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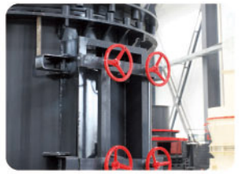
SBM
MINING AND CONSTRUCTION MACHINERY

MTM中速梯形磨粉机

MTM Medium Speed Trapezium Pulevriser



文明的进程即细化的过程
The process of civilization,that is,
the process of dividing

上海世邦机器有限公司

文明的进程即细化的过程！

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MTM 中速梯形磨粉机
Medium Speed Trapezium Pulveriser

MTM 中速梯形磨粉机

APPLICABLE SCOPE / 适用范围

该机可广泛适用于建材、化工、冶金、矿山、磨料、耐材、陶瓷、钢铁、电力、煤炭等行业物料的加工。可粉磨石英、长石、方解石、滑石、重晶石、萤石、稀土、大理石、陶瓷、铝矾土、锰矿、铁矿、铜矿、磷矿石、氧化铁红、镐英砂、矿渣、水渣、水泥熟料、活性炭、白云石、花岗岩、石榴子石、氧化铁黄、豆饼、化肥、复合肥、粉煤灰、烟煤、焦煤、褐煤、菱镁砂、氧化铬绿、金矿、红泥、粘土、高岭土、焦碳、煤矸石、瓷土、蓝晶石、氟石、膨润土、麦饭石、流纹石、浑绿岩、叶腊石、页岩、紫砂石、迭岩石、玄武岩、石膏、石墨、碳化硅、保温材料等莫氏硬度在9.3级以下，湿度在6%以下的各种非易燃易爆矿产物料。

超压梯形磨粉机在设计之初充分考虑脱硫制粉的需要，更可与脱硫设备完美匹配，从而提高脱硫效率，因此成为了国内外脱硫制粉的首选设备。

This series pulveriser is applicable to powder pulverization in metallurgy, building material, chemicals mine and other industries, can pulverize quartz, feldspar, calcite, talcum, barite, fluorite, rare earth, marble, ceramic, bauxite, manganese ore, iron ore, copper ore phosphorus ore, ferric oxide rouge, zircon sand, slag, grain slag, clinker, compound fertilizer, coal ash, coking coal, brown coal, magnesite, chromium sesquioxide, golden ore, clay, kaolin, coke, coal gangue, porcelain clay, cyanite, fluorspar, bentonite, medical stone, flow mark stone, mixed green rock, pyrophillite, cleaving stone, purple stone, dolomite, granite, basalt, gypsum, graphite, carborundum, heat insulating material and all kinds of non–flammability and non–explosion minerals with Moths hardness below Class 9 and humidity below 6%.

At the beginning of design for the overpressure trapezoidal pulveriser, full consideration on desulphurization and pulverization was made, thus the pulveriser is able to perfect match with the desulphurization equipment, so as to improve desulphurization efficiency. It becomes the first choice for desulphurization and pulverization at home and abroad.

MTM 中速梯形磨粉机

PRODUCT INTRODUCTION/产品概述

MTM中速T型磨是我公司专家历经多年研制和开发，根据客户的使用和建议。在原高压悬辊磨的基础上设计出的新型工业磨粉机。该机型采用了梯形工作面、柔性连接、磨辊联动增压等五项磨机专利技术，开创了超压梯形磨粉机的业内新标杆。

MTM medium speed T type pulveriser is a new type of industrial pulveriser designed on the basis of original high pressure suspended roller pulveriser according to customers´ utilization opinions and suggestions, which has been researched and developed for many years by our experts. It adopts five pulveriser patent technologies, such as trapezoid working face, flexible connection and roller linkage boosting, creating a new mark post in the overpressure trapezoid pulveriser industry.

