Jiangsu Kingwood Industrial Co., Ltd.

Biomass Pellet Production Equipment

Product Manual

Catalogue

Part I：Company Profile

Jiangsu Kingwood Industrial Co., Ltd. (listed in National Equities Exchange and Quotations, stock code: 871765), located in Zhongguancun Industrial Park of Liyang City, Jiangsu Province, China. The company covers an area of more than 35,000 ㎡, with 30 million USD existing fixed assets. It is a high-tech enterprise which is dedicated to develop low-carbon, recyclable, and renewable energy.

Panorama of the factory

Established in 1999, Kingwood has been dedicated in providing one stop solution in biomass business for our valued customers, and these services are including: consultation, design, manufacture, logistic, installation, commissioning, training, and after-sales service for biomass pellets production line equipment.


KINGWOOD
金梧股份


KINGWOOD

Kingwood has ISO9000 quality management system, ISO14000 environmental management system, passes the CE, SGS certification, and has won various awards in the biomass equipment industry many times. At present, our company has built a large CNC mold punching center, particle machine assembly and testing center, large blank forging base, production line auxiliary equipment manufacturing base, particle production test machine center and so on. Strict quality control is implemented from raw material purchasing, parts processing, heat treatment, welding, and assembly to finished product delivery.

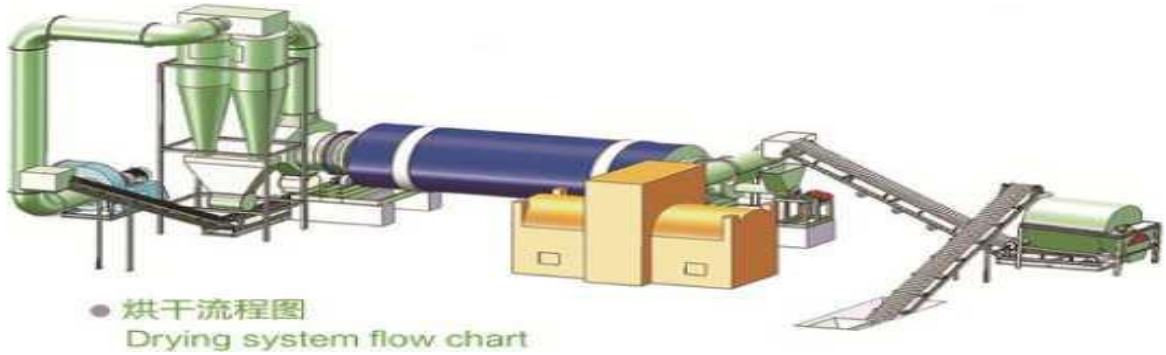

筛选
Screening
烘干
Drying
制粒
Pelleting
冷却
Cooling
打包
Packing
生物质原料
切片
Chipping
粉碎
Pulverizing
生物质颗粒

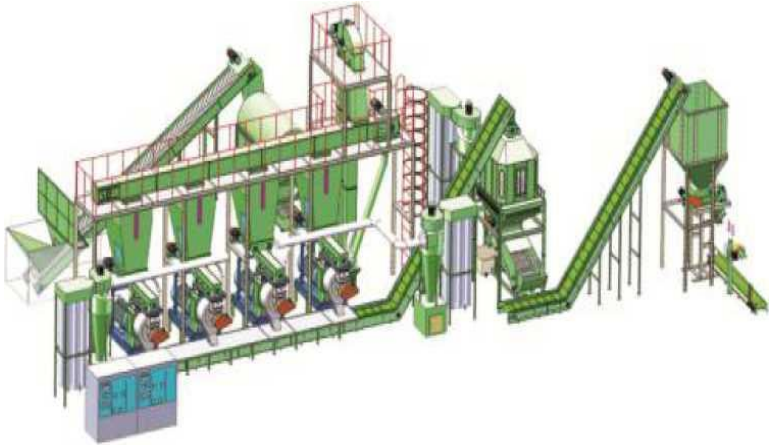
Part II：Workshop Section Introduction

Design concept

The biomass project is mainly divided into chipping (crushing), grinding, drying, Pelleting, silo, cooling, and packaging sections.

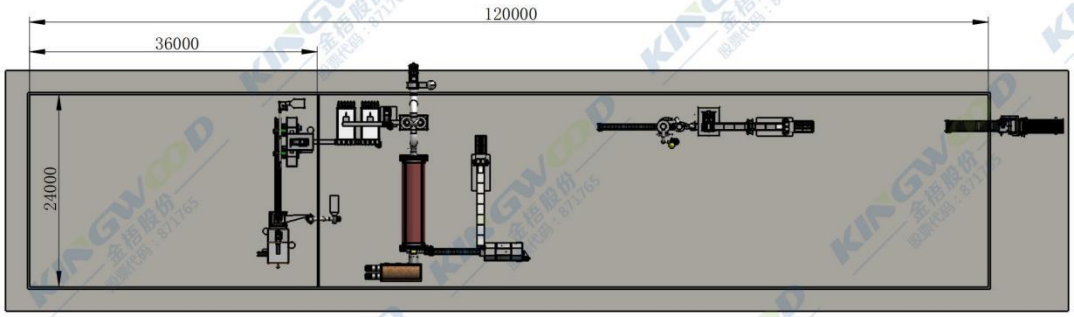
According to the characteristics of customer's raw material, targeted to design the whole production line, the equipment selection is reasonable and the layout is compact; the equipment has a high degree of automation, less labor, and dust removal in the processing workshop is safe and reliable.

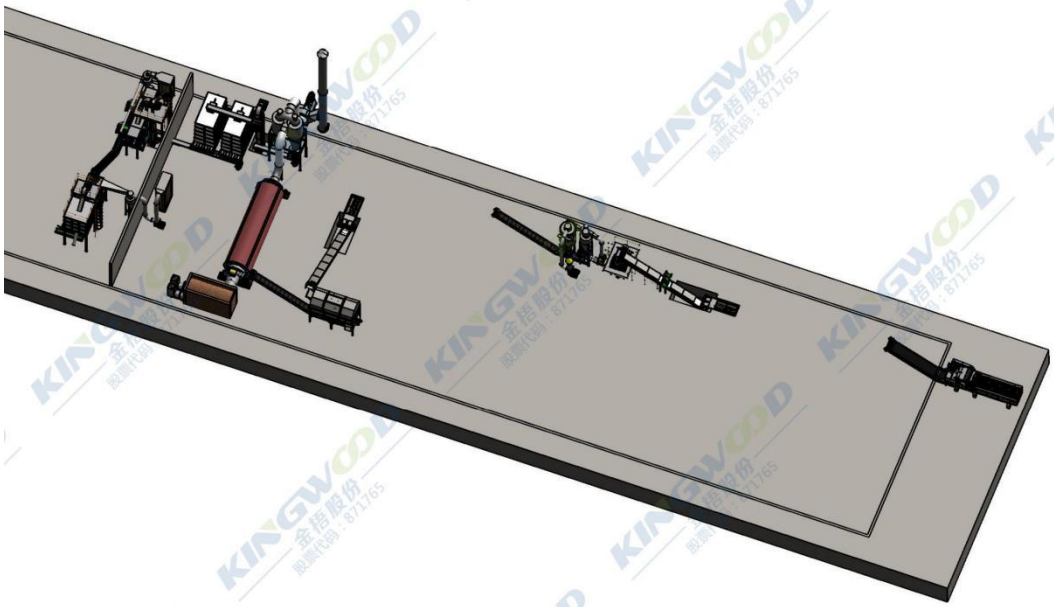


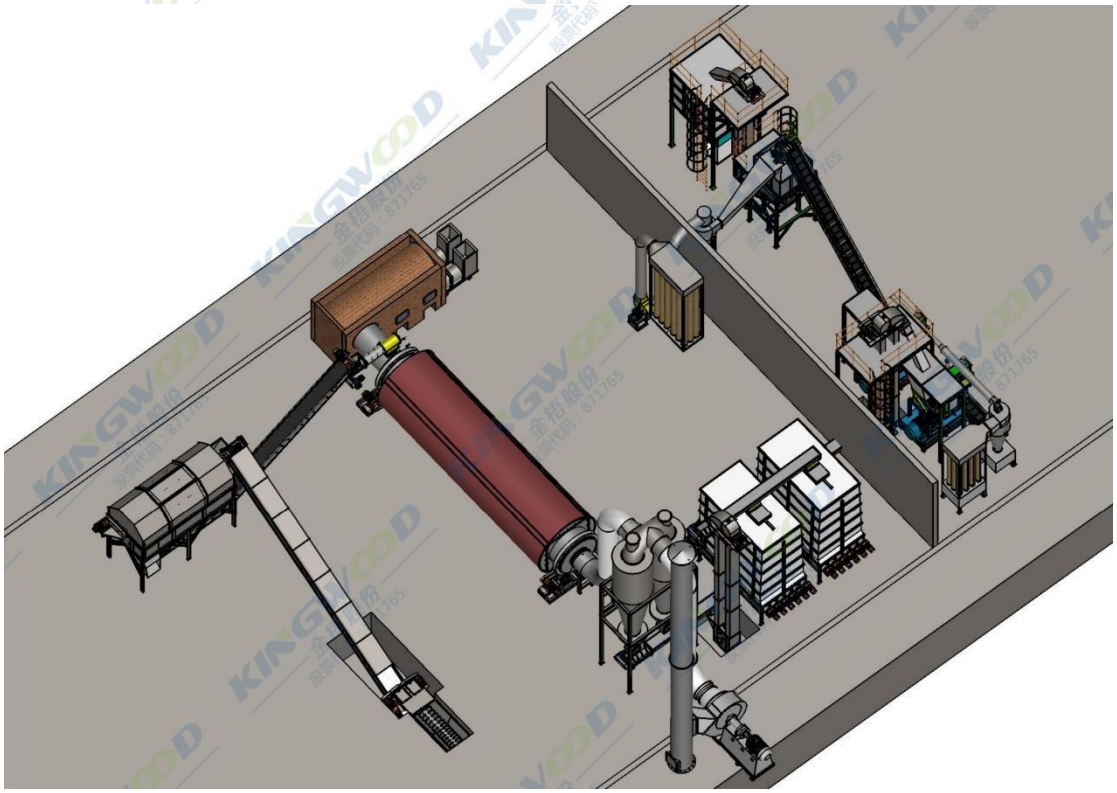


Case 1

Crushing-grinding-drying-silo- pelleting -cooling, and packaging sections.

