



Coal processing

series products and solutions



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website



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Haiwang
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Haiwang, 35 years of focus on

Separation equipment R&D, manufacturing and technical services

We not only provide high-quality equipment, but more importantly, advanced technology and quality services



260000 square meters

Production base area

30000 sets

Annual output of cyclone

5000

Annual output of other equipment

3000 square meters

Experimental base area

20000 square meters

Spare parts warehouse area

company profile

Weihai Haiwang Hydrocyclone Co., Ltd. was established in 1989 and is the world's leading separation equipment manufacturing and technical solution provider. Over the past 30 years, we have been adhering to the concept of "making separation more efficient" and are committed to providing efficient equipment, advanced technology and high-quality services to industries such as mining, coal, electric power environmental protection, petrochemicals, sand and gravel aggregates, etc., and continue to provide customers with Energy saving and consumption reduction create higher value. The products have a far leading market share in the domestic market and are exported to more than 50 countries and regions including Australia, Russia, Peru, and India etc. The brand owns international branches such as Russian Haiwang Mining Company and Australian Helicon Company, and has offices in more than 10 countries including the Poland, Turkiye, United States, Peru, Chile, South Africa, India, and Mongolia, providing global users with convenient local services.

Enterprise Certification

- EU CE certification
- ISO9001 quality management system certification
- ISO14001 Environmental Management System Certification
- OHSAS18001 Occupational Health and Safety Management System Certification

Innovation platform

- Shandong Academician Workstation
- Shandong Province Postdoctoral Innovation Practice Base
- Shandong Province Cyclone Separation Engineering Technology Research Center
- Shandong Province Certified Enterprise Technology Center
- Shandong Province One Enterprise One Technology R&D Center
- Shandong Industrial Design Center
- Shandong Engineering Research Center
- National Torch Plan Key High-tech Enterprise

Scientific research strength



1 item

Second Prize of National Technological Invention Award



3 items

Set industry standards



8

Innovation platform at provincial level or above



100

Independent intellectual property rights



100

Intermediate and senior engineer



150

Professional technical team



Pressureless feeding three-product heavy media cyclone



The current maximum specification is WTMC1500/1100, with a processing capacity of 500-600t/h.

Two-section adjustable overflow pipe

Ep1≤ 0.03 , Ep2≤0.05

Sorting efficiency > 95%

Lined with wear-resistant high-alumina ceramics



The main technical parameters

Specifications and models	Barrel diameter (mm)		Feeding particle size (mm)	Feeding pressure (MPa)	processing power (t/h)	Medium circulation amount (m³/h)
	first stage	second stage				
WTMC600/400	600	400	≤30	0.06~0.10	40~60	250~350
WTMC710/500	710	500	≤35	0.08~0.12	60~100	350~450
WTMC850/600	850	600	≤45	0.10~0.14	100~160	500~650
WTMC900/650	900	650	≤50	0.12~0.16	120~180	600~800
WTMC1000/710	1000	710	≤55	0.15~0.18	160~220	800~1000
WTMC1100/780	1100	780	≤60	0.18~0.22	200~280	900~1200
WTMC1200/850	1200	850	≤70	0.20~0.28	260~350	1200~1400
WTMC1300/920	1300	920	≤80	0.24~0.30	320~400	1400~1800
WTMC1400/1000	1400	1000	≤90	0.28~0.36	400~500	1800~2200
WTMC1500/1100	1500	1100	≤100	0.32~0.40	500~600	2200~2600

Pressure feeding three-product heavy media cyclone



The current largest specification is YTMC1400/1000, with a processing capacity of 450-550t/h.

Double cone patented structural design

Ep1≤0.03, Ep2≤0.05

Sorting efficiency > 95%

Lined with wear-resistant high-alumina ceramics



The main technical parameters

Specifications and models	Barrel diameter (mm)		Feeding particle size (mm)	Feeding pressure (MPa)	processing power (t/h)	Throughput (m³/h)
	first stage	second stage				
YTMC710/500	710	500	≤35	0.09~0.14	70~120	400~550
YTMC850/600	850	600	≤45	0.13~0.16	120~180	650~750
YTMC900/650	900	650	≤50	0.15~0.18	140~200	750~950
YTMC1000/710	1000	710	≤55	0.18~0.22	180~240	900~1100
YTMC1100/780	1100	780	≤60	0.20~0.24	220~300	1100~1400
YTMC1200/850	1200	850	≤70	0.22~0.28	300~400	1400~1700
YTMC1300/920	1300	920	≤80	0.26~0.32	350~450	1600~1900
YTMC1400/1000	1400	1000	≤90	0.30~0.40	450~550	1900~2300

Pressure feeding two-product heavy media cyclone



The current largest specification is FZJ1600, with a processing capacity of over 1000t/h.

Eps0.05

Sorting efficiency >95%

Lined with wear-resistant high-alumina ceramics



The main technical parameters

Specifications and models	Barrel diameter (mm)	Feeding particle size (mm)	Feeding pressure (MPa)	processing power (t/h)	Throughput (m³/h)
FZJ600	600	γ30	0.06~0.12	40~80	250~350
FZJ660	660	γ30	0.06~0.14	60~100	300~400
FZJ710	710	γ40	0.08~0.14	80~140	400~600
FZJ800	800	γ40	0.08~0.14	120~180	600~800
FZJ850	850	γ50	0.08~0.14	160~240	700~900
FZJ900	900	γ50	0.10~0.16	220~320	800~1100
FZJ1000	1000	γ60	0.10~0.16	260~360	1000~1200
FZJ1100	1100	γ60	0.10~0.16	320~420	1100~1300
FZJ1150	1150	γ60	0.10~0.16	360~460	1200~1400
FZJ1200	1200	γ80	0.12~0.18	400~500	1300~1600
FZJ1300	1300	γ80	0.12~0.18	450~600	1500~1800
FZJ1400	1400	γ90	0.12~0.18	550~700	1600~2000
FZJ1450	1450	γ90	0.12~0.18	600~800	1900~2200
FZJ1500	1500	γ100	0.14~0.20	700~900	2000~2400
FZJ1600	1600	γ120	0.14~0.20	800~1000	2200~2600

Slurry water classification and concentration cyclone



The current largest specification is FX1250, with a processing capacity of 1300m³/h.

