



The introduction of new type iron ore dry grinding and dry separation

The Technology Background Introduction



Background Introduction

China's iron ore resources are relatively rich, and with the continuous improvement of iron ore exploration technology, the proven iron ore resources reserves continue to increase. Judging from the quality of iron ore in China, it is mainly characterized by "more lean ore, less rich ore, fine embedded particle size, high proportion of polymetallic (associated) ore, and complex ore composition". Under the current technical conditions, magnetite, hematite, limonite, siderite, ilmenite and pyrite are the main ones with industrial application value.

The sustained and rapid development of economic construction has driven the rapid development of domestic iron and steel industry. As the largest producer and consumer of iron ore in the world, China's iron ore supply is far from meeting domestic demand due to the "poor, fine and miscellaneous" characteristics of iron ore resources. Therefore, a large amount of iron ore or iron concentrate powder must be imported from abroad every year.



Background Introduction

At present, the research on ore dressing technology in China is mainly focused on the following aspects:

1. Implement "iron enhancement and silicon reduction"
2. Develop efficient and energy-saving new processing technology and new technology for mineral processing
3. Research on new crushing, grinding, classification and beneficiation equipment

Disadvantages of traditional wet mill concentration

1

The utilization of ore is not high

2

The water consumption is large, the environmental pollution is also large

3

The investment cost is large

wet mineral processing needs to establish tailings dam, only one need to invest tens of millions of, and the early government approval is difficult, late hidden trouble

4

High requirement

The arid areas in central and western China are short of water all year round and do not have wet mineral processing conditions

Advantages and Features of dry grinding method



At present, the ore dressing process, usually using wet beneficiation process, this process has a long history, mature technology, but large water consumption, relatively complex process, high infrastructure costs. This method will greatly increase the cost of mineral processing in the arid and water deficient central and western regions. Even for some lean iron ore, there is no economic beneficiation. And the emergence of CIC company's dry grinding dry magnetic separation process, very good to solve this problem, the use of this process, can shorten the beneficiation process, the whole process without water, and greatly reduce the cost of dressing 。



Features

1
The whole process without water, can be used in dry areas without water.

2
No tailings dam, reduce the threshold of access, protect the environment.

3
Short process flow, short construction cycle, can be put into production quickly

4
Compared with the wet beneficiation process, the equipment and capital construction cost are low and the construction investment is less

Features

Dry grinding process is short, avoid over grinding, no magnetic agglomeration ore grade is high

6

The production cost per ton of fine powder is greatly reduced, which makes some lean iron ores economical

8

New process and new ideas, large output per hour, daily processing can reach tens of thousands of tons

5

Compared with the traditional wet process, the unit power consumption of dry process is low, which can be reduced by 30-50%

7

Small footprint, modular design, fast installation and movement

9



These advantages make the dry grinding dry magnetic separation technology and equipment get fast development in recent years, with the continuous depletion of resources and the rising demand, the development and utilization of low grade ore is more and more important, especially in the west of iron ore resources and serious water shortage, dry grinding dry magnetic separation process is preferred.

Summary



EQUIPMENT INTRODUCTION



Our company has carried out a lot of research work in view of the characteristics of our country's iron ore resources with much lean ore and high cost of wet beneficiation, especially in recent years, our independent research and development of dry grinding dry separation powder mill has replaced the traditional wet ball mill in the ore grinding stage. This progress brings hope for the improvement of beneficiation process index.



Advantages of Equipment

1 Water Conservation

For a long time, mining production need a large number of water resources supply, which has produced many problems caused by water source II, such as river pollution, surface subsidence and frequent cancer villages. Everyone can't avoid the "water crisis". This equipment does not use water and saves a lot of water resources. At the same time, the quality level of finished products processed by this product is consistent with that processed by conventional processes, and even can be higher. If these products are updated all over the country, the water saved is equivalent to the transmission capacity of several South-to-North water diversion projects. Because the product itself does not need water for operation, there is no sewage discharge, which can effectively reduce pollution and improve the level of environmental protection.



2 Save Electrical Energy

The newly invented beneficiation equipment saves more than 30% of electricity than the traditional equipment. When the equipment is idling, it is only 10% higher than the no-load current of the motor. The data shows that the power input by the ball mill is used to crush materials (do useful work), and the power consumption accounts for only 5% - 7% of the total power. More than 90% of it is useless work, which is mainly driven by the body and transformed into heat and sound energy, which is a great cost expenditure. The design features of this product can effectively avoid the above waste and reduce the production power consumption.