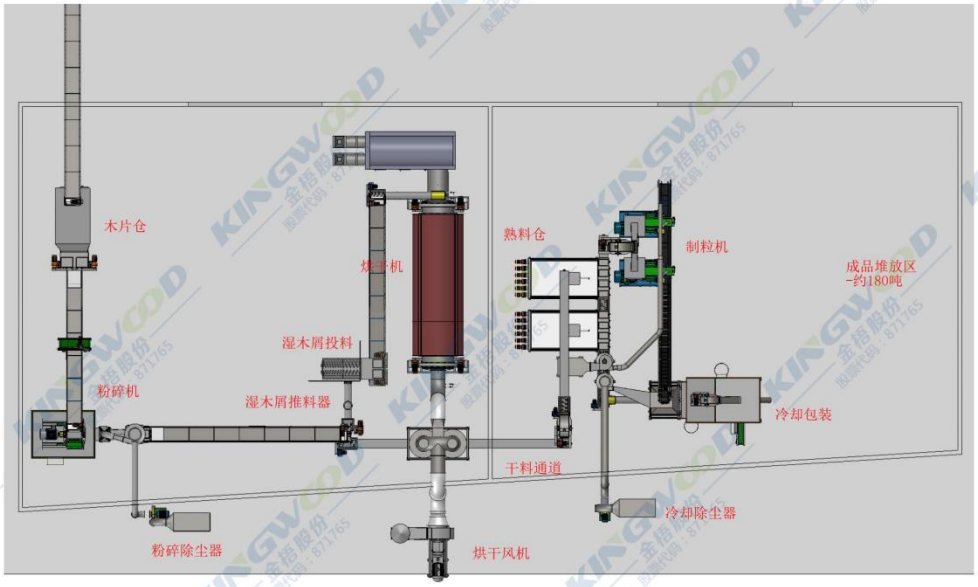


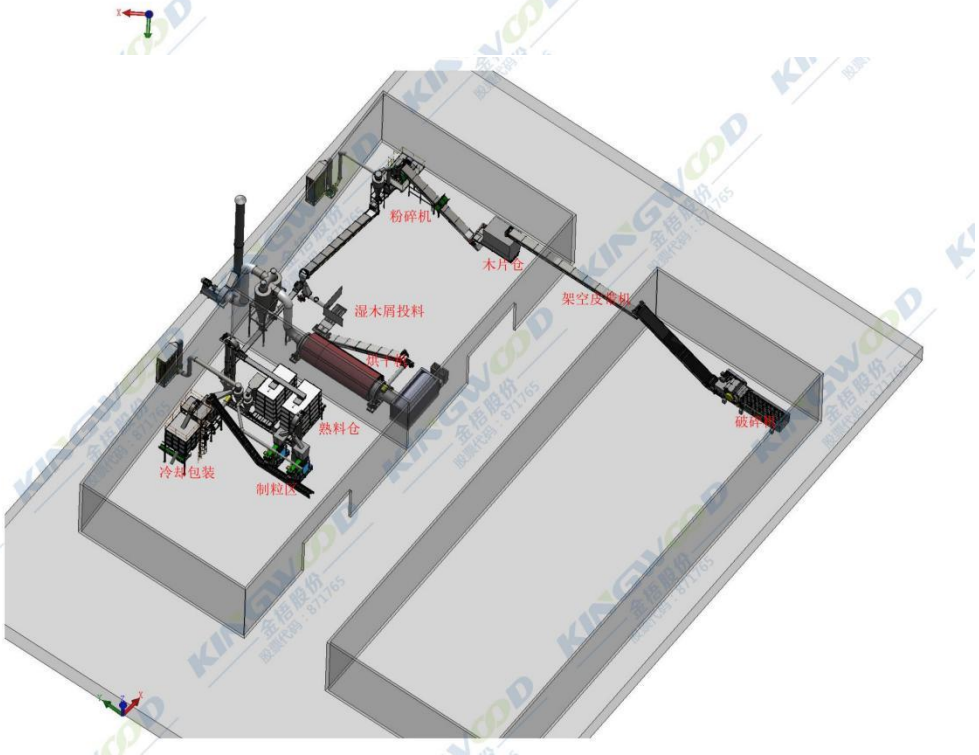


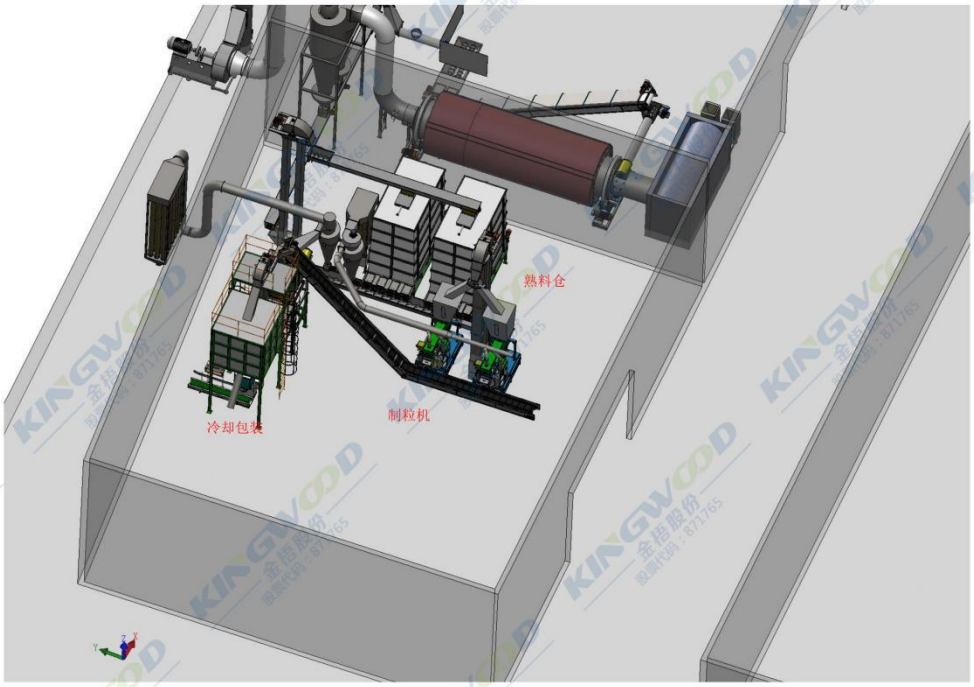


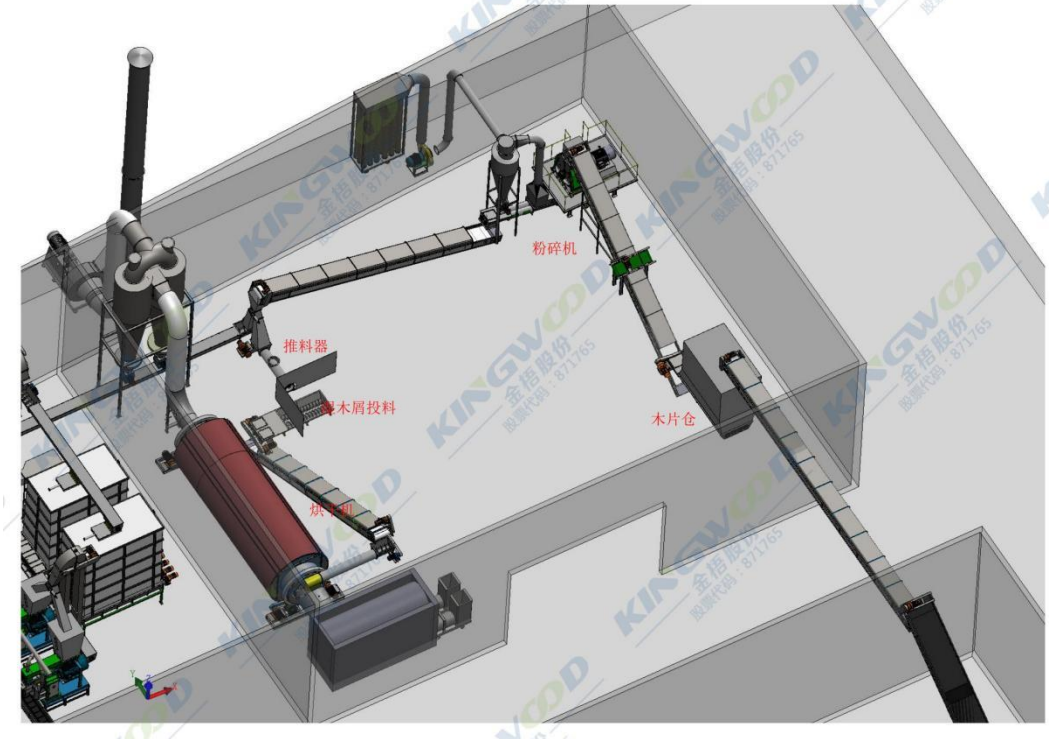
Case 2

Crushing-grinding-drying-pelleting–silo-cooling, and packaging sections.



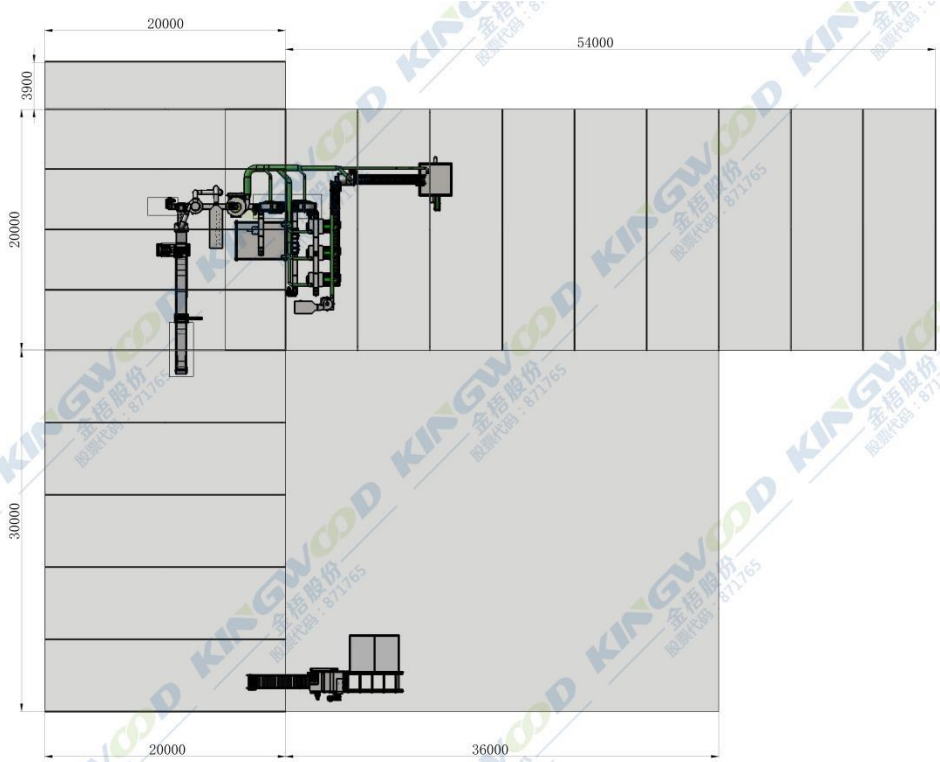


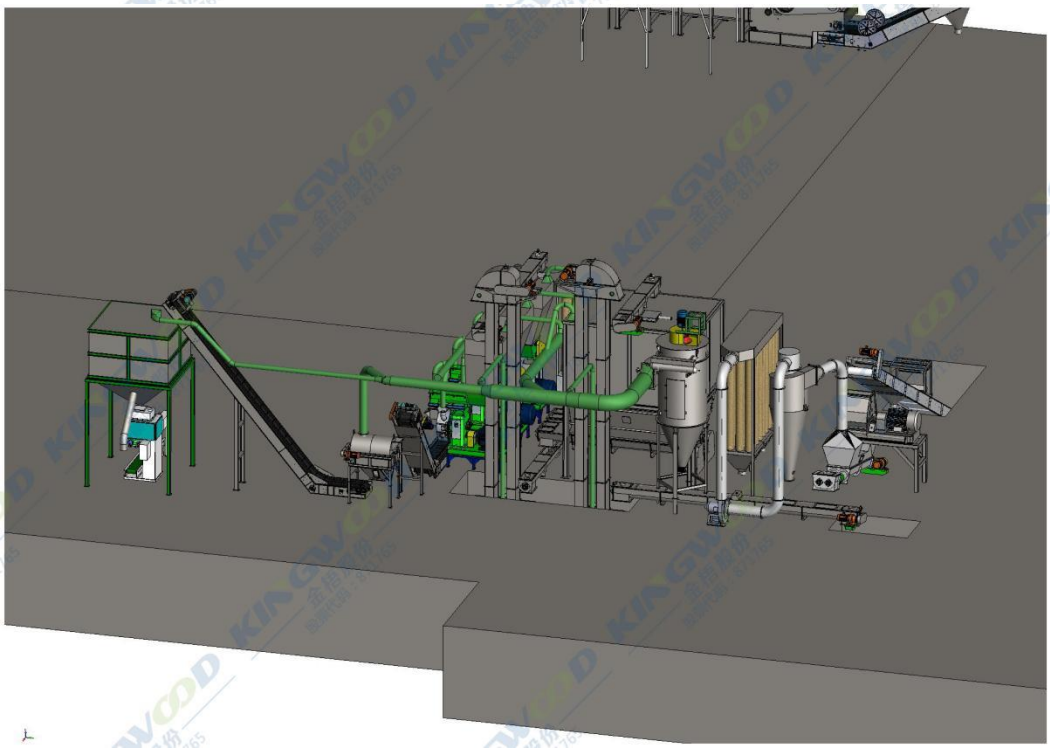

熟料仓
制粒机
冷却包装

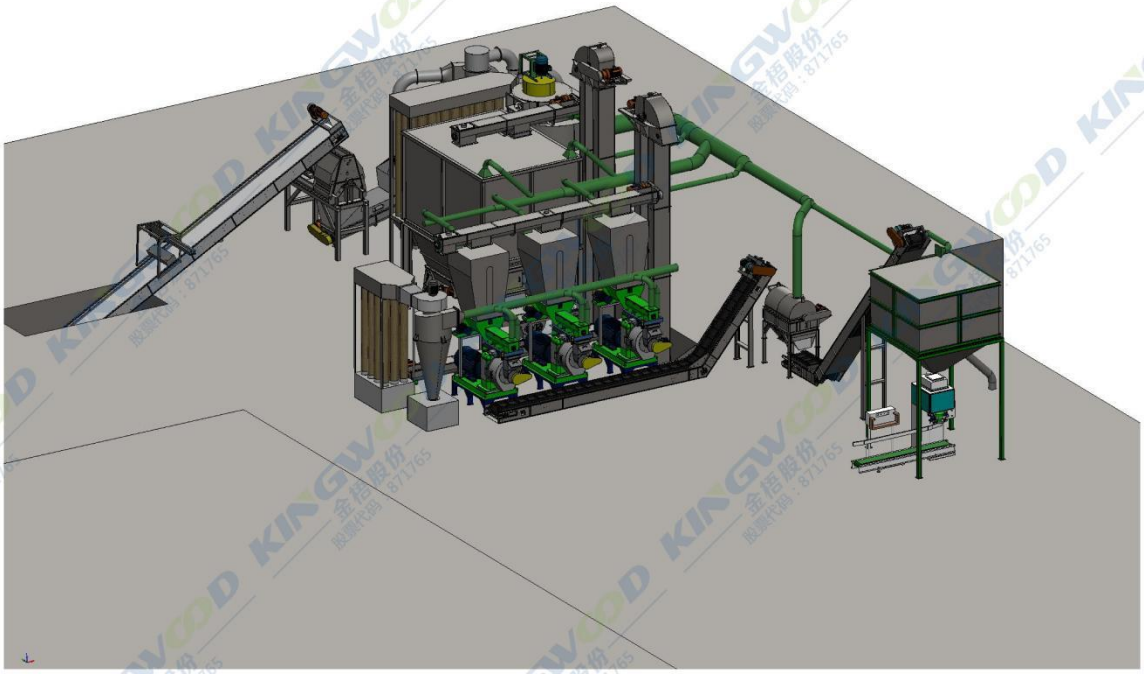

粉碎机
推料器
木片仓

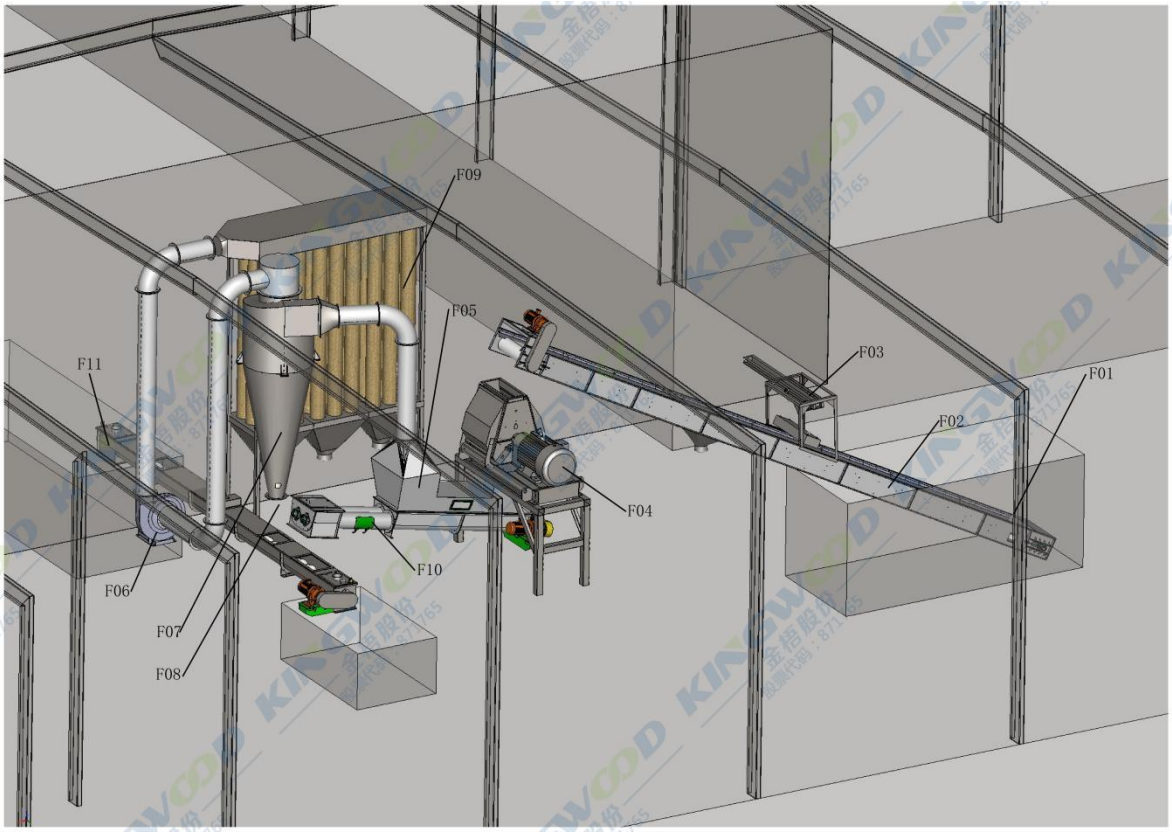
Case 3

Chipping-grinding- raw material silo- pelleting -screening packing.