Suitable for use in combination with FBS fluidized bed separator, LXA spiral separator and ZKJ laminated vibrating screen, etc.

Lined with wear-resistant high-aluminum ceramics, KM wear-resistant composite materials, polyurethane, nano-modified glue, etc.



The main technical parameters

Specifications and models	diameter (mm)	Feeding pressure (MPa)	processing power (m³/h)	Grading granularity (mm)
FX150	150	0.10~0.15	20~35	0.04~0.10
FX250	250	0.10~0.15	60~85	0.04~0.12
FX350	350	0.10~0.15	70~120	0.06~0.16
FX380	380	0.10~0.15	130~180	0.06~0.16
FX450	450	0.10~0.15	150~220	0.10~0.20
FX500	500	0.10~0.15	180~270	0.10~0.20
FX610	610	0.10~0.15	280~380	0.10~0.20
FX660	660	0.10~0.15	340~460	0.15~0.25
FX710	710	0.10~0.15	400~560	0.15~0.25
FX850	850	0.10~0.15	560~850	0.20~0.30
FX1000	1000	0.10~0.15	800~1050	0.20~0.40
FX1250	1250	0.10~0.15	1000~1300	0.20~0.40



Three-product slime heavy media separator



EP₂≤0.05
 Quantity efficiency > 90%
 Adjustable overflow pipe
 Lined with wear-resistant high-alumina ceramics



Specifications and models	Barrel diameter (mm)	Feeding particle size (mm)	Feeding pressure (MPa)	processing power (t/h)	Throughput (m ³ /h)
TSMC350	350	0~1	0.06-0.15	10~30	100~200
TSMC500	500	0~1.5	0.08-0.15	30~50	200~300
TSMC600	600	0~2.0	0.08-0.15	40~80	300~400
TSMC710	710	0~2.0	0.10-0.15	60~100	400~600

Coal slime heavy medium cyclone



EP₂≤0.05
 Quantity efficiency > 90%
 Adjustable overflow pipe
 Lined with wear-resistant high-alumina ceramics



Specifications and models	Barrel diameter (mm)	Feeding particle size (mm)	Feeding pressure (MPa)	processing power (t/h)	Throughput (m ³ /h)
SMC150	150	0~0.5	0.12-0.18	4~10	20~35
SMC200	200	0~0.5	0.18-0.22	10~15	35~55
SMC250	250	0~1.0	0.22-0.24	15~20	55~80
SMC300	300	0~1.0	0.24-0.28	20~30	80~120
SMC350	350	0~1.0	0.26-0.30	30~40	120~160
SMC400	400	0~1.5	0.28-0.32	40~55	160~220

3CDC-PL series pressureless three-product heavy medium cyclone



3CDC (Central-feeding Dense-medium Cyclone) series of pressureless feeding three-product heavy medium cyclones, based on standard cyclones
 Optimization and upgrade, improved parameters in the first stage, low jet and large flux design in the second stage, greatly increased the upper limit of raw coal feed particle size, and completely solved the first and second stage channels, gangue
 Problems such as port blockage can be solved; at the same time, the coal-to-coal ratio can be reduced, and the processing capacity and gangue discharge capacity can be improved.

It is used in sites that have special requirements for processing capacity and particle size, or where coal and gangue account for a large proportion, and existing equipment cannot meet the requirements; for easy-to-select coal types or thermal coal, It can greatly improve the raw coal processing capacity.

- The dry coal processing capacity is increased by 50% to 70%, and the gangue discharge volume is increased
- by more than 40%; the medium-coal ratio is reduced to (3-3.5): 1. Reduce the flow and power of the cyclone pump;
- It can meet the 150mm feeding particle size requirement, and the limit particle size can reach 200mm;
- The possible deviation of the first stage is y0.03kg/l, and the possible deviation of the second stage is y0.05kg/l.

The main technical parameters

Specifications and models	Feeding particle size (mm)	Feeding pressure (MPa)	processing power (t/h)	Medium circulation amount (m ³ /h)
3CDC850-PL	≤80	0.14~0.18	160~260	800~1000
3CDC900-PL	≤80	0.16~0.20	220~320	900~1100
3CDC1000-PL	≤100	0.18~0.22	260~360	1100~1300
3CDC1100-PL	≤100	0.20~0.24	300~440	1300~1500
3CDC1200-PL	≤120	0.22~0.26	380~580	1600~1800
3CDC1300-PL	≤120	0.26~0.30	440~680	1800~2000
3CDC1400-PL	≤150	0.28~0.32	520~820	2200~2400

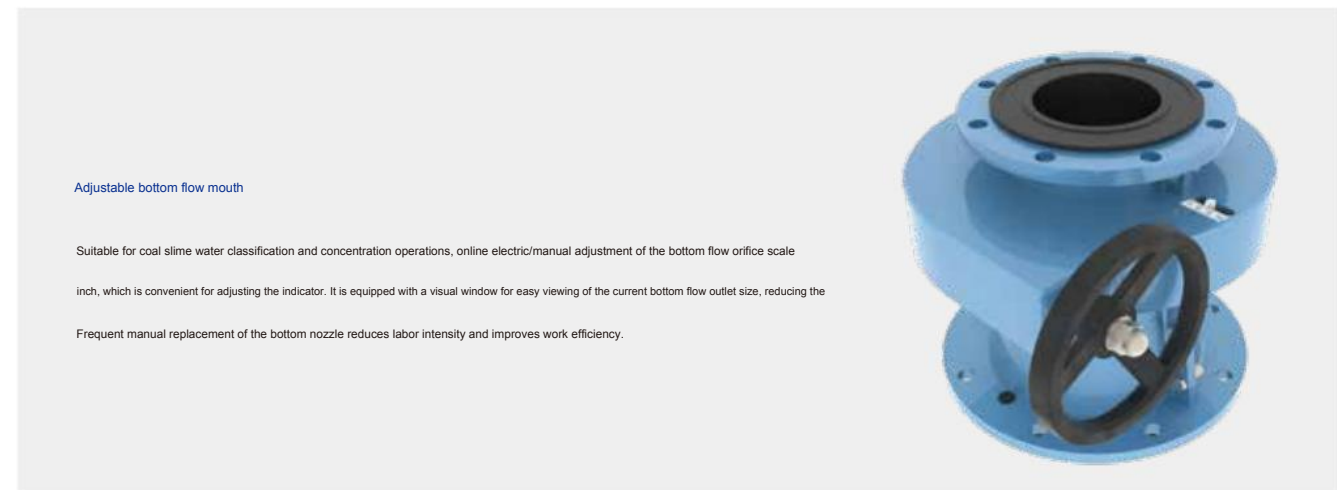
Note: The above specifications are for selection reference only, and specific projects can be adjusted accordingly.

