

带棒式筛条的悬臂筛分技术 Technology of Cantilever Screen Vibrating Sifter with Bar Screen

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北京天启金桥工程技术公司

Beijing Golden Bridge Engineering Technology Co., Ltd.

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1、棒条式筛分技术原理

Technical Principle of Bar Screen

(1) 多级布置的、上下摆动的棒式悬臂筛条构成了主要的筛分结构；

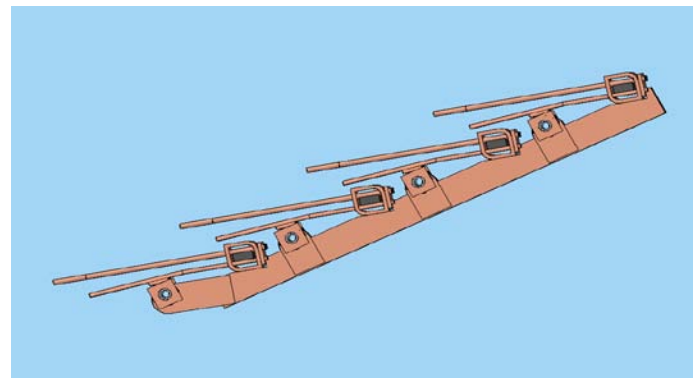
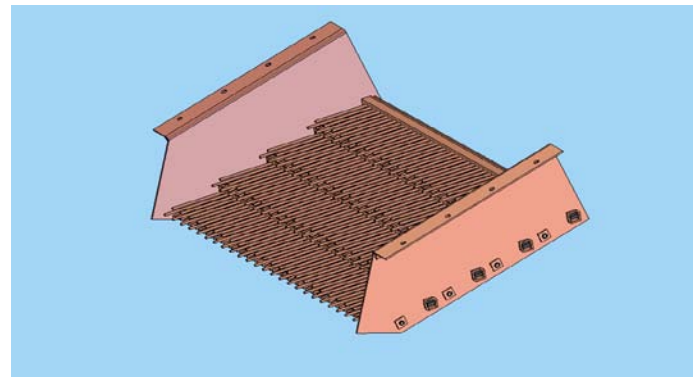
The main screening structure is flapping and multi-level layout cantilever bar screen.

(2) 设置清理用的弯棒筛条，通过高频振动可消除筛条上各个部位的堵塞；

Clean-up bend bar screen is set to eliminates blocking on each position of bar screen by high-frequency vibration.