F09
F05
F11
F03
F01
F02
F04
F10
F06
F07
F08

Part III：Product Introduction

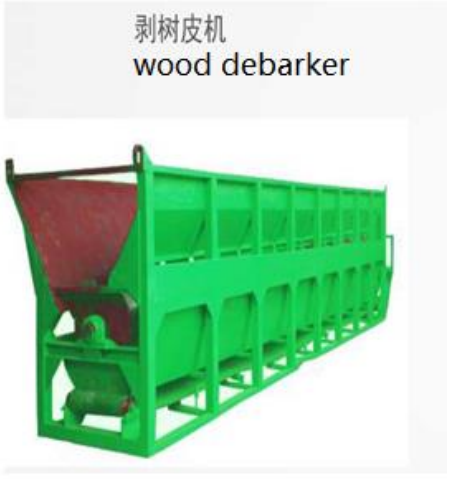
3.1 Debarker

Product Introduction

This series of wood debarker can be used for peeling the barks from wood for MDF factory，paper mills, veneer rotary cutting factory, wood chip factory, paper pulp factory, forest farms, etc. It is suitable for peeling of newly cut coniferous wood and part of broad-leaved wood, and can also complete peeling of part of frozen wood and dry wood. Widely adaptability to wood, it has very good effect on popular wood species such as eucalyptus and poplar, and it is supporting equipment suitable for assembly line operation and automatic production.
The wood debarker uses the unique force generated by the rotor with debarking teeth to make the wood section circulate in the silo plate, and it also rotates around the axis of the wood section itself, as well as irregular beating. The wood segment and the teeth, the wood segment and the wood segment, and the wood segment and the bin groove are constantly rubbing, impacting, squeezing, and the bark is quickly separated to achieve the peeling effect.

Product featur

1. Adopt opening silo, it can be feed by one side and discharge at the other side
2. Strong adaptability to wood and can debark the wood segments of different tree species, diameters, lengths, and shapes.
3. Less energy consumption, low failure rate, less maintenance workload, less vibration, and noise.





Technical parameter

specification	6M	12M	16M	20M
Roller Día (mm)	Φ325	Φ325	Φ325	Φ325
Speed (RPM)	90	90	90	90
Production capacity (T/H)	6-8	12	15	20
Debarking Rate	> 90	> 85	> 85	> 85
Power	7.5kwX2	7.5kwX4	15kwX4	18.5kwX4
Weight (ton)	3.2	7	12	14.8
Dimension (mm)	6600X1500X1400	12000X1500X1800	16500X1600X2000	20000X1600X2200

3.2 Chipper (Drum Chipper)

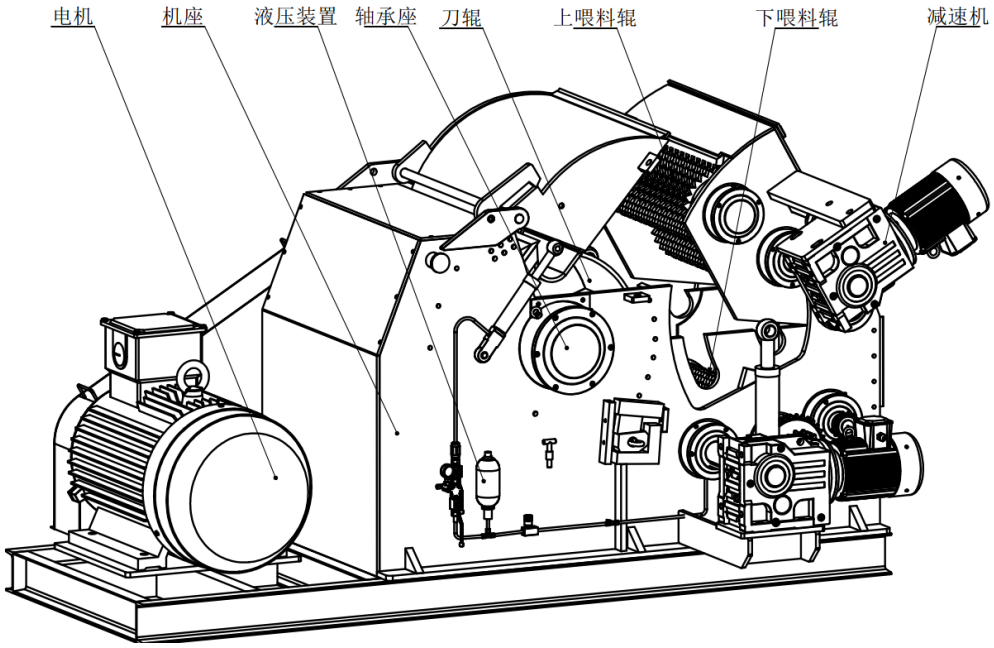
Introduction

Raw materials of the Drum Chipper are mainly undersized wood logs, wood harvesting residues (branches, branches, etc.), wood processing residues (slats, slabs, garden wood cores, waste veneers, etc.). The machine is compact and reasonable in structure, easy to operate, high in production capacity, safe and reliable, and easy to maintain.

The Main structure

The Chipper is composed of machine base, knife roll, upper and lower feed rollers, feeding

belt conveyor, hydraulic system, etc.

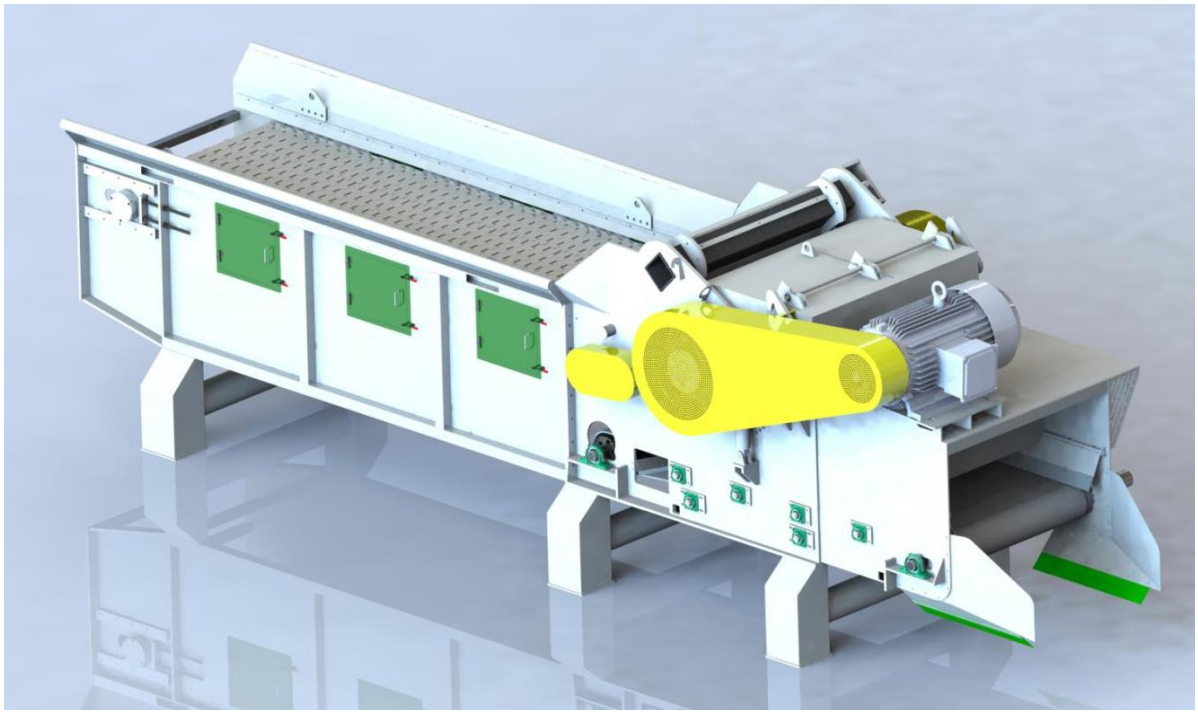


Technical parameter

型 Technical parameter / Model	BX216	BX218	BX218D	BX2110	BX2113	BX2113/13
Roller Día mm	650	800	800	1000	1300	1300
Nomber of knife (pcs)	2	2	2	2×2	2	4×2
Feed opening Dimensions（mm）	180×500	225×680	240×750	330×1050	400×700	400×1250
Speed of Knife roller (Rpm)	590	650	650	550	500	375
Feeding Speeds (m/min)	37	37	38	38	38	44
Material max Dia.（mm）	120	160	160	210	230	250
The length of the wood chip （mm）	30	30	30	30	38	30

Production capacity (m^3/h)	10	15-20	38	75	34-64	90-132
Power of main motor (kw)	55	110	132	220	200-250	450-600
Power of feeding roller motor (kw)	3×2	4×2	4×2	7.5×2	7.5×2	11×2
Power of oil pump motor (kw)			0.55	2.2	3	2.2
G.W(KG)	4070	7000	12500	118400	11840	20000
Dimension (MM)	4348×1730×1258	4670×2150×1500	4340×3550×1500	3670×2517×2050	3670×2517×2050	5484×5400×1860

3.3 Crusher



Introduction

Biomass integrated crusher processes a wide range of raw materials, and can process wood, such as various small-diameter wood, slabs, slats, round wood cores, etc., and widely application to various non-wood materials such as various bulk straws, cotton firewood, reeds, etc., our machine adopts intelligent feeding chain plate, and the feeding speed can be automatically adjusted according to the load of the main motor. Make the machine run at full load to avoid no-load operation, feed more smoothly, and increase the production capacity. It is the ideal equipment for biomass power plants and biomass pellet plants.

The integrated crusher (hammer head type) is not afraid of the nails on the bamboo plywood or cargo pallets on the construction site. It is an ideal choice for professionally crushing the bamboo plywood, the waste composite on the construction site, and wooden pallets.

The integrated crusher can endow these industrial wastes and forestry wastes for secondary utilization.

Technical Parameter

XPJ1250 Crusher		XPJ1400 Crusher	
1、Inlet Equipment	**Belt Conveyor**	**、Inlet Equipment**	**Chain Conveyor**
Type	Belt	Type	Chain
Model	1200mm wide belt	Model	1380mm wide chain plate
Width	1200mm	Width	1380mm
Length	4500mm	Length	4500mm
Drive	Reducer/hydraulic motor	Drive	Reducer/hydraulic motor
2、Main Machine	**Integrated Crusher**	**2、Main Machine**	**Integrated Crusher**
Dimension	8510mm×2300×2660	Dimension	8010mm×2400×2660
Knife Length	290mm	Knife Length	290mm
Speed of Knife Roller	680rpm	Speed of Knife Roller	680rpm
Production Capacity (Knives)	8-12t/h around	Production Capacity (Knives)	10-15t/h around
Production Capacity (hammer type)	4-6t/h around	Production Capacity (hammer type)	6-8t/h around
Inlet Dimension	1250X500	Inlet Dimension	1400X500
Max diameter of processed material	≤350	Max diameter of processed material	≤400
Quantity of Knives	10PCS	Quantity of Knives/hammers	12PCS/28PCS
Main Motor	Three-phase asynchronous motor	Main Power	Three-phase asynchronous motor
Main motor power	132KW	Main motor power	185KW
Main motor coil	Copper core	Main motor coil	Copper core
Main motor pulley	8 channel	Main motor pulley	8 channel
3 Outlet Equipment	Belt Conveyor	**3** Outlet Equipment	Belt Conveyor
Drive	**Reducer/hydraulic motor**	Drive	**Reducer/hydraulic motor**

Width	1000mm	Width	1200mm
Discharging height	4000mm	Discharging height	4000mm
Conveying Length	8000mm	Conveying Length	8000mm
4 Hydraulic System		**4 Hydraulic System**	
Control Cabinet	Automatic	Control Cabinet	Automatic
Electrical remote control	With invertor	Electrical remote control	With invertor
5、Hydraulic System		**5、Hydraulic System**	
Oil Tank Volume	400L	Oil Tank Volume	400L
Hydraulic lifting rod	60*300-550	Hydraulic lifting rod	60*300-550
Power	22KW	Power	22KW

The main structure

The Crusher is composed of machine base, rotor, upper and lower feed rollers, feeding belt conveyor, hydraulic system, etc.

