BULK MATERIAL HANDLING

WOBBLER FEEDER BROCHURE

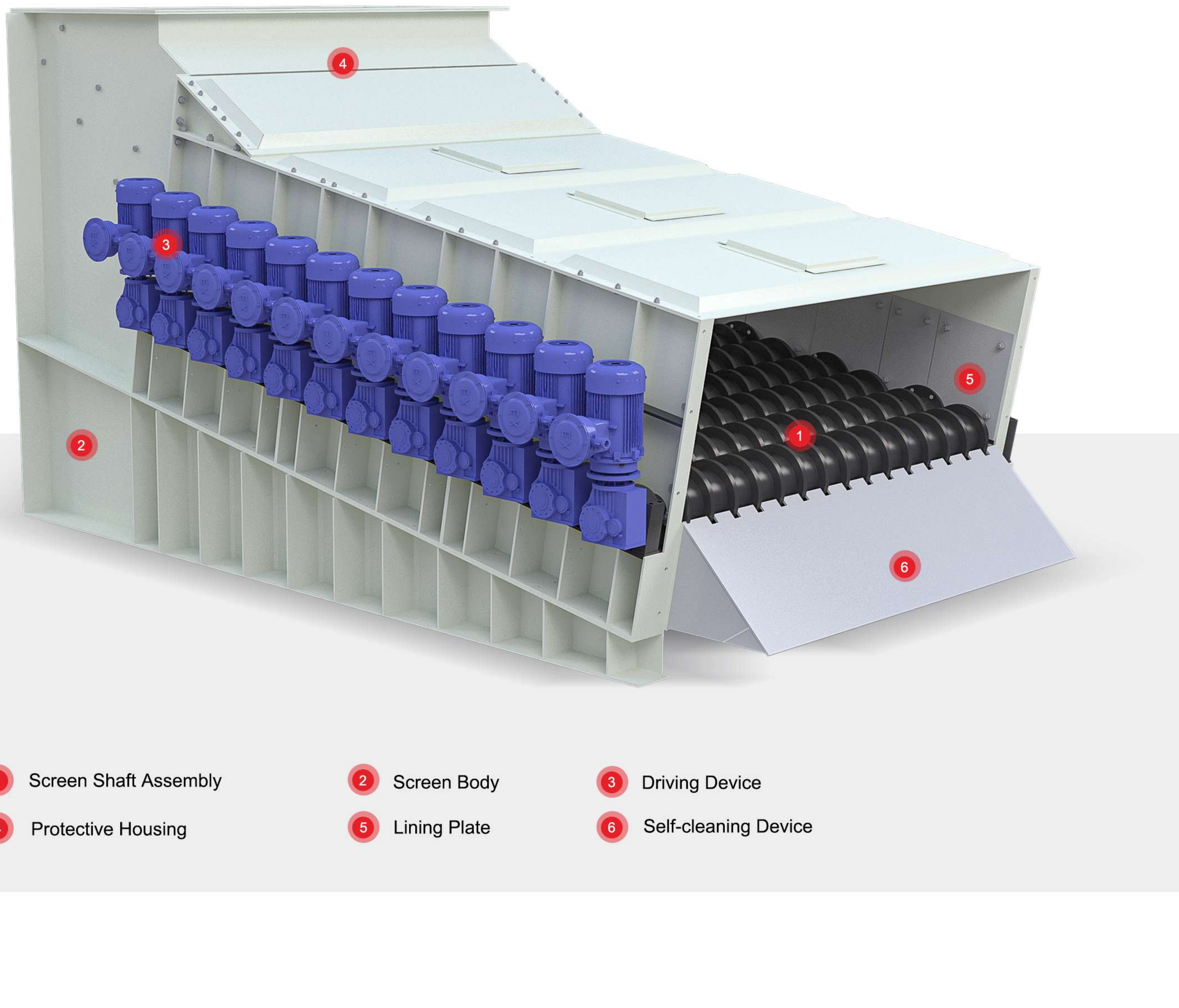
Henan Excellent Machinery Co.,Ltd.

WOBBLER FEEDER
INTRODUCTION

The Wobbler Feeder is an essential piece of screening equipment commonly utilized at the front end of primary crushers in material processing operations. Its primary function is to pre-screen incoming materials before they enter the crushing stage. By doing so, it effectively reduces the workload and wear on the crusher, thereby enhancing the overall efficiency and longevity of the equipment.

The versatility of the Wobbler Feeder makes it suitable for a wide range of industrial applications. It is extensively used in industries such as coal processing, mining, metallurgy, construction materials production, waste recycling, power generation, and chemical manufacturing. In each of these fields, the feeder plays a crucial role in optimizing the initial stages of material handling and processing.

In coal handling systems, for example, the Wobbler Feeder helps separate fine coal dust from larger coal lumps, preventing unnecessary clogging and wear in downstream equipment. In recycling operations, it aids in removing small debris and contaminants before the materials undergo further processing. Its robust construction and reliable performance make it a preferred choice in environments where continuous and efficient screening is required.



1 Screen Shaft Assembly
2 Screen Body
3 Driving Device
4 Protective Housing
5 Lining Plate
6 Self-cleaning Device

01 Screen Shaft Assembly

Wobbler feeder disc is cast with wear-resistant manganese chromium alloy steel, which has good wear resistance and can cope with the impact and wear of large materials without any deformation or fracture.

