC控制系统是基于可编程逻辑控制器（PLC）构建的核心控制单元，通过工业级编程实现对提升机变频调速过程的精准逻辑控制。该系统集成了速度闭环控制、位置精确检测、多段速运行模式及故障自诊断功能，可根据提升工艺需求自动调节电机频率与转矩，并通过数据总线与上位机监控系统实时交互运行参数。

The PLC control system for the variable frequency electric control device of mine hoists is a core control unit built on Programmable Logic Controllers (PLCs). It achieves precise logical control over the variable frequency speed regulation process of the hoist through industrial-grade programming. This system integrates closed-loop speed control, precise position detection, multi-speed operation modes, and fault self-diagnosis functions. It can automatically adjust the motor frequency and torque according to the requirements of the hoisting process and exchange real-time operating parameters with the host computer monitoring system via a data bus.

智能网络化操作台

Intelligent networked operation console

产品简介

Product Introduction

采用高清液晶彩色触摸屏具有故障显示、参数设定、井深观察等多种功能，同时内部带有独家的诊断精灵功能。可针对日常故障现象与原因作出判断并提示修复的原因。按钮指示灯采用正泰产品具有使用寿命长等优点。主令与手柄控制器采用编码器形式输出可靠性进一步提升。

It adopts a high-definition LCD color touch screen with multiple functions such as fault display, parameter setting, and well depth observation. Meanwhile, it has an exclusive internal diagnostic wizard function, which can judge daily fault phenomena and causes and prompt the reasons for repair. The button indicator lights are Chint products, which have the advantage of long service life.

The master command and handle controller adopt an encoder form for output, further improving reliability.



产品性能

Product performance

操作台是整个矿井提升机运输系统的控制核心设备，该设备采用技术先进、性能可靠的工业PLC为核心器件；为双PLC网络化控制，互为监控，以及多样化设计理念，有效的防止了PLC在特定环境下带来的隐患，按照安全回路双线制的设计原则实现了双线制提升机综合保护；配上位机监控系统，更直观的显示提升机运行状况。它完成了提升机运行过程中的逻辑、时间和速度、位置控制，按行程的速度给定及各种情况下的安全保护、自动化开车等控制和各种工作状态的显示；具备完善的远程诊断，远程监控系统，留有网络接口可直接并入其他网络监控系统；实现调速系统数字化、控制系统网络化、监控系统智能化。

The operating console is the core control equipment of the entire mine hoist transportation system. This equipment adopts technologically advanced and reliable industrial PLC as its core component; it features dual-PLC networked control with mutual monitoring and a diversified design concept, which effectively prevents potential risks caused by PLCs in specific environments. In accordance with the design principle of the dual-line safety circuit, it realizes the comprehensive protection of the dual-line hoist. Equipped with a host computer monitoring system, it can more intuitively display the real-time operation status of the hoist. It fulfills the control of logic, time, speed and position during the operation of the hoist, as well as the control of speed setting according to the stroke, safety protection under various conditions, automatic driving, and the display of various working states. It is equipped with a complete remote diagnosis and remote monitoring system, with a reserved network interface that can be directly connected to other network monitoring systems. It realizes the digitalization of the speed regulation system, the networking of the control system, and the intellectualization of the monitoring system.

电源柜

power cabinet

产品简介

Product Introduction

电源柜具有双回路进线，可满足矿山特殊需要，具有短路、过流、过压、缺相等多种保护，（可选输入电抗器与滤波器）对电网污染小、不干扰其他设备。且附带防雷与浪涌抑制器模块，减少雷击与大电流冲击对控制系统造成的影响。

The power cabinet is equipped with dual-circuit incoming lines, which can meet the special needs of mines. It has various protections such as short circuit, overcurrent, overvoltage, and phase loss. (Optional input reactors and filters) It causes little pollution to the power grid and does not interfere with other equipment. Additionally, it comes with a lightning protection and surge suppressor module to reduce the impact of lightning strikes and high-current surges on the control system.

变频柜

Frequency conversion cabinet

产品简介

Product Introduction

变频柜采用国内一线品牌变频器，也可根据客户需求定制进口品牌变频器。变频柜使用带PG卡的矢量控制模式，电机轴端由高速编码器传输。具有极高的低速控制性能，加速平稳、具有0Hz起步功能。同时具有完善的电机保护功能。

The frequency conversion cabinet adopts frequency converters of domestic first-tier brands, and can also be customized with imported brand frequency converters according to customer needs. The frequency conversion cabinet uses the vector control mode with a PG card, and the motor shaft end is transmitted by a high-speed encoder. It has extremely high low-speed control performance, stable acceleration, and a 0Hz starting function. At the same time, it is equipped with complete motor protection functions.

制动柜（回馈柜）

Brake cabinet (feedback cabinet)

产品简介

Product Introduction

使用大功率无感电阻器，可使变频器在下放时产生的电能迅速以热量释放掉。制动电阻具有富裕的制动功率可满足长时间下放的需求。当使用回馈单元时可将变频器下放产生的电能反馈至电网中从而减少电能消耗。附带输出电抗器可有效减少反馈至电网的二次谐波保证其他设备的可靠运行。

The use of high-power inductive resistors allows the electrical energy generated by the frequency converter to be quickly released with heat. The brake resistor has a rich braking power to meet the needs of long-term decentralization. When the feedback unit is used, the power generated by the frequency converter is decentralized and fed back to the grid, thereby reducing power consumption. The included output reactor can effectively reduce the second harmonics feedback to the power grid and ensure the reliable operation of other equipment.

低压 / 高压变频柜

Low Voltage/High Voltage Frequency Conversion Cabinet

产品简介

Product Introduction

提升机的电控系统中的低压/高压变频柜是实现电机变频调速的核心设备，分别适配不同功率等级的提升机电机。低压变频柜多用于中小功率提升机，高压变频柜则适用于大功率提升设备，二者均通过内部的变频模块将工频电源转换为可调节频率的电源，实现电机的无级调速，从而满足提升机在启动、加速、匀速、减速、停止等不同阶段的速度需求。

The low-voltage/high-voltage inverter cabinet in the electronic control system of the hoist is the core equipment to realize the frequency conversion speed regulation of the motor, which is suitable for the hoist motors of different power levels. The low-voltage inverter cabinet is mostly used in small and medium-power hoists, and the high-voltage inverter cabinet is suitable for high-power hoisting equipment, both of which convert the power frequency power supply into a power supply with adjustable frequency through the internal inverter module to realize the stepless speed regulation of the motor, so as to meet the speed requirements of the hoist in different stages such as starting, accelerating, constant speed, deceleration, and stopping.



低压变频柜

Low-Voltage Frequency Conversion Cabinet

低压变频柜是提升机电控系统中适配中小功率电机的关键设备，通过内部变频模块将工频电源转换为频率可调的电源，实现电机无级调速，满足提升机在启动、运行、停止等各阶段的速度调控需求。其集成过流、过压、过载等多重保护功能，可实时监测运行状态，异常时迅速响应以保障安全。同时，柜内设有针对性的散热和防尘结构，能在矿井复杂环境中稳定工作，为中小功率提升机提供高效、节能的控制支持。

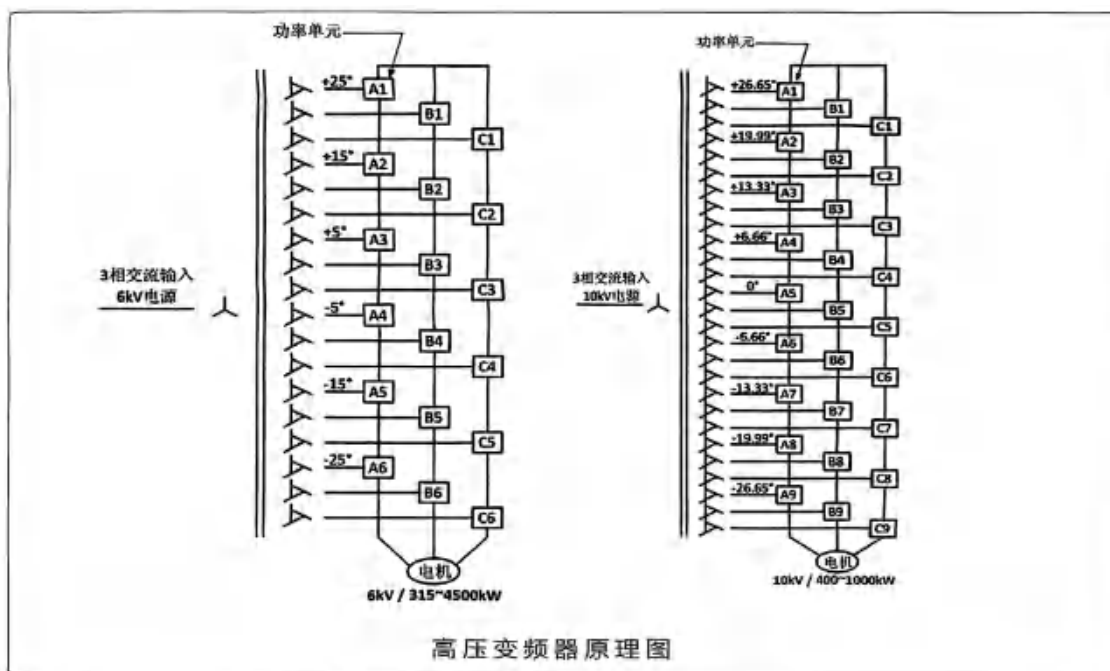
The low-voltage frequency conversion cabinet is a key device in the hoist's electrical control system that adapts to small and medium-power motors. It converts the industrial frequency power supply into a power supply with adjustable frequency through internal frequency conversion modules, realizing stepless speed regulation of the motor to meet the speed control requirements of the hoist during start-up, operation, stop and other stages. It integrates multiple protection functions such as overcurrent, overvoltage and overload, which can monitor the operating status in real time and respond quickly in case of abnormalities to ensure safety. At the same time, the cabinet is equipped with targeted heat dissipation and dust-proof structures, enabling it to work stably in complex mine environments and providing efficient and energy-saving control support for small and medium-power hoists.