As shown in figure 1

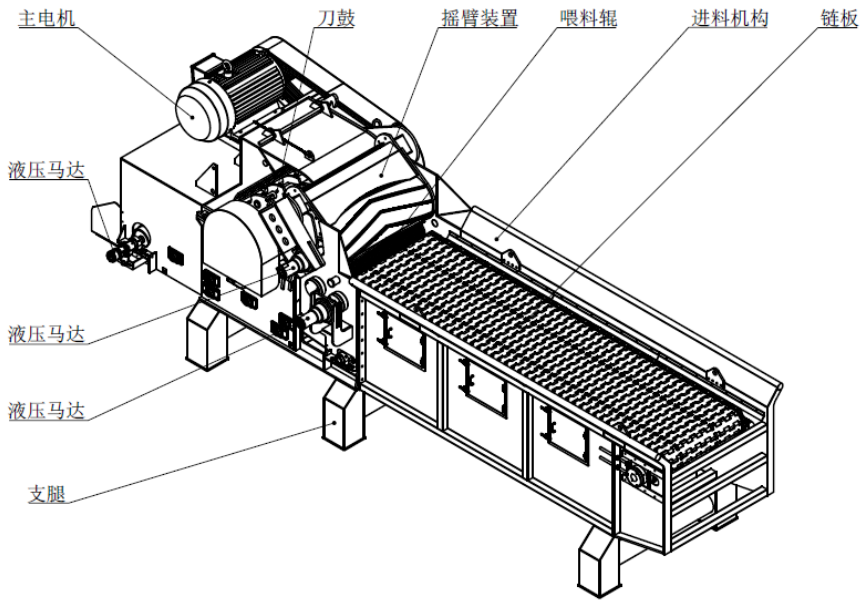


Figure 1

1. Machine base: The machine base is adopting with high-strength steel plate, it is the supporting foundation of the whole machine. The support of the bed knife base is welded into a whole machine base for placing the bed knife base. The bed knife is made of high-strength bolts through the press block fixed on the bed knife base with specially, and the bed knife base can be freely drawn out through the hole on the side of the wall plate of the base，It is fixed on the base by two clamp keys. The cut wood chips fall through the holes of the screen and are discharged from the bottom of the machine base, the oversized wood chips can be broken again by the crushing rod installed on the machine base.
2. Knife drum assembly：the knife drum is a spare part of the Crusher，It is welded by steel plates (the small crusher drum is an overall solid structure). It has good rigidity and moment of inertia, and has undergone a dynamic balance test. The main shaft and the knife drum are pressed together by a locking device or a flat key. Its structure is simple, easy to assemble and disassemble, and reliable. Both ends of the main shaft are supported by self-aligning roller bearings, and the bearing seat is fixed on the base. The knife drum is equipped with 10 or12 flying knives，it is use specialized flying knife bolts to fix on the knife drum through the press block.
3. Upper and lower feeding mechanism：The upper feeder is composed of upper feeding roller base, feeding roller, feeding roller shaft, pendulum shaft, reducer, and et. The lower feeder is composed of feeding roller, supporting roller, feeding roller shaft, reducer, etc. The feeding roller has a large diameter, a heavier weight, and coarse teeth on the surface, so that is can compress the raw material and makes it enter the cutting position at a balanced speed to ensure the length and quality of the chips.The upper feeding roller is tightened with the shaft by a locking device, and the shaft is supported by Self-aligning roller bearing, the bearing base is fixed on the upper feeding roller base, and it can swing up and down around the pendulum axis to ensure that automatically adapt to the feeding height. The lower feeding roller is tightened with the shaft by a locking device, and the shaft is supported by Self-aligning roller bearing, the bearing base is fixed on the machine base, The upper and lower reducer drive the upper and lower feed rollers separately, the direction of rotation of the upper feeding roller is the same as that of the knife drum, and the direction of rotation of the lower feeding roller is opposite to the knife drum.
4. The feeding device has two forms: belt conveyor or chain feeder. Belt transportation is composed of head wheel, tail wheel, belt, and the frame. The head wheel is driven

by the lower feeding roller shaft through a chain, and is driven by the head wheel to feed the raw materials into the feeding port. chain feeder is composed of the groove, base and driving part.

5. Hydraulic buffer system: in addition to small crushers, large and medium crushers all have hydraulic buffer systems. The hydraulic buffer system is composed of oil pump, large and small oil cylinders, one-way throttle valve, stop valve and other pipeline components

3.4 Grinder

66 Series Fine Grinding

Coarse Grinding

Overview

Hammer grinder can crush wood chips and other materials，And it is specially designed for fibrous raw materials, raw materials with high moisture and oiliness, and fine pulverization. This series of grinders are welded by thickened steel plates, Wear-resistant replaceable parts and double wear-resistant plates are used in the grinding chamber and the parts of contact material，The motor and the rotor of the grinder are mounted on the same heavy-duty base, it is adopt direct coupling transmission, and the rotor has been checked for dynamic balance, it can also work in both forward and reverse directions, and the hammers are arranged symmetrically. Our machine has simple structure, fastness and durability, safety and reliability, easy installation, simple operation, small vibration, and high productivity.

Technical parameter

Fine Grinding

Parameter	66*40	66*60	66*80	66*100	66*120
mm diameter	660	660	660	660	660
rpm Rotating speed	2960	2970	2970	2980	2980
m/s Speed of hammer line	102	102	102	102	102
mm Width of grinding chamber	400	600	800	1000	1200

Number of the hammer	40		64		84		116		136
Power (Kw)	37	45	55	75	75	90	110	132	160

Coarse Grinding

Parameter Model	120*80		120*100		120*120	
Diameter mm	1200		1200		1200	
speed of the rotating （rpm）	1450		1450		1450	
Speed of hammer line (m/s)	91		91		91	
Width of grinding chamber(mm)	800		1000		1200	
Number of the hammer	96		128		144	
Power (Kw)	110	132	160	185	200	250

Target Capacity

Fine Grinding

Model	66*40		66*60		66*80		66*100		66*120
Power (KW)	37	45	55	75	75	90	110	132	160
Production capacity(T/H)	1	1.5	1.8	2.5	2.8	3	3.5	4.3	5

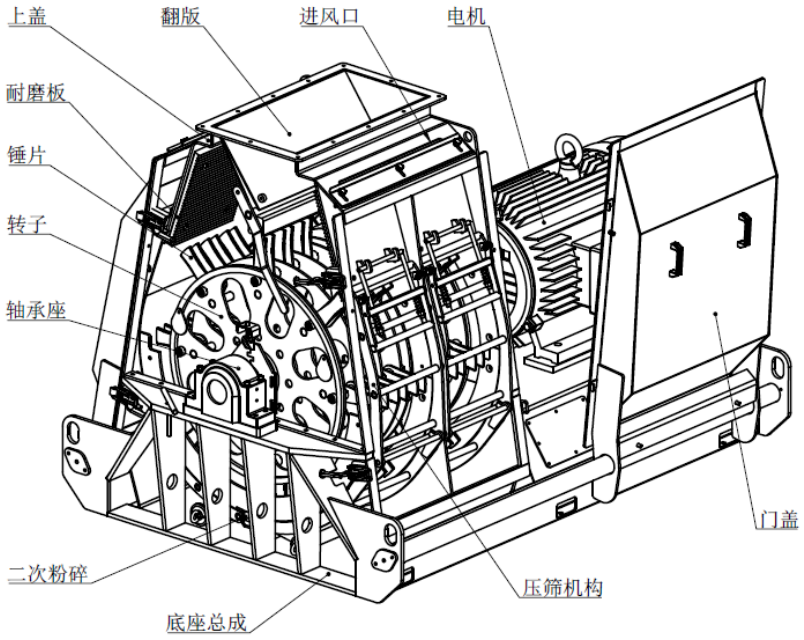
Coarse Grinding

Model	120*80		120*100		120*120	
Power (KW)	110	132	160	185	200	250
Production capacity(T/H)	3.6	4.4	5.2	6	6.6	8

The list of the quick-wear part

No	Name、Codename	Qty/PCS	Installation location	Place of the purchase or Tel
1	Sieve plate	2	Grinding chamber	Kingwood/ henry18205276256
2	Pin roll	4 or 8	Rotor	
3	Hammer	见表 1	Rotor	
4	Wearing plate	2	Grinding chamber	

The main structure



Base：the heavy-duty base is used to connect and support various parts of the grinder, reduce vibration, increase reliability, and extend life. The grinded materials are discharged from the discharge port at the lower part of the base.

Rotor：it is composed of the main shift，hammer frame plate、pin roll、hammer、bearing、base the bearing, and other parts, it is the main moving part of the grinder, the rotor speed is too high, so that when the rotor is not in the working

Operating door: The operating door needs to be opened when you replacing the sieve plate or hammer. There is a proprietary sieve pressing mechanism, which makes the replacement of the sieve plate very convenient and requires less operation time.

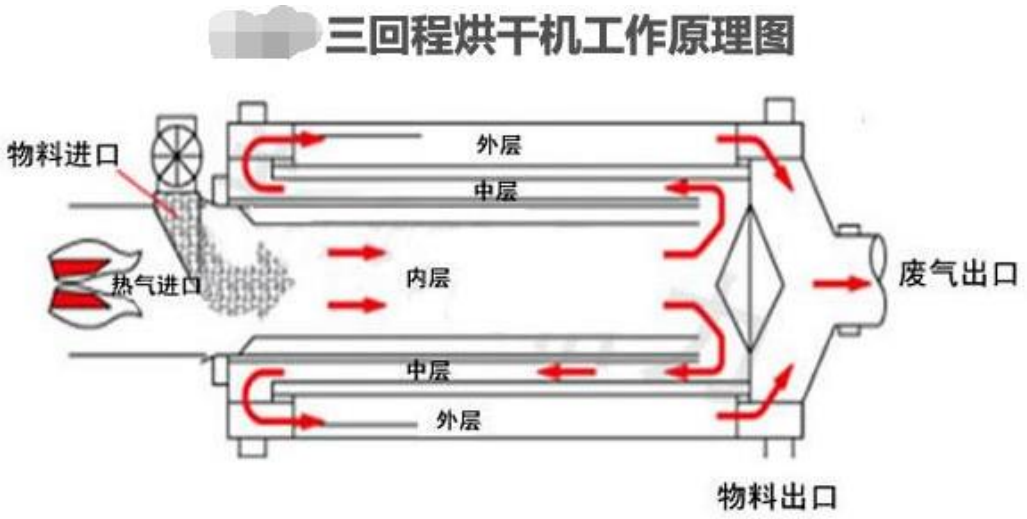
Wearing plate：The parts in the grinding chamber and contact with the material are wearing plate, All the wearing plates of the grinder are designed as replaceable parts. When worn to a certain degree, they must to be replaced to prevent damage, falling off, and accidents caused by entering the crushing chamber.

Upper cover：connect in wearing plate，keep the grinding chamber In a sealed environment when the operating door has been closed.

Work process

When the material need to grinding，the material is feed from the top feed port with this machine, then through the feed guide plate from the left or right into the grinding chamber, the material is gradually crushed under the action of the high-speed rotating hammer and the friction of the sieve plate, and is discharged from the discharge port of the base through the sieve hole under the action of centrifugal force and air flow.

3.5 Dryer



Overview

With the increasing tension of environmental resource, the comprehensive utilization of the biomass energy has been increasingly valued by us, Biomass pellet fuel manufacturing equipment has been further developed.

In terms of bioenergy utilization, due to the high-water content of the wood chips, sawdust, straw, etc., Direct combustion has low heat efficiency, incomplete combustion, and produces a large amount of smoke, which increases the cost of environmental protection and dust removal. The international general biomass utilization method is that the biomass raw materials are through crushed, dried, and dehydrated, dashed, and high-pressure forming，when the water content reaches 12-15%, calorific value is 4200-4800kcal/kg, and the ash content is ≤1%. It is made into energy-gathering pellet fuel for efficient use. According to market demand, our company has developed a triple layer single channel dryer for raw materials in a targeted manner. It is suitable for wood chips, sawdust, bamboo chips, wooden shavings, shavings, barley stalks, oat stalks, wheat stalks, rye stalks, rice straws, sorghum stalks, corn stalks, potato vines, bean stalks, peanut vines. According to the characteristics of each biomass material, Production capacity, application requirements, cost control, degree of automation, on-site working conditions to carry out optimized drying process technology. This machine has a large output, high efficiency, and energy saving, and cover a small area, it can save energy by 30-50% compared with ordinary dryers, which can maximize energy saving and drying costs.

Working principle

The material process is the crushed material with about 35-50% moisture is sent to the drum by the conveyor to realize the downstream drying, the materials are continuously picked up and scattered under the inner layer of the copy board, and move forward in a spiral manner, through the three layers of inner, middle, and outer to realize the heat exchange of materials and hot air，The material that achieves the drying effect travels quickly and discharged out of the drum under the action of the wind, wet materials that have not reached the drying effect cannot move quickly due to their own weight，the material is dried in the control stroke, so that can be achieve the drying effect，our dryer can decrease the raw material moisture content to 12-15%，when the drying process is completed and discharged by the screw conveyor. A shock cleaning device is installed inside the drum to prevent the material from adhering to the wall of the drum.

The gas process is that air through the pressurized by the blower of the hot blast stove and enters the hot blast stove for combustion and heating, when the temperature reaches 500-550℃, it will be sucked into the dryer by the induced draft fan after the dryer to dry the material and evaporate the water, when the temperature drops to 55-60℃ and discharged from the dryer, the dust-containing moisture is collected by the cyclone dust collector, and the wet dust collector is purified and discharged up to the standard.

The features

6. This sawdust dryer has achieved intelligent control---the operating parameters can be controlled automatically with one-button operation.
7. The sawdust dryer can automatically remove impurities and iron to ensure that the impurities of the wood chips to be baked will not enter the subsequent process
8. The thermal efficiency of three-layer dryer is 30% higher than traditional single layer dryer.
9. With four-wheel drive, more stable and reliable transmission.
10. It covers about 50% less land than the single-drum dryer, which reduces the civil construction investment by about 50%.

6. The internal structure of the dryer adopts a variety of high-efficiency lifting plate combination modes, which can effectively control the drying process and heat distribution, with high heat utilization, and the exhaust gas exhaust temperature below 50°C.
7. Variable speed is available to control the material feeding volume, and the desired final moisture index can be easily adjusted and controlled according to the customer's requirement.
8. Modular dust collection, dust removal, purification and heat recycle, are safe and environmentally friendly.
9. It is equipped with a variety of new energy-saving hot air stoves, which are highly energy-efficient, controllable heating, and simple to operate， energy consumption can be reduced by about 30%, power consumption can be reduced by 20%, and operating costs are lower

Technical Parameters

Spec	Capacity （kg/hour）	Water removal （kg/hour）	Diameter X Length）	Heat Required （kcal/hour）

SG-10	1000	700	ø2000X4550	70X10^4
SG-15	1500	1050	ø2000X6550	105X10^4
SG-20	2000	1400	ø2300X6040	140X10^4
SG-25	2500	1750	ø2300X7100	175X10^4
SG-30	3000	2100	ø2300X9060	210X10^4
SG-40	4000	2800	ø2700X9660	280X10^4
SG-50	5000	3500	ø3000X10570	350X10^4
SG-60	6000	4200	ø3450X10200	420X10^4

Evaporation capacity=production capacity *<(1-15%)/(1- Initial moisture)-1>=3x<(1-15%)/(1-50%)-1>=2.1ton

The dryer evaporates 60 kgs of water per cubic meter

To evaporate 1kg of water, 800-1000 calories are required;

3.6 Pellet Mill

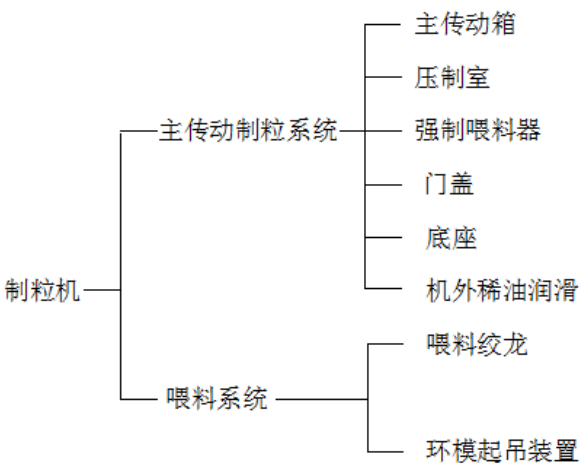
Model	Dimensions	Power of the main motor	Inner diameter for ring die	Capacity of hourly	Weight
JWZL-420	2990-1320-2300	90 kw	420 mm	1-1.5 t/h	3.5t
JWZL-688	3530-1580-2390	200 kw	688 mm	2.2-3t/h	9.5t

The Features

1. The main transmission adopts high-precision gear, and the ring die adopts a quick-release hoop type, which increases the efficiency by 20%
2. The transmission part of the whole machine adopts high-quality imported bearings and oil seals to ensure high-efficiency, stable transmission, and low noise.
3. Special safety pin design for horizontal machine, mechanical overload protection, more safety and lower failure.
4. Unique stainless steel reinforced cyclone propulsion device, forced feeding, increase material entry speed, reduce vibration, and increase production capacity.
5. Optional non-stop refueling system, water cooling system, high efficiency, low energy consumption, stable operation, the discharging quality is stable and reliable.