water medium hydrocyclone

EP value ≤ 0.12 , quantity efficiency $\geq 85\%$, online adjustable overflow device and composite cone structure, etc., lined with wear-resistant materials.
It is suitable for the separation of coarse coal slime and the separation of fine-grained minerals with large density differences such as easy coal selection.



Specifications and models	Barrel diameter (mm)	Maximum feed particle size (mm)	Feeding pressure (MPa)	Feed concentration (g/L)	processing power (m ³ /h)
SX250	250	2	0.15-0.2	100~200	75~90
SX350	350	6	0.15-0.2	100~200	90~125
SX500	500	13	0.2-0.3	100~200	180~280

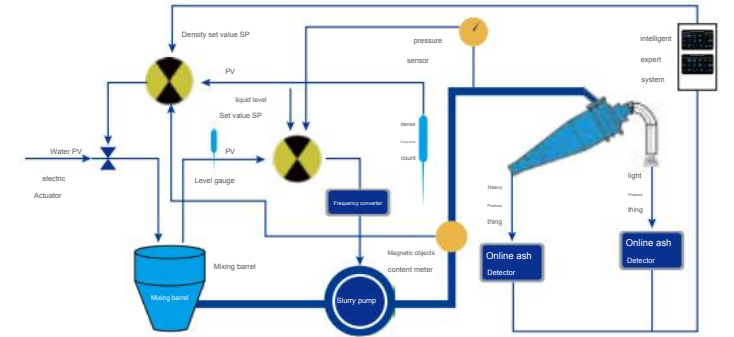


HW-IPDMCS Intelligent Secret Control Expert System

The intelligent close control expert system is based on Haiwang's powerful industrial application expert database and realizes intelligent detection of indicators and parameters related to heavy medium cyclone sorting. Intelligent analysis and intelligent control provide strong intelligent support for the efficient and stable operation of the cyclone.

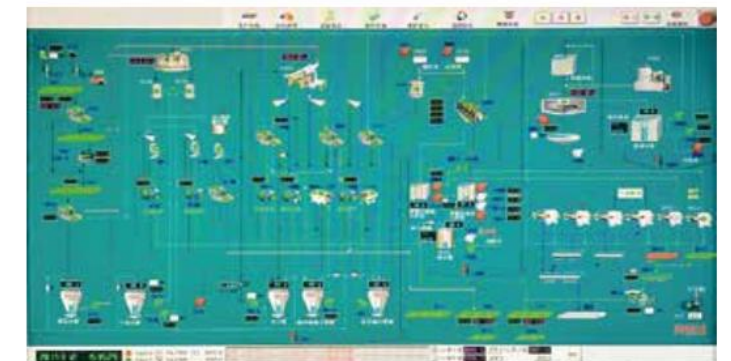
System composition:

- System operating status intelligent detection module: with password degree sensor, liquid level meter, magnetic content meter, Mainly composed of pressure sensors and other detection instruments
- System intelligent adjustment module: controlled by PLC
- Mainly software and hardware such as computers and system control software constitute
- System intelligent control module: with intelligent frequency converter, Slurry pumps, cyclones, smart valves and other hardware
- Mainly composed



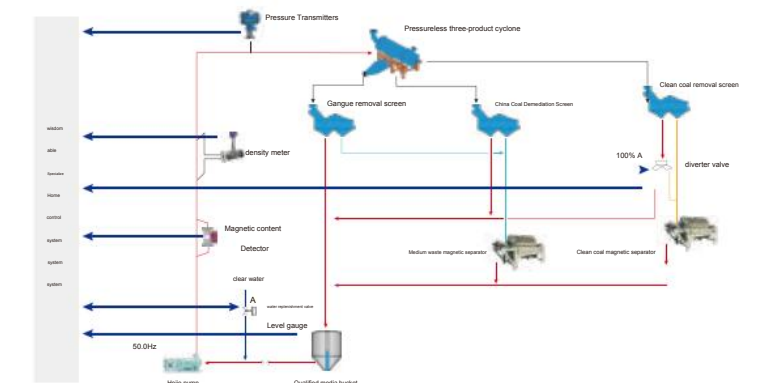
System functions:

- Real-time detection of qualified suspension density, magnetic field in cyclone
- Parameters such as physical substance content, slime content, product ash content, etc. number, intelligently adjust the density of qualified medium suspension,
- The operating frequency of the slurry pump, the amount of water added to the pump pool, etc. operating parameters to stabilize the tight control system, pump pool liquid level and Cyclone feed pressure and other control parameters.



System principle:

- During the production process, product ash content requirements are set, The system adaptively searches for the best qualified suspension
- Density, magnetic substance content, slime content, input
- Material pressure and pump pool liquid level, slurry pump operation
- Parameters such as line frequency can be monitored and adjusted in real time, to achieve optimal production conditions.
- Intelligent secret control expert system as an organic combination
- A comprehensive system in which each functional module coordinates with each other to ensure the smooth and safe operation of the production system
- OK.



Wear-resistant materials

Appropriate wear-resistant materials can be selected according to on-site usage conditions.
Or use a combination of different wear-resistant materials to increase the overall service life of the equipment.