高压变频柜

High-Voltage Frequency Conversion Cabinet

高压变频柜主要适配提升机的大功率电机，核心功能是将工频电源转换为可调节频率的电源，实现大功率电机的无级调速，精准匹配提升机不同运行阶段的速度要求。它具备完善的过流、过压、接地等保护机制，可实时监控电机及自身运行状态，出现异常时及时切断电源或报警。柜内采用强化的散热与防尘设计，能适应矿井恶劣环境，确保大功率提升机高效、安全、稳定运行，是大功率提升机电控系统的核心组成部分。

The high-voltage frequency conversion cabinet is mainly adapted to the high-power motors of hoists. Its core function is to convert the industrial frequency power supply into a power supply with adjustable frequency, realizing stepless speed regulation of high-power motors and accurately matching the speed requirements of the hoist in different operating stages. It has perfect protection mechanisms such as overcurrent, overvoltage and grounding, which can monitor the operating status of the motor and itself in real time, and cut off the power supply or alarm in time when abnormalities occur. The cabinet adopts enhanced heat dissipation and dust-proof design, which can adapt to harsh mine environments, ensure the efficient, safe and stable operation of high-power hoists, and is a core component of the electrical control system of high-power hoists.



适用范围

High-Voltage Frequency Conversion Cabinet

可与煤矿、有色金属矿井的单绳、多绳变频矿井提升机配套使用。适用于大功率，高压的各种矿井提升机场合，6KV系列，10K系列。主要与高压开关柜、低压开关柜、智能网络化主控台配套使用形成完美的网络化智能控制。

It can be used in conjunction with single-rope and multi-rope variable-frequency mine hoists in coal mines and non-ferrous metal mines. It is suitable for various mine hoist scenarios with high power and high voltage, including the 6KV series and 10KV series. It is mainly used in conjunction with high-voltage switchgear, low-voltage switchgear, and intelligent networked main control consoles to form a perfect networked intelligent control system.

防爆型变频电控装置

Explosion-proof inverter electronic control device



产品简介

Product Introduction

提升机的电控系统里的防爆型变频电控装置，是专为煤矿、有色金属矿井等存在瓦斯、粉尘等爆炸性危险的环境设计的核心控制设备，广泛适配单绳缠绕式、多绳摩擦式等各类变频提升机。其采用隔爆外壳、增安型接线端子等多重防爆结构设计，能严格阻隔电火花、高温表面等引燃源，可满足高功率（数百至数千千瓦级）、高压（如6KV、10KV系列）工况下提升机的运行需求，通过内部集成的变频器模块实现提升机的无级调速，确保启停平稳、速度精准可控。

该装置不仅集成了防爆变频箱、防爆编程箱等关键部件，还配备完善的传感器与数据传输模块，可实时监测提升机的运行速度、位置、电流、电压等参数，实现对设备状态的动态掌控。

The explosion-proof variable frequency electrical control device in the electrical control system of the hoist is a core control equipment specially designed for environments with explosive hazards such as gas and dust in coal mines and non-ferrous metal mines. It is widely applicable to various variable frequency hoists such as single-rope winding type and multi-rope friction type. It adopts multiple explosion-proof structural designs such as flameproof enclosures and increased-safety terminal blocks, which can strictly block ignition sources such as electric sparks and high-temperature surfaces. It can meet the operating requirements of hoists under high-power (hundreds to thousands of kilowatts) and high-voltage (such as 6KV, 10KV series) working conditions. Through the internally integrated frequency converter module, it realizes stepless speed regulation of the hoist, ensuring smooth start and stop and precise speed control.

This device not only integrates key components such as explosion-proof frequency conversion boxes and explosion-proof programming boxes, but also is equipped with complete sensors and data transmission modules. It can monitor parameters such as the operating speed, position, current and voltage of the hoist in real time, thus realizing dynamic control of the equipment status.

防爆变频箱

Explosion-proof inverter box

产品简介

Product Introduction

防爆变频箱是防爆型电控装置的核心执行单元，采用隔爆/增安型结构，集成IGBT模块与PWM调制电路，可在爆炸性环境中实现电机无级调速、软启动及能耗制动。具备IP54防护与多重电气保护，能承受内部爆炸压力并阻止火焰外传，确保恶劣工况下稳定运行。

The explosion-proof frequency conversion box is the core executive unit of the explosion-proof variable frequency electrical control device. Adopting an flameproof/increased-safety structure, it integrates IGBT modules and PWM modulation circuits, enabling stepless speed regulation, soft start and energy-consuming braking of the motor in explosive environments. With IP54 protection and multiple electrical protection functions, it can withstand internal explosion pressure, prevent flame transmission to the outside, and ensure stable operation under harsh working conditions.



防爆编程箱

Explosion-proof programming box



产品简介

Product Introduction

防爆编程箱是危险区域专用的控制系统配置终端，采用Exd II BT4防爆外壳与IP65防护设计，内置PLC编程模块与隔爆式触控屏。通过本质安全接口实现程序编写、参数配置及故障诊断，支持带电操作，满足矿井提升机智能化运维需求。

The explosion-proof programming box is a dedicated control system configuration terminal for hazardous areas. It adopts an Exd II BT4 explosion-proof enclosure and an IP65 protection design, with a built-in PLC programming module and an flameproof touch screen. It realizes program writing, parameter configuration and fault diagnosis through an intrinsically safe interface, supports live operation, and meets the intelligent operation and maintenance needs of mine hoists.

无人值守系统 Unattended system



矿井提升机无人值守系统

Unattended system for mine hoist

产品简介

Product Introduction

矿井提升机无人值守系统以机械化生产替换人工作业、以自动化控制减少人为操作，大力提高煤矿企业安全生产科技保障能力，大幅提高企业安全生产水平，同时达到减人提效，降低成本的目的，围绕自动化减人提效，运用智能集控系统，代替固定人员值守，实现主井提升机无人值守自动化开车方式的直流电控系统。

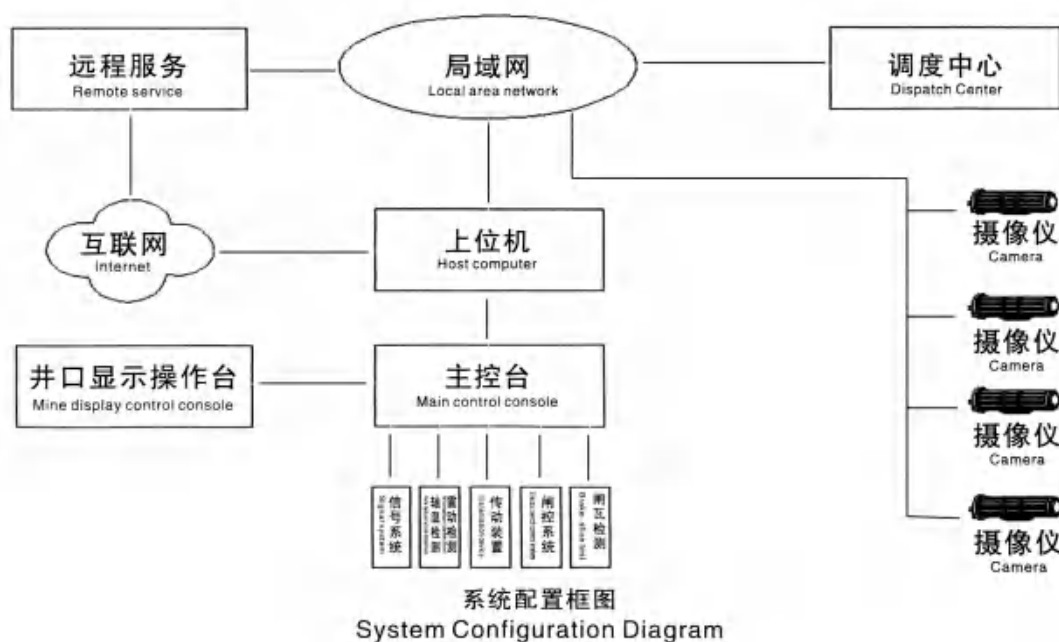
The unattended system for mine hoists replaces manual operations with mechanized production and reduces human operations through automatic control. It vigorously enhances the scientific and technological guarantee capability for safe production in coal mining enterprises, significantly improves the enterprise's safe production level, and at the same time achieves the goals of reducing the number of workers, improving efficiency and lowering costs. Centering on reducing the number of workers and improving efficiency through automation, it uses an intelligent centralized control system to replace fixed personnel on duty, thus realizing a DC electrical control system for the main shaft hoist with an unattended automatic operation mode.

在现有提升机电控的基础上，通过完善传统提升机电控的保护设施，增加上位机监控系统、视频监控系統、设备检测系统和井口显示操作台等设备，最终实现电控系统完全根据信号开车的自动运行无人值守方式。

On the basis of the existing hoist electrical control system, by improving the protection facilities of the traditional hoist electrical control system, adding equipment such as a host computer monitoring system, a video monitoring system, an equipment detection system and a wellhead display console, the electrical control system can finally realize an automatic operation and unattended mode where it operates completely according to signals.

主控台通过以太网通讯方式与井口显示操作台和上位机进行联接。井口显示操作箱是完成井口操作人员操作和监视提升机运行的设备。上位机可以监视提升机运行参数和故障记忆，通过它可以接入矿方的局域网系统，可以在矿调度中心进行远程监控，也可以通过权限设置在接入局域网的电脑上监控；还可以通过它接入互联网，完成远程服务功能。摄像机采用高清网络型，接入矿上的局域网，可以在矿上的调度中心和井口人员操作现场或需要视频监视的地方进行设备的运行情况监视。

The main console is connected to the wellhead display console and the upper computer via Ethernet communication. The parallel port display operation box is a device for wellhead operators to operate and monitor the operation of the hoist. The upper computer can monitor the operating parameters of the hoist and store fault records. Through it, it can be connected to the mine's local area network (LAN) system, enabling remote monitoring at the mine's dispatching center, and also allowing monitoring on computers connected to the LAN through permission settings. Additionally, it can be connected to the Internet to achieve remote service functions. The cameras are high-definition network - type, connected to the mine's LAN, and can be used to monitor the operation of equipment at the mine's dispatching center, the on - site operation area of wellhead personnel, or other places where video monitoring is required.



系统特点

System features

- 1、实现提升机的自动化运行，达到无人值守效果。
- 1.Realize the automatic operation of the hoist to achieve the unattended effect.
- 2、提高矿井提升机的自动化、信息化、智能化水平。
- 2.Improve the automation, informatization and intelligence level of mine hoists.
- 3、减少绞车操作人员，减少设备故障时间，提高生产效率，直接效益显著。
- 3.It reduces the number of winch operators, shortens equipment failure time, improves production efficiency, and brings significant direct benefits.
- 4、具有远程监控和远程服务功能。
- 4.It is equipped with remote monitoring and remote service functions.
- 5、最大限度减少设备运行过程中的故障，提高设备的使用寿命。
- 5.It minimizes failures during equipment operation and prolongs the service life of the equipment.
- 6、通过对制动闸盘的检测增强了提升机系统的安全性能。
- 6.The safety performance of the hoist system is enhanced through the detection of the brake disc.