This machine is mainly composed of two parts: feeding system and main drive granulation system. The specific structure is shown in the system breakdown diagram as below:

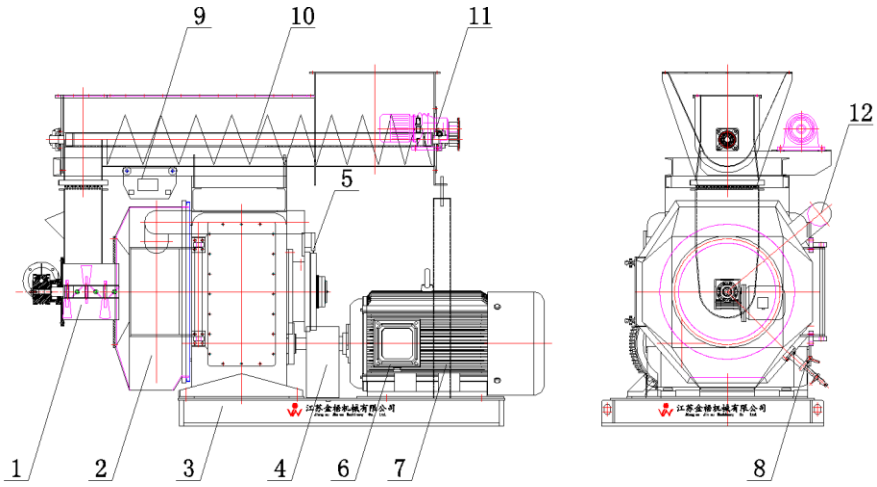
系统分解图



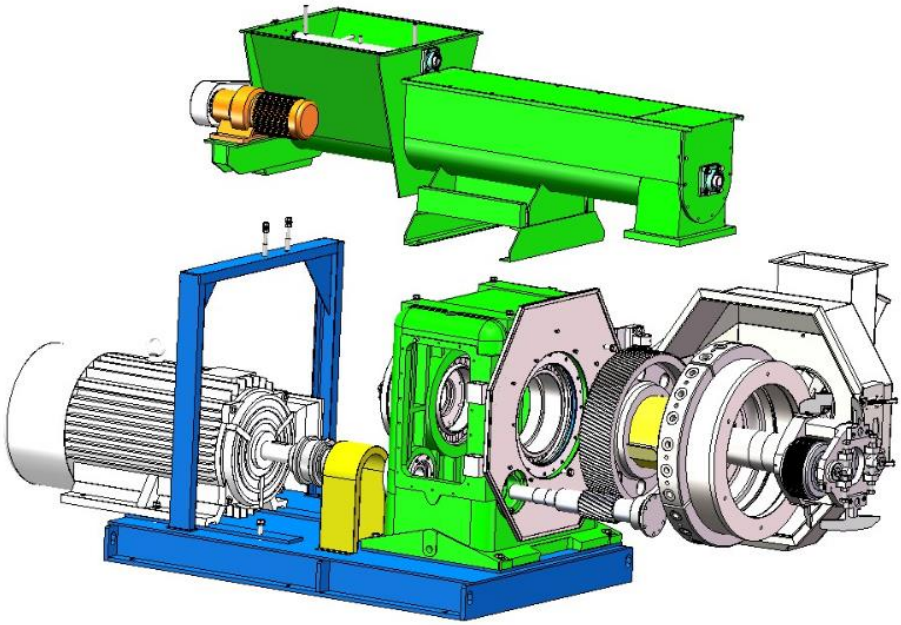
Working principle

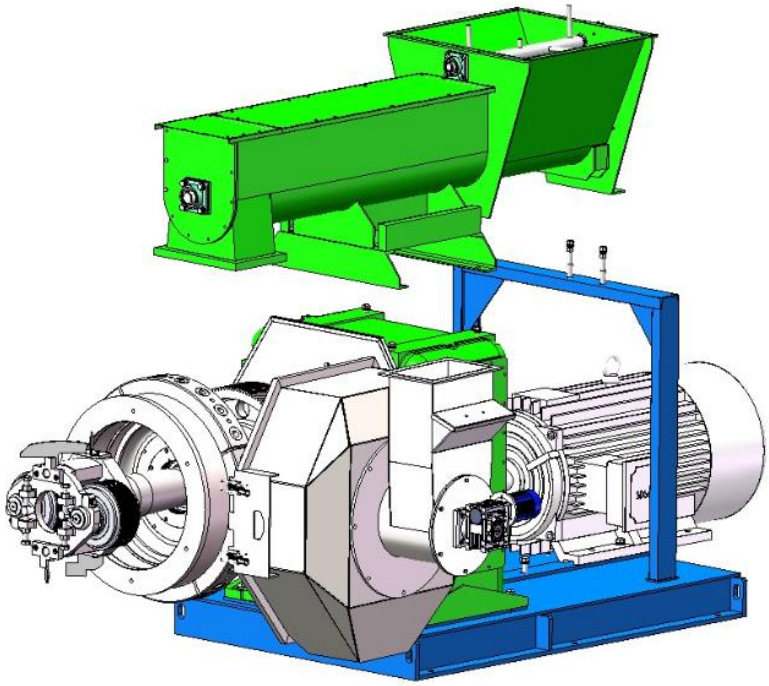
The powdery sawdust, straw, bark, and other materials in the pelleting silo are sent into the chute through the feeding screw, the material enters the compression chamber through the forced feeder, and feed the material into the two pressing areas in the ring die through the feeding scraper, because the high-speed rotation of the ring die brings the material into between the ring die and the roller, the material is gradually compacted under the strong squeezing action of the ring die and the roller, and formed in the die hole, because the extrusion of the material between the ring die and roller is continuous, so that the formed material is continuously discharged from the die hole in a columnar shape, and then cut into particles of the required length by the cutter, and enters the next process.

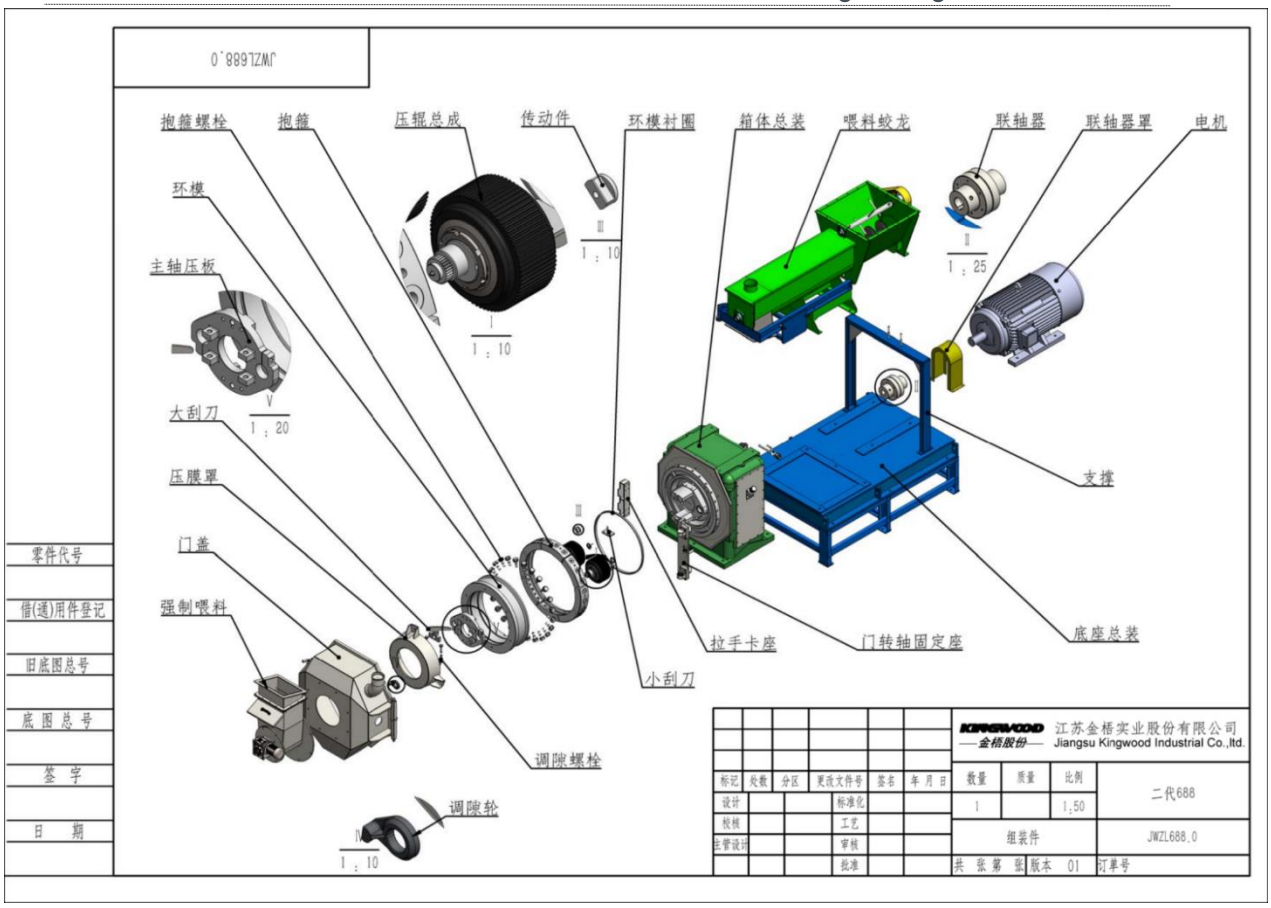
Structure diagram of the pellet mill



1.Feeder 2. Cover 3. Base 4. Coupling cover 5. Switch 6. Mian motor 7. Support frame 8. Cutter 9. Hoist 10. Feeding screw 11. Feeding reduce screw 12 Hygroscopic duct







3.7 Automatic de-ironing separator

RCYD type automatic magnet iron remover is a new generation of hanging self-unloading permanent magnet iron removing equipment that integrates the advantages of similar equipment at home and abroad, this series of products are used in conjunction with belt conveyors, vibration conveyors and other conveying equipment to remove ferromagnetic substances mixed in bulk materials, it plays a reliable protective role for various types of crushers, grinders and other crushing equipment, at the same time, it is also used to improve and purify the quality of raw materials, and it can also recover ferromagnetic substances in the materials. This series of products form the best magnetic pole structure through computer-aided design. It has the strength characteristics of high magnetic field large suction, stable and reliable performance, reasonable structure, and easy to maintain, stable and reliable work in the extremely harsh environments, and low failure rate. The performance indicators of this series products are standard in line with the JB/T8711-2006, and some of products have exceeded this standard. This series of products are widely used in cement, electric power, coal mines, bricks and tiles, glass, chemicals, gypsum, mining, food processing, etc

The Product Feature

1. Simple structure, operation, and maintenance easily, long service life

2. Cancelled the rectifier, decrease the effluence of electric quality issue, without insulation and withstand voltage problem

3. Solving the temperature rising of electric magnet issue, easily to keep the constant of magnetic field.

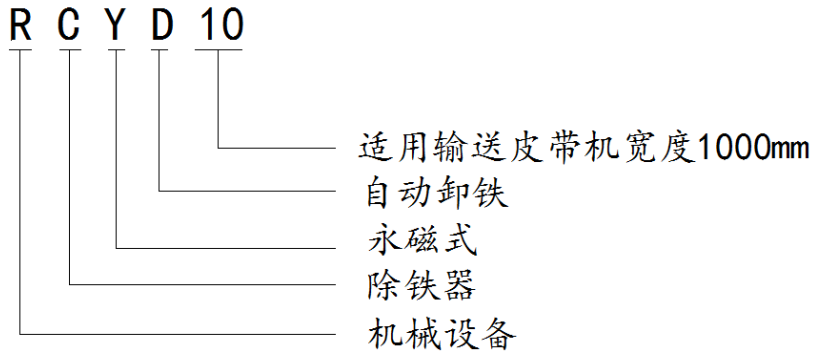
4. Strong magnetic field, high gradient, deep magnetic range, and large suction, a good effect of removal on oversized iron parts or small iron parts.

Working principle

When the machine is working, the iron remover is suspended above the belt conveyor, when the conveyed material passes through the strong magnetic field of the iron remover, The ferromagnetic substance mixed in the material is under the action of the strong magnetic attraction of the de-ironing separator, it is firmly adsorbed on the iron unloading belt, and at the same time, it is also thrown out of the scene through the drive motor to drive the belt, so that to achieve the purpose of automatic iron removal.