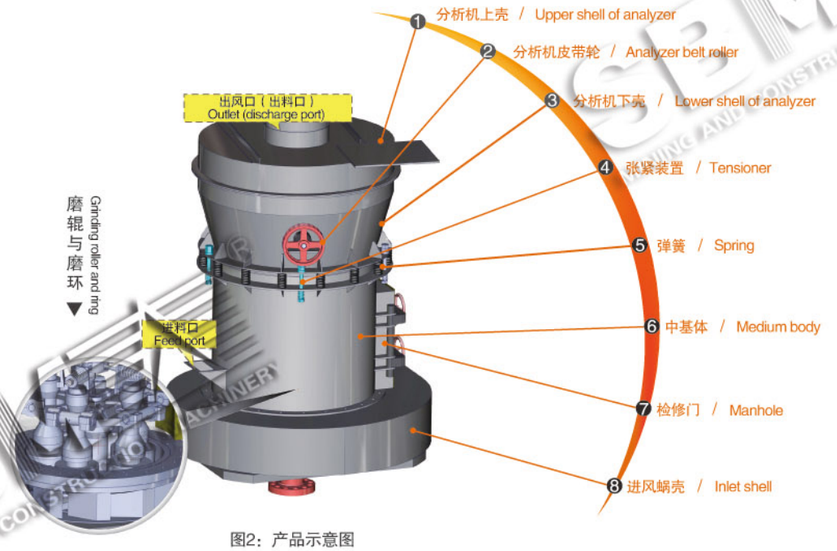


图2：产品示意图
Fig. 2: Product Diagram

MTM 中速梯形磨粉机

OPERAING PRINCIPLE/工作原理

主机通过减速机带动中心轴转动（图3）。轴的上端联结着梅花架（图4），磨辊装置通过横担轴吊装在梅花架下并形成摆动支点。磨辊沿磨环以整机中轴进行公转，同时因与磨环的摩擦作用而自转。梅花架下装有铲刀系统，铲刀与磨辊同转过程中把物料抛起喂入磨辊磨环之间而被冲压、碾碎。（图5）从磨环底部进入磨腔的气流将小颗粒粉料带入选粉机，细度过粗的物料落重磨，合格细粉则随气流进入集粉器，经出粉管排出，即为成品。

The host drives the central shaft running (Fig. 3) by the gear box. The upper end of the shaft is connected with a wobbler spindle (Fig. 4) and the grinding roller is suspended under the wobble spindle by a cross arm shaft and forms a swinging point. The grinding roller runs along with the central shaft of the whole machine, and also rotates by friction with the grinding ring. A perching knife system is installed under the wobble spindle and feeds the material into the gap between the grinding roller and ring for pressing and grinding with the grinding roller during rotation. (Fig. 5) Air flow will bring minor powder into the powder concentrator upon entry into the grinding gravity from the bottom of the grinding ring. Coarse materials fall down and are reground; and fine powder goes into the powder collector along with the air flow and is discharged as the finished product through the powder discharge tube.

