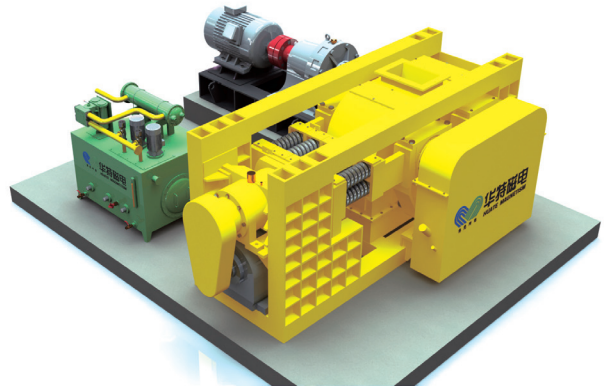
单传动高压辊磨机

SINGLE DRIVE HIGH PRESSURE GRINDING ROLL

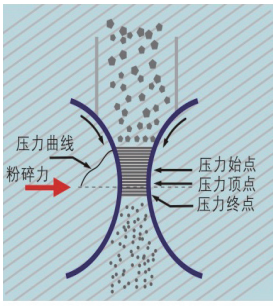
适用范围 Application Scope

单传动高压辊磨机广泛应用于水泥（用于水泥熟料、矿渣、钢渣的预粉磨；）、金属矿（用于铁矿石、铅锌矿、锰矿、钒矿、铜矿等物料超细碎）、非金属矿（用于煤矸石、长石、霞石、白云石、石灰石、硅砂）等物料制粉。

Single—drive high pressure grinding roll is specially designed to pre—grind the cement clinkers, the mineral dross, the steel clinkers and so on into small granules, to ultra—crush the metallic minerals (iron ores, manga—nese ores, copper ores, lead—zinc ores, vanadium ores and others) and to grind the non—metallic minerals (the coal gangues, feldspar, nephe—line, dolomite, limestone, quartz, etc.) into powder.



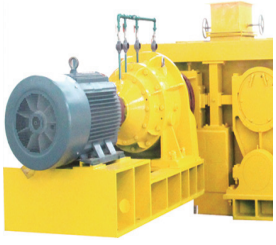
结构及工作原理 Structure & Working Principle



◆工作原理图 Working Principle Diagram

单传动高压辊磨机采用料床挤压的粉磨原理。一个为固定辊，一个为活动辊，两根速度相同，相对运转，物料由上部喂料口进入，在两辊缝隙中被高压力挤压而粉碎，从底部排出。

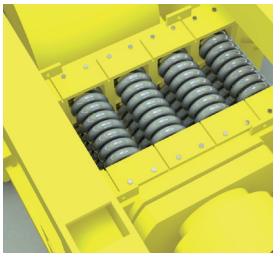
The single—drive high pressure grinding roll adopts the grinding principle of material aggregate extrusion. One is stationary roll and the other is movable roll. The two rolls rotate oppositely at the same speed. The materials enter from the upper feed opening, and are grinded due to extrusion by high pressure in the gap of the two rolls, and discharged from the bottom.



◆传动部分 Drive part

只需一台电机传动，动力由定辊通过齿系传给动辊，使两辊完全同步运行，无滑动摩擦，做功全用于物料的挤压，能耗利率高，比传统高压辊磨机装机节电 45%。

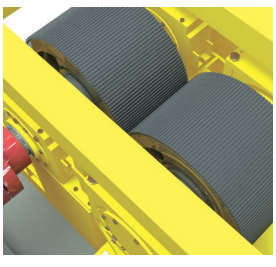
Only one motor drive is needed, the power is transmitted from the stationary roll to the movable roll through the gear system, so that the two rolls are fully synchronized with no sliding friction. The work is all used for material extrusion, and the energy consumption utilization rate is high, which saves 45% of electricity compared to conventional high pressure grinding roll.



◆施压系统 Pressure applying system

采用组合弹簧机械施压系统，使运辊避让灵活，当有铁块异物进入时，弹簧施压系统直接退让，反应及时，确保运转率高达 95%；而传统高压辊磨机的避让需将液压油通过管道排出后泄压，动作滞后，易造成辊面损伤或液压系统故障。

The combined spring mechanical pressure applying system makes the movable roll avoid flexibly. When there is iron foreign matter entering, the spring pressure applying system directly sets back and reacts in time, ensuring the operation rate is as high as 95%; while the traditional high pressure grinding roll makes avoiding, the hydraulic oil needs to be discharged through the pipeline for pressure relief. The action is delayed, which may cause damage to the roll surface or malfunction of the hydraulic system.