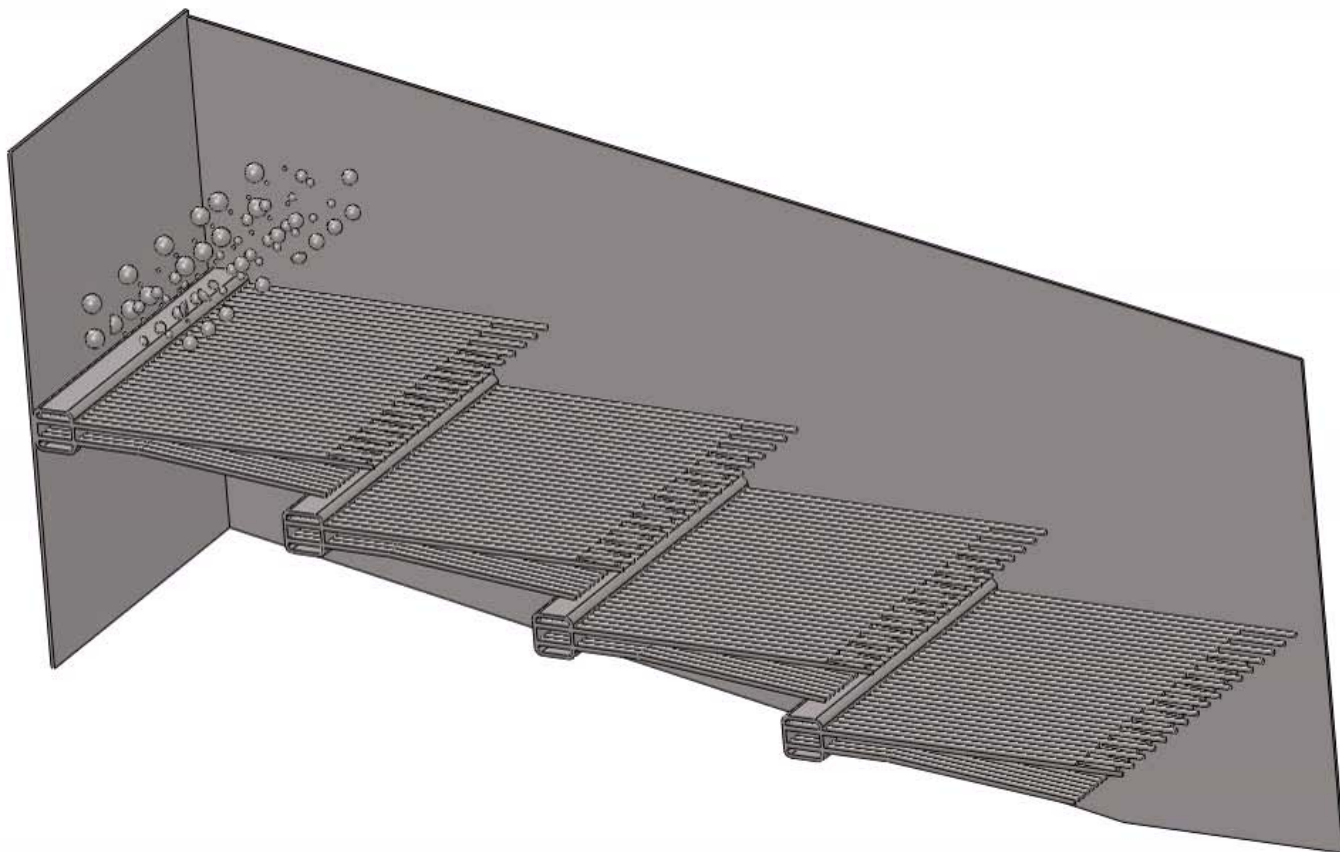
(3) 根据筛条之间固定的间距保证筛分精度。

The fixed distance of bar screen ensure the accuracy of sieving.



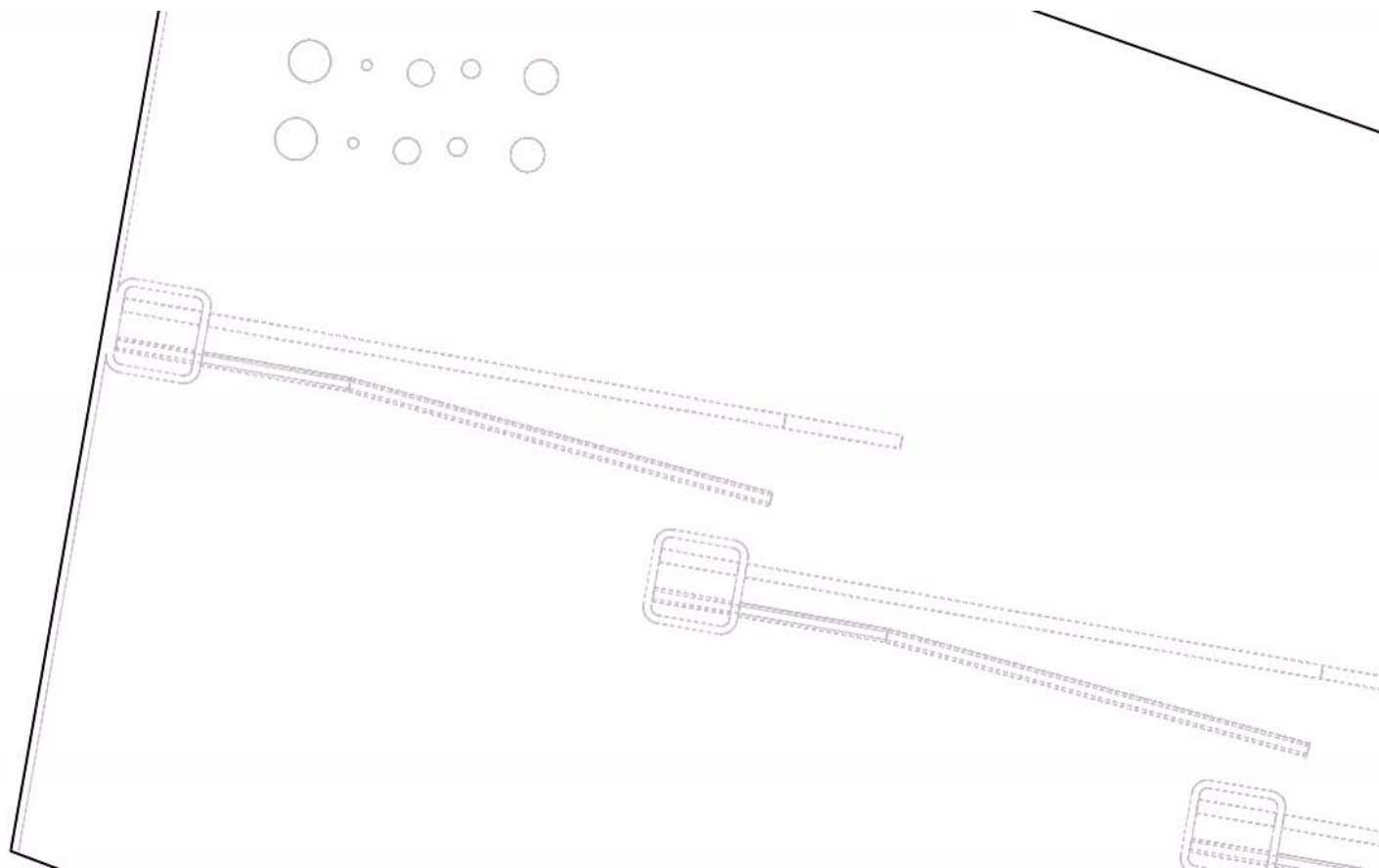
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Technical Principle of Bar Screen