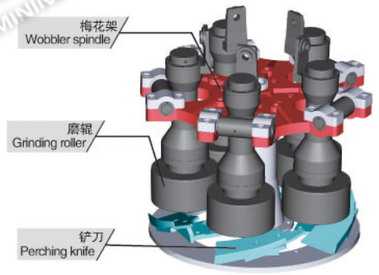


图5：磨辊–梅花架–铲刀组件图
Fig. 5: grinding roller— wobbler spindle— perching knife module

图4：梅花架
Fig. 4: wobbler spindle

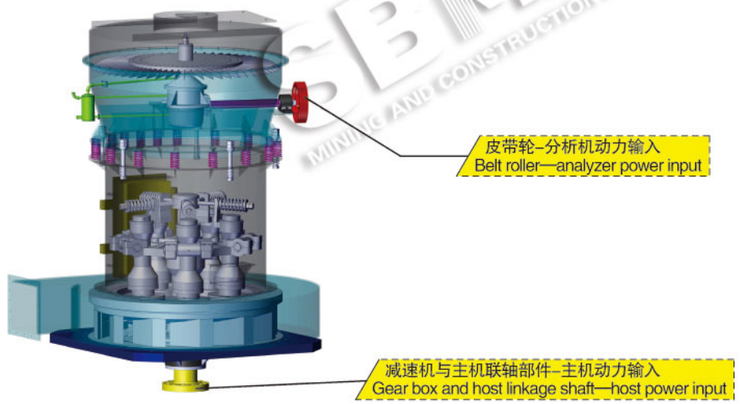


图3：动力输入
Fig. 3 Power input

MTM 中速梯形磨粉机

PRODUCT ADVANTAGES /产品优势

★ **1、成本优势**

立体结构，占地面积小，成套性强。从块料到成品粉子独立自成一个生产体系，一次性投资少。能耗低，在理想工作条件下,单位通过量能耗和新给料单位能耗分别为1.02kWh/t和1.48kWh/,t与同等级球磨所需电耗相比,低60%以上。

★ **2、创新性的磨辊与磨环（图6）**

与传统的雷蒙磨相比，将磨辊与磨环设计成多级阶梯状，降低了物料在梯形磨辊与磨环之间的下滑速度，延长了对物料的碾压时间，提高了成品的细度和产量。

★ **3、高效的平衡加压弹簧**

梯形磨汲取雷蒙磨与悬辊磨的优点，将磨辊总成通过拉杆及水平放置的弹簧联结到一起，其产生的径向力避免了大块物料进入磨腔后对主轴及轴承的损耗，提高了设备的使用寿命。同时在工作中，高压弹簧与离心力的共同作用，磨辊紧贴磨环滚动，其滚动压力比同等动力条件下的雷蒙粉机高1.2倍，故产量大为提高。

★ **4、基于环保理念的技术改进**

主机与选粉机采用软联结，减震弹簧与密封带即减轻了震动和噪音，也避免了共振。高效能的除尘设备，严谨的零部件加工工艺，确保将粉尘污染降至最低。

图6 磨辊装配图

Fig. 6: Grinding roller assembly

★ **1. Cost advantage:** It's a vertical structure and easy to be complete and covers a small area. It's characterized by an independent and self production system from cubic materials to finished powder product, low investment by one time and low energy consumption. Under ideal conditions, energy consumption per unit and per new material feed is 1.02kWh/t and 1.43Wh/t, more than 60% lower than the pulveriser at the same level.

★ **2. Reative grinding roller and ring: (Fig. 6)** Compared with traditional Ramon pulverizer, the grinding roller and the grinding ring are designed as multi level step shape to reduce the material slowing down between the grinding roller and the grinding ring, extend grinding time and improve fineness and output of the finished product.

★ **3. High efficient balancing and pressurizing spring:** The trapezoid pulverizer also succeeds the advantage of Roman pulveriser and suspended roller pulveriser; the grinding roller assembly is connected with the horizontal spring through the rod. Generated radial forces are able to largely avoid large materials into the grinding cavity and abrasion on main shaft and bearing and improve the service life of the equipment. During operation, the high pressure spring interacts with the centrifugal force and the grinding roller is running against the grinding ring. Its running pressure is 1.2 times higher than that of Roman pulveriser under the same power condition; so the output is largely improved.

★ **4. Technical improvement based on environmental protection concept:** The host is connected with the power concentrator flexibly and the damping spring and the sealing belt reduce vibration and noise, and also avoid resonance. Minimum dust pollution is ensured by high efficient dust removal equipment and prudent component processing technologies.

★ **5、高密度、高精度叶轮装置**

在转速不变的情况下，提高叶片的密度可提高成品的细度。换言之，在成品细度不需要改变的情况下，高密度叶轮可比低密度叶轮转速低。通过减少气流阻力，同等动力下成品产量提高达50%以上。（叶轮）

★ **6、高效节能的离心引风机**

风机在磨粉机的整个运转过程中，起到了至关重要的作用，梯形磨采用高效的叶轮式节能风机，效率比直叶片式风机大大提高。传统磨粉机上配用的直叶片老式风机的效率仅为62%，而叶轮与叶片均为模具冲压成型的节能引风机的效率为85%以上。