◆辊面 Roll surface

辊面采用合金耐磨焊材堆焊而成，硬度可达 HRC58—65；压力随物料多少自动调节，既达到粉碎目的，又保护了辊面；动辊与定辊同步运转，无滑动摩擦。因此，辊面使用寿命远远高于传统高压辊磨机。

The roll surface is surfacing welded with alloy wear—resistant welding material, and the hardness can reach HRC58—65; the pressure is automatically adjusted with the material, which not only achieves the purpose of grinding, but also protects the roll surface; the movable roll and the stationary roll operate synchronously without sliding friction. Therefore, the service life of the roll surface is much higher than that of the conventional high pressure grinding roll.

主要技术特点 Main Technical Features

◆效率高，相对于传统破碎设备产量提高 40–50%，PGM1040 产量高达 50~100t/ 小时，功率 90kW，高效节能。
◆由于采用单辊传动，只有一个电机，能耗低，相对于传统双传动辊磨机降低功耗 20–30%。
◆单电机传动，两辊的同步性好，辊磨损低，辊面采用耐磨堆焊技术，辊耐磨性好，易于维护。
◆运转率高，95% 以上，结构简单，设计科学，采用高压弹簧组加压，工作压力随弹簧压缩量及时自动调整，无故障点。
◆自动化程度高，易于调节，无液压系统，故障率低。
◆辊面采用合金耐磨焊材堆焊而成，硬度高，耐磨性好；弹簧压力来自物料的反作用力，压力始终平衡，既达到粉碎目的，又保护了辊面；动辊与定辊之间通过齿系啮合传动，速度完全同步，避免了物料与辊面的滑动摩擦。因此，使用寿命远远高于双传动辊压机。
◆结构紧凑，占地面积小。

◆ High Working Efficiency. Compared with the traditional crushing equipment, the processing capacity increases by 40 – 50%. The processing capacity for PGM1040 can reach around 50 – 100 t/h, with only 90kw power.
◆ Low Energy Consumption. As per the single roll driving way, it needs only one motor to drive. The energy consumption is very low. Compared with the traditional double drive HPGR, it can reduce the energy consumption by 20~30%.
◆ Good Wear–resistant Quality. With only one motor driving, the synchronization performance of the two rolls is very good. With wear–resistant welding surfaces, the rolls are with good wear–resistant quality and can be easily maintained.
◆ High Operation Rate: ⩾ 95%. With scientific design, the equipment can be pressurized by the high pressure spring group. The working pressure can be adjusted automatically as per the spring group compress. There is no malfunction point.
◆ High Automation and easy adjustment. Without the hydraulic system, there is low malfunction rate
◆ The roll surface is surfacing welded with alloy wear–resistant welding material, with high hardness and good wear–resistance; The pressure to the spring comes from the reaction force of the material, and the pressure is always balanced, which not only achieves the purpose of crushing, but also protects the roll surface; the movable roll and the stationary roll are meshed and driven by the gear system, and the speed is completely synchronized, thereby avoiding sliding friction between the material and the roll surface. Therefore, the service life is much higher than that of the double drive HPGR.
◆ Compact structure and small floor space.

技术参数 Technical Parameters

型号 Model	压辊直径 mm Roll diameter mm	压辊宽度 mm Roll width mm	最大入料粒度（水泥、钢渣、矿渣）mm Max. feed size (Cement, steel slag, ore slag) mm	理想入料粒度（金属矿、非金属矿）mm Optimum feed size (metallic mineral, non–metallic mineral) mm	出料粒度（水泥）mm Output size(cement) mm	处理能力 T/h Processing capacity T/h	电机功率 Kw Motor power Kw	外形尺寸（长×宽×高）mm Outline dimensions (L×W×H) mm
PGM0850	ϕ800	500	50	30	分级 Classifying，＜4	30 ～ 40	37	2760×2465×1362
PGM1040	ϕ1000	400	50	30	分级 Classifying，＜4（其中＜2.5 的占 75%）	50 ～ 80	90	4685×4300×2020
PGM1060	ϕ1000	600	50	30	分级 Classifying，＜4（其中＜2.5 的占 75%）	70 ～ 110	110	4685×4300×2020
PGM1065	ϕ1000	650	50	30	分级 Classifying，＜4（其中＜2.5 的占 75%）	100 ～ 160	200	5560×4500×2200
PGM1250	ϕ1200	500	50	30	分级 Classifying，＜4（其中＜2 的占 80%）	120 ～ 180	250	6485×4700×2485
PGM1465	ϕ1400	650	50	30	分级 Classifying，＜4（其中＜2 的占 80%）	240 ～ 320	630	9200×6320×3600
PGM1610	ϕ1600	1000	50	30	分级 Classifying，＜4（V 选＜1）	500 ～ 650	1250	10800×8100×4400