矿井提升机无人值守系统的核心价值是以智能化技术替代人工操作，在保障极端环境下设备安全运行的同时，提升生产效率、降低成本，是矿井智能化升级中“关键设备自动化”的典型代表。

The core value of the mine hoist unattended system is to replace manual operation with intelligent technology, which can improve production efficiency and reduce costs while ensuring the safe operation of equipment in extreme environments, which is a typical representative of "key equipment automation" in mine intelligent upgrading.

无人值守系统 Unattended system

泵房无人值守控制系统

Unattended system for mine hoist

1. 概述

Overview

矿井就像工厂一样，在生产和开采的过程中，井下会产生大量的污水以及涌水。矿井排水系统承担着排出井下涌水和污水的重要任务，是矿井安全生产的关键环节，排水系统各种设备能否安全、可靠、有效的运行，关系到整个矿井的生产与安全。排水设备一般功率大，耗电量多，水泵启动前吸水管路的充水，通常采用抽真空吸水的方法来完成。当前，煤矿泵房内设备的运行与管理，以及水仓水位的观察，普遍采用人工操作方式，操作过程繁琐、劳动强度大、水泵启动时间长、自动化程度低。这种传统的人工手动排水方式，根本无法利用排水设备与仓容，科学合理地调度排水量与排水时间。因而传统的矿井排水方式普遍存在能耗大、效率低、生产成本高的缺点，不适应现代化矿井管理。

A mine, much like a factory, generates a large amount of sewage and gushing water underground during the production and mining processes. The mine drainage system undertakes the important task of draining underground gushing water and sewage, and it is a key link in ensuring the safe production of the mine. The safe, reliable, and effective operation of various equipment in the drainage system is crucial to the production and safety of the entire mine. Drainage equipment generally has high power and consumes a lot of electricity. Before starting the water pump, the water filling of the suction pipeline is usually completed by means of vacuum pumping. At present, the operation and management of equipment in coal mine pump rooms, as well as the observation of water sump levels, generally adopt manual operation methods, which are characterized by cumbersome procedures, high labor intensity, long pump start-up time, and low automation. This traditional manual drainage method is completely unable to scientifically and reasonably schedule the drainage volume and time by utilizing the drainage equipment and sump capacity. Therefore, the traditional mine drainage method generally has the disadvantages of high energy consumption, low efficiency, and high production cost, which is not suitable for modern mine management.

基于以上原因，井下泵房无人值守及远程监控系统可以有效地解决那些问题。此系统可通过现场的传感器，依据水仓水位自动确定起停水泵的数量和时间，提高水泵的利用率，大大降低生产成本；可减少看护人员，相应减少工资投入，并可充实设备的维护检修队伍，提高维护质量，减少事故发生，提高设备的使用率；可以保证安全生产，改善工作环境，提高劳动生产率；可有效的保护水泵电机等设备，延长使用寿命，减少事故停机时间，提高排水能力；通过调整开停时间避开电力负荷高峰期，有效地削峰填谷，节约电费开支。

For the above reasons, the underground pump room unattended and remote monitoring system can effectively solve those problems. This system can automatically determine the number and time of starting and stopping water pumps according to the water level of the sump through on-site sensors, which improves the utilization rate of water pumps and greatly reduces production costs. It can reduce the number of nursing staff, correspondingly reduce wage input, and can strengthen the equipment maintenance and repair team, improve maintenance quality, reduce the occurrence of accidents, and increase the utilization rate of equipment. In addition, it can ensure safe production, improve the working environment, and enhance labor productivity. What's more, it can effectively protect equipment such as water pump motors, extend their service life, reduce accident downtime, and improve drainage capacity. By adjusting the start and stop time to avoid the peak period of electric load, it can effectively cut peaks and fill valleys, thus saving electricity expenses.

随着计算机控制技术的迅速发展，以微处理器为核心的可编程序控制器(PLC)已逐步取代继电器控制，普遍应用千各行各业的自动化控制领域。矿井中央泵房无人值守及远程监控系统就是以PLC为控制核心，并且在过程现场配备各种先进的传感器，能够科学合理地自动控制水泵机组起停，实时采集和上传过程数据，按时统计各种报表信息，及时进行故障报警，并能通过远程操作完成故障诊断和软件编程，达到节约能源和人力资源的功能，并能长时间连续稳定地安全工作。

With the rapid development of computer control technology, programmable logic controllers (PLC) with microprocessors as the core have gradually replaced relay control and are widely applied in the field of automation control across various industries. The unattended and remote monitoring system for the mine central pump room takes PLC as the control core, and is equipped with various advanced sensors on the process site. It can scientifically and reasonably automatically control the start and stop of water pump units, collect and upload process data in real time, count various report information on time, issue fault alarms promptly, and complete fault diagnosis and software programming through remote operations. This system achieves the functions of saving energy and human resources, and can work safely, continuously and stably for a long time.

2.系统组成

System Composition

煤矿排水系统承担排出井下污水的重要任务，是保证矿井安全生产的关键环节，其各种设备的可靠运行，能否达到经济合理运行，关系到矿井的经济效益。因此应用现代自动化控制技术，实现煤矿排水系统的自动化控制，是保证煤矿生产安全可靠、经济合理的重要措施。整个系统由地面监控中心和井下泵房自动控制系统两部分组成，系统结构如下图所示：

The coal mine drainage system undertakes the important task of draining underground sewage and is a key link in ensuring the safe production of the mine. The reliable operation of its various equipment and whether it can achieve economical and reasonable operation are related to the economic benefits of the mine. Therefore, the application of modern automatic control technology to realize the automatic control of the coal mine drainage system is an important measure to ensure the safe, reliable, economical and reasonable production of the coal mine. The entire system consists of two parts: the ground monitoring center and the underground pump room automatic control system. The system structure is shown in the following figure:



本控制系统以PLC作为控制核心，触摸屏为显示和主要操作设备，通过PLC检测水泵设备和传感器等信号，控制水泵、真空泵和电动阀门等执行器的开启与关闭。PLC的模拟量模块通过传感器实时采集现场的压力、流量、液位、真空度、电压、电流等信号，再通过光纤通信，将信息显示在地面监控中心的上位机。井下自动控制系统主要包括可编程的集中控制柜、就地控制柜(高压真空电磁启动器)、传感器，执行器和视频监控等五部分。

This control system uses a PLC as the control core and a touch screen as the display and main operating device. The PLC detects signals from water pump equipment and sensors, and controls the opening and closing of actuators such as water pumps, vacuum pumps, and electric valves. The analog module of the PLC collects on-site signals such as pressure, flow, liquid level, vacuum degree, voltage, and current in real time through sensors, and then transmits the information to the upper computer of the ground monitoring center via optical fiber communication. The underground automatic control system mainly consists of five parts: a programmable

centralized control cabinet, a local control cabinet (high-voltage vacuum electromagnetic starter), sensors, actuators, and video surveillance.

1. 集中控制柜: 为矿用隔爆兼本质安全型可编程控制箱, 主要由PLC、数字量和模拟量扩展模块、通信模块、触摸屏、中间继电器、信号变送器、防爆隔离板, 开关电源和按钮等元器件组成, 具备信号采集、变换、处理、输出、显示、保护、故障报警和通讯等多种功能。触摸屏的作用是就地实时以图形、图像、数据、文字等方式, 直观、形象、实时地反映系统工作状态以及水仓水位、电机工作电流、电机温度、工作压力、排水管流量、水泵真空度等参数。

1. Centralized control cabinet: It is a flameproof and intrinsically safe programmable control box for mines, mainly composed of PLC, digital and analog expansion modules, communication modules, touch screens, intermediate relays, signal transmitters, explosion-proof isolation boards, switching power supplies and buttons and other components, with signal acquisition, conversion, processing, output, display, protection, fault alarm and communication and other functions. The function of the touch screen is to intuitively, vividly and real-time reflect the working status of the system and the water level of the water tank, the working current of the motor, the motor temperature, the working pressure, the flow rate of the drain pipe, the vacuum degree of the pump and other parameters in real time in real time.

2. 就地控制柜: 为矿用隔爆兼本质安全型高压真空电磁启动器, 主要由高压真空接触器、综合保护装置等元器件组成, 给水泵电机提供高压电源。

2. In-situ control cabinet: It is a high-voltage vacuum electromagnetic starter for mining explosion-proof and intrinsically safe, mainly composed of high-voltage vacuum contactor, comprehensive protection device and other components, to provide high-voltage power supply for the pump motor.

3. 传感器: 主要包括超声波液位计、超声波流量计、负压变送器、压力变送器、电机绕组及轴承温度传感器、电机电压及电流互感器、阀门位置行程开关和过转矩行程开关等。

3. Sensors: mainly including ultrasonic level gauges, ultrasonic flowmeters, negative pressure transmitters, pressure transmitters, motor windings and bearing temperature sensors, motor voltage and current transformers, valve position travel switches and over-torque travel switches, etc.

4. 执行器: 包括多功能控制阀、电动球阀等。

4. Actuator: including multi-function control valve, electric ball valve, etc.

另外, 在井下水泵房和吸水井液位位置装有摄像头, 实时拍摄现场水泵运行状况及吸水井液位变化, 通过光纤点对点形式以图像的形式显示在上位机界面上, 系统配置数字硬盘录像机, 能够将各时段的运行录像保存在硬盘里, 监控系统图如下:

In addition, there are cameras installed in the underground pump room and the water level position of the water suction well, which shoots the operation status of the water pump and the liquid level change of the water suction well in real time, and is displayed on the interface of the host computer in the form of an image in the form of optical fiber point-to-point.



3.系统特点

System characteristics

3.1 安全可靠

Safety and reliability

拥有多种操作模式: 本系统拥有远端控制、就地自动控制及手动控制三种控制方式, 三种控制模式以“井下优先”的原则可以进行手动切换。在特殊条件下时也可以进行自动切换, 例如: 当井上与井下通讯光缆中断的情况下, 系统将控制权自动交给井下PLC进行控制。再例如: 如果设备运行在远端手动模式或井下PLC自动控制模式的情况下, PLC发生故障, 则系统自动转换为现场手动运行模式。

It has a variety of operation modes: the system has three control modes: remote control, on-site automatic control and manual control, and the three control modes can be manually switched according to the principle of "downhole priority". Under special conditions, automatic switching can also be carried out, for example, when the communication cable between the well and the underground is interrupted, the system automatically hands over the control to the downhole PLC for control. Another example: if the equipment is running in remote manual mode or downhole PLC automatic control mode, the PLC fails, the system will automatically convert to on-site manual operation mode.