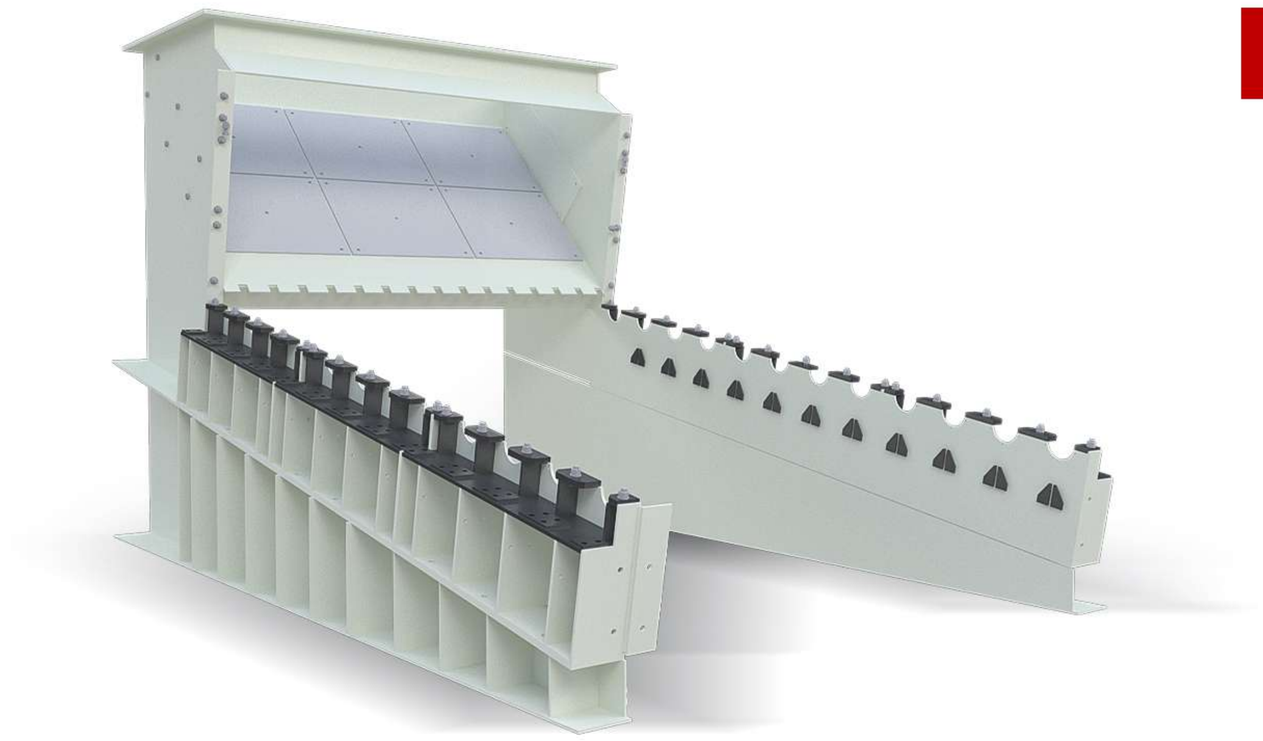
Wobbler feeder disc is designed as a parabolic screen disc, and is rounded to eliminate sharp corners, so that the rotating resistance of the screen is minimized.

The Parabolic shape of the screen disc can maximize the disturbance ability of the wobbler feeder to the material flow and improve the screening rate.

The design of the screen shaft is reasonable and safe, which can effectively avoid the phenomenon of bending and breaking of the roller shaft.

When any group of screen shafts fails, the material can continue to move forward under the push of previous screen shaft, and the screening can operate as usual.

The screen shaft bearing seat is installed on the outside of the screen box side plate for easy disassembly.



02 Screen Body

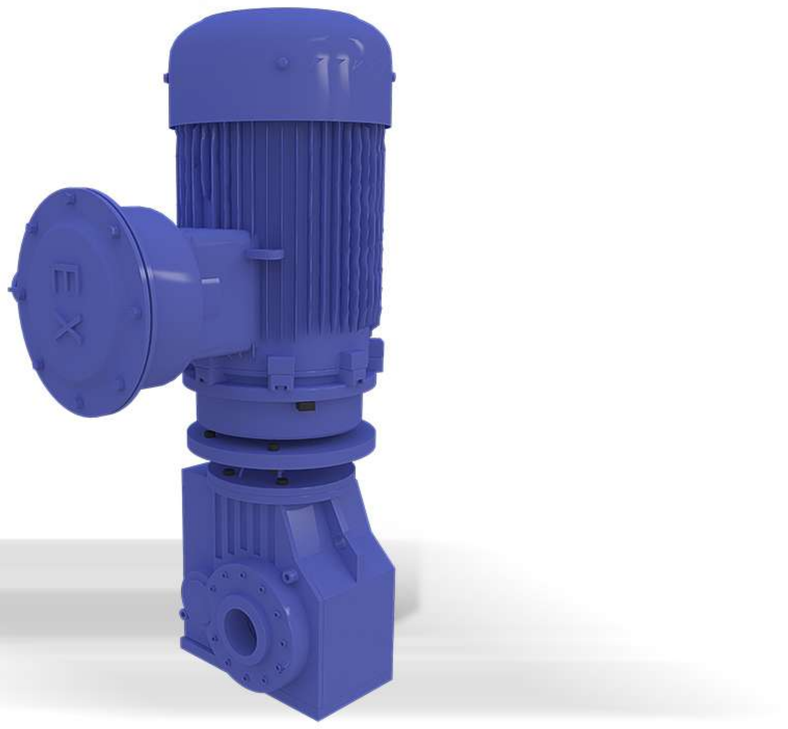
The main body of the roller screen is welded with low-alloy high-strength structural steel. All screen shaft assemblies are fixed to the machine body through connecting bolts. Wear-resistant lining plates are installed on the side of the machine body to avoid direct contact between materials and the box, greatly extending the service life of the equipment. And the wear-resistant lining plate and the screen box are connected by bolts, which is easy to replace.