（仅供参考）for reference only

单传动高压辊磨机与传统高压辊磨机对比

COMPARISON BETWEEN SINGLE DRIVE HPGR AND CONVENTIONAL HPGR

传统高压辊磨机	单传动高压辊磨机
能 耗 较 高	能耗低，装机功率少 45%
运 转 率 较 低	运 转 率 高
操作复杂（液压系统）	“傻瓜机”无液压系统，易操作
两辊线速度不同步，磨损大	两辊完全同步，损耗小
工作间隙大，漏料多	工作间隙适时调整，漏料少
工作腔呈梯形，受力不均	工作腔始终平行，受力均匀
动辊避让滞后，故障较高	动辊避让灵活，确保高运转率
投 资 较 大	投 资 较 小

通过对传统高压辊磨机的升级改造，扬长避短，单传动高压辊 磨机具有明显的综合优势，将引领高压辊磨机的发展趋势。

单传动高压辊磨机预粉磨工艺流程图

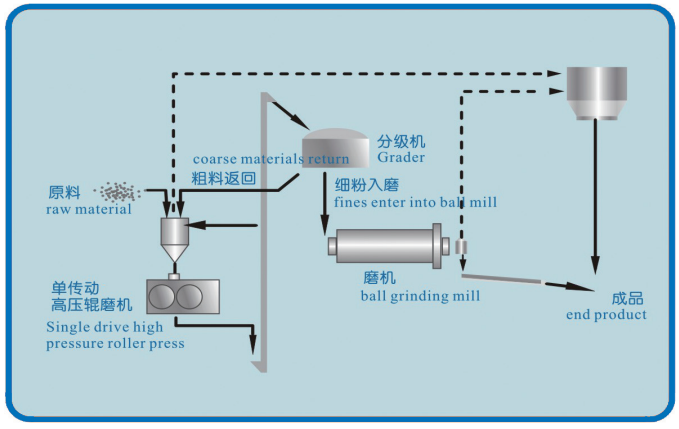
PRE—GRINDING PROCESS FLOW CHART OF SINGLE DRIVE HPGR

水泥、矿渣、钢渣预粉磨

Pre—grinding of cement, ore slag and steel slag

“多破少磨，以破代磨”即预粉磨，已成为管磨生产工艺提产降耗的主流技术，单传动高压辊磨机作为目前最先进的预粉磨节能设备，可将物料碎至 —4mm 或 —0.5mm，其中 0.08mm 占 30% 以上，使用球磨机产量提高 50~100%，系统粉磨电耗降低 15~30 左右。

“More crushing and less grinding, replace grinding with crushing”, that is, pre—grinding, has become the mainstream technology for pipe mill production process to increase production and reduce energy consump—tion. As the most advanced pre—grinding energy—saving equipment, single—drive HPGR can crush the materials to —4mm or —0.5mm, of which 0.08mm accounts for more than 30%. The capacity of utilized ball mill can be increased by 50~100%, and the system grinding power consumption can be reduced by 15~30%.