Analysis of the machine model

introduce of the machine model， RCYD10



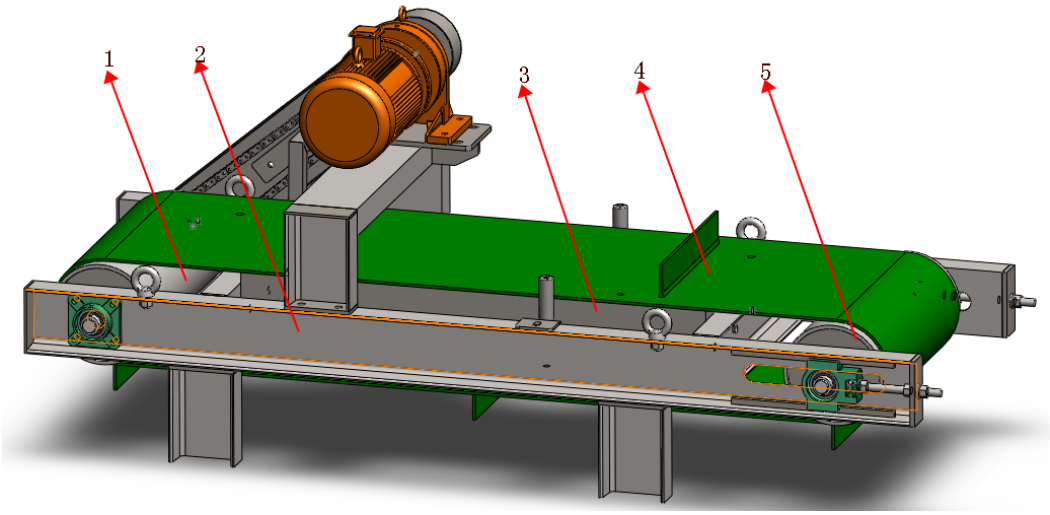
Technical parameters

Type	Belt width （mm）	Magnetic field strength （Gs）	Motor Power （Kw）	The material thickness	Height from Belt conveyor (mm)

RCYD06	600	≥200	1.5	150	200
RCYD08	800	≥200	1.5	150	200
RCYD10	1000	≥200	1.5	200	250
RCYD12	1200	≥200	1.5	250	300

Structure and main components

Main components：frame, foot wheel, Permanent magnet magnetic core.



1. 头轮 **head wheel** 2.支架 **machine frame** 3.永磁磁芯 **Permanent magnet magnetic core** 4.皮带 **belt** 5.尾轮 **foot wheel**

3.8 Screening Machine

Overview

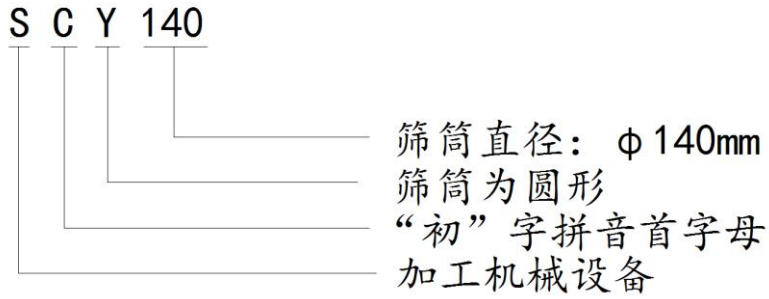
Series of the SCY drum screen is suitable for special screening equipment of feed, wood chips, saw dust, coal, coal gangue, coke, lime, and other of materials whether wet or easy-to-block，it is also suitable for the coking factory, materials of building, metallurgy, chemicals, mines, flour factory, feed factory, biomass factory, It has the same function as other pre-cleaning equipment, It is mainly used to distinguish the sundries that do not meet the production of the next process, so that the machinery, equipment, conveying device of the next process can be prevented from malfunctioning or being damaged. It overcomes the problem of screen sticking and clogging caused by various vibrating screens when screening wet materials, and improves the production capacity and reliability of the screening system. According to customers the characteristics of the materials used to equipped with a suitable screen，Smoothly screen out the materials that do not meet the requirements. This product has simple structure, convenient operation, stable operation, good cleaning effect, high

impurity removal efficiency, and can withstand the test of the market.

The Main Feature

1. Have good effect of the cleaning，high efficient of the removing impurities，≥95%
2. Compact structure and cover a small area, high transmission power, stable performance, stable and reliable operation, high productivity.
3. Equipped with flange mirror and cleaning door to easy observation and easy operation;
4. Large adjustability, in order to achieve productivity and better separation effect, the hole of the screen can be changed according to the characteristics of the customer's material
5. The upper cover is detachable to easy to replace the screen.
6. Easy to install and maintain

Example of technical specifications



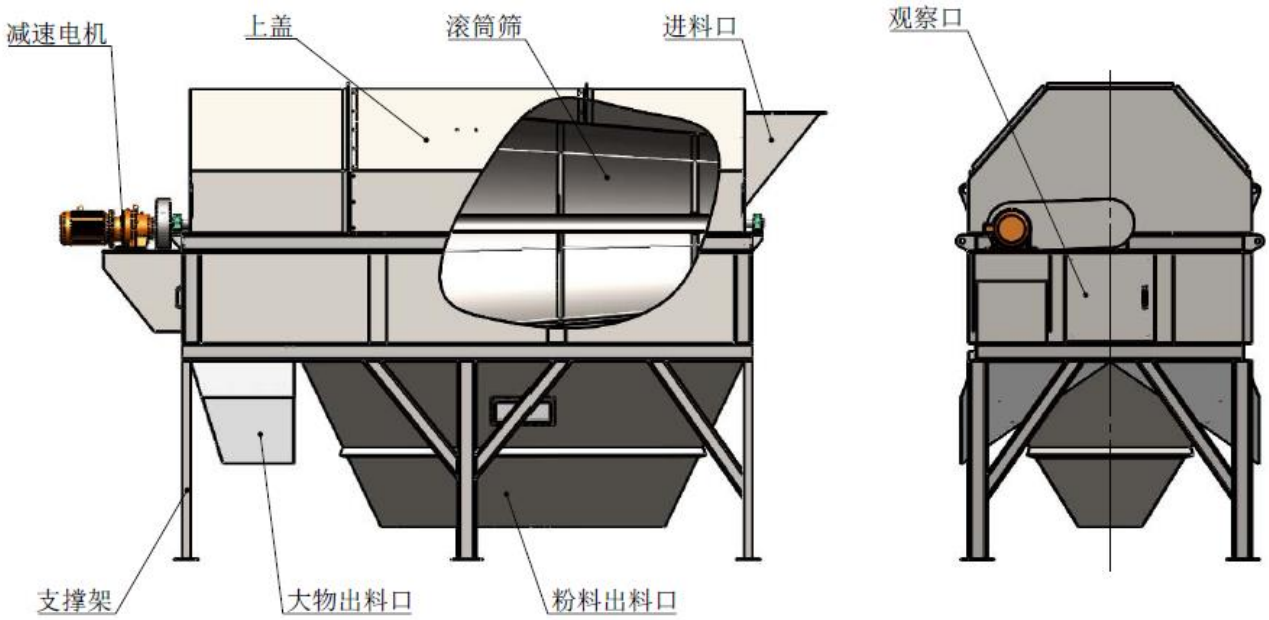
Technical parameter

Model / parameter	SCY80	SCY120	SCY140	SCY160	SCY180	SCY200
NAME	Pellet screen		Wood chip screen			
Power (KW)	1.1	1.1	1.5	3	3	4
Speed of the rotating (min/r)	18	21.8	21.8	21.8	21.8	24.4

Capacity (tph)	1-5	6-12	2-3	4-5	6-8	10-15

Main structure

The main structure of the cylinder preliminary cleaning screen is shown in the figure: it is composed of chain wheel，reducer，machine frame，machine body，upper cover，transmission shaft, screen silo，feed port，discharge port.



3.9 Vibrating screen

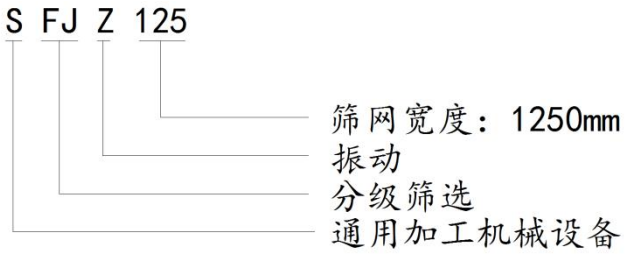
Overview

Vibrating screen is a new and efficient equipment, It adopts a fully enclosed screen ship and equipped with two vibrating motors to drive，it is mainly used for screening and grading of pellet feed, It is a method of screening the compressed the pellets to extract qualified pellets, screen out unqualified or too small pellets and powder, and return to the pellet mills. This machine has the characteristics of simple structure, easy operation, convenient maintenance, high production capacity, low power consumption, low noise, good sealing, and no pollution, etc.

The Main Feature

1. Exquisite and durable design, high screening efficiency, according to customer's needs, simple operation, convenient cleaning, obvious screening effect, high production capacity.
2. Use a vibrating motor as the vibration source, with adjustable amplitude, low vibration, low noise, and stable operation;
3. The mesh is a perforated plate, and the screen surface is compressed reliably, not easy to plug holes, easy to replace, and high in efficiency;
4. Continuous production, automatic classification and screening, quick start, stable stop, enclosed construction.

Example of technical specifications

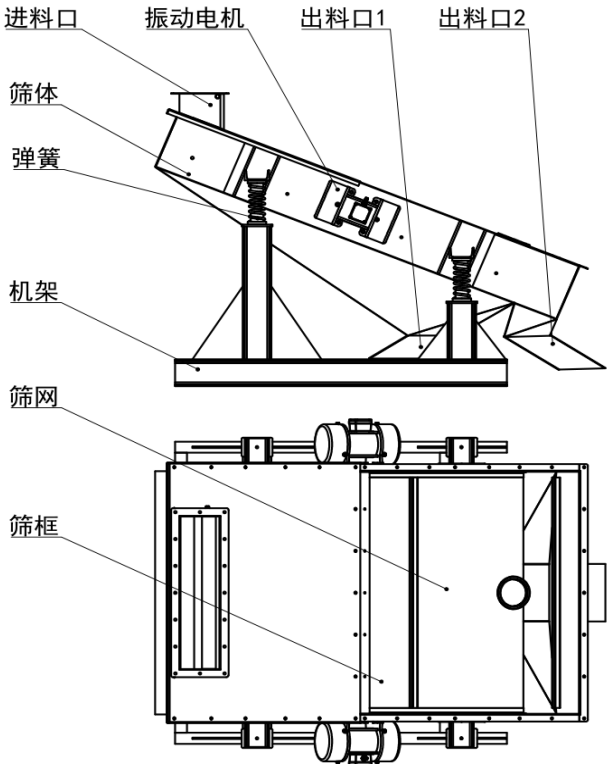


Technical parameter

Model	Number of screen surface	Model of Vibrating motor	Power (Kw)	Production capacity (t/h)
SFJZ125	1	YZU5-6	0.37	1~10
SFJZ150	1	YZU8-6	0.55	10~13
SFJZ180	1	YZU8-6	0.55	> 13

Main structure

The series of SFJZ vibrating screen is mainly composed of feeding port, screen body, discharge port 1, vibration source, discharge port 2, screen frame, discharge port, etc.



3.10 Cyclone separator

The cyclone separator uses the centrifugal force generated by the rotating airflow to separate dust particles from the airflow, and is used to separate dust particles with a particle size greater than 10 μm. Utilize macroscopic movement of the airflow can be divided into: outer vortex, inner vortex, and upper vortex. It is generally used in the occasions where the pellets are large and the dust removal efficiency is not too high, and when the concentration is high, it can be used as a primary treatment or can be used in series. Cyclone separators are widely used in machinery, building materials, light industry, metallurgy, chemical industry, petroleum, and other industries. The practical study shows that a considerable part of the power consumption of the cyclone dust collector is not useful for separation, which is a pure energy consumption loss

Features and Characteristics

Cyclone dust collector has simple structure, low cost, easy to manufacture， cover a small area，convenient operation and maintenance, medium pressure loss, low power consumption, it is also can be used for various materials, high temperature, high pressure, corrosive gas and recyclable dry pellets. Disadvantages: 80% efficiency, low pellets capture efficiency, poor performance for dusty gases with large flow changes, cyclone dust collectors generally used as pre-dust removal treatment for multi-stage dust removal systems.

Operating conditions

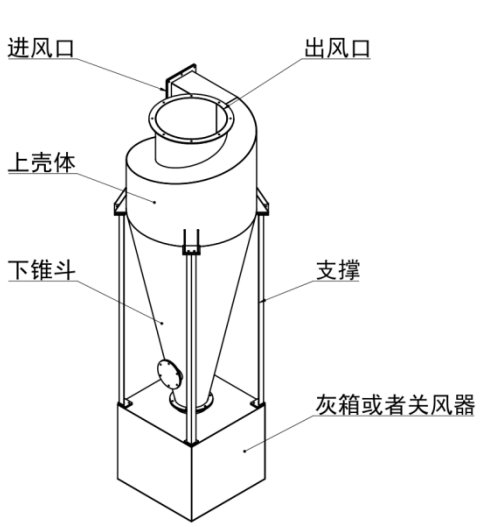
The performance of the cyclone dust collector is not only related to the above structure size, but also depends on the operating conditions：

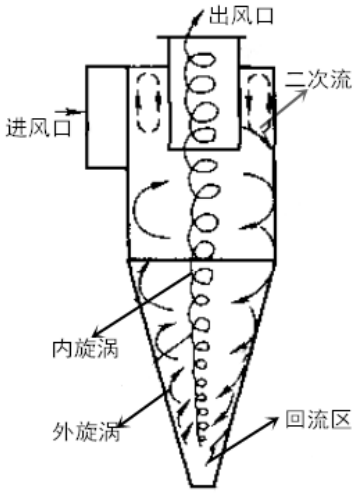
1. To be familiar with the performance of the cyclone dust collector correctly, choose a reasonable inlet wind speed and processing capacity, the inlet wind speed is generally in the 10-25M/S;
2. In special occasions, the changes in gas density, atmospheric pressure and temperature should be considered, actual handling capacity, speed of inlet wind and pressure change also should be Correct in time;
3. In consider of the density of the dust, particle size distribution, the humidity, viscosity of the dust and whether there is fibrous or fluffy dust, etc., reasonable to choose dust collector;

In addition to the above reasons, it is also related to whether the inner wall of the dust collector is smooth, whether the welding seam is polished, whether the connecting flange has protrusions, etc., which will cause airflow disturbances and affect the efficiency of dust removal，so that we also should pay attention to the quality of the dust collector.

The main structure

The cyclone dust collector is mainly composed of inlet of the air, outlet of the air, shell, cone, etc.