★ **7、快捷的调整维护**

当磨辊与磨环达到一定磨损量后，通过调整高压弹簧长度，保持磨辊与磨环之间恒定碾压力，进而保证了稳定的产量与细度。

★ **5. High density and precision impeller device:** Under the same rotary speed, the product fineness is improved by more impellers. In other words, more impellers run at a slower speed than fewer impellers under a condition that the product fineness is not changed; and the output is improved at higher than 50% by less air flow resistance under same power condition. (Impeller)

★ **6. High efficient and energy saving centrifugal draft fan:** The fan plays a vital role in the whole running of the pulveriser. The trapezoid pulveriser adopts the high efficient and energy saving impeller fan and its efficiency is largely higher than that of the straight blade fan. The efficiency of the straight type old fan installed on the traditional pulveriser is only 62%; while the energy saving fan, of which the impeller and the blade are pressed and formed by the tie, is at higher than 85%.

★ **7. Quick adjustment and maintenance:** When the grinding roller and ring are at specified wear extent, it's to adjust the length of the high pressure spring, keep constant grinding force between the roller and the ring, so as to ensure stable output and fineness.

MTM 中速梯形磨粉机

PRODUCTION FLOW OF COMPLETE EQUIPMENT / 全套设备生产流程

MTM130中速T形磨粉机整套设备主要有主机、选粉机、管道装置、离心引风机、除尘器组成，其附属设备有颚式破碎机、畚斗提升机、电磁振动给料机、储料仓、电控柜等组成（图7）。

磨粉机整机工作过程：大块物料经小型颚式破碎机破碎到所需粒度后，由提升机将物料送至储料斗，再经振动给料机将物料均匀定量连续地送入主机磨室内进行研磨，粉磨后的粉子被风机气流带走，经选粉机进行分级 ，符合细度的粉子随气流经管道进入大旋风集粉器内，进行分离收集，再经出粉管排出即为成品粉末。气流再由大旋风集粉器上端回风管吸入引风机。本机整个气流系统是密闭循环的，并且是在负压状态下循环流动的。（图8）

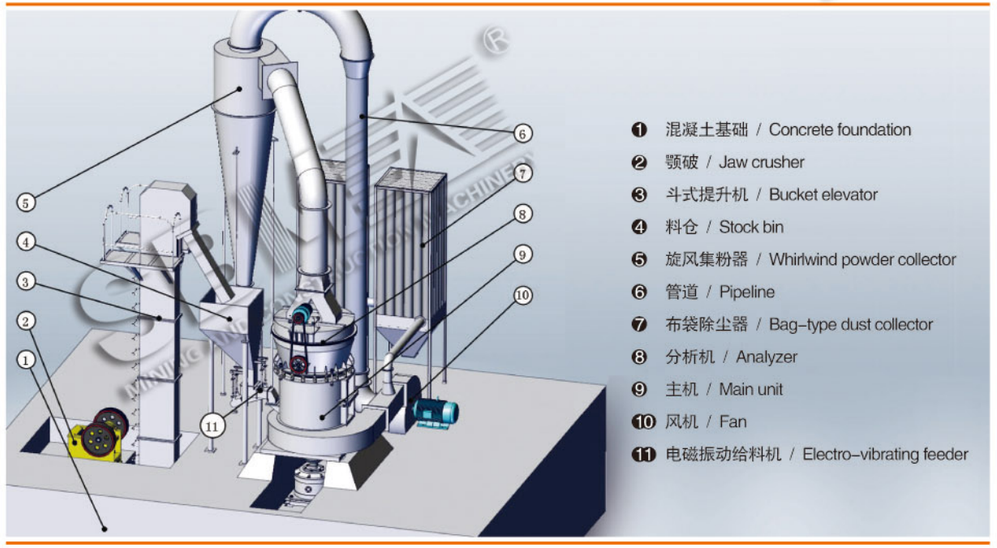
高产能的保障：旋风收集器（图9）。带粉气流以高速旋转状态进入收集器，待气流与粉子分离后，气流随圆锥体壁收缩向中心移动至锥底时（自气流自然长度）形成一个旋转向上的气流圆柱，这时粉子被分离掉落收集。由于向上旋转的气流核心呈负压状态，所以对收集器下端密封要求很高，必须对外界空气严格隔开，否则被收集下的粉子会重新被核心气流带走，这直接影响到整机的产量。因此在收集器的下端设计有上下锥阀，其作用是将外界正压气体与收集器负压气体隔离开，从而保证产量。