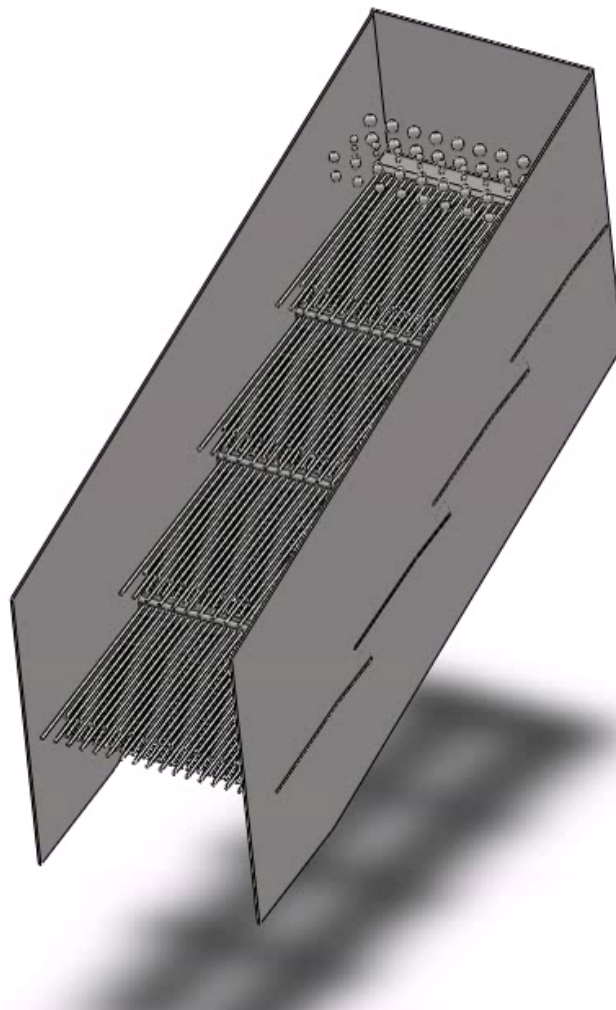
1、棒条式筛分技术原理

Technical Principle of Bar Screen



1、棒条式筛分技术原理

Technical Principle of Bar Screen



2、棒条式悬臂筛分的主要优点 Advantages of Bar Screen

新型棒条式悬臂筛网所需要振动强度是其他筛型的1/2，因此具有以下特点：
The vibration strength of cantilever bar screen is half of other kind of screens.
It has advantages are as follows:

- 1、整机重量轻，是其他筛型的60%；
Light weight , 60% of other kind of screens
- 2、耗电低，是其他筛型的60%；
Low electricity consumption, 60% other kind of screens
- 3、减少了筛分过程中细小颗粒的产生；
Little fine particle, during sieving
- 4、扬尘少，降低防尘系统载荷。
Less dust, lighten load of dust prevention system



2、棒条式悬臂筛分的主要优点 Advantages of Bar Screen



A、矿筛网主要特点

Main feature of screen of mine

1、筛网不堵孔、不卡料,，筛分效率高达85%以上；

The screening efficiency of the screen reaches more than 85% without blocking.