Haiwang wear-resistant high alumina ceramics

- Sintered alumina powder imported from Germany is used to ensure oxidation to the greatest extent. Aluminum construction is present. Wet grinding-spray drying process granulation, from the raw material formula ensures that the split particles are regular, uniform and fluid, good sex.
- Dry press molding. Adopt fully automatic microcomputer controlled hydraulic feeding system. System, continuous production. During the pressing process, ensure that the powder in the mold is evenly pressed. Uniform, especially products with heterosexual structures, dimensional stability.
- Normal pressure sintering, gradual temperature control method, according to different formulas, individual personalized customized firing data curve, using software program to control temperature. Play to realize the rational configuration of hardness, strength and toughness.



Comparison of microscopic image performance of granulated powder

Comparative advantages: Original imported German raw materials/Super wear-resistant alumina/Bright white color and sleek appearance



64 times 92 100 times 92

Microscopic display of domestic granulated powder



64 times 96 100x96

Microscopic display of imported granulated powder

Alumina content (%)	Mohs hardness	Rockwell hardness (GAME)	Density (g/cm ³)	wear (%)	Bending strength (MPa)
≥95	9	≥80	≥3.65	≤0.04	≥290
Apparent porosity γ̄%	Compressive strength γ̄MPaγ̄	Fracture toughness KIC (MPa.m ^{1/2})	Thermal conductivity (W/mk)	Thermal expansion coefficient	
≤0.1	≥850	≥4.8	20	7.2×10-6m/mK [1]	



Haiwang wear-resistant polyurethane

- It adopts the world's most advanced low-temperature prepolymerization and high-temperature extraction processes to target different working conditions. Conditions enable personalized design of product formulas.
- The internal main chain of polyurethane elastomer is linearly arranged and reasonably hybridized and cross-linked. Its strength, elasticity, and elongation are The growth rate and wear resistance have reached the world's leading level.
- Suitable for cyclones, screen plates, screens, rubber rollers, elastic couplings, buffer springs and other products.



Acid and alkali resistance	Resistant to high temperature hydrolysis (y)	Permanent deformation (%)	Elongation (%)
pH 1~13	≤100	≤10	400~1500
Rebound rate (%) Shore hardness	Tensile Strength (MPa) Tear strength		(KN/m)
25~65	10~98	20~50	30~130

Nano modified glue

- Adopting internationally advanced IPN technology, by combining polyurethane rigid groups and rubber flexibility. Macromolecule chains interpenetrate each other in the network, breaking the 'rigidity' of traditional polyurethane materials and rubber materials. 'Soft' cannot coexist with the limitation of obtaining high-strength, high-resilience, and high-flexibility elastomers.
- Add modified nano functional fillers to form an active nano protective film, which greatly improves the material. The erosion resistance of the surface greatly increases the wear-resistant life.
- Strict forming process, regular lining size and high smoothness can reduce the internal friction of the cyclone. Reduce energy consumption and improve classification efficiency.

	Shore hardness	tensile strength (MPa)	Elongation at break	Tear strength (%) (N/mm)	Rebound rate (%)	proportion	DIN wear (wet)	(cm3)
Haiwang Nano-modified Glue 65	65	30	720	55	78	1.2	0.014	
traditional rubber	60	23	570	90	65	1.15	0.072	
Traditional polyurethane	85	40	470	110	55	1.17	0.075	

KM composite wear-resistant material

The operating temperature range is: -25~150°C
It has excellent resistance to alkali, salt and oil.
Acid resistance: hydrochloric acid at any concentration
Sulfuric acid concentration is less than 75%
The concentration of strong oxidizing acids such as nitric acid is less than 5%



PD composite wear-resistant material

The operating temperature range is: -20~50°C
It has fast and convenient on-site repair, strong impact resistance, Not easy to fall off and other characteristics, high wear resistance
For general wear parts repair



Providing customers with perfect products and services is our unremitting pursuit!

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 淮北矿业(集团)有限责任公司
 皖北煤电集团有限责任公司
 徐州矿务集团有限公司
 大屯煤电(集团)有限责任公司
 新汶矿业集团有限责任公司
 枣庄矿业(集团)有限责任公司
 福建省能源集团有限责任公司
 山东泰丰矿业集团有限公司
 济宁能源发展集团有限公司
 山东裕隆矿业集团有限公司
 淄博矿业集团有限责任公司
 肥城矿业集团有限责任公司
 临沂矿业集团有限责任公司
 龙四矿业集团有限公司
 江西省煤炭集团公司
 冀中能源集团有限责任公司

河南能源化工集团有限公司
 平煤神马能源化工集团有限责任公司
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 华电煤业集团有限公司
 河南神火集团有限公司
 庆华能源集团有限公司
 黑龙江龙煤矿业集团有限责任公司
 辽源矿业集团有限责任公司
 理春矿业集团有限责任公司
 沈阳煤业(集团)有限责任公司
 辽宁铁法能源有限责任公司
 抚顺矿业集团有限责任公司
 贵州盘江投资控股(集团)有限公司
 贵州水城矿业(集团)有限责任公司
 湖南省煤业集团有限公司
 四川煤炭产业集团有限责任公司
 重庆市能源投资集团公司
 云南曲靖煤焦化实业发展有限公司
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 山西煤炭进出口集团有限公司
 阳泉煤业(集团)有限责任公司
 山西汾西矿业(集团)有限责任公司
 霍州煤电集团有限责任公司
 中煤华利能源控股有限公司
 华晋焦煤有限责任公司
 山西沁新能源集团股份有限公司
 山西乡宁焦煤集团有限责任公司
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 山西美锦能源股份有限公司
 山西凌志能源投资集团有限公司
 山西联盛能源(集团)有限公司
 山西大土河焦化有限责任公司
 太原煤气化股份有限公司
 山西晋能集团有限公司
 山西兰花科技创业股份有限公司
 山西离柳焦煤集团有限公司
 山西东辉能源集团有限公司
 山西省襄汾县宏源煤焦化有限公司
 永泰能源股份有限公司
 (排名不分先后)



ZKJ-D laminated vibrating screen



ZKJ-D laminated vibrating screen is a wet fine-grained material screening equipment developed by introducing advanced foreign technology. It adopts advanced laminated design and can realize up to five parallel feeding channels. It occupies a small area and has large processing capacity; Martin Vibration The motor, internationally advanced linear motion trajectory, and repetitive pulping technology enable fast screening transfer speed and high screening efficiency; the screen frame is supported by original imported spring suspension, which has low noise, low power consumption, small equipment dynamic load, and long service life; It adopts flexible polyurethane anti-clogging screen (the smallest mesh can reach 0.045mm), which has high efficiency, high opening rate, anti-clogging, wear-resistant and long service life.