对透水事故进行早期预警: 引入水仓水位变化率的概念, 使用液位传感器对水仓水位进行实时监控, 并且通过PLC程序对水位的变化率进行计算。当系统检测到水位上升很快时, 可以判断为即将发生透水事故, 这样可以早起预警。

Early warning of water seepage accidents: The concept of water level change rate in the water silo is introduced, and the water level of the water tank is monitored in real time using liquid level sensors, and the change rate of water level is calculated through PLC program. When the system detects that the water level rises quickly, it can be judged that a water penetration accident is about to occur, so that early warning can be observed.

可靠的信号隔离: 所有现场本质安全型传感器都经过变压器隔离型安全栅接入 PLC模拟量输入模块, 真正实现了本质安全型电路与非本质安全型电路之间的隔离。隔离耐压为AC2000V, 高于国家标准规定的AC1500V的要求。对所有PLC开关量输出的信号均采用继电器进行隔离输出, 一方面实现了本质安全型的电路与非本质安全型的电路的隔离, 同时也保证了输出的负载能力及可靠性。

Reliable signal isolation: All field intrinsically safe sensors are connected to the PLC analog input module via a transformer isolated safety barrier, which truly isolates intrinsically safe and non-intrinsically safe circuits. The isolation withstand voltage is AC2000V, which is higher than the AC1500V requirements stipulated by national standards. The signals output by all PLC switching quantities are isolated by relays, which on the one hand realizes the isolation of intrinsically safe circuits and non-intrinsically safe circuits, and also ensures the load capacity and reliability of the output.

按照累计运行时间循环启动: 对水泵的运行时间进行累计, 每次启动累计运行时间最小的水泵。这样实现了水泵的均匀磨损, 避免了某台水泵经常使用造成设备疲劳, 同时某台水泵长期不使用造成锈蚀。

Start the cycle according to the cumulative running time: accumulate the running time of the pump, and start the pump with the smallest cumulative running time each time. This realizes the uniform wear of the pump, avoids equipment fatigue caused by frequent use of a pump, and rust caused by long-term non-use of a pump.

3.2 先进性 Advancement

(1) 由于采用了光纤环网通讯传输技术使得数据传输更加快捷、可靠。

(1) Due to the use of optical fiber ring network communication and transmission technology, data transmission is faster and more reliable.

(2) 采用了组态软件控制编程技术，不仅使可靠性大为提高而且使程序更加具有通用性，也使系统的二次开发及扩容变得更加规范和容易。

(2) The configuration software control programming technology is adopted, which not only greatly improves the reliability and makes the program more versatile, but also makes the secondary development and expansion of the system more standardized and easy.

(3) 本系统遵循矿井综合监控系统标准子系统接口规范使得该系统可以非常容易地并入矿井综合监控系统中，与其它子系统实现数据的共享。

(3) The system follows the standard subsystem interface specification of the mine integrated monitoring system, so that the system can be easily integrated into the mine comprehensive monitoring system and share data with other subsystems.

(4) 控制系统对泵房内排水泵、射流系统、抽真空系统、管道电动阀门等装置实施了自动控制及运行参数自动检测，通过检测水仓水位、电机电流、电机电压、闸阀开启度、流量、真空度等参数，控制水泵工作。

(4) The control system implements automatic control and automatic detection of operating parameters for the drainage pump, jet system, vacuum extraction system, pipeline electric valve and other devices in the pumping room, and controls the pump work by detecting the water level of the water tank, motor current, motor voltage, gate valve opening, flow, vacuum and other parameters.

(5) 控制系统面板上设有液晶触摸屏，就地实时以图形、图像、数据、文字等方式，直观、形象、实时地反映系统工作状态以及水仓水位、电机工作电流、电机温度、水泵温度、排水管流量、水泵真空度等参数。

(5) The control system panel is equipped with an LCD touch screen, which intuitively, vividly and real-time reflects the working status of the system and the water level of the water tank, the working current of the motor, the temperature of the motor, the temperature of the water pump, the flow rate of the drainage pipe, the vacuum degree of the pump and other parameters in real time in real time.

(6) 交换机将各种数据信息传送到地面生产调度中心和生产设备控制中心地面操作员站进行实时监测监控及报警显示、故障历史查询、模拟量曲线显示和报表打印。该系统具有运行可靠、操作方便、自动化程度高等特点。

(6) The switch transmits various data information to the ground production dispatch center and the ground operator station of the production equipment control center for real-time monitoring and alarm display, fault history query, analog curve display and report printing. The system has the characteristics of reliable operation, easy operation and high degree of automation.

(7) 视频监控系统将现场运行工况以录像的形式发送并保存到上位机，在上位机上以四画面的形式显示各设备的运行状况及吸水井液位变化。

(7) The video surveillance system sends and saves the on-site operating conditions in the form of video to the upper computer, and displays the operating status of each equipment and the change of the liquid level of the suction well in the form of four screens on the upper computer.

3.3 可扩展性 Scalability

系统具有良好的开放性和可扩展性，能够满足集控组网要求。系统的软、硬件留有充足的扩展余量，以保证将来的技术和产品升级。硬件留有备用容量和网络接口，可以方便地实现系统扩展和接入全矿井综合自动化平台。

The system has good openness and scalability, and can meet the requirements of centralized networking. The software and hardware of the system have sufficient expansion margin to ensure future technology and product upgrades. The hardware has spare capacity and network interface, which can easily realize system expansion and access to the integrated automation platform of the whole mine.

4.经济效益分析 Economic benefit analysis

根据水位控制原则，自动实现水泵的轮换启停工作，大大延长了水泵的使用寿命。通过实施水泵自动化监控系统，实现水泵的无人值守，每年不仅可以节省大量的人工工资，还能够降低设备的维护成本。

According to the principle of water level control, the rotation of the pump is automatically realized, which greatly extends the service life of the pump. By implementing the automatic monitoring system of the pump, the unattended pump can not only save a lot of labor wages every year, but also reduce the maintenance cost of the equipment.

人力资源节约:由本系统是按照无人值守的原则进行设计，通过上位机进行参数设置，就能够根据水位原则自动控制水泵的启停，所以现场无需人员进行值守，这样就节省了大量的人力工资成本。

Human resource saving: The system is designed according to the principle of unattended, and the parameters are set by the upper machine, which can automatically control the start and stop of the pump according to the principle of water level, so there is no need for personnel to be on duty on site, which saves a lot of labor and wage costs.

避峰填谷:将电价的避峰填谷原则引入水泵启动算法中，使得水泵能耗处于最佳的经济状态。该无人值守系统以水仓水位作为水泵启停的基本条件，在此条件满足的前提下，然后再根据电价避峰填谷的原则实现水泵的自动起停。通过这种设计思路，水泵系统每年可以节省大量的电费。

Peak avoidance and valley filling: The principle of peak avoidance and valley filling of electricity prices is introduced into the pump starting algorithm to make the energy consumption of the pump in the best economic state. The unattended system takes the water level of the water warehouse as the basic condition for the start and stop of the pump, and then realizes the automatic start and stop of the pump according to the principle of avoiding peak prices and filling valleys under the premise that this condition is met. With this design idea, the pump system can save a lot of electricity bills every year.

维护成本降低:对水泵的运行时间进行累计，每次启动累计运行时间最小的水泵。这样就实现了水泵的均匀磨损，避免了某台水泵经常使用造成设备疲劳，同时某台水泵长期不使用造成锈蚀。通过设备轮值运行，实现无人值守和定期巡检，可以在很大程度上降低设备的维护成本。

Reduced maintenance costs: accumulate pump running time and minimize cumulative operating time per start. In this way, the uniform wear of the pump is realized, avoiding equipment fatigue caused by frequent use of a pump, and rust caused by a pump not used for a long time. Through the rotating operation of equipment, unattended and regular inspections can greatly reduce the maintenance cost of equipment.

无人值守系统 Unattended system

压风机房无人值守控制系统

Unattended control system of the compressor room

1.概述

Overview

煤矿企业的井下安全生产要求有良好的通风，而良好的通风完全依靠地面的压风机进行送风，因此压风机本身的运行安全问题就十分重要。传统的压风机安全运行监测手段采用人员的定时观测，存在着较大的弊端和事故隐患，一是责任心不强导致问题时有发生，二是两次监测时间间隔内发生的事故不能被及时发现。采用现代技术手段改进设备安全运行的管理方法，能无间隔的进行设备运行状况监测，且精度高、速度快。利用工业控制计算机研制的煤矿压风机变频控制系统可以对煤矿压风机进行实时监控，具有检测、超限控制、报警打印等功能，保证压风机正常运行，且系统本身可以在恶劣环境下无故障的连续运行。

The underground safety production of coal mining enterprises requires good ventilation, and good ventilation completely relies on the ground compressor for air supply, so the operation safety of the compressor itself is very important. The traditional compressor safety operation monitoring method adopts regular observation of personnel, which has great disadvantages and hidden dangers of accidents, one is that the lack of responsibility leads to problems from time to time, and the other is that the accidents that occur within the two monitoring intervals cannot be discovered in time. The management method of improving the safe operation of equipment by modern technical means can be monitored without interval, and the accuracy and speed are high. The frequency conversion control system of the coal mine compressor developed by the industrial control computer can monitor the coal mine compressor in real time, with functions such as detection, overrun control, alarm printing, etc., to ensure the normal operation of the compressor, and the system itself can operate continuously without failure in a harsh environment.

目前，企业生产的和市场销售的空压机，绝大部分均为智能型空压机，智能型空压机本身具有参数监测、自动控制及保护等功能。在厂矿企业生产现场需要与冷却水泵、风包及电控设备等形成一个系统运行。多台空压机时，设计一套自动监控系统来监控空压机的运行就显得更加必要。

At present, most of the air compressors produced and sold by enterprises are intelligent air compressors, and the intelligent air compressors themselves have functions such as parameter monitoring, automatic control and protection. In the production site of factories and mining enterprises, it is necessary to form a system operation with cooling water pumps, air bags and electronic control equipment. When there are multiple air compressors, it is even more necessary to design an automatic monitoring system to monitor the operation of the air compressor.