原料 —50mm
Raw Material —50mm

原料 —4mm
Raw Material —4mm

单传动高压辊磨机金属矿超细碎工艺流程图

ULTRA FINE CRUSHING PROCESS FLOW CHART OF METALLIC MINERAL WITH SINGLE DRIVE HPGR

金属矿超细碎 Ultra Fine Crushing of Metallic Mineral

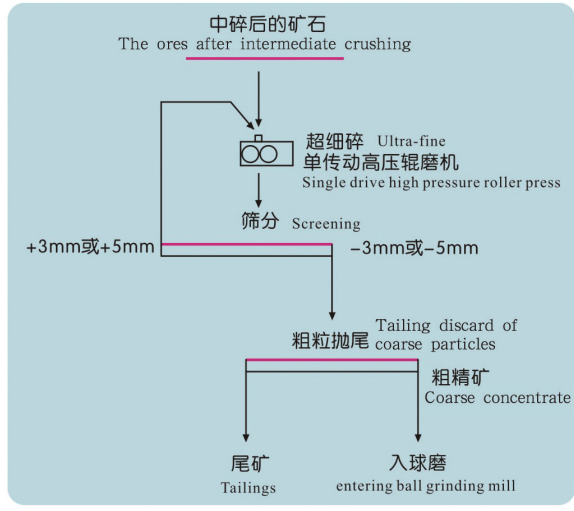
矿石通过两辊间隙时，被高压力碾成细粒 −5mm 或 −3mm 及大量粉末状，由于有用矿物与脉石的合界面的结合力较弱，容易产生疲劳断裂或产生微裂纹和内应力，部分的结合界面也会完全解离。

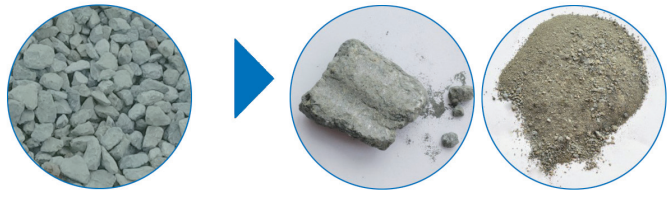
由于高压辊磨机出料细粉含量高，并且多沿解理面破碎，同时具备这两大优势，与常规破碎相比，破碎产品连生体比例降低，其抛尾效果好，粗精矿品位和抛度产率均大幅提高。

When the minerals pass through the gap between the two rolls, they are crushed into fine particles of −5 mm or −3 mm and a large amount of powder by high pressure force. Due to the weak bonding force of the interface between the useful mineral and the gangue, fatigue fracture or micro−crack and internal stress are easily generated. Part of the interface will be completely dissociated.

Due to the high content of fine powder discharged from the HPGR and the fact that the minerals are crushed along the dissociation surface, compared with the conventional crushing, the proportion of intergrowth in the crushed products is reduced, and the tailing discard effect is good.

Both the coarse concentrate grade and the waste discard yield are greatly improved.





原料 −30mm Raw Material −30mm　　料饼 Material Cake　　出粒 −4mm Output Size −4mm

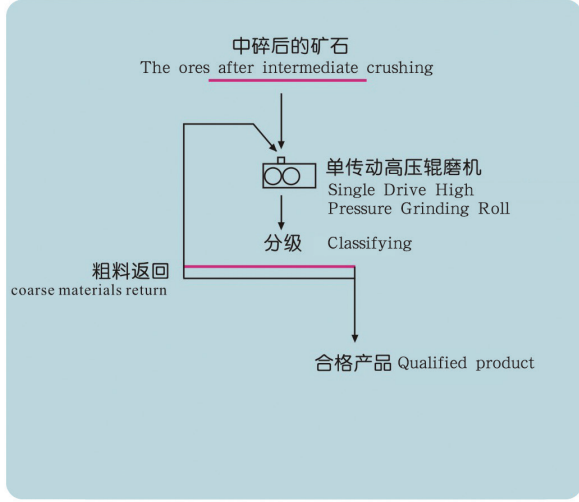
单传动高压辊磨机非金属矿应用工艺流程图

APPLICATION PROCESS FLOW CHART FOR NON−METALLIC MINERAL WITH SINGLE DRIVE HPGR

非金属矿制粉
Non−Metallic Mineral Grinding

与传统制粉设备相比，单传动高压辊磨机具有单机产能大、能耗低、磨耗少，铁污染少的优点；产品细度可控制在 20 目 ~120 目，可取代球磨机，可创全新制粉工艺。

Compared with traditional grinding equipment, single−drive HPGR has the advantages of large single machine capacity, low energy consumption, less wear and less iron pollution; the product fineness can be controlled from 20 mesh to 120 mesh, which can replace ball mill and create a new grinding process.



原料 Raw Material　　一次性出料 One−time discharge