Technical features



- Using Martin vibration motor, during the vibration process, the instantaneous acceleration of the screen machine can reach 4g~6g;
- Using flexible wear-resistant polyurethane screen mesh, the screen opening rate reaches 32~45%, and the screen service life is more than 6 months; Screen machine
- vibration The spring adopts imported anti-shear suspension support spring, and the screen machine bracket has almost no vibration;
- all flow-passing parts of the laminated vibrating screen are wear-resistant; patented
- design (utility model ZL201420142686.3 a uniform distribution device) stacked screen distributor. The materials are evenly distributed in the width direction of the screen surface of each layer; the classification
- efficiency can reach more than 80%.



Specifications and models



ZKJ1007-D series laminated vibrating screen

Model	motor power (kW)	Screen area (m ²)	Screen hole size (mm)	Dry ore processing capacity (t/h)	Screen material
ZKJ1007-D1	1.8×2	1.4	0.074~1	4-9	Flexible wear-resistant polyurethane screen
ZKJ1007-D2	1.8×2	2.9	0.074~1	8-18	
ZKJ1007-D3	1.8×2	4.4	0.074~1	12-27	
ZKJ1007-D4	1.8×2	5.8	0.074~1	16-36	
ZKJ1007-D5	1.8×2	7.3	0.074~1	20-45	

ZKJ1007-D/3 series laminated vibrating screen

Model	motor power (kW)	Screen area (m ²)	Screen hole size (mm)	Dry ore processing capacity (t/h)	Screen material
ZKJ1007-D1/3	1.8×2	2.19	0.074~1	5-10	Flexible wear-resistant polyurethane screen
ZKJ1007-D2/3	1.8×2	4.39	0.074~1	10-20	
ZKJ1007-D3/3	1.8×2	6.58	0.074~1	15-30	
ZKJ1007-D4/3	1.8×2	8.78	0.074~1	20-40	
ZKJ1007-D5/3	1.8×2	10.97	0.074~1	25-50	

ZKJ1408-D series laminated vibrating screen

Model	motor power (kW)	Screen area (m ²)	Sieve hole size (mm)	Dry ore processing capacity (t/h)	Screen material
ZKJ1408-D1	2.8×2	2.24	0.074~1	5-11	Flexible wear-resistant polyurethane screen
ZKJ1408-D2	2.8×2	4.48	0.074~1	10-22	
ZKJ1408-D3	2.8×2	6.72	0.074~1	15-33	
ZKJ1408-D4	2.8×2	8.96	0.074~1	20-44	
ZKJ1408-D5	2.8×2	11.20	0.074~1	25-55	

The actual processing capacity of the ZKJ series of laminated high-frequency vibrating fine screens is related to the nature of the incoming materials and the screen aperture. The processing capabilities of different properties of slurry and screen specifications are also different.

ZKJ-D laminated vibrating screen

Screen selection is more accurate

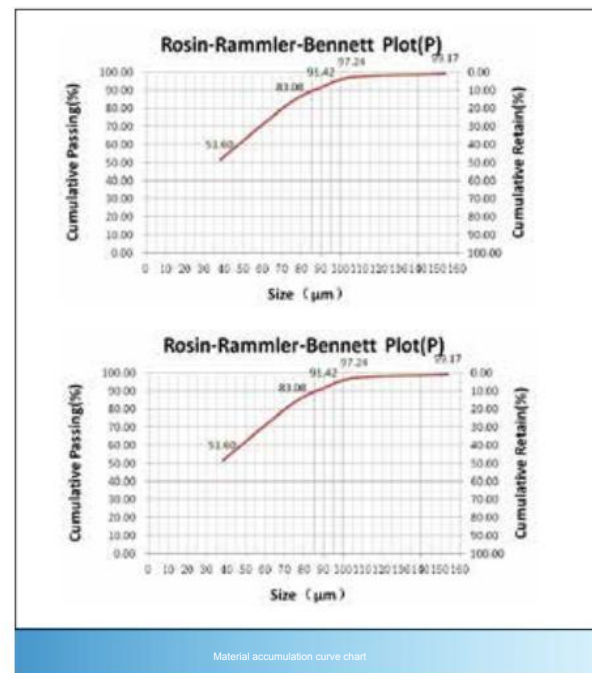
Accurately select screen mesh based on incoming material particle size composition and experimental data analysis



Movement and material status during the actual classification process of stacked screens



High efficiency, high porosity, anti-blocking, wear-resistant, and long service life.



Material accumulation curve chart



Screen display

Main application scope



It is used for classifying and desliming slime such as clean coal screen discharge in jig coal preparation plant and clean coal magnet tail in heavy medium coal preparation plant. It can also be combined with classification cyclone, FBS coarse slime separator or LXA spiral separator. use.

It is used in the closed-circuit grinding and classification process of iron ore, lead-zinc ore, tin ore, tungsten ore and other ferrous and non-ferrous metal mineral processing plants. It is combined with the cyclone for classification. The classification efficiency is high and it can significantly reduce the mill cycle load and over-grinding. Improve mineral processing recovery rate.

It is used for grading, desliming and other processes in non-metallic mineral processing plants such as feldspar, quartz and kaolin.