星光矿山机械制造有限公司研制了自动化控制系统来控制 and 监视空压机的运行。把所有空压机组成网络，实现整个压风机房的在线实时监测和智能控制，从而达到无人值守的目的。

Starlight Mining Machinery Manufacturing Co., Ltd. has developed an automated control system to control and monitor the operation of air compressors. All air compressors are formed into a network to realize online real-time monitoring and intelligent control of the entire compressor room, so as to achieve the purpose of unattended.

2.系统结构

System structure

系统主要由各类传感器、电动阀、PLC控制柜、触摸屏、进口PLC及模拟量输入模块、数字量输入模块、数字量输出模块、串行通信模块及以太网通信模块等组成。采用集中管理、分散控制系统结构。

The system is mainly composed of various sensors, electric valves, PLC control cabinets, touch screens, imported PLC and analog input modules, digital input modules, digital output modules, serial communication modules and Ethernet communication modules. Adopt centralized management and decentralized control system structure.

系统的现场测量控制主要由各类传感器、变送器及执行机构完成。对于空压机本体，由于选用的是智能型的设备，所需传感器及执行机构本身已有，无需再添加。智能空压机都提供有通信接口，所以只需通过通信电缆连接到PLC系统中，通过在PLC中编程即可实现对空压机的自动监控。

The on-site measurement and control of the system is mainly completed by various sensors, transmitters and actuators. For the air compressor body, because it is an intelligent equipment, the required sensors and actuators are already there, and there is no need to add them. Smart air compressors are provided with communication interfaces, so they only need to be connected to the PLC system via communication cables, and the air compressors can be automatically monitored by programming in the PLC.

压风机房冷却水水泵的出水口阀门也应选用电动阀。电动阀及水泵的控制通过数字量输入输出模块实现。压风机供电系统的监控通过高压柜内装设的微机综合保护装置实现，综保都具有通信功能，通过其通信接口可以与PLC连接，通过在PLC内编程即可实现压风机供电参数的采集、开关的遥控分合闸等功能。

The outlet valve of the cooling water pump in the compressor room should also use an electric valve. The control of the electric valve and pump is realized by a digital input and output module. The monitoring of the compressor power supply system is realized through the microcomputer comprehensive protection device installed in the high-voltage cabinet, and the comprehensive protection has a communication function, through its communication interface can be connected with PLC, and the collection of compressor power supply parameters, remote control opening and closing of the switch can be realized through programming in the PLC.

控制柜设于压风机房内，进口PLC性能稳定而可靠。控制柜装设有触摸屏，操作人员可通过该触摸屏查看各台空压机的实时运行情况，如操作员权限符合要求，还可向空压机发出命令，进行各种控制操作。

The control cabinet is located in the compressor room, and the imported PLC has stable and reliable performance. The control cabinet is equipped with a touch screen, through which the operator can view the real-time operation of each air compressor, and if the operator's authority meets the requirements, he can also issue commands to the air compressor to perform various control operations.

另外，控制柜内装设有以太网通信模块及光端机等设备，可方便地与调度中心通信。在调度中心设有高性能工业控制计算机、打印机等设备，并装有后台监控软件，可实现对压风机房的远程集中控制，最终实现无人值守。

In addition, the control cabinet is equipped with Ethernet communication modules and optical transceivers, which can easily communicate with the dispatch center. The dispatch center is equipped with high-performance industrial control computers, printers and other equipment, and is equipped with background monitoring software, which can realize remote and centralized control of the compressor room and finally realize unattended.

3.系统功能

System functions

控制系统具备就地手动/远方控制两种控制方式。压风机房集中控制柜内提供有触摸屏操作界面，能对压风机系统所有运转状态、运行参数及故跨信号进行动态显示。操作人员可以对压风机发出命令，控制压风机的启停、冷却水泵的启停、风包的定期排污等等。

The control system has two control modes: local manual and remote control. The centralized control cabinet of the compressor room provides a touch screen operation interface, which can dynamically display all the operating status, operating parameters and cross-signals of the compressor system. The operator can issue commands to the compressor to control the start and stop of the compressor, the start and stop of the cooling water pump, the regular discharge of the air bag, etc.

可以在调度室内设高性能工控机，配后台监控软件，软件基于高性能的工控组态软件编制，可实现对压风机房的远程集中监控。

A high-performance industrial computer can be set up in the dispatch room, equipped with background monitoring software, and the software is compiled based on high-performance industrial control configuration software, which can realize remote centralized monitoring of the compressor room.

压风机集中控制系统可以完成对压力(包括压风机排气压力、风包压力、冷却水压力)、温度(包括压风机排气温、风包温度)、空压机总运转时间以及电气参数(包括电机温度、电流、电压、电机功率、日耗电量等)的连续在线检测功能。

The centralized control system of the compressor can complete the continuous online detection function of pressure (including compressor exhaust pressure, air bag pressure, cooling water pressure), temperature (including compressor exhaust temperature, air bag temperature), total operating time of air compressor and electrical parameters (including motor temperature, current, voltage, motor power, daily power consumption, etc.).

具有保护及报警显示功能，包括：风机超温保护、风机超风压保护、电机过压保护、电机欠压保护、变频器过流过压保护、电机过载超温保护、故障排除后，可实现安全复位功能。

It has protection and alarm display functions, including: fan over-temperature protection, fan over-pressure protection, motor over-voltage protection, motor under-voltage protection, frequency converter over-current and over-voltage protection, motor overload and over-temperature protection, and after troubleshooting, the safe reset function can be realized.

实现空压机供气网络的自动联动控制，按程序执行启动/停止压风机操作。可通过比较供气压力与设定联机控制压力，选取空压机发送控制命令，控制网络中空压机的启动停机、自动稳定供气压力、平衡网络中各空压机的运行时间。

Realize the automatic linkage control of the air supply network of the air compressor, and perform the start/stop operation of the compressor according to the program. By comparing the air supply pressure and setting the online control pressure, the air compressor can be selected to send control commands to control the start and stop of the air compressor in the network, automatically stabilize the air supply pressure, and balance the running time of each air compressor in the network.

后台监控软件可提供设备管理及人员管理功能。设备管理功能包括设备参数一览表、设备投入运行时间显示、设备当次工作时间、设备工作总时间等。人员管理功能包括工作人员一览表、值班人员安排、管理员及操作员权限密码设置等。

Background monitoring software can provide equipment management and personnel management functions. The equipment management function includes a list of equipment parameters, display of equipment operating time, current working time of equipment, total working time of equipment, etc. Personnel management functions include staff list, duty personnel arrangement, administrator and operator permission password settings, etc.

4.系统特点

System features

本系统以工业控制 PLC为核心，主要由各类传感(变送)器、执行器、PLC、触摸屏及通讯装置等设备组成，主要特点如下：

The system is based on industrial control PLC, mainly composed of various sensors (transmitters), actuators, PLCs, touch screens and communication devices and other equipment, the main features are as follows:

1. 采用了先进的计算机技术，功能强大，智能化程度高。
2. PLC选用国际著名品牌，可靠性高、抗干扰能力强，与普通PLC相比平均硬故障/软故障间隔时间更长，功能、通用性更强、速度更快、扩展更灵活。
3. 监控软件采用国外著名的组态软件WINCC进行二次开发，稳定可靠。以图形界面显示工作状态，画面丰富，直观生动。
4. 监控软件还可提供设备管理及人员管理功能。
5. 选用了国外进口传感(变送)器，具有原理先进，质量可靠，寿命长，精度高等特点。
6. 采用了多种抗干扰措施，因此系统的抗干扰能力强，可靠性高，监测准确。
7. 留有备用通道，便于扩展。
8. 采用先进的计算机网络技术，实现了全矿数据共享。
9. 软件平台设计起点高，能方便地与其它自动化系统互联，为以后搭建全矿自动化平台提供最好的便利。

1. It adopts advanced computer technology, which is powerful and intelligent.
2. PLC is selected from international famous brands, with high reliability and strong anti-interference ability, longer average hard failure/soft fault interval than ordinary PLC, stronger function, versatility, faster speed, and more flexible expansion.
3. The monitoring software adopts the famous foreign configuration software WINCC for secondary development, which is stable and reliable. The working status is displayed in a graphical interface, and the picture is rich, intuitive and vivid.
4. The monitoring software can also provide equipment management and personnel management functions.
5. The imported sensor (transmitter) is selected, which has the characteristics of advanced principle, reliable quality, long life and high accuracy.
6. A variety of anti-interference measures are adopted, so the system has strong anti-interference ability, high reliability and accurate monitoring.
7. Leave a spare channel for easy expansion.
8. The use of advanced computer network technology realizes the sharing of data of the whole mine.
9. The software platform has a high starting point and can be easily interconnected with other automation systems, providing the best convenience for building a whole mine automation platform in the future.

系统结构图如下：

The system structure diagram is as follows:



无人值守系统 Unattended system

通风机房无人值守控制系统

Unattended control system for ventilation machine room

1. 概述

Overview

煤矿企业的井下安全生产要求有良好的通风，而良好的通风完全依靠地面的通风设备进行送风，因此通风设备本身的运行安全问题就十分重要。传统的通风设备安全运行监测手段采用人员的定时观测，存在遗校大的弊端和事故隐患，一是责任心不强导致问题时有发生，二是两次监测时间间隔内发生的事故不能有及时发现。采用现代技术手段改进设备安全运行的管理方法，能无间隔的进行设备运行状况监测，且精度高、速度快。利用工业控制计算机研制的煤矿通风机变频控制系统可以对煤矿通风机进行实时监控，具有检测、超限控制、报警打印等功能，保证通风机正常运行，且系统本身可以在恶劣环境下无故障的连续运行。

The underground safety production of coal mining enterprises requires good ventilation, and good ventilation completely relies on the ventilation equipment on the ground for air supply, so the operation safety of the ventilation equipment itself is very important. The traditional method of monitoring the safety operation of ventilation equipment adopts regular observation of personnel, which has the disadvantages and hidden dangers of accidents, one is that the sense of responsibility leads to problems from time to time, and the other is that the accidents that occur within the interval between the two monitoring cannot be discovered in time. The management method of improving the safe operation of equipment by modern technical means can be monitored without interval, and the accuracy and speed are high. The frequency conversion control system of coal mine ventilator developed by industrial control computer can monitor the coal mine fan in real time, with functions such as detection, overrun control, alarm printing, etc., to ensure the normal operation of the ventilator, and the system itself can operate continuously without failure in a harsh environment.