2、筛网耐磨性强，是梳齿型筛网的2倍；

It has strong abrasive resistance and is double times of comb type screen.

3、返矿粉末中超颗粒量控制在10%左右；

The powder has about 10% quantity of exceed standard particles when return mines.

4、筛网更换方便，维修简单。

It is convenient to replace and repair the screen.

B、焦筛网主要特点

Main feature of screen of coke

1、具有上述矿筛特点；

It has features mentioned above.

2、采用橡胶陶瓷复合筛网，抗腐蚀、耐磨损、寿命长。

It uses rubber ceramic compound screen with corrosion resistant, wear resistant and long lifetime.

2、棒条式悬臂筛分的主要优点 Advantages of Bar Screen



3、显著的经济效益

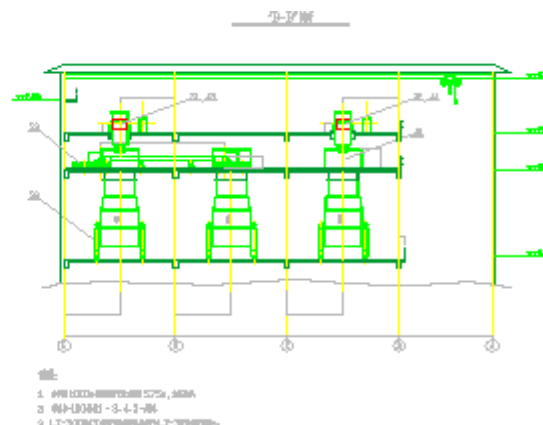
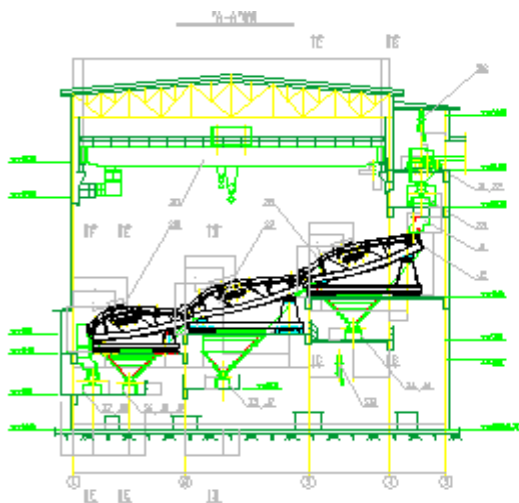
Remarkable Economic Benefit

360m²烧结机中的整粒筛分系统整体改造案例

Overall modification of whole grain screening system in 360m² sintering machine

原系统采用两用一备生产模式（3条生产线），每一条线有2台3mx9m及1台3mx7.5m的椭圆等厚振动筛组成，整个筛分系统3条线共9台振动筛。

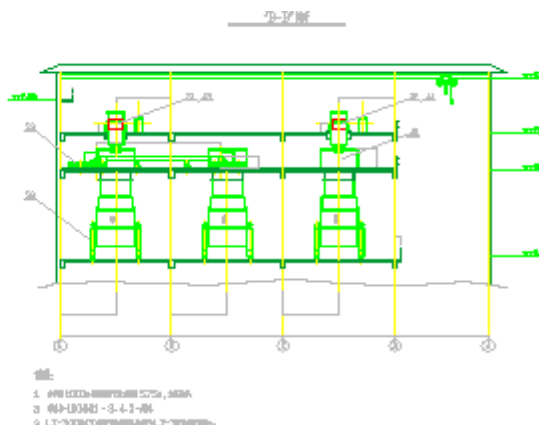
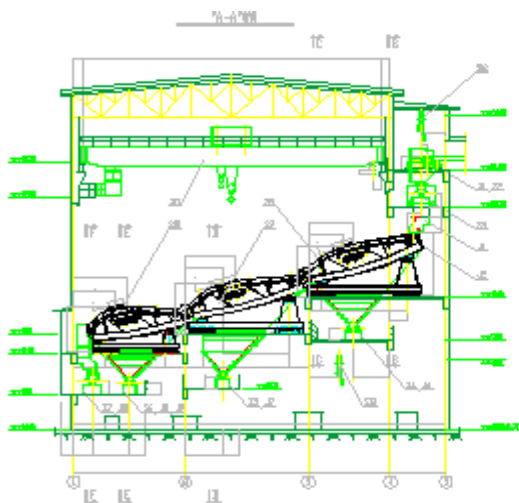
The original system has three production lines including two operation and one prepare. Each line has two sets of 3m*9m and one set of 3m*7.5m elliptically vibrating screen. The whole 3 lines of screen system has total 9 sets of vibrating screen.