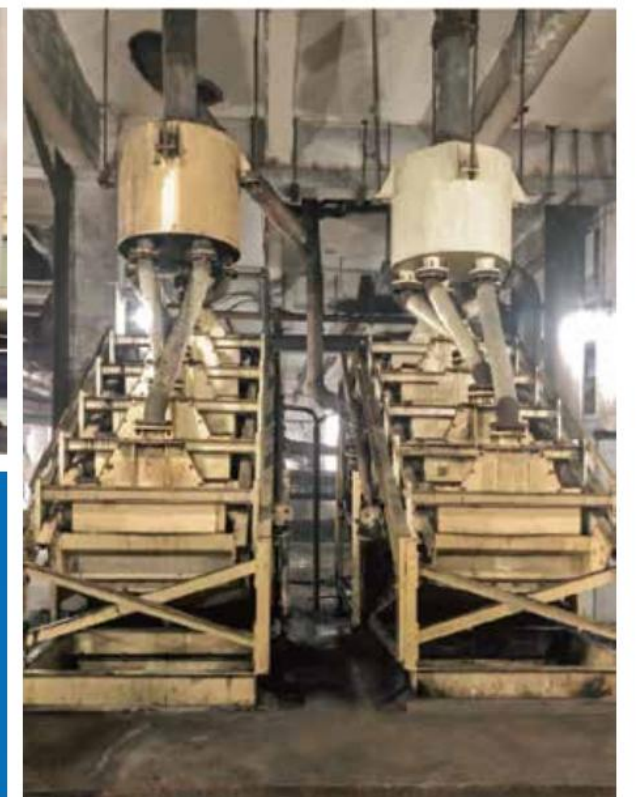
Some on-site application demonstrations



ZKJ-D series laminated vibrating screens have been used in National Energy Group, Shandong Energy Group, Henan Nenghua Group, Jizhong Energy Group, Shanxi Coking Coal Group, Lu'an Group, Panjiang Coal and Electricity Group and other units, with good results.



On-site shooting of laminated vibrating screen application



ZKJ series linear vibrating screen

Haiwang linear vibrating screen is suitable for efficient material screening, dehydration, tailings dry discharge, mud purification and other operations. The upwardly designed screen surface inclination angle forms a slurry pool at the feeding end. The static pressure head helps the slurry penetrate through the screen and improves the material processing capacity. Different screen surface inclination angles can be used according to different requirements; dual motor self-synchronous vibrators are used. Two vibration motors generate linear vibration trajectories through synchronous and reverse rotation to promote the transportation, dehydration and discharge of products on the screen (coarse-grained materials); they are supported by shock-absorbing steel springs, which have low noise, low power consumption, and small equipment dynamic load; Wear-resistant polyurethane sieve plate is used, which has high opening rate, good dehydration effect and long service life.



Technical features

- The standard motor is a Sino-foreign joint venture product, and imported motors are optional; - - - ● The screen plate is made of wear-resistant polyurethane material and is installed in a modular manner;
- The steel is made of high-quality manganese steel; - - - ● The overall profile design of the beam has been completely stress-relieved;
- The overall profile design of the bottom beam has a smooth surface Wear-resistant rubber protection, side panels and guard plates are connected with high-strength Huck bolts without welds.

Specifications and models

model	Motor power (kW)	Sieve hole size (mm)	Maximum screen area (m ²)	Screen inclination angle	Screen material	Processing capacity (t/unit-h)
ZKJ1530	3×2	0.25~1	5.5	-5°	Wear-resistant polyurethane screen	15~30
ZKJ1836	5.8×2	0.25~1	7.3	-5°		25~40
ZKJ2136	7×2	0.25~1	9.0	-5°		40~70
ZKJ2436	7×2	0.25~1	9.7	-5°		40~80
ZKJ2448	11×2	0.25~1	13.4	-5°		60~90



Application scope

It can be used for dehydration, desliming, sand removal, washing and other operations of coal slime, quartz sand and mud.

New modified wear-resistant polyurethane screen plate



Sieve plate specification parameter table

	Model screen	surface size (mm)	screen hole size (mm)	Remark
0.25mm mesh screen	SW025	610×305	0.25	Ordinary
				water retaining height
				25mm, water retaining
				height 50mm, blind plate
0.35mm mesh screen	SW035	305×305	0.35	Ordinary
				water retaining height
				25mm Water retaining
		610×305		height 50mm
				Ordinary water retaining
				height 25mm Water retaining height 50mm Blind plate
0.5mm mesh screen	SW050	305×305	0.5	Ordinary
				water retaining height
				25mm Water retaining
		610×305		height 50mm
				Ordinary water retaining
				height 25mm Water retaining height 50mm Blind plate
1mm mesh screen	SW100	610×305	1	Ordinary
				water retaining height
				25mm, water retaining
				height 50mm, blind plate
2mm mesh screen	SW200	305×305	2	Ordinary
				water retaining height
				25mm Water retaining
		610×305		height 50mm
				Ordinary water retaining
				height 25mm Water retaining height 50mm Blind plate

LXA spiral separator



The coal spiral separator is a coal preparation equipment that separates clean coal and gangue according to the density of the materials. After the coarse slime enters the spiral separator, because the light and heavy particles are affected by gravity, centrifugal force, friction and water flow pressure in the spiral groove, materials with different particle sizes and densities have different motion trajectories in the spiral groove. Gangue is discharged at the inner edge of the spiral groove, and clean coal is discharged at the outer edge of the spiral groove.

Coal spiral separator is a common equipment for coarse slime separation in thermal coal preparation plants. It is suitable for coarse slime separation between 2 ~ 0.15mm.

Technical features



- Equipped with a patented pre-discharge ruler structure, which can greatly improve the sorting accuracy of the spiral separator;
- the slurry distributor adopts the advanced design of a parallel throat breathing tube to ensure the stability of the slurry throughput and flow rate; the cross section of the spiral groove adopts a special compound curve shape, advanced design, which can maximize the recovery rate of clean coal; the whole machine adopts a modular design, which is easy to assemble and disassemble, and some parts can be added or deleted according to customer requirements; the flow-passing parts are all cast with wear-resistant polyurethane or polyurea Spray coating, high strength, wear resistance, the service life of the whole machine is more than 10 years; The structure of the spiral separator can be optimized and designed according to the coal quality, including adjusting the number of spiral turns and the number of pre-discharged waste rulers.