目前，企业生产的和市场销售的通风机，绝大部分均为智能型通风机，智能型通风机本身具有参数监测、自动控制及保护等功能。在厂矿企业生产现场需要与冷却水泵、风包及电控设备等形成一个系统运行。多台通风机时，设计一套自动监控系统来监控通风机的运行就显得更加必要。

At present, most of the ventilators produced and sold by enterprises are intelligent ventilators, and the intelligent fans themselves have functions such as parameter monitoring, automatic control and protection. In the production site of factories and mining enterprises, it is necessary to form a system operation with cooling water pumps, air bags and electronic control equipment. When there are multiple ventilators, it is more necessary to design an automatic monitoring system to monitor the operation of the ventilator.

星光矿山机械有限公司研制了变频自动系统来控制 and 上位机监视通风机的运行，把多台通风机组成网络，实现整个通风机房的在线实时监测和智能控制，从而达到无人值守的目的。

Starlight Mining Machinery Co., Ltd. has developed a frequency conversion automatic system to control and monitor the operation of the ventilator, and form a network of multiple ventilators to realize online real-time monitoring and intelligent control of the entire ventilation room, so as to achieve the purpose of unattended.

2.系统功能 System functions

根据通风机性能煤矿的实际情况，矿井主通风机在线监测与无线通讯集成系统用于矿井主参数的采集和结果处理。系统可分为参数监测、数据通信与计算机数据处理与管理等部分组成。

According to the actual situation of the coal mine with the performance of the ventilator, the online monitoring and wireless communication integration system of the main fan of the mine is used for the collection of the main parameters of the mine and the processing of results. The system can be divided into parameter monitoring, data communication and computer data processing and management.

1. 实时监测风机风压（静压、全压）、风速风量、轴承温度、定子温度、电网电流、电压、功率、电机与风机效率等风机运行各种参数；
2. 监测风门位置、风机开停状态、反风信号和电机编号等风机运行多种状态信息；
3. 控制风门开/关、风机启/停；
4. 自动闭锁控制，保证系统安全；
5. 具有现场控制、远程控制、手动控制等多种控制方式；
6. 在控制中心，通过32'液晶电视对风机机房进行24小时监视，通过网络视频服务器实现24小时远程监视；
7. 接收、处理、存储、显示PLC系统上传的现场数据，显示方式多样，生动直观；
8. 自动生成各类报表，内容丰富详实；
9. 实时曲线、历史曲线绘制；
10. 实时监测各类参数，具有超限报警并记录报警信息的功能；
11. 系统设置了操作权限，只有获得权限的人员才可以操作系统；
12. 支持远程网络浏览和控制。

1. Real-time monitoring of fan wind pressure (static pressure, full pressure), wind speed and volume, bearing temperature, stator temperature, grid current, voltage, power, motor and fan efficiency and other fan operation parameters;

2. Monitor the position of the damper, the start and stop status of the fan, the anti-wind signal and the motor number, and other status information of the fan.

3. Control the opening/closing of the damper and the start/stop of the fan;

4. Automatic locking control to ensure system safety;

5. It has a variety of control modes such as on-site control, remote control, and manual control;

6. In the control center, the fan room is monitored 24 hours a day through a 32' LCD TV, and 24 hours of remote monitoring is achieved through a network video server.

7. Receive, process, store and display the on-site data uploaded by the PLC system, with various display methods, vivid and intuitive;

8. Automatically generate various reports with rich and detailed content;

9. Real-time curve and historical curve drawing;

10. Real-time monitoring of various parameters, with the function of over-limit alarm and recording alarm information;

11. The system has set up operation permissions, and only those who have obtained permissions can operate the system.

12. Support remote network browsing and control.

3.系统结构

System structure

系统主要由各类传感器、电动阀、PLC控制柜、变频器、带触摸屏的PLC及模拟量输入模块、数字量输入模块、数字量输出模块、串行通信模块及以太网通信模块等组成。采用集中管理、分散控制系统结构。

The system is mainly composed of various sensors, electric valves, PLC control cabinets, frequency converters, PLC and analog input modules with touch screens, digital input modules, digital output modules, serial communication modules and Ethernet communication modules. Adopt centralized management and decentralized control system structure.

系统的现场测量控制主要由各类传感器、变送器及执行机构完成。对于通风机本体，由于选用的是智能型的设备，所需传感器及执行机构本身已有，无需再添加。智能通风机都提供有通信接口，所以只需通过通信电缆连接到PLC系统中，通过在PLC中编程即可实现对通风机的自动监控。

The on-site measurement and control of the system is mainly completed by various sensors, transmitters and actuators. For the ventilator itself, since the intelligent equipment is selected, the required sensors and actuators are already there, and there is no need to add them. Smart fans are provided with communication interfaces, so they only need to be connected to the PLC system through communication cables, and the automatic monitoring of the fans can be realized by programming in the PLC.

通风机供电系统的监控通过高压柜内装设的微机综合保护装置实现，综保都具有通信功能，通过其通信接口可以与PLC连接，通过在PLC内编程即可实现通风机供电参数的采集、开关的遥控分合闸等功能。

The monitoring of the fan power supply system is realized through the microcomputer comprehensive protection device installed in the high-voltage cabinet, and the comprehensive protection has a communication function, through its communication interface can be connected with the PLC, and the collection of fan power supply parameters, remote control of the switch and other functions can be realized by programming in the PLC.

PLC本质安全型操作台设千通风机房内，PLC性能稳定而可靠。操作台装设有触摸屏，操作人员可通过该触摸屏查看各台通风机的实时运行情况，如操作员权限符合要求，还可向通风机发出命令，进行各种控制操作。

PLC intrinsically safe operation table is set in the 1,000 ventilation machine room, and the PLC performance is stable and reliable. The operation table is equipped with a touch screen, through which the operator can view the real-time operation of each fan, and if the operator's authority meets the requirements, he can also issue commands to the fan to perform various control operations.

PLC集中控制柜内装设有以太网通信模块及光端机等设备，可方便地与调度中心通信。在调度中心设有高性能工业控制计算机、打印机等设备，并装有后台监控软件，可实现对通风机房的远程集中控制，最终实现无人值守。

The PLC centralized control cabinet is equipped with Ethernet communication modules and optical transceivers, which can easily communicate with the dispatch center. The dispatch center is equipped with high-performance industrial control computers, printers and other equipment, and is equipped with background monitoring software, which can realize remote centralized control of the ventilation room and finally realize unattended.

3.系统特点

System features

本系统以工业控制PLC为核心，主要由各类传感(变送)器、执行器、PLC、触摸屏及通讯装置等设备组成，主要特点如下：

The system is based on industrial control PLC, mainly composed of various sensors (transmitters), actuators, PLCs, touch screens and communication devices and other equipment, the main features are as follows:

采用了先进的计算机技术，功能强大，智能化程度高。

It adopts advanced computer technology, which is powerful and intelligent.

PLC选用国际著名品牌，可靠性高、抗干扰能力强，与普通PLC相比平均硬故障/软故障间隔时间长、功能，通用性更强、速度更快、扩展更灵活。

PLC is selected from international famous brands, with high reliability and strong anti-interference ability, and the average time between hard failures/soft failures compared with ordinary PLCs Long, functional, versatile, faster, and more flexible in expansion.

监控软件采用国外著名的组态软件WINCC进行二次开发，稳定可靠。以图形界面显示工作状态，画面丰富，直观生动。

The monitoring software is developed by WINCC, a well-known foreign configuration software, which is stable and reliable. The working status is displayed in a graphical interface, and the picture is rich, intuitive and vivid.

监控软件还可提供设备管理及人员管理功能。

Monitoring software can also provide equipment management and personnel management functions.

选用了国外进口传感(变送)器，具有原理先进，质量可靠，寿命长，精度高等特点。

The sensor (transmitter) imported from abroad is selected, which has the characteristics of advanced principle, reliable quality, long life and high precision.

采用了多种抗干扰措施，因此系统的抗干扰能力强，可靠性高，监测准确。

A variety of anti-interference measures are adopted, so the system has strong anti-interference ability, high reliability and accurate monitoring.

留有备用通道，便于扩展。

Leave a backup channel for easy expansion.

采用先进的计算机网络技术，实现了全矿数据共享。

Advanced computer network technology is used to realize the data sharing of the whole mine.

软件平台设计起点高，能方便地与其它自动化系统互联，为以后搭建全矿自动化平台提供最好的便利。

The software platform has a high starting point and can be easily interconnected with other automation systems, providing the best convenience for building a whole mine automation platform in the future.



其他产品 Other products

天轮

Skywheel

产品简介

Product Introduction

天轮是安装在矿井立井井架最上方，用于调节钢丝绳运动方向的定滑轮，主要作用是撑起连接提升机卷筒和提升容器的钢丝绳，并引导钢丝绳转向。

The head sheave is a fixed pulley installed at the top of the shaft tower of a mine vertical shaft. It is used to adjust the movement direction of the steel wire rope. Its main function is to support the steel wire rope connecting the hoist drum and the hoisting container and guide the steel wire rope to change direction.

单绳天轮

single-rope head sheave

单绳天轮适配单绳缠绕式提升机，单轮单槽，直径较大，适用于中小型矿井，结构简单但提升能力有限、绳损较快。

The single-rope head sheave is adapted to single-rope winding hoists, with a single wheel and a single groove, and a relatively large diameter. It is suitable for small and medium-sized mines, featuring a simple structure but limited lifting capacity and relatively fast rope wear.



多绳天轮

multi-rope head sheave



多绳天轮配多绳摩擦式提升机，多槽（4-6个），适用于大型/深井重载场景，提升力强、安全性高，但结构复杂、对安装维护要求高。

The multi-rope head sheave is matched with multi-rope friction hoists, with multiple grooves (4-6). It is applicable to large-scale/deep well heavy-load scenarios, having strong lifting capacity and high safety, but with a complex structure and high requirements for installation and maintenance.

游动天轮

travelling head sheave

产品简介

Product Introduction

游动天轮是矿井提升系统中一种特殊类型的定滑轮，主要由轮毂、轮辐、轮缘、轴承及轴向移动机构组成，其核心特点是轮体除能绕轴旋转外，还可沿轴向灵活移动。

The traveling head sheave is a special type of fixed pulley in the mine hoisting system, mainly composed of a hub, spokes, a rim, bearings and an axial movement mechanism. Its core feature is that the wheel body can not only rotate around the axis, but also move flexibly along the axial direction.



罐笼

Cage



产品简介

Product Introduction

罐笼是矿井竖井提升系统中的重要运输容器，通常悬挂在钢丝绳上，并通过井架天轮与提升机相连。它用于在井筒内垂直提升人员、矿石、设备和物料，是保障矿山生产和人员安全的关键设备。

The cage is an important transportation container in the mining shaft lifting system, usually suspended on steel wire ropes and connected to the hoist through the derrick pulley. It is used to vertically lift personnel, ore, equipment, and materials inside the wellbore, and is a key equipment to ensure the safety of mining production and personnel.