Advantages of Equipment

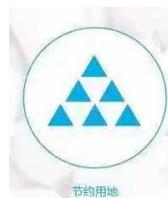
3 Environmental Protection

This equipment does not produce liquid fluid tailing, saves the capital investment of iron ore enterprises in tailing pond, and avoids a series of problems and dangers caused by tailing pond, such as difficult site selection, long distance, heavy fine, high pollution, tailing pond collapse and so on.



4 Land Conservation

Compared with traditional products, this product has small volume, light weight and is convenient for installation and production. It is an alternative product of ball mill and can be widely used in mining, cement, ceramics, pharmaceutical and other industries



Advantages of Equipment

5 Simple Maintenance and Low Steel Consumption

This product is easy to maintain and repair, which can save the later maintenance and operation cost of the equipment. The diversified crushing principle reduces the steel consumption and other materials, such as sieve, belt conveyor and other related equipment by more than 50% compared with conventional grinding.



6 Improve Production Efficiency

Due to the advanced technical concept, the working principle of this product is different from the traditional beneficiation equipment. The equipment has a large crushing ratio, remove many links, shortens the production process by two-thirds, reduces the investment in equipment and infrastructure, less the number of front-line workers, lower steel consumption and cost. With different hardness of the ore, the processing capacity of this product is very flexible, and the processing capacity of weathered ore and placer ore in some areas can even be increased several times. .



Advantages of Equipment

7 High Recovery

In the process of traditional beneficiation production, according to different ore properties, the iron content in tailing is about 3% - 10%. The equipment's crushing ratio is high, and the recovery rate powder in tailing is greatly improved. Through laboratory testing, the iron content of tailing processed by this product is less than 0.5%. This point is enough to increase the output on the price of the same raw materials. (For example, the output of the concentrator with a daily processing capacity of 10000 tons can produce 153.8 tons of concentrate for every reduction of Fe grade current price is 400 yuan, and the daily net profit is 61520 yuan).



Equipment Working Process

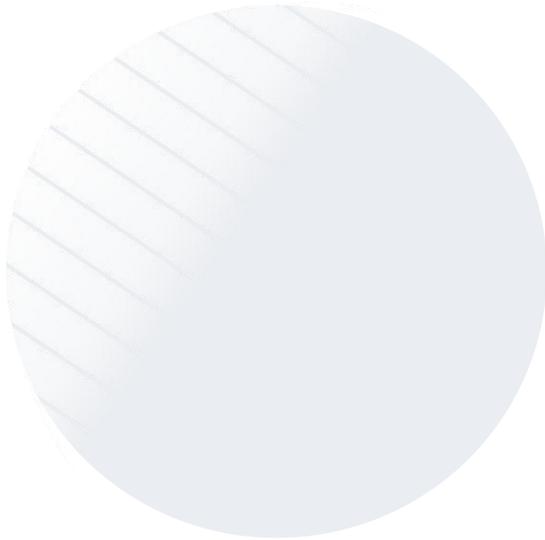


PROSPECT

The application of this equipment in iron ore enterprises is very typical: save grinding electricity and steel consumption, save the transportation cost of clean water and mud, no tailing pond maintenance cost, shorten the process, reduce equipment, capital construction and personnel, total cost can be reduced more than 50%. At present, the most concentrated cost of finished products is 450-550 yuan/ton mine accounting. The cost of finished products of this equipment can be reduced to 200-300 yuan/ton, and the reduction of cost is the enterprise profit. Turning losses into profits has enhanced the international competitiveness of domestic mining enterprises. Domestic mining enterprises can raise 0.2 people by producing 1 ton of mineral powder and pay 138 yuan of tax. The tax paid by these mining enterprises can raise the finance of more than 90 mining cities and drive the development of downstream catering, transportation and other enterprises. These can not be replaced by directly buying 1 ton of foreign ore.

This product is applicable to non-metallic ores such as lime, graphite and ceramics, and non-ferrous metal ores designed for grinding and flotation links such as gold, silver, copper, lead and zinc. The particle size of this product can be adjusted arbitrarily, which also has a very good effect on fine crushing industries such as building sand and stone. The products of this sand making model include powder and products of various particle sizes. As concrete aggregate, there is no need for grading, and the proportion of cement can be saved at the same time. Australia, Brazil and other high-quality ores that do not need beneficiation but need to be crushed have the application of this technology. This is an unprecedented invention and creation, which is bound to bring the technological revolution of relevant industries across the country and become a new profit growth point. It can create benefits of hundreds of billions of yuan every year.





Thank You !