03 Driving Device

Wobbler feeder adopts single-axis single-motor drive or multi-axis chain combination transmission mode, reasonable power configuration to evenly distribute the material in the screen and ensure smooth operation.

The design structure of the driving device is simple, easy to install and disassemble, and the connected screen shaft is not moved when disassembling.

The driving device is compact in size, light in weight, long in life and low in maintenance cost.



04 Protective Housing

The protective housing of the wobbler feeder is welded with NM500 wear-resistant alloy steel plate, sprayed with anti-rust and anti-corrosion paint, and connected with the hopper and the outlet housing at the front and back.

The protective housing plays a sealing role, and the closed screen box can prevent materials from falling, prevent rain and snow weather from affecting the operation of the equipment, and protect the safety of personnel.

The overall sealing of the screen box can effectively prevent dust pollution, reduce the impact on the environment, and meet the requirements of green construction.

The protective housing is provided with an observation window to facilitate the observation of the operation of the machine.

05 Lining Plate

The lining plate is made of wear-resistant alloy material, which has a long service life and strong wear resistance, toughness and impact resistance.

The inside of the screen body and the contact surface between the feeding inlet and the material are provided with wear-resistant lining plates, which can protect the screen body and increase the life of the feeding inlet.

The end of the screen shaft adopts a wear-resistant liner wrapped disc structure, which completely solves the problem of large blocks stuck on both sides of the screen box and the screen disc, ensuring the normal operation of the equipment.

The lining plate is fixed together with the mother plate by bolts, the replacement is convenient, and reduced maintenance time.

06 Self-cleaning Device

The self-cleaning device of the wobbler feeder is made of wear-resistant steel and is equipped with a cutting edge, which is inclined to the lower part of the screen shaft. Some fibrous debris and sticky materials attached to the screen will be automatically cleaned off by the cleaning device to solve the blockage of the screen surface.

TECHNICAL COOPERATION AND **ACHIEVEMENTS**

In 2022, in cooperation with China University of Mining and Technology and Xinjiang Tianchi Energy Co., LTD., the virtual screening technology was applied to the screening process simulation and jam analysis of the industrial roller sieve, the significant influencing factors of screening efficiency and movement speed were summarized, and the compression–shear critical crushing analysis method of the stuck material under the occluding state of the roller sieve was proposed. The force characteristics of roller and screen are obtained, and the problem of parameter setting of overload control system is solved effectively.

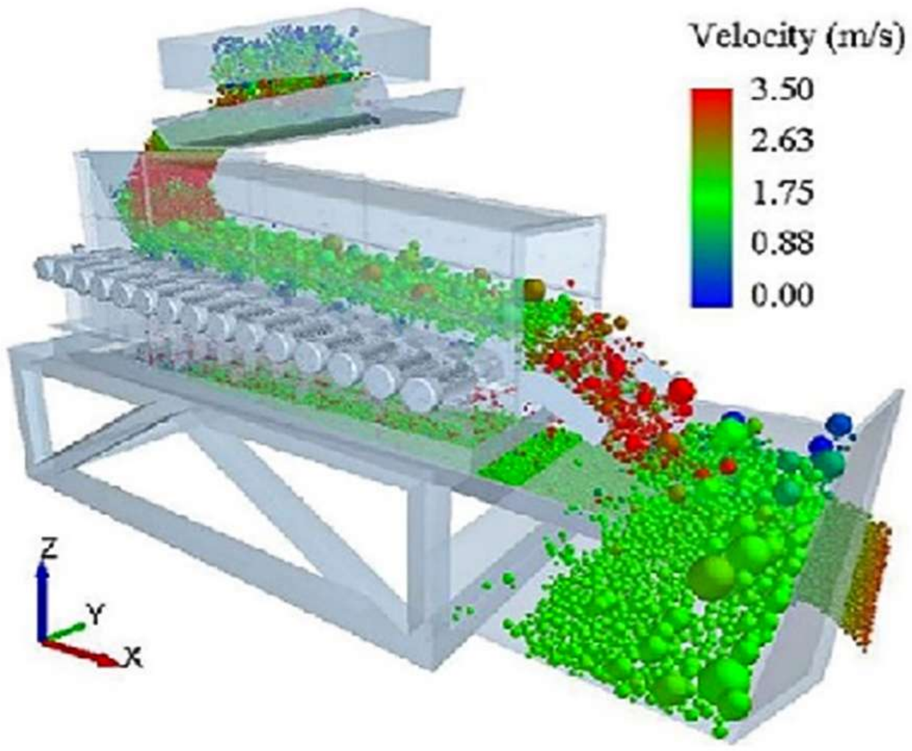
GZS series large and efficient wobbler feeder has been successfully used in Jining Mining Group, Henan Province Academy of Science Application Physics Institute Limited Company, Xinjiang Tianchi Energy, Qitai County Yindu Construction Engineering Co., LTD. Since the wobbler feeder has been put into operation, the recovery efficiency of lump coal has reached more than 95%, and the environmental protection, safety and health indicators meet the national standards. The equipment has the advantages of stable operation, high reliability, low noise, low bearing temperature, uniform screen surface material distribution, small screen disc wear, and all indicators have reached the advanced level of similar equipment at home and abroad.