3、显著的经济效益 Remarkable Economic Benefit

开孔率仅为10%—15%；（与筛网孔尺寸相近的）临界颗粒卡孔特别严重且物料卡孔后不易排出，筛网有效开孔率远远低于10%。筛分效率仅为70%左右，物料筛分不彻底，使成品料中含粉量高达14%，返矿超标达到18%左右，导致入炉物料中含粉量过高，高炉透气性差，影响了高炉的正常运行。

The porosity is 10%~15%. Critical particle size radius (similar to hole size of screen) is liable for blocking and is difficult of elimination. So the effective porosity far lower than 10%. The screening efficiency is about 70%. The powder content of finished product is 14% and exceed standard of particle is about 18% when return mine because of incomplete screening. The high powder content materials lead to low gas permeability and affect operation of BF.



3、显著的经济效益

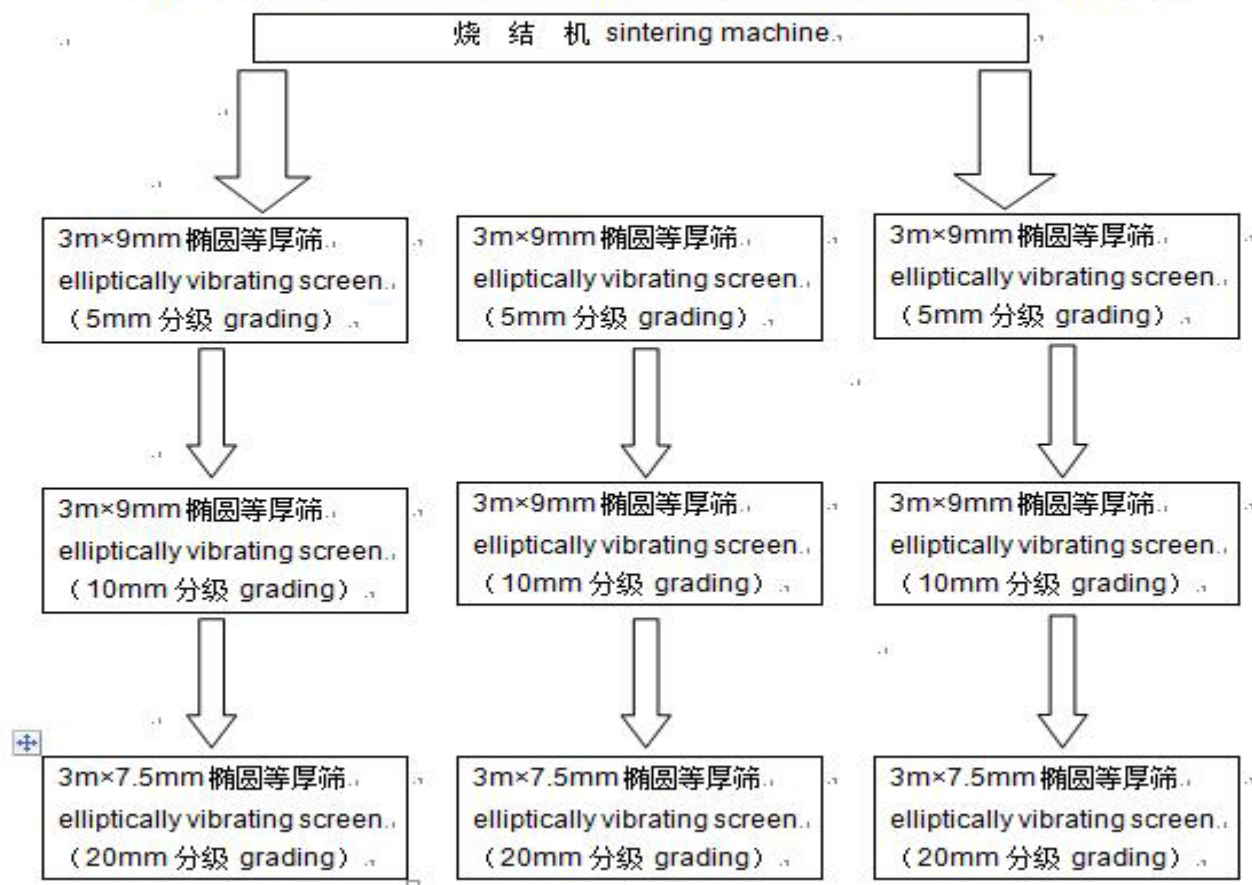
Remarkable Economic Benefit

360m²烧结机中的整粒筛分系统整体改造案例

Overall modification of whole grain screening system in 360m² sintering machine

图一(改造前原有旧系统筛分过程图)

Picture 1, the procedure chart of original screen system before modification

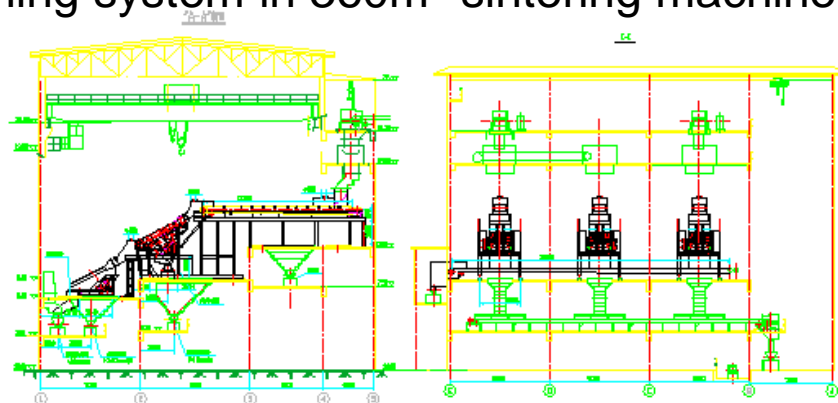
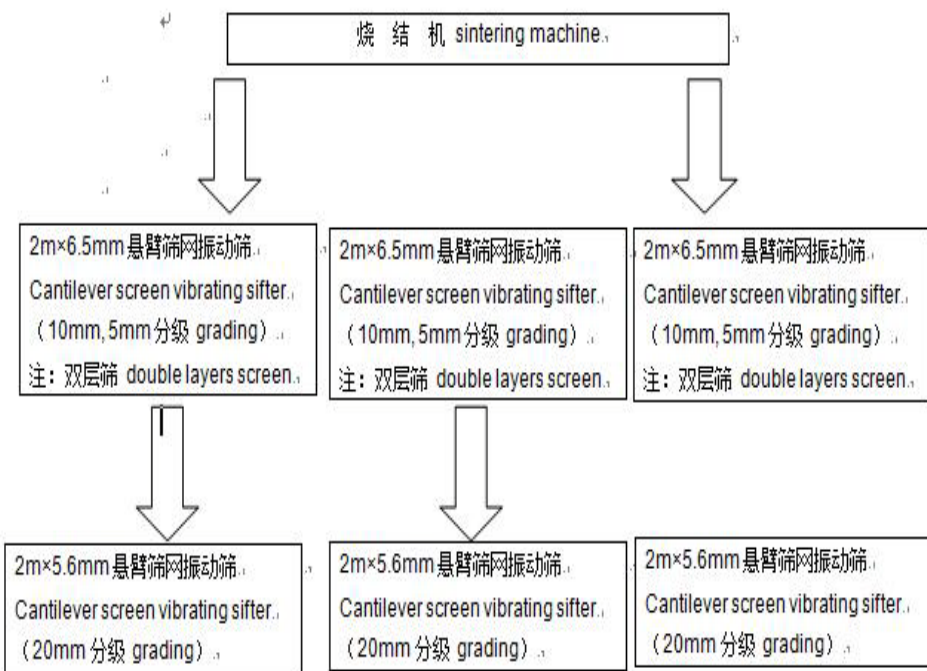


3、显著的经济效益 Remarkable Economic Benefit

360m²烧结机中的整粒筛分系统整体改造案例 Overall modification of whole grain screening system in 360m² sintering machine

图二(技术改造后新系统筛分过程图)