矿车

Mine car

产品简介

Product Introduction

矿车是采矿作业中用于运输矿石、废石、煤炭、设备和人员的专用车辆，是地下和露天采矿运输系统的基本设备。

Mine cars are specialized vehicles used in mining operations to transport ore, waste rock, coal, equipment, and personnel. They are the basic equipment of underground and open-pit mining transportation systems.



矿井井架

Mining derrick



产品简介

Product Introduction

矿井井架是采矿工程中矗立在井口上方的大型钢制或钢筋混凝土结构设施。作为矿井提升系统的核心支撑设备，它承载着提升容器、滑轮、钢丝绳等关键部件，在保障矿山物料运输、人员升降及设备安装作业的安全与效率方面发挥着决定性作用。

Mining derrick is a large steel or reinforced concrete structure facility standing above the wellhead in mining engineering. As the core supporting equipment of the mine lifting system, it carries key components such as lifting containers, pulleys, steel wire ropes, etc. It plays a decisive role in ensuring the safety and efficiency of mining material transportation, personnel lifting, and equipment installation operations.

选型参数 selection parameters

6×37(b) 类圆股钢丝技术参数

6× Technical parameters of class 37 (b) round strand steel wire

6×37（b）类圆股钢丝绳（GB/T 898-1996）													
钢丝绳公称直径 d (mm)	钢丝绳近似重量 (Kg/100m)			钢丝绳公称抗拉强度（MPa）									
	天然纤维 芯钢丝绳	合成纤维 芯钢丝绳	钢芯 钢丝绳	1470		1570		1670		1770		1870	
				钢丝绳最小破断拉力（KN）									
				纤维芯	钢芯	纤维芯	钢芯	纤维芯	钢芯	纤维芯	钢芯	纤维芯	钢芯
5	8.65	8.42	9.52	10.8	11.7	11.5	12.5	12.3	13.3	13	14.1	13.7	14.9
6	12.5	12.1	13.7	15.6	16.8	16.6	18	17.7	19.1	18.7	20.3	19.8	21.4
7	17	16.5	18.7	21.2	22.9	22.6	24.5	24.1	26.1	5.5	27.6	27	29.2
8	22.1	21.6	24.4	27.7	30	29.6	32	31.5	34	33.4	36.1	35.3	33.1
9	28	27.3	30.9	35.1	37.9	37.5	40.5	39.9	43.1	42.2	45.7	44.6	48.3
10	34.6	33.7	38.1	43.3	46.8	46.3	50	49.2	53.2	52.2	56.4	55.1	59.6
11	41.9	40.8	46.1	52.4	56.7	56	60.6	59.6	64.4	63.1	68.3	66.7	72.1
12	49.8	48.5	54.9	62.4	67.5	66.6	72.1	70.9	6.7	75.1	81.3	79.4	85.9
13	58.5	57	64.4	73.2	79.2	78.2	84.6	83.2	90	88.2	95.4	93.2	100
14	67.8	66.1	74.7	84.9	91.9	90.7	98.1	96.5	104	102	110	108	116
16	88.6	86.3	97.5	111	120	118	128	126	136	133	144	141	152
18	112	109	123	140	151	158	162	159	172	169	182	178	193
20	138	125	152	173	187	185	200	197	213	208	225	220	233
22	167	163	184	209	226	224	242	238	257	252	273	266	288
24	199	194	219	249	270	266	288	283	306	300	325	317	343
26	234	228	258	293	316	313	338	333	360	352	381	372	403
28	271	264	299	339	367	363	392	386	417	409	442	432	467
(30)	311	303	343	390	422	416	450	443	479	469	508	496	536
32	354	345	390	444	480	474	512	504	545	534	578	564	610
(34)	400	390	440	501	542	535	578	569	615	603	652	637	689
36	448	437	494	562	607	600	649	638	690	676	731	714	773
(34)	500	487	550	626	677	668	723	711	769	753	815	796	861
40	554	539	610	693	750	741	801	788	852	835	903	882	954
(42)	610	594	672	764	827	816	883	869	939	921	996	973	/
44	70	652	738	839	907	896	969	953	/	/	/	/	/
(46)	732	713	806	917	992	980	/	/	/	/	/	/	/
48	797	776	878	999	/	/	/	/	/	/	/	/	/
(50)	865	840	952	/	/	/	/	/	/	/	/	/	/

6×19(b) 类圆股钢丝绳技术参数

6× Technical parameters of class 19 (b) round strand steel wire

6×19 (b) 类圆股钢丝绳 (GB/T 8918-1996)													
钢丝绳公称直径 d (mm)	钢丝绳近似重量 (Kg/100m)			钢丝绳公称抗拉强度 (MPa)									
	天然纤维 维芯钢 丝绳	合成纤维 维芯钢 丝绳	钢芯钢 丝绳	1470		1570		1670		1770		1870	
				钢丝绳最小破断拉力 (KN)									
				纤维芯	钢芯	纤维芯	钢芯	纤维芯	钢芯	纤维芯	钢芯	纤维芯	钢芯
3	3.11	3.03	3.43	4.06	4.39	4.33	4.69	4.61	4.98	4.89	5.28	5.16	5.58
4	5.54	5.39	6.1	7.22	7.8	7.71	8.33	8.2	8.87	8.69	9.4	9.18	9.93
5	8.65	8.42	9.52	11.2	12.2	12	13	12.8	13.8	13.5	14.6	14.3	15.5
6	12.5	12.1	13.7	16.2	17.5	17.3	18.7	18.4	19.9	19.5	21.1	20.6	22.3
7	17	16.5	18.7	22.1	23.9	23.6	25.5	25.1	27.1	26.6	28.7	28.1	30.4
8	22.1	21.6	24.4	28.8	31.2	30.8	33.3	32.8	35.4	34.7	37.6	36.7	39.7
9	28	27.3	30.9	36.5	39.5	39	42.2	41.5	44.9	44	47.5	46.5	50.2
10	34.6	33.7	38.1	45.1	48.8	48.1	52.1	51.2	55.4	54.3	58.7	57.4	62
11	41.9	40.8	46.1	54.6	59	58.3	63	62	67	65.7	71.1	69.4	75.1
12	49.8	48.5	54.9	64.9	70.2	69.4	75	73.8	79.8	78.2	84.6	82.6	89.4
13	58.5	57	64.4	76.2	82.4	81.4	88	86.6	93.7	91.8	99.3	97	104
14	67.8	66.1	74.7	88.4	95.6	94.4	102	100	108	106	115	112	121
16	88.6	86.3	97.5	115	124	123	133	131	141	139	150	146	158
18	112	109	123	146	158	156	168	166	179	176	190	186	201
20	133	135	152	180	195	192	208	205	221	217	235	229	248
22	167	163	184	218	236	233	252	248	268	263	284	277	300
24	199	194	219	59	281	277	300	295	319	312	338	330	357
26	234	228	258	305	329	325	352	346	374	367	397	388	419
28	271	264	299	353	382	377	408	401	434	426	460	450	486
(30)	311	303	343	406	439	433	469	461	498	489	528	516	558
32	354	345	390	462	499	493	533	524	567	556	528	587	635
(34)	400	390	440	521	564	557	602	592	640	628	679	663	717
36	448	437	494	584	632	624	675	664	718	704	761	744	804
(38)	500	487	550	651	704	695	752	740	800	784	848	828	896
40	554	539	610	722	780	771	833	820	887	869	940	918	993
(42)	610	594	672	796	860	850	919	904	978	958	/	/	/
44	670	652	738	873	944	933	/	992	/	/	/	/	/
46	732	713	806	954	/	/	/	/	/	/	/	/	/

Y 系列 (IP23) 提升机专用变频调速电动机

Y series (IP23) special frequency conversion speed regulation motor for hoist

型号 Type		额定功率 Rated Power	额定电流 Rated Current	额定输出转矩 Rated output torque	额定转速 Rated speed	堵较较矩/额定转矩 Locked torque/ Rated torque	最大转矩/额定转矩 Max torque/ Rated torque	转动惯量 Moment of inertia	重量 Weighnt
		KW	A	Nm	r/min			kg.m2	Kg
注：表中为电压380V、50Hz的数据									
6极	YTS-200M-6	22	44	435	971	2.0	2.4	1.4	440
	YTS-200L-6	30	60	295	972			1.5	440
	YTS-225M-6	37	68	353	981			2.0	400
	YTS-250S-6	45	82	435	987			1.7	440
	YTS-250M-6	55	100	532	987			2.0	480
	YTS-250M2-6	75	135	728	983			2.1	605
	YTS-280S-6	75	142	727	985	2.0	3.0	2.4	620
	YTS-280M-6	90	168	873	985			3.1	740
	YTS-315S-6	110	205	1063	988			3.9	915
	YTS-315M1-6	132	245	1276	988			4.6	1090
	YTS-315M2-6	160	296	1543	990			5.5	1200
	YTS-355M1-6	185	324	1785	990	2.0	2.8	9.3	1495
	YTS-355M2-6	200	350	1929	990			10.2	1575
	YTS-355M3-6	220	383	2123	990			11.4	1610
	YTS-355M4-6	250	434	2413	989			13.1	1760
	YTS-355L1-6	280	485	2703	989			15.0	1780
	Y'TS-355L2-6	315	547	3040	989			16.4	1800
	YTS-400S1-6	315	548	3036	991	1.7	2.6	21.4	2190
	YTS-400S2-6	355	617	3421	991			23.4	2260
	YTS-400S3-6	400	694	3855	991			28.5	2340
	YTS-400L1-6	450	780	4337	991			29.7	2570
	YTS-400L2-6	500	865	4818	991			33.1	2600
	YTS-400L3-6	560	966	5402	990			37.1	2660
	YTS-400L4-6	630	1058	6071	991			40	2720
8极	YTS-200M-8	18.5	41	244	725	1.8	2.4	1.2	395
	YTS-200L-8	22	48	290	725			1.3	405
	YTS-225M-8	30	63	395	725			1.5	420
	YTS-250S-8	37	72	479	738			1.7	435
	YTS-250M-8	45	87	582	738			2	480
	YTS-250M2-8	55	105	714	736			3.1	520
	YTS-280S-8	55	111	717	733	2.0	2.8	2.4	625
	YTS-280M-8	75	151	977	733			3.1	740