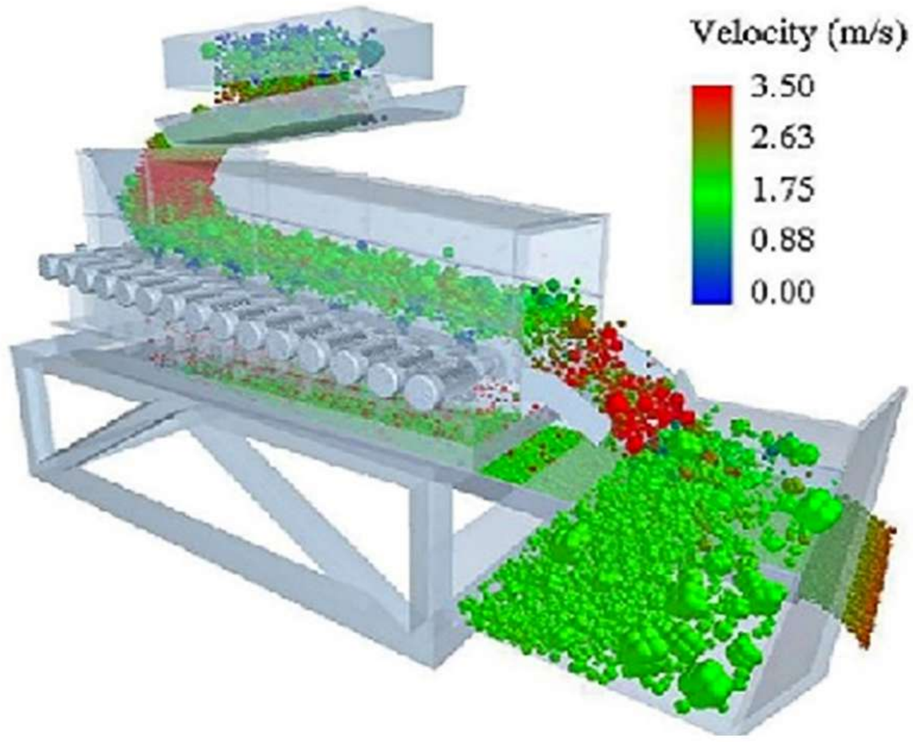
Accurate Virtual Screening Test

Screening efficiency is an important index to evaluate the performance of screening equipment.

The speed and residence time of the particles on the screen surface are also important factors affecting the screening process, which not only affects the processing capacity of the screening equipment, but also affects the screening efficiency.

Therefore, in order to study the effect of actual working conditions on the screening performance of the wobbler feeder, a series of parametric studies were carried out on different feed rates, screen shaft rotational speed, screen surface inclination and bonding force, ensure the rationality of selection.





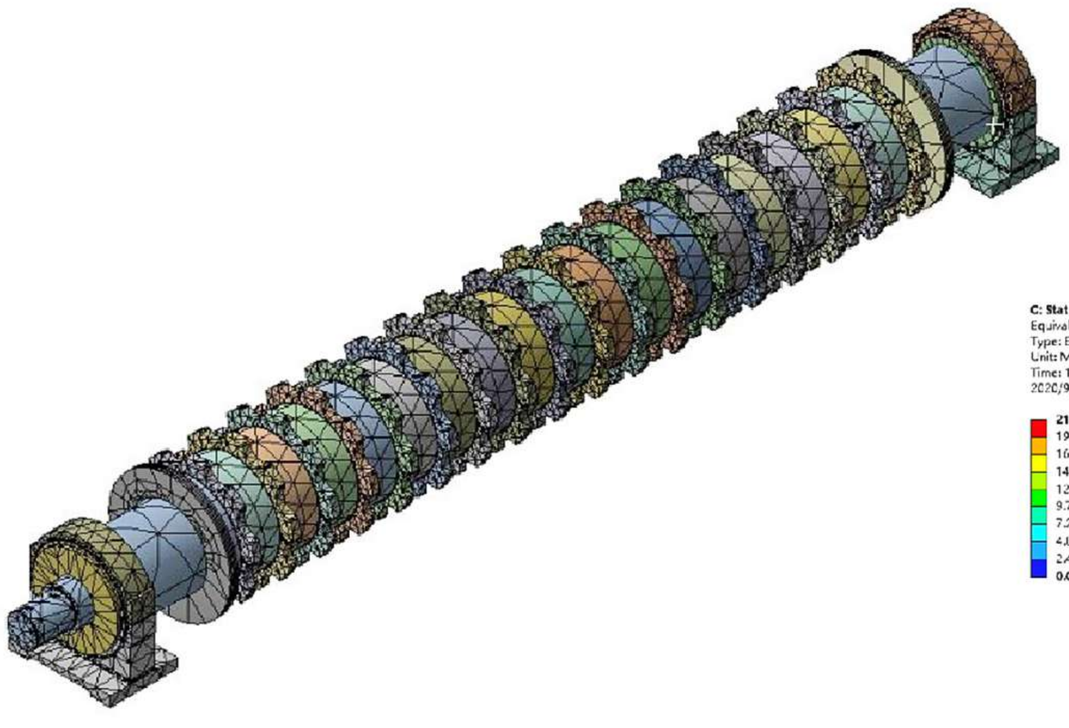
Velocity distribution of spherical and non-spherical particles in DEM simulation