The analysis of structural

1. Air inlet: Air inlet is the key of forms the swirling airflow，it is the main factors of the effects dust removal efficiency and pressure loss. The cut area of the tangential air inlet has a great influence on the dust collector, the air inlet area is small relative to the section of the cylinder, and the tangential velocity of the airflow entering the dust collector is large, which is beneficial to the separation of dust.
2. Diameter and height of the cylinder ：The diameter of the cylinder is the basic dimensions that constitutes the cyclone dust collector. The centrifugal force generated by the tangential velocity of the rotating airflow on the dust is inversely proportional to the diameter of the cylinder, and at the same tangential velocity, the diameter of the cylinder is smaller, the radius of rotation of the airflow is smaller, and the particle which received the centrifugal force is greater，the particles will more easily to trapped, so that, it is more appropriate to choose a smaller cylinder diameter；
3. Exhaust pipe: The diameter and insertion depth of the exhaust pipe have a greater impact on the dust removal efficiency. The diameter of the exhaust pipe is reduced, this can reduce the rotation range of the internal swirling flow, and the dust is not easy to be removed from the exhaust pipe, it is beneficial to improve the dust removal efficiency, but at the same time the air outlet speed the resistance loss will increases；If the diameter of the exhaust pipe is increased, the resistance loss is obviously reduced, although, the resistance loss is reduced，but because of the exhaust pipe is too close to the tube wall

of the cylindrical body, it will easy to form the phenomenon of internal and external swirling short circuit, so that part of the uncleaned dust in the outer swirling flow is directly mixed into the exhaust pipe and discharged, which reduces the dust removal efficiency，the diameter of the exhaust pipe is better 0.5~0.6 times than the cylinder. The deep insertion of the exhaust pipe increases the friction surface between the airflow and the pipe wall, which increases the resistance loss，at the same time，the distance between the exhaust pipe and the bottom of the cone is shortened，this will increase the chance of the dust remixing, so that the depth of the exhaust pipe is generally lower than the bottom of the air inlet.

4. Ash discharge port：The dimension and structure of the ash discharge port have a direct effect on the efficiency of dust removal. Increasing the diameter of the ash discharge port can reduce the high pressure of the dust collector, it is beneficial to improve the dust removal efficiency，but if the diameter of the ash discharge port is too large, the dust will rise again.

Working principle

From a macro point of view, airflow can be attributed to three movements: outer vortex, inner vortex, and upper vortex. The air flow movement in the cyclone separator is very complicated. In addition to the tangential and axial movement, there is also have a dial movement. The upper vortex is not conducive to dust removal.

Outer vortex: when the dust-laden airflow enters the dust collector along the tangential direction from the inlet, it will rotate from top to bottom along to the wall of the device, this downwardly rotating airflow is called the outer vortex.

The outer vortex reaches the bottom of the cone and then rotates upward along the axis, it is finally discharged out through the discharge pipe.

Upper vortex: When the airflow rotates from the top of the dust collector down at a high speed, the pressure at the top drops, and a part of the airflow will take the fine dust particles and rotate upward along the outer wall， after reaching the top, it rotates downward along the discharge pipe and is discharged from the discharge pipe. This upward swirling airflow is called the upper vortex.

work process：Most of the swirling airflow moves along the wall of the vessel in a spiral shape from top to bottom along the bottom of the cone, and then forms a descending external swirling dust-laden airflow, the centrifugal force generated in the process of strong rotation throws dust particles whose density is far greater than that of gas to the wall vessel，they will

lose their inertial force, and rely on the momentum of the inlet velocity and their own gravity to fall into the ash hopper along the wall.

Another part of the small airflow flowing in from the air inlet moves towards the top cover of the cyclone dust collector, Then flow down the outside of the exhaust pipe, when it reaches the lower side of the exhaust pipe，It will discharge from the exhaust pipe along with the rising central airflow, the dust particles scattered into it will be take away at the same time.

3.11 Pulse dust precipitator

This series of pulse dust collectors are mainly used in mining and metallurgy, coal chemical industry, thermal power generation, cement refractory materials, building ceramics, biomass pellet, medicine and other industries that cause pollution to the atmosphere. The necessary ventilation and dust removal or material collection and treatment for the dust pollution points of the materials during in the process is have a great significance to environmental protection, energy saving, emission reduction, and clean production.

Features

This series of products have low preparation resistance, high dust removal efficiency, and convenient operation, and simple maintenance, low pressure of supporting air source, low noise, long life, small dimensions, and easy installation

1. The dust collector is equipped with a novel nozzle, it is convenient to install and remove the filter bag, and reduce the dust hazard when changing the bag, dynamic adjustment processing capacity is large, and the filter wind speed has been further improved
2. The air outlet has two ways， one is side-mounted the other is top-mounted, which is convenient for on-site position adjustment
3. DMF-Z electromagnetic pulse valve has simple structure, low resistance, good dust removal effect, stable and reliable work.
4. The right-angle electromagnetic pulse valve and pulse controller are used in combination to realize automatic control.
5. TBLMF/Y series pulse jet bag filter can be combined or non-standard design according to the industry site environment, gas properties, and air volume
6. It is adopted centrifugal feeding which is beneficial to reduce the resistance of the equipment and reduce the load of the filter belt
7. Cover a small area, and the equipment noise is low.

Main technical parameters

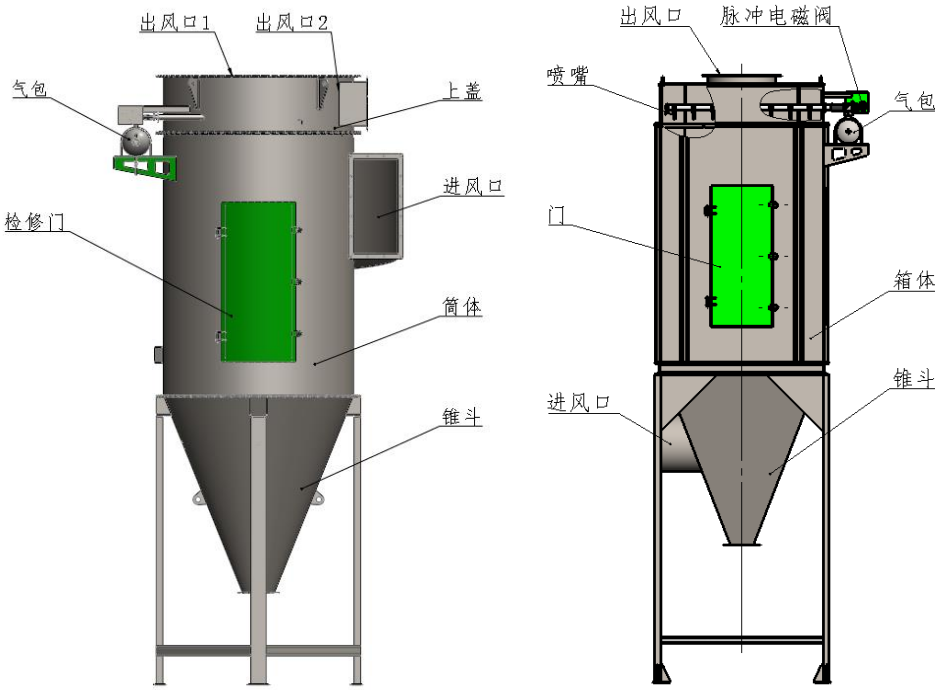
1. Example of Technical Specifications

2. **Technical parameters**

Model / Spec	TBLMF 28	TBLMY 39	TBLMY 52	TBLMY 78	TBLMF 96	TBLMY118
filter area m2	21	29	39	58	72	89
Bags Number	28	39	52	78	96	118
air volume (m^3/h)	2520-5040	3480-6960	4680-9360	6960-13920	8640-17280	10680-21360
Specification of the filter-bag mm	⌀120X2000					
Number of electromagnetic pulses	4	7	8	10	12	24

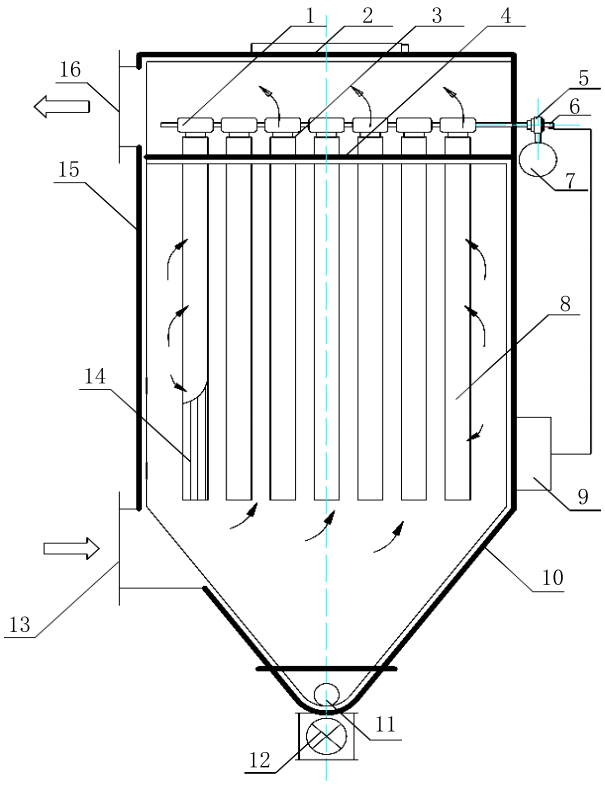
3. The main structure

The series of the TBLMF/Y pulse jet bag filter is composed of the air inlet, filter room (filter bag, filter bag frame), clean room, air outlet, draught fan, ash hopper, screw conveyor or impeller discharger, ladder type of the maintenance platform, guardrail, electrical control, etc. the directions of inlet and outlet can be flexibly chosen according to the needs of site design.



3.2 Working principle

The dust-containing gas enters the dust collector from the upper (or lower) air inlet of the box under the negative pressure of the draught fan, and is filtered by the filter bag to the clean room and discharged into the atmosphere from the air outlet through the system of draught fan, After a certain period of time or the resistance reaches a certain value (time, pressure), it will start cleaning, and the programmable PLC pulse controller will send a signal, the electromagnetic pulse valve begins to release compressed air, and a large amount of air is induced into the filter bag through the ejection nozzle installed in the bag mouth and blow it to remove the dust outside the filter bag and fall into the ash bucket; Then it is discharged from the dust collector through screw conveyor or impeller discharger;



1 —Ejector nozzle 2 —upper cover 3 —Plug pipe 4 — tubesheet；5 —Pulse valve 6 —Electromagnetic valve 7 —Air bag 8 —Filter bag 9 —Pulse controller 10 —Ash bucket 11 —；Screw conveyor 12 —discharger 13 —air inlet 14 —Filter bag framework；15 —box of machine body 16—outlet

3.12 Bag filter

Overview

The filter bag is a dry filter device，it is suitable for capturing fine, dry, non-fibrous dust. The filter bag is made of woven filter cloth or non-woven felt, and the dust-containing gas is filtered by the filtering effect of fiber fabric，When the dust-containing gas enters the bag filter, the dust with large particles and heavy specific gravity will settle down due to gravity and fall into the ash bucket, The finer dust is prevented,, so that the gas will get purified. It is suitable for casting, metal processing, refractory materials, ceramics, glass, cement, mineral materials, plastics, chemicals, and other industries with dust problems

This machine can be equipped with shot blasting machine, grinder, sand screener, sand mixer and other equipment with high dust concentration to remove dust. Practice has proved that the bag filter has stable operation, low noise, high dust removal efficiency, and convenient operation and maintenance.

The dust collector bag is a key component that determines the dust removal efficiency and working temperature of the bag filter, the cost of replacing the filter bag is the main maintenance cost of the bag filter, so that the working life of the filter bag is related to the operating state and cost of the filter, appropriate filter material and reasonable design structure are particularly important, the selection of filter materials should be based on the temperature, humidity and chemical characteristics of the gas; the size, weight, shape, whether or not the particles are pecking, and the dust concentration, filtration speed, dust removal method, emission concentration and the work of the bag filter comprehensive consideration of system .

Technical parameter

model	Dimensions of the feeding	Dimensions of the machine	Bag Dimension
JYMC4-260	260x225	650x665	Φ250×10
JYMC4-320	320x280	650x670	
JYMC4-290	290x250	650x670	
JYMC6-360	360x320	650x980	

JYMC9-450	Φ450	1050x1080	
JYMC12-420	Φ420	1050x1390	
JYMC12-480	Φ480	1050x1390	
JYMC15-480	Φ480	1100x1800	

3.13 Vibration cooler

Overview

At present, the vibrating cooler is a new type of cooler that is popular and most advanced in the world, it is suitable for cooling high-temperature pellets after pelletizing. The machine has a unique cooling mechanism, the cooling air is evenly distributed from bottom to top through the mesh plate to gradually cool the material, which avoiding the surface cracking of the material caused by the general vertical cooler due to the sudden cooling，the cooling effect is better than the existing domestic similar products.

The temperature of the cooled material is not higher than the outside temperature +5℃, and the

precipitation rate is not less than 3.8%, which plays a good role in the production of high-quality biomass pellets and the improvement of economic benefits.

Scope of application

ZDB vibration cooler is mainly used for cooling biomass pellets and feed pellets.

The main feature

1. It adopts the bending and laying of the mesh plate and increases the ventilation and heat dissipation surface.
2. Unique bulk material mechanism, material distribution is more even, cooling is more thorough.
3. Uniform and smooth discharging, and the discharging speed is adjustable.
4. It is suitable for the cooling of various materials such as lumps, blocks, flakes, granules, etc. It is especially suitable for the cooling of large-volume materials like wood pellets;
5. Simple structure, simple operation, low energy consumption, low noise, and convenient maintenance;
6. The temperature of the product after cooling is not higher than room temperature +3℃～5℃.

Working principle

High-temperature and high-humidity particles pass through the air shutter and spread evenly layer by layer in the cooling box by the bulk material mechanism, stay in the machine for a period, the draught fan draws air from the top, and the cold air enters in from the bottom of the cooler, vertically through the material layer，take away the calories and moisture emanating from the pellet, cool it and to achieve the purpose of cooling and dehumidification. Features：In the process of draught fan cooling, the pendulum countercurrent cooler uses cold air to contact the cold material，The gradually heated hot air is in contact with the hot material, and the cold air enters in the bottom of the cooler, after vertically passing through the material layer, it is extracted from the top, while the pellet material enters from the top, it is discharged by a vibrating pendulum discharging frame to achieve the purpose of first in, first out. The principle that the direction of wind flow is opposite to the direction of material flow, that is the principle of counterflow, makes the granular material gradually cool in the forward direction.

Technical parameter

Item	Model			
	ZDB2.5	ZDB3	ZDB5	ZDB10
Cooling volume （m³）	1.5-3	2.5-4	5-8	8-12
Production capacity （T/H）	1.5-3	4-8	10-14	15-20
cooling time （min）	≥6-16		≥6-16	
Material temperature after cooling	Not higher than room temperature +3℃～5℃.		Not higher than room temperature +3℃～5℃.	
Suction air volume （m³min*T）	25-34		25-34	
power of the air shutoff （KW）	BWD1-43-1.1	BWD1-43-1.5	BWD1-43-1.5	BWD2-43-3
Model of the draft fan	4-72NO-6A	4-72NO-6A	4-72NO-6C	4-72NO-6C
Model of the vibration machine	YZU2.5-6	YZU2.5-6	YZU5-6	YZU8-6

The main structure

ZDB vibration countercurrent cooler is mainly composed of air outlet top cover, suction port, machine box body, hopper, bottom frame, etc.