Application scope



- Thermal coal preparation plant or anthracite coal preparation plant, 2~0.15mm particle size coarse slime separation and recovery, coking coal preparation plant coarse slime waste disposal
- process is used for oxidation, high sulfur coal spiral separator ash reduction and desulfurization process in the coarse coal slime separation and recovery process under the jig screen, we can provide users with a complete set of coal slime classification cyclone + spiral separator + laminated high-frequency vibrating fine screen, a high-efficiency coarse coal slime separation and recovery process general contracting service



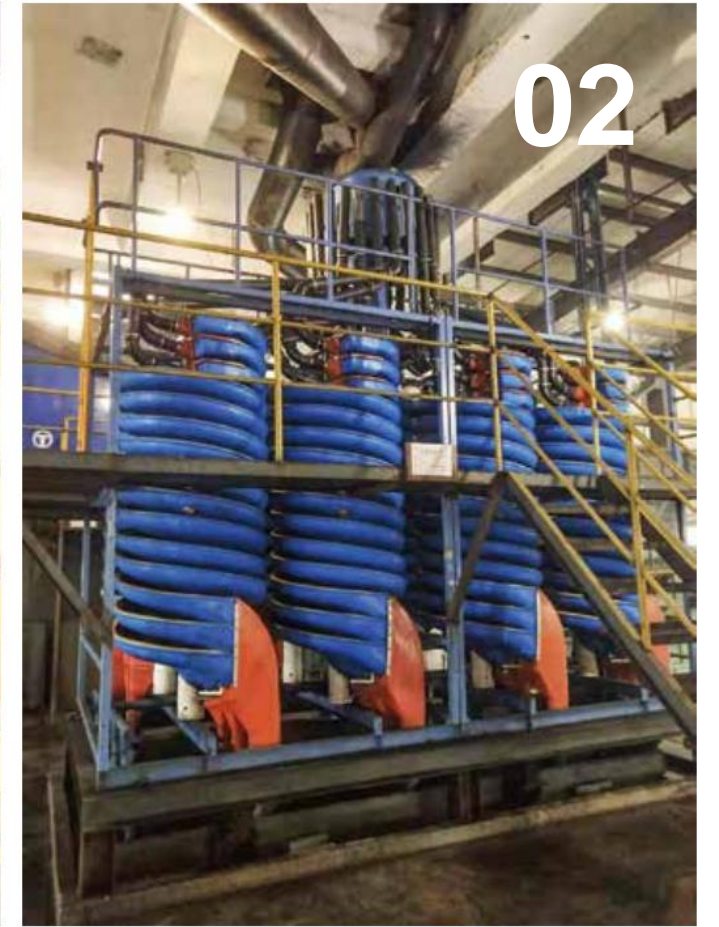
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project	parameter			
	4 columns/table	6 columns/table	8 columns/table	10 columns/table
Feed particle size range	2~0.15mm			
Feed mass concentration	30~40%			
Dry material quantity t/h	30~40	40~60	60~80	80~100
Slurry volume m ³ /h	80~100	120~150	160~200	200~250

Note: This technical specification is based on the structure of 3 heads and 4 turns/column. The production capacity is also related to the nature of the input materials. Please be sure to approve it with Haiwang Company.

01



03



Application site



Huining Group Buldong Coal Co., Ltd.

Du Chaideng Coal Preparation Plant, the parent company of China Coal Group

Shanxi Lu'an Group Yuwu Mine Coal Preparation Plant

Inner Mongolia Manshi Group Guigongou Coal Preparation Plant

Tongmei Group Majialiang Coal Preparation Plant

Tongmei Group Tashan Coal Preparation Plant

Tongmei Group Yongdingzhuang Coal Preparation Plant

Baode County Xuyang Coal Washing and Preparation Co., Ltd.

Hequ County Xuyang Coal Washing and Preparation Co., Ltd.

Jiaokou County Xingwang Coal Co., Ltd.

Shenmu Qingcaojie Mining Co., Ltd.

Inner Mongolia Yingyuan Coal Transportation and Marketing Co., Ltd.

Inner Mongolia Jintai Chengta Coal Co., Ltd.

Jungar Banner Gonggou Coal Co., Ltd.

Kailuan (Group) Co., Ltd.

Dadi Engineering Development (Group) Co., Ltd.

Fuxin Mining Area Wulong Various Operations Co., Ltd. Coal Slime Plant

Lingshi Xisheng Coal Preparation Plant

Gaoping Niushan Coal Preparation Plant

Dingji Coal Mine Coal Preparation Plant

Huaren Xinxing Coal Washing Plant



04

FBS fluidized bed separator



The FBS fluidized bed separator is a self-generated medium developed by Weihai Haiwang Cyclone Co., Ltd. and the Institute of Process Engineering of the Chinese Academy of Sciences for the first time by combining fluidization technology and turbulent field gravity interference sedimentation separation technology. The new sorting equipment with large processing capacity and low operating cost can achieve efficient separation or purification of fine particle materials such as coarse coal slime, ore, pyrite, etc. It has been identified as a scientific and technological achievement by Shandong Province and has reached the domestic leading technology level, and has been listed in the list. Shandong Province's major energy-saving technology industrialization projects and National Torch Plan projects have been authorized with 2 national utility model patents and won 1 Shandong Province Science and Technology Progress Award.