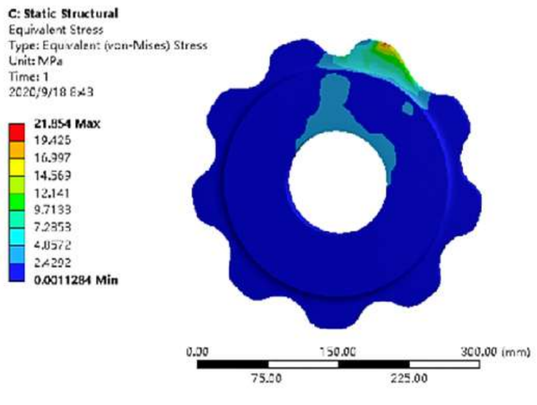
Finite Element Force Analysis On The Screen Shaft

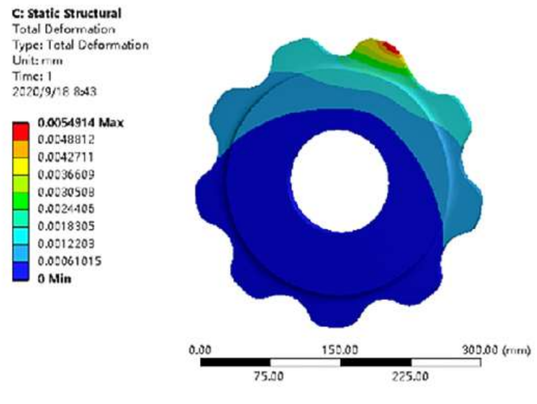
In the static coupling simulation, EDEM mainly provides the stress information of key components during operation for the finite element analysis of Workbench.

To realize the coupling simulation between EDEM and Workbench, two pieces of software need to be associated together in Workbench.

The EDEM module is added to Workbench through the interface program, and the EDEM module is associated with the mechanical analysis module in Workbench, and then the force information of the roller obtained from EDEM is imported into the discrete element module in Workbench.