3.14 Pneumatic valve

The series of the TZMQ pneumatic valve are mainly used for automatic discharging and closing of granular or powdered material warehouses, conveying equipment and pipelines in grain, feed, food, chemical, fertilizer, biomass, and other industries. It is the necessary equipment to realize the automatic production .

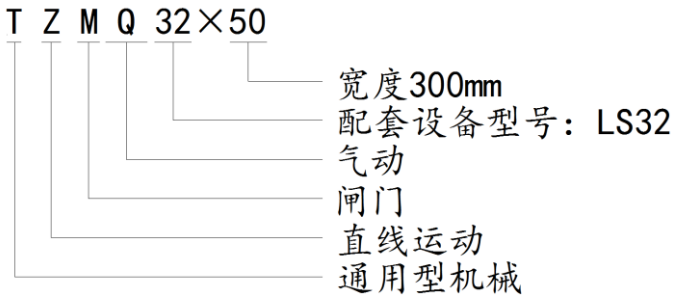
The Product Features

1. Small dimensions，compact in design and reasonable in structure
2. Adopt pneumatic transmission, control by magnetic switch, simple operation, convenient operation, quick opening and closing action.

3. The cylinder connection adopts flange type, which is simple and quick to replace;
4. The cylinder is equipped with a magnetic switch, and the valve opening can be adjusted by the position of the magnetic switch;

The main technical parameter

Example of the Technical Specifications



Technical parameter

Technical parameter				
Model	Model of the cylinder	magnetic switch	Work stress	Supporting equipment
TZMQ25×25	SC63×300	Y	0.4-0.6MPa	LS25
TZMQ32×50	SC63×350	Y	0.4-0.6MPa	LS32
TZMQ40×60	SC80×450	Y	0.4-0.6MPa	LS40
TZMQ50×50	SC100×600	Y	0.4-0.6MPa	LS50
TZMQ50×80	SC100×600	Y	0.4-0.6MPa	LS50
TZMQ60×60	SC100×700	Y	0.4-0.6MPa	LS60
TZMQ60×80	SC100×700	Y	0.4-0.6MPa	LS60

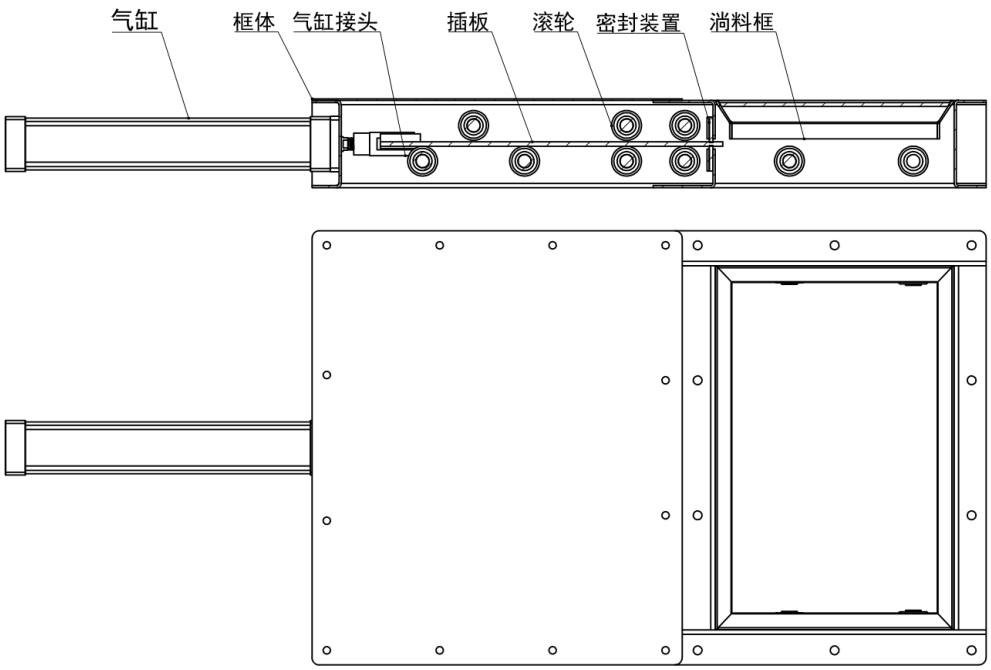
Working principle

The series of the TZMQ pneumatic valve is adopt a standard cylinder, and uses the connected air pressure source to push the cylinder piston rod to expand and contract to drive the gate to open and close the material port, making reciprocating motion. The electronic control system uses the magnetic

switch on the cylinder to realize the plate opening and closing position. Pneumatic transmission is stable and reliable, and the door opening and closing is flexible.

The main structure

The series of the TZMQ pneumatic valve is composed of the machine frame, plugboard, cylinder, roller, drip frame.



闸门简图

3.15 Pneumatic Two-Way Valve

The series of the TBDQ pneumatic two-way valve mainly used for the distribution or distribution of pellet or powdery materials in conveying equipment and pipelines in grain, feed, chemical, fertilizer, biomass, and other industries, it is an essential equipment to the realization of automated production lines. This machine adopts pneumatic transmission, solenoid valve reversal, stroke switch control, simple operation, rapid reversing action and stable working performance.

The Feature

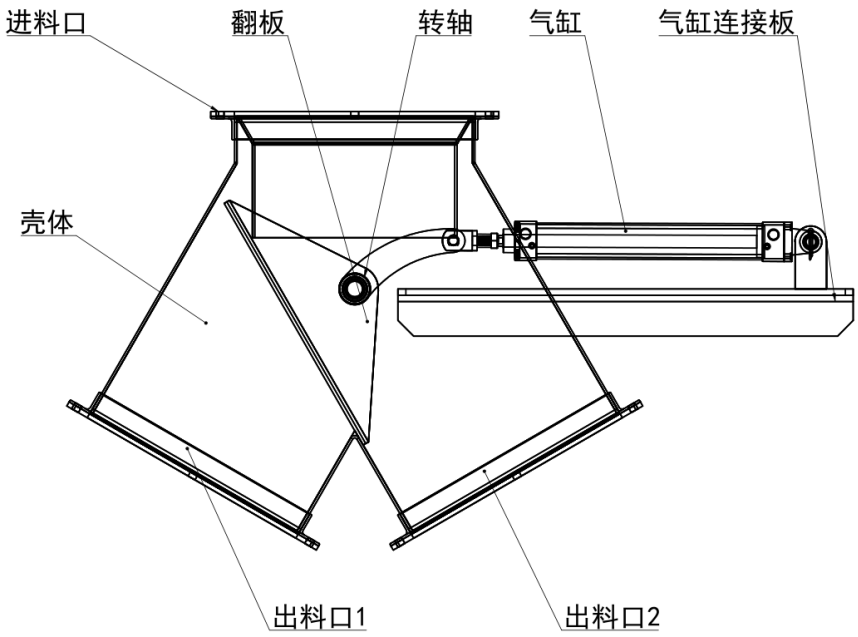
1. Small dimensions, compact design, reasonable structure, and convenient installation;
2. It adopts pneumatic transmission, simple operation, convenient operation, and quick opening and closing;
3. Stable working performance, safety, and reliable, and long life;
4. The cylinder connection adopts a single-ear base, and fixe with the pin shaft, which is simple and quick to replace;
5. Good airtightness and not easy to leak
6. The platform trap door can be adjusted by the position of the magnetic switch, so that to achieve the purpose of adjusting the material flow;

The main technical parameter

Technical parameter		
Model	Model of the cylinder	（mm） Dimensions of the inlet and outlet
TBDQ30	SC40×250	300×300
TBDQ50	SC50×350	500×500

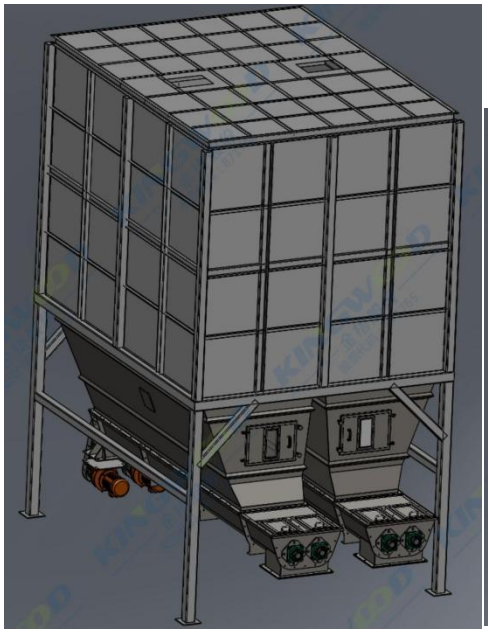
The main structure

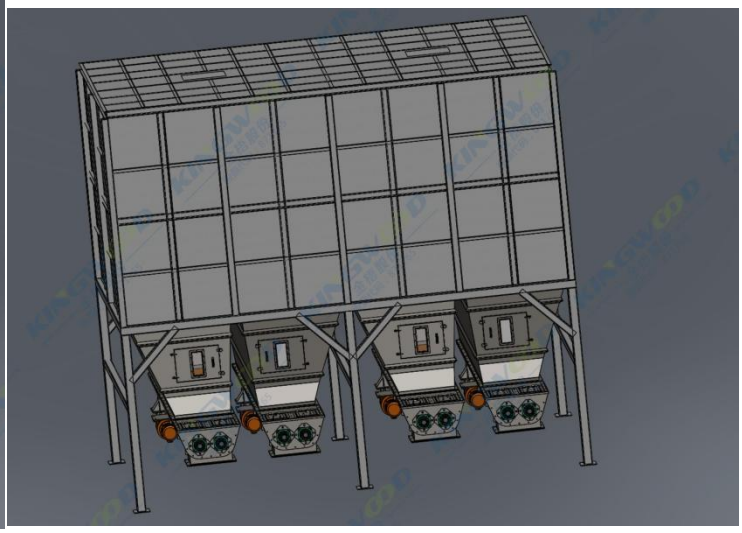
The series of TBDQ pneumatic two-way valve are mainly composed of the shell, platform trap door, cylinder, shaft, feed port, discharge port, etc.

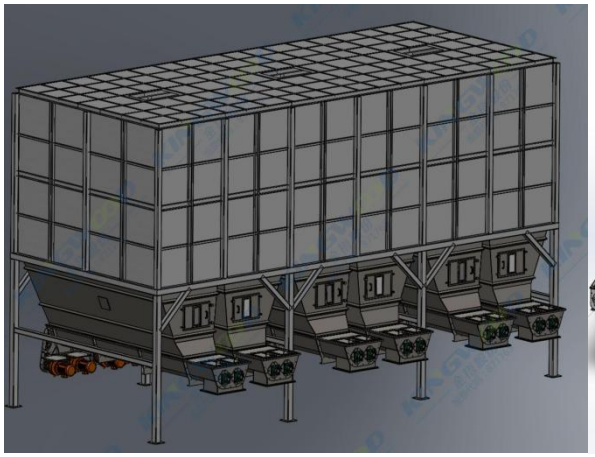


3.16 Raw materials silo

It is used for the storage of raw materials after grinding or drying, according to the production capacity and the nature of the raw materials to select different types and capacities of material silos. The material silo adopts modular design.

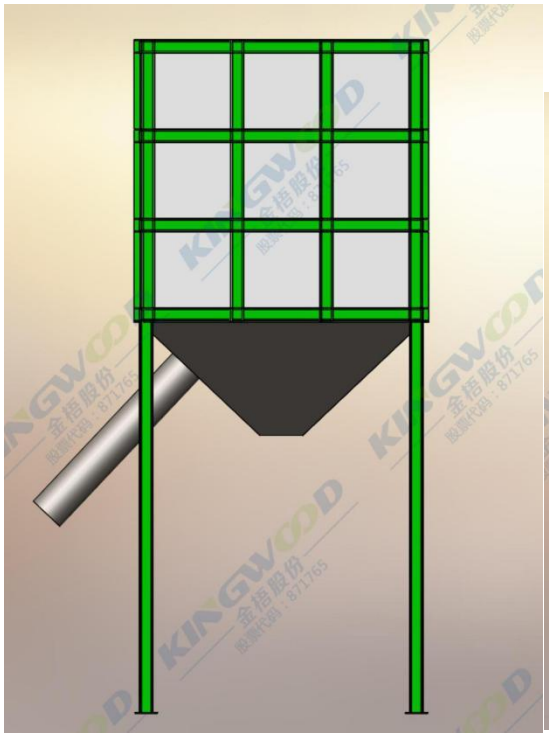


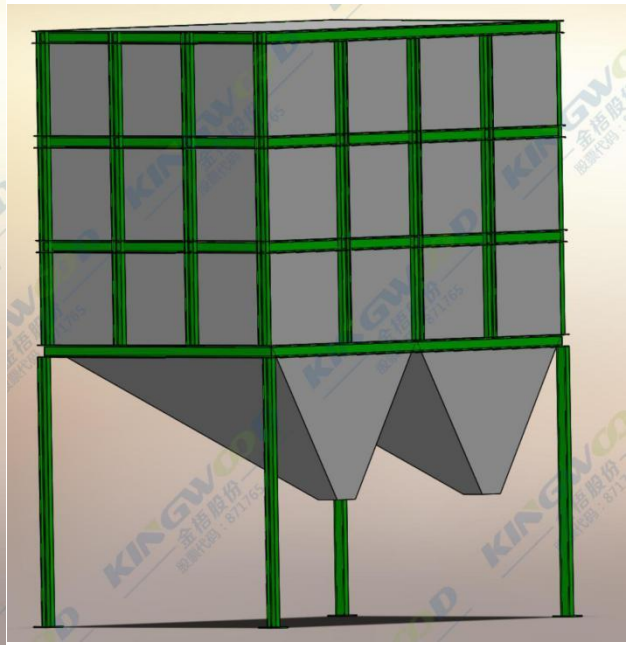




3.17 Finished product silo

The finished product silo is used for the storage of finished pellet, which can be matched with different sizes according to different storage requirements. It also can be connected to automatic packaging scales, manual packaging, bulk packaging, and other forms.





3.18 Automatic packaging scales

Automatic packaging scales are mainly divided into non-bucket scales, single-bucket scales, double-bucket scales, and ton-pack scales, which can be selected according to the packaging form and production capacity.

In addition, you can also choose high-position palletizer or manipulator palletizer to improve palletizing efficiency and reduce labor intensity of workers.