Y 系列 (IP23) 提升机专用变频调速电动机

Y series (IP23) special frequency conversion speed regulation motor for hoist

型号 Type		额定 功率 Rated Power	额定电 流 Rated Current	额定输出 转矩 Rated output torque Nm	额定 转速 Rated speed r/min	堵转较 矩/额定 转矩 Locked torque/ Rated torque	最大转 矩/额定 转矩 Max torque/ Rated torque	转动惯 量 Moment of inertia	重量 Weight
		KW	A	Nm	r/min			kg.m2	Kg
注：表中为电压380V、50Hz的数据									
8极	YTS-315S-8	90	182	1169	735			5.9	895
	YTS-315M1-8	110	221	1429	735			6.8	1060
	YTS-315M2-8	132	263	1715	735			7.8	1170
	YTS-355M2-8	160	304	2064	740	2.2	2.8	10.7	1585
	YTS-355M3-8	185	349	2388	740			12.5	1685
	YTS-355M4-8	200	380	2579	740			14	1768
	YTS-355L1-8	220	416	2837	740			15	1945
	YTS-355L2-8	250	471	3226	740			15.8	1990
	YTS-355L3-8	260	487	3356	740			17.6	2050
	YTS-355L4-8	280	526	3614	740			17.6	2010
	YTS-400S]-8	280	514	4045	741	1.7	2.6	22.5	2210
	YTS-400S2-8	315	576	4565	740			27.4	2290
	YTS-400S3-8	355	650	4575	741			30.8	2440
	YTS-400L1-8	400	730	5155	741			34.8	2650
	YTS-400L2-8	450	820	5800	741			34.8	2800
	YTS-400L3-8	500	915	6444	741			38.8	2820
	YTS-400L4-8	560	1022	7217	741			40	2870
10极	YIS-315S-10	55	110	886	593	1.8	2.8	5.2	790
	YIS-315M1-10	75	147	1209	592			6.4	1050
	YTS-315M2-10	90	176	1451	592			7.5	1110
	YIS-355M2-10	110	214	1773	592	1.9	2.8	11.9	1510
	YTS-355M3-10	132	255	2128	592			14.7	1610
	YTS-355L1-10	160	306	2582	592			16.6	1890
	YTS-355L2-10	185	355	2982	593			19.2	2080
	YTS-355L3-10	200	384	3225	592			20.6	2120
	YTS-400S1-10	200	375	3226	592			22.8	2170
	YTS-400S2-10	220	410	3549	592	15	2.5	25.1	2250
	YTS-400S3-10	250	466	4033	592			27.4	2340
	YIS-400S4-10	280	522	4517	592			32.0	2430
	YTS-400L1-10	315	586	5215	592			36.0	2630
	YTS-400L2-10	355	660	5727	592			37.7	2760
	YTS-400L3-10	400	748	6453	592			42.3	2870

Y 系列 (IP23) 提升机专用变频调速电动机

Y series (IP23) special frequency conversion speed regulation motor for hoist

型号 Type		额定功率 Rated Power	额定电流 Rated Current	额定输出 转矩 Rated output torque Nm	额定 转速 Rated speed r/min	堵较较矩/ 额定转矩 Locked torque/ Rated torque	最大转 矩/额定 转矩 Max torque/ Rated torque	转动惯量 Moment of inertia	重量 Weignht
		KW	A	Nm	r/min			kg.m2	Kg
注：表中为电压380V、50Hz的数据									
12级	YTS-355M4-12	90	191	1742	493	1.4	2.5	13.2	1615
	YTS-355L1-12	110	230	2131	493			15.6	1630
	YIS-355L2-12	132	275	2559	493			17.6	1870
	YTS-355I3-12	160	331	3103	492			20.6	1930
	YTS-400S1-12	160	325	2552	494	1.5	2.5	25.1	2230
	YIS-400S2-12	185	371	3093	494			27.4	2320
	YIS-400S3-12	200	404	3576	494			32.0	2390
	YIS-400L1-12	220	441	3866	494			36.0	2600
	YTS-400L2-12	250	504	4253	494			37.7	2750
	YIS-400L3-12	280	561	4833	494			42.3	2840

ZQ 减速机选型参数

ZQ reducer selection parameters

ZQ减速机许用输入功率表(电机功率*1在速度、速比中找合适的)										
工作类型	型号Type	ZQ650								
中型	速比Ratio	50	40	31.5	25	20	16	12.5	10	8
	速度r/min	功率								
	750	20.5	26	29	41	47.5	53	62	73	83
	1000	25	31.5	35.5	48	56	60	73	83	90
	1500	32	38.5	42	60	70	74			
	型号Type	ZQ750								
	速比Ratio	50	40	31.5	25	20	16	12.5	10	8
	r/min	功率								
	750	34.5	41	52	73	83	93	110	128	146
	1000	44	54	63	85	94	106	130	146	
	1500	56	69	75	104	118	130			
	型号Type	ZQ850								
	速比Ratio	50	40	31.5	25	20	16	12.5	10	8
	r/min	功率								
	750	47.5	57	77	101	114	151	174	205	230
	1000	63	75	100	129	141	168	205		
	1500	90	106	119	162					
	型号Type	ZQ1000								
	速比Ratio	50	40	31.5	25	20	16	12.5	10	8
	r/min	功率								
	750	82	98	124	171	196	220	260	305	
	1000	104	127	148	205	220	250			
	1500	132	163	176						

NBD 减速机选型参数

NBD reducer selection parameters

NBD型减速机高速轴公称输入功率(电机功率*2在转速、速比中找合适的)

规格	转速	速比20	速比25	速比28	速比31.5
250	600	20.5	16.6	12.2	11.4
250	750	25.6	20.7	15.2	14.2
250	1000	34.1	27.6	20.3	18.9
250	1500	51.1	40.9	30.3	28.2
280	600	35	24.8	20.2	18.6
280	750	43.7	30.8	25.2	23.2
280	1000	58.3	40.9	33.8	31.1
280	1500	85.6	60.8	49.9	45.9
315	600	45.7	34.4	25.4	23.2
315	750	57.1	42.7	31.6	28.9
315	1000	76	56.8	42	38.4
315	1500	113.8	84.2	62.3	56.9
355	600	68.3	52.3	41.7	34.5
355	750	85.3	65.3	52.1	43.1
355	1000	113.6	86.5	68.3	56.5
355	1500	170	128.3	102.8	85
400	600	84.3	68	52.4	43.8
400	750	105.3	84.5	65.3	54.6
400	1000	140.2	111.9	86.5	72.4
400	1500	209.6	165.6	128.3	107.3
450	600	137.1	114.6	84.2	69.8
450	750	171.1	139.7	104.8	86.9
450	1000	228.4	184.9	139	115.2
450	1500	341.7	237	205.8	170.6
500	600	163.1	135.7	109.6	91
500	750	203.5	168.8	136.4	113.2
500	1000	270.8	223.1	180.5	149.8
500	1500	404.2	328.8	266.7	221.5
560	600	265.4	206.2	177.4	149.3

NBD 减速机选型参数

NBD reducer selection parameters

NBD型减速机高速轴公称输入功率(电机功率*2在转速、速比中找合适的)					
规格	转速	速比20	速比25	速比28	速比31.5
560	750	331.3	256.4	220.5	185.7
560	1000	440.6	338.6	291.6	245.5
560	1500	657.7	497.4	430.3	362.2
630	600	330.4	272.9	235.8	235.8
630	750	412.4	340.6	294.5	294.5
630	1000	548.3	463.2	391.9	391.9
630	1500	818.1	676.8	585.6	585.6
710	600	531.5	410.3	342.8	342.8
710	750	663.2	508.2	425.1	425.1
710	1000	881.6	667.4	559.5	559.5
710	1500	1314.3	971.8	818.3	818.3
800	600	651.6	538.3	465.4	407
800	750	812.3	671.8	580.9	508.2
800	1000	1080	983.2	772.6	676.3
800	1500	1609.1	1332.2	1153.3	1010.7
900	600	1057.9	844.9	700	665.8
900	750	1318.9	1044.3	866.3	831.1
900	1000	1751.1	1366.8	1137.7	1105.5
900	1500	2604.7	1977.4	1655	1650.7
1000	600	1301.8	1033.1	893.4	802
1000	750	1622.4	1288.4	1114.6	1001
1000	1000	2152.8	1711.3	1481.1	1331.1
1000	1500	3198.2	2547.2	2206.9	1986.4
1120	600	2019.9	1603.2	1386.5	1211.1
1120	750	2517.1	1999.1	1717.1	1511.5
1120	1000	3339	2654.7	2244.9	2010.1
1120	1500	-	3857.9	3241.3	2999.4
1250	600	2496.3	2063.4	1785.7	1565.4
1250	750	3109.8	2573.2	2226.8	1953

NBD 减速机选型参数

NBD reducer selection parameters

NBD型减速机高速轴公称输入功率(电机功率*2在转速、速比中找合适的)

规格	转速	速比20	速比25	速比28	速比31.5
1250	1000	4123.2	3415.1	2957.1	2595.9
1250	1500	-	5075.4	4400.1	3869.4
1400	600	3985.8	3040.6	2554.1	2517.2
1400	750	4963.4	3731.1	3142.3	3140.2
1400	1000	6575.3	4827.6	4082.7	4082.7
1400	1500	-	-	5826	5826
1600	600	5380	4449.8	3849.6	3040.3
1600	750	6700.8	5545.6	4799.6	3791.7
1600	1000	8880.9	7357.6	6371.9	5036.2
1600	1500	-	-	-	-
1800	600	7840.8	6135.8	5118.6	4947.5
1800	750	9763	7502.8	6279.1	6171.5
1800	1000	-	9653.6	8119.7	8119.7
1800	1500	-	-	-	-
2000	600	9564.1	7601.2	6578.4	5912.5
2000	750	11899.5	9466.3	8196.7	7372.2
2000	1000	-	-	10870.9	9789
2000	1500	-	-	-	-



企业实况 Company News

车间实况

Factory status



生产车间
Production workshop

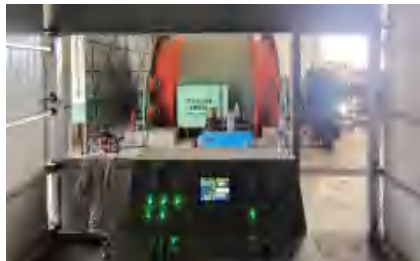


产品展示
Product Display

企业实况 Company News

现场实况

Live broadcast



现场实况图
Live picture of the scene