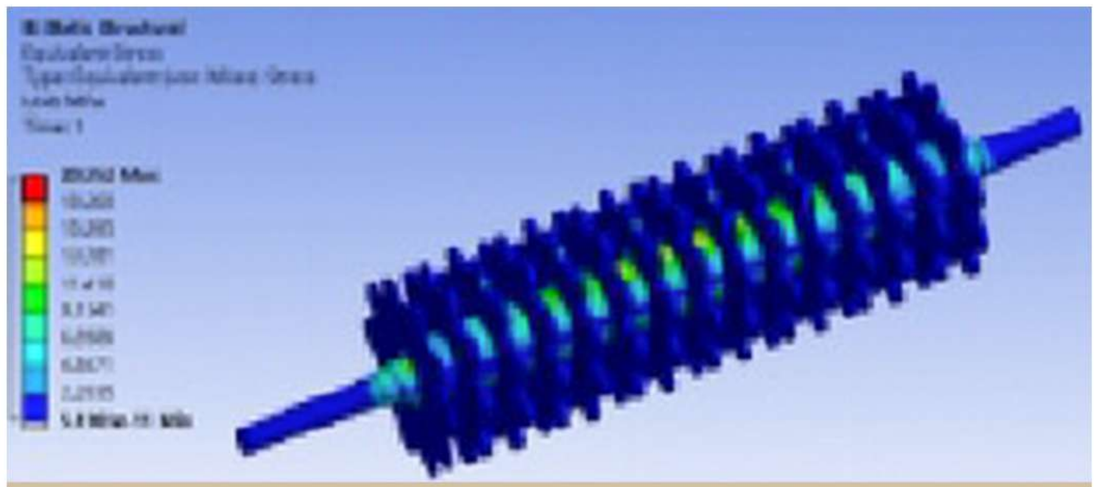




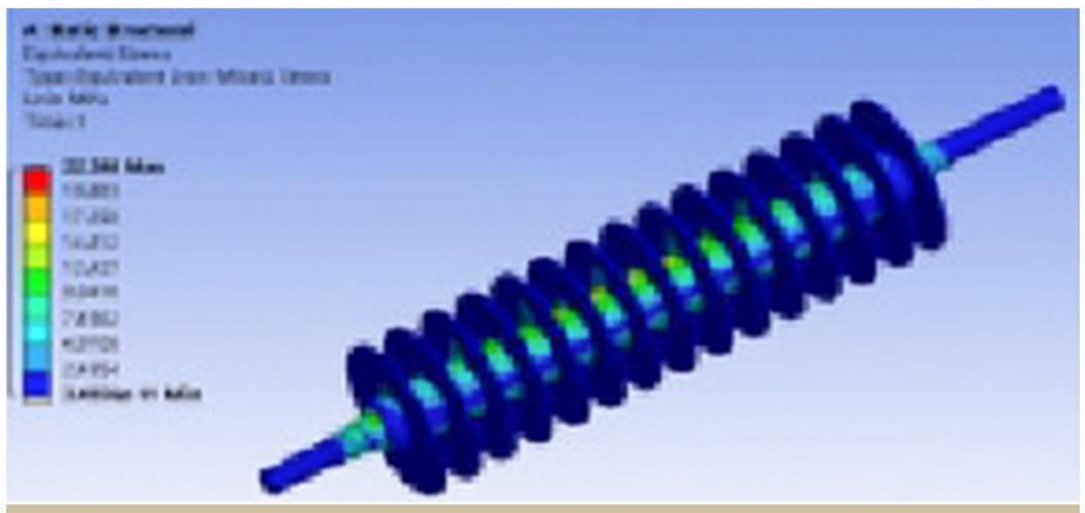


Scientific Screen Disc Selection

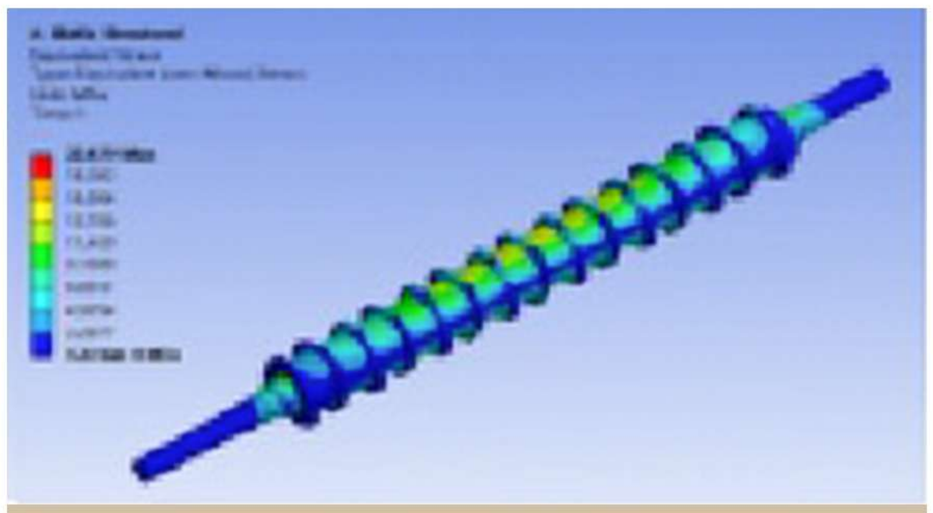
On the basis of the existing finite element checking process, we further simulate the existing screen shaft of other screen disc shapes to explore the influence of screen disc shapes on the stress distribution of the shaft body. In addition to the existing quince-shaped screen disc, we conduct 3D modeling of CAM and sheet shaped roller screen, and carry out finite element check under the same load condition, and select the blade form according to the results.