Picture 2, the procedure chart of new screen system after modification



3、显著的经济效益

Remarkable Economic Benefit

360m²烧结机中的整粒筛分系统整体改造案例

Overall modification of whole grain screening system in 360m² sintering machine

改造后每年可获得显著的综合节能降耗效益，1年内可回收投资。

After modification——

- **Gain remarkable comprehensive benefits of energy-saving and cost-reducing each year;**
- **Recover investment within one year;**

改造后筛分系统开孔率可达30%—40%；棒条筛孔是敞开的，颗粒不易卡孔；筛网本身具有自清理装置，即使物料卡孔也会很容易被自清理装置排出，运行过程中的有效开孔率较高。筛网筛分效率高达90%，返矿超标平均10%左右，大大降低了成品料中的含粉量，实际检测：产品中含粉量仅为5.8%，为高炉提高高炉利用系数、降低焦比提供了良好的条件。

The porosity reaches 30%~40%;

The open type of bar screen hole prevents blocking of particles;

The bar screen has self cleaning device to eliminate blocking easily and improve effective porosity when running;

The screening efficiency reaches 90% and average exceed standard is about 10% when return mine. It greatly reduces powder content of finished products. The actual test result of powder content is 5.8% that is good for increasing coefficient of utilization of capacity of BF and reducing coke ratio.

3、显著的经济效益

Remarkable Economic Benefit

360m²烧结机中的整粒筛分系统整体改造案例

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综合效益包括：

Comprehensive benefits:

1、技术改造完成后，每年可大幅度降低系统的运行电力能耗；

Reduce electrical energy consumption of running system sharply each year after modification;

2、节省了一套除尘系统，大幅度节省了除尘系统动力消耗；

Save one set of dedusting system to reduce power consumption sharply;

3、改造后振动筛采用小功率普通电机，没有同步器（易损件）和万向节（易损件）等部件，从而大大减少了备件和维修费用，并大大减少成品物料的破碎。筛网振动筛本身重量轻，所需激振力较小，所以轴承不易发热，寿命较长。

After modification, the screen use low-power common electric machine without synchronizer (wearing parts), universal joint (wearing parts) and other parts in order to reduce spare parts, repairing costs and crush of finished products. The screen vibrating sifter with light weight has little exciting force to avoid overheat of bearing. So the bearing has long life time.

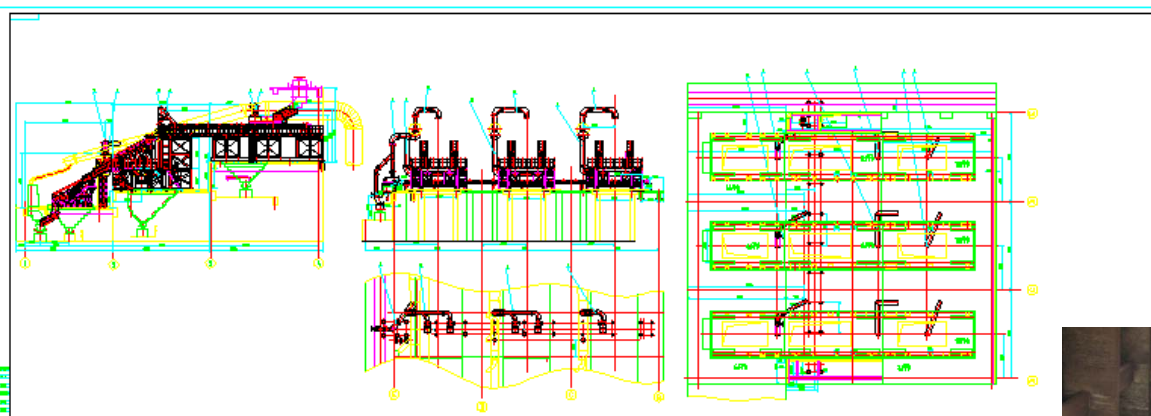
4、降低返矿率，大幅度节省返矿量（重复烧结）（占综合效益约50%）。

Reduce sinter return ratio and save quantity of return mine (repeated sintering) (occupy 50% of comprehensive benefits)

3、显著的经济效益 Remarkable Economic Benefit

改造后的除尘系统

Dedusting system after modification



3、显著的经济效益 Remarkable Economic Benefit

改造后采用小功率普通电机的激振系统
Vibration system with small power
general motor after modification



改造前采用大功率电机带万向节同步
器的激振系统和大量备件
Vibration system with cardan joint
synchronizer and high power motor
before modification



THANK YOU

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