Specifications and models



Specifications and models	FBS1800	FBS2100	FBS2400	FBS3000	FBS3600	FBS3900
Tank diameter (mm)	1800	2100	2400	3000	3600	3900
Processing capacity (t/h)	20~40	30~50	40~60	60~100	100~140	140~180
Bed density (g/cm ³)	1.1~1.8	1.1~1.8	1.1~1.8	1.1~1.8	1.1~1.8	1.1~1.8
Top water volume (m ³ /h)	20~30	30~50	45~70	70~100	120~150	140~180
Top water pressure (KPa)	70~100	70~100	70~100	70~100	70~100	70~100

Technical advantages



01

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- ZL200920305033.1 (a pulse turbulent field fluidized mineral separator)
- ZL201220421393.x (a new coal slime separator underflow discharge valve)
- ZL201520556769.1 (a coal slime separator) machine feeding well)



03

E+H高精度密度传感器

The sensor protection level is IP68, with a high safety factor; the bed density can be accurate to 0.001g/cm³, achieving high-precision density control.



02

智能气动执行器



Use intelligent pneumatic actuators to provide powerful functions such as automatic setting, PID optimal control, valve position signal feedback, and HART communication. It has low gas consumption, is earthquake-resistant, water-resistant, oil-resistant, and corrosion-resistant. It can be applied to low voltage (8.5V), and has a protection level of IP66. It has a high safety factor, a low probability of failure, and is easy to maintain.

04

SIEMENS PLC可编程控制器



The instruction operation speed reaches 0.22s, making signal collection, analysis, and execution faster and ensuring high-precision sorting of the system.

05

Patented structure water tray

The number, size and arrangement of water replenishment holes are calculated through accurate computer CFD simulation. The water replenishment is uniform and the fluidized bed is stable. The water replenishing hole adopts a tapered anti-blocking design and is made of NM wear-resistant material, with a service life of more than 2 years.

06

Patented structure underflow valve

The underflow valve always moves vertically and linearly in the valve seat without shaking, and the underflow discharge is stable; the valve and valve seat are made of stainless steel, with a service life of more than 6 months; it can pass particles up to 10mm, is not easy to block, and has good sealing performance when closed good.

07

Low hydration

The water supply capacity per unit area of the sorting machine is only 10-15m³/m²·h.

08

Intelligent expert control system

The intelligent expert control system can realize automatic control and adjustment of the production process of the FBS coarse slime separator; equipped with a mobile phone smart APP remote monitoring function, it is convenient for on-site managers to conduct real-time monitoring of the production status and operating parameters of the FBS coarse slime separator. Control and monitor.

09

Professionally equipped with upstream and downstream

equipment. Professionally equipped with large-diameter coal slime water classification cyclone to ensure the particle size of the material fed into the sorter; professionally equipped with overflow product dehydration and desliming equipment; small-diameter concentration cyclone or laminated high-frequency vibrating fine screen, so that the coarse slime separation process is more complete and the indicators are more stable.

Application scope

- Coarse slime sorting
- Removal of Pyrite from Finished Coal
- Remove high specific gravity debris from sand
- Mineral sand classification
- Removal of lignite/peat from sand
- Sorting of fine-grained minerals such as tin, lead, zinc, titanium, etc.



Fengling Group Matou Coal Preparation Plant	-----	FBS1800
Hejin Yonghesheng Coal Preparation Plant	-----	FBS1800
Shenhua Group Liuhe Coal Preparation Plant	-----	FBS1800
Jikou Group Huayuan Coal Mine Coal Preparation Plant	-----	FBS1800
Zixing Coking Power Group Coal Preparation Plant	-----	FBS1800
Handan Xinchang Coal Industry Coal Preparation Plant	-----	FBS2100
Yulon Group Shanjiacun Coal Mine Coal Preparation Plant	-----	FBS2100
Jikou Group Yunhe Coal Mine Coal Preparation Plant	-----	FBS2100
Jikou Group Yangcheng Coal Mine Coal Preparation Plant	-----	FBS2100
Jinan Mining Group Yiqiao Coal Mine Coal Preparation Plant	-----	FBS2100
Linkang Group Qiiji Coal Mine Coal Preparation Plant	-----	FBS2100
Xinwen Zhaoguan Coal Mine Coal Preparation Plant	-----	FBS2400
Shenhua Group Quandian Coal Mine Coal Preparation Plant	-----	FBS2400
Hejin Yonghesheng Coal Preparation Co., Ltd.	-----	FBS2400
Hengyuan Coal and Electricity Bay No. 3 Well Coal Mine Coal Preparation Plant	-----	FBS2400
Tunliu County Jinfeng Coal Preparation Plant	-----	FBS2400
Pingmei Group Qixing Coal Preparation Plant	-----	FBS2400
Xiangning Yongchangyuan Coal Preparation Plant	-----	FBS2400
Jinqiao Coal Mine Coal Preparation Plant of Jikou Mining Group	-----	FBS3000
China Coal Wangjialing Coal Mine Coal Preparation Plant	-----	FBS3000
Russia KTK coal preparation plant	-----	FBS3000
Shanxi Lishi Quanshunda Coal Preparation Plant	-----	FBS3000
Ytai Group Talahao Coal Mine Coal Preparation Plant	-----	FBS3000
Hancheng Xiangrui Coal Washing and Coking Co., Ltd.	-----	FBS3000
Hengyuan Coal and Electricity Group Zhaojialing Coal Mine Coal Preparation Plant	-----	FBS3000
Hejin Taihe Coal Preparation Plant	-----	FBS3000
Yongmei Group Cheji Coal Mine Coal Preparation Plant	-----	FBS3000
Yangzhou Coal Group Xinyuan Coal Mine Coal Preparation Plant	-----	FBS3000
Lu'an Group Wuyang Coal Mine Coal Preparation Plant	-----	FBS3000
Shermu Xiangxianghe Coal Mine Coal Preparation Plant	-----	FBS3000
Hejin Municipal Welfare Coal Preparation Plant	-----	FBS3000
Pingmei Group No. 8 Coal Preparation Plant	-----	FBS3600
Gujiao Hongtu Coal Industry Coal Preparation Plant	-----	FBS3600
Lishi Quanshunda Coal Preparation Plant	-----	FBS3600
Baode County Yunsheng Coal Washing Co., Ltd.	-----	FBS3600
Tongmei Group Sitai Coal Mine Coal Preparation Plant	-----	FBS3600
Qinxin Group Coal Preparation Plant	-----	FBS3600