Plum blossom screen sheet is arranged in parallel

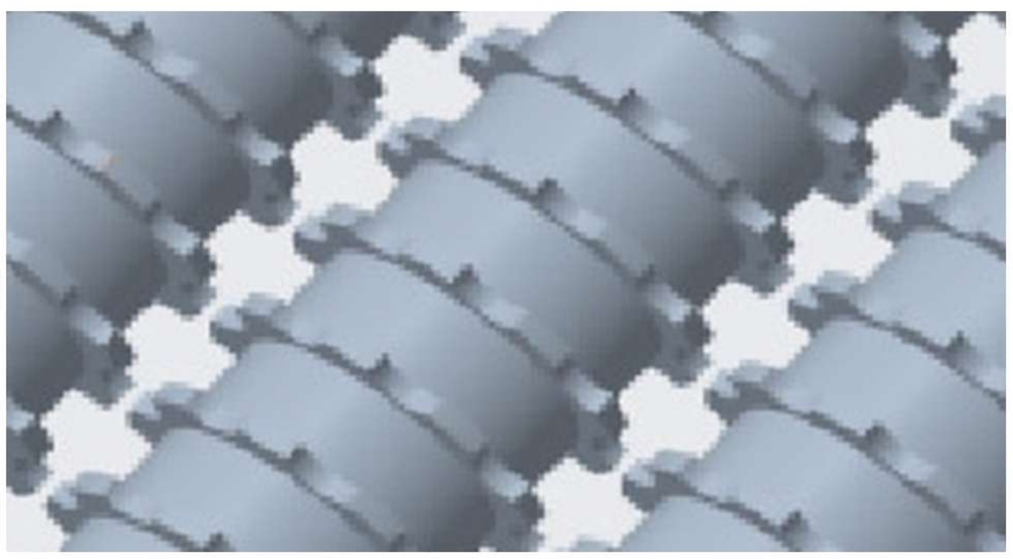


CAM screen sheet is arranged in intersect

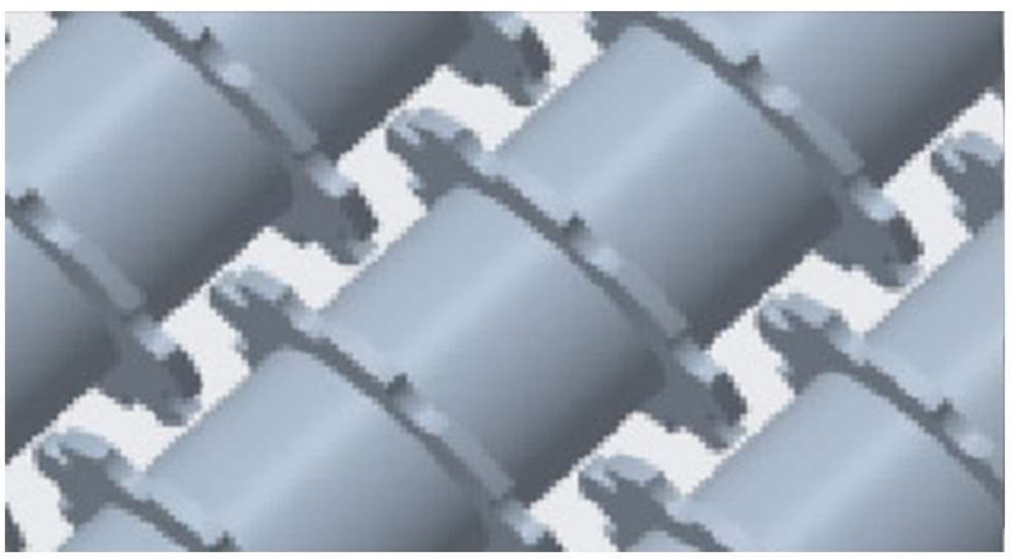


Plum blossom screen sheet is arranged in intersect

Torx screen disc
parallel distribution



Torx screen disc
staggered tooth arrangement



CAM screen disc
staggered tooth distribution

LETTERS OF
PATENT

证书号第16757211号

实用新型专利证书

实用新型名称：一种绿色环保且防堵卡的组合驱动的滚轴筛

发　明　人：吕巧凤;娄云利;林梅;孔卫鹏

专　利　号：ZL 2021 2 2298694.X

专利申请日：2021年09月23日

专 利 权 人：河南省振源科技有限公司

地　　址：453000 河南省新乡市经开区榆东路与纬七路交叉口东南角

授权公告日：2022年06月17日　　授权公告号：CN 216757105 U

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局长
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2022年06月17日

WOBBLER FEEDER
FEATURES

High Productivity

The Wobbler Feeder integrates both feeding and screening functions, doubling the processing efficiency in a single machine. Its reinforced swing mechanism, designed with impact resistance, ensures stable output under full-load operation, significantly enhancing system throughput.

Long Maintenance Cycle

This series of Wobbler Feeders integrates a self-cleaning system, effectively preventing material blockage and screen blinding. The equipment is standardly equipped with an automatic centralized lubrication device, combined with the point-movement reverse function, which can quickly resolve sudden material jamming situations, ensuring continuous and stable operation.

Wide Application Range

It can be widely applied in various industries such as coal, building materials, mining, metallurgy, power plants, chemical engineering, and garbage recycling, especially suitable for difficult-to-screen bulk materials, such as damp materials containing mudstone or clay.

Modular Design

The entire machine adopts a modular design, which makes installation, disassembly, maintenance and repair convenient and fast. According to different customers' demands, the sieve plate can be customized into various types such as circular, triangular and plum blossom. This modular design also allows for the setting of stepped structures between each independent module.

Self-cleaning Function

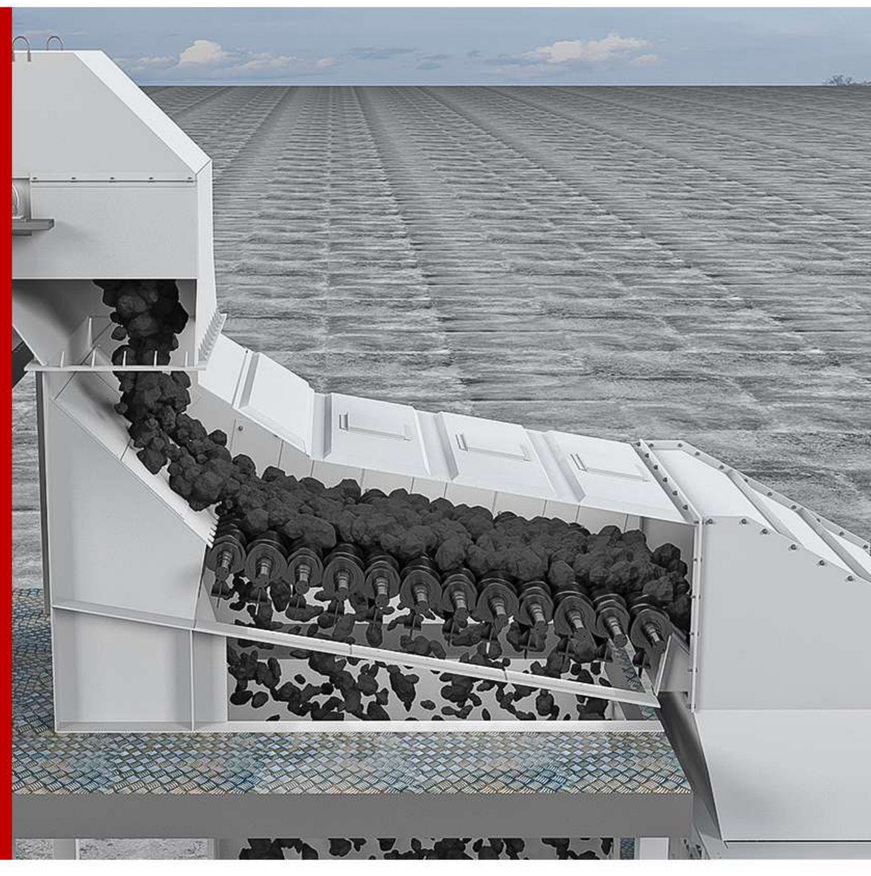
The screen shafts, through a unique separation surface movement mechanism and self-cleaning design, significantly reduce the risk of material blockage. Each screen shaft is equipped with an efficient scraper cleaning system, providing a double guarantee to ensure the continuous cleanliness of the screening surface.

High Safety

The wobbler feeder adopts a closed design, operates without vibration, has minimal dust emission, and generates low noise. It is equipped with a centralized automatic lubrication system that enables continuous operation for long periods, significantly reducing the frequency of manual maintenance.

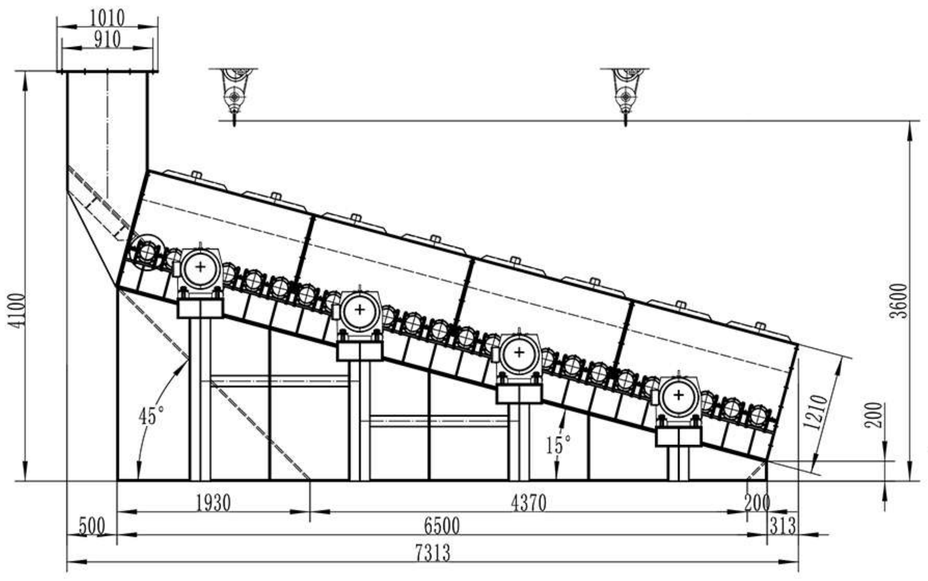
APPLICATION

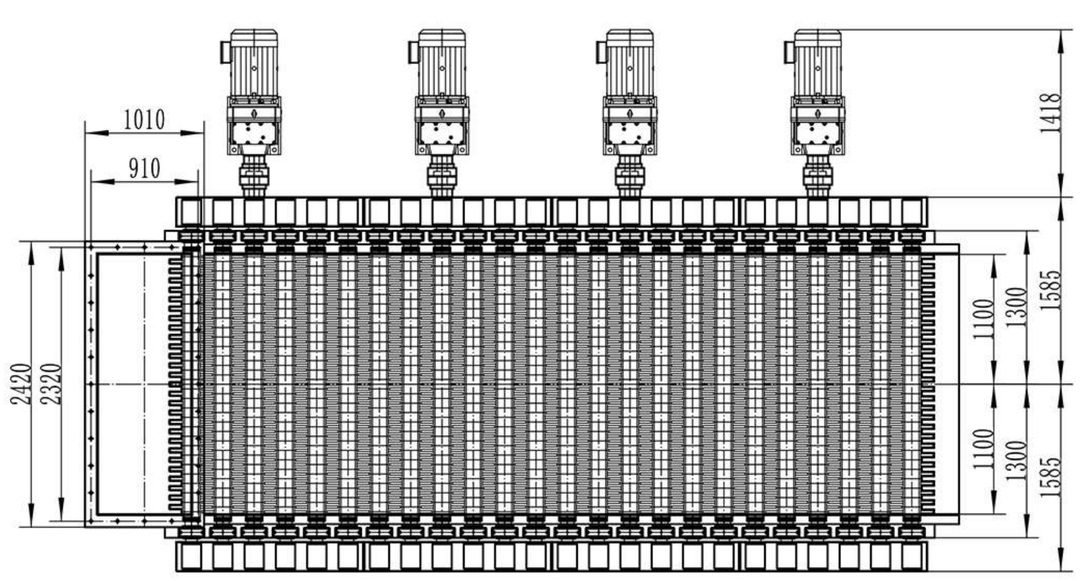
- Feeding
- Mining
- Screening/Sizing
- Aggregates
- Coal
- Metallurgy
- Clay
- Argil
- Salt
- Gypsum
- Bauxite
- Copper Ore
- Electric Power
- Coal Fired Power Plants
- Cement
- Sand Aggregate
- Solid Waste
- Limestone
- Gold Ore
- Granite
- Ilmenite
- Iron Ore
- Kaolin
- Laterite Ore



WOBBLER FEEDER

TECHNICAL SPECIFICATIONS





Model	Screen Width (mm)	Controlled Axis/Base	Graded Particle Size (mm)	Drive Power (km)	Handling Capacity (t/h)
GZS1208	1200	8	10–100	15	150–300
GZS1412	1 400	12	10–100	2x15	200–500
GZS1618	1600	18	10–100	3x18.5	400–800
GZS1824	1 800	24	10–100	4x22	600– 1000
GZ S2024	2000	24	10–100	4x30	800–1200
GZ S2430	2400	30	10–100	5x37	1000–1800

* The number of rolls can be customized according to customer requirements.

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