The complete equipment of MTM130 medium speed T shape pulveriser consists of host, powder concentrator, pipeline, centrifugal fan and dust remover. The auxiliary equipment includes jaw crusher, bucket lifter, electromagnetic oscillating feeder, silo and electric cabinet. (Fig. 7)

Working process of the whole pulveriser: large materials, after crushed into expected granularity by a small jaw crusher, is sent to the bucket by the lifter, evenly and continuously fed into the host grinding cavity at fixed quantity for grinding after through the oscillating feeder. The pulverized powder is brought by the fan flow and enters into the cyclone collector along with the air flow for separation and collection if compliant with fineness requirements, and finally discharged as the finished powder through the powder tube. The air flow is absorbed into the draft fan from the backwind tube on the top of the cyclone collector. The whole air flow system of this machine is closed and circulated, and flowing under negative pressure. (Fig. 8)

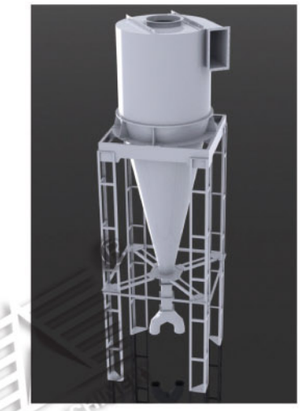
High productivity assurance—— cyclone collector (Fig. 9): Powder and air flow enters into the collect as high rotary status and forms a upwards rotary air flow column upon moving to the cone bottom from the center along with the corn body (national air flow length) after separation of air flow and powder flow; and then the powder is falling down and collected into the collector. The rotary air flow core is under negative status, so the collector bottom is sealed under high requirements and shall be strictly separated from outside; otherwise the collected powder will be taken away by the core air flow, directly affecting the whole quality. The collector is designed as upper and lower cone valves at the lower end to separate outside positive pressure and negative pressure in the collector and ensure the productivity.

图7：整套设备
Fig. 7: complete equipment



❶ 混凝土基础 / Concrete foundation
❷ 颚破 / Jaw crusher
❸ 斗式提升机 / Bucket elevator
❹ 料仓 / Stock bin
❺ 旋风集粉器 / Whirlwind powder collector
❻ 管道 / Pipeline
❼ 布袋除尘器 / Bag-type dust collector
❽ 分析机 / Analyzer
❾ 主机 / Main unit
❿ 风机 / Fan
⓫ 电磁振动给料机 / Electro-vibrating feeder

图8：生产现场图 ▶
Fig. 8: production site



◀ 图9 旋风集粉器
Fig. 9: Cyclone collector

图10:系统模型 ▶
Fig.10 system mode

MTM 中速梯形磨粉机

TECHNICAL PARAMETERS /技术参数

★ 表一 / Table 1

	MTM100	MTM130	MTM160
磨辊数量 / Qty of grinding roller	4	5	6
磨辊大径×高度 / Diameter and height of grinding roller（mm）	Φ310×170	Φ410×210	Φ440×270
磨环内径×高度 / Inner diameter and height of grinding ring（mm）	Φ950×170	Φ1280×210	Φ1600×270
主机转速 / Host rotary speed（r/min）	130	103	82
最大进料粒度 / Maximum feed granularity (mm)	25	30	35
成品粒度 / Granularity of finished product(mm)	1.6—0.045 最细可达0.038 0.038 at maximum	1.6—0.045 最细可达0.038 0.038 at maximum	1.6—0.045 最细可达0.038 0.038 at maximum
产量 / Output (t/h)	3—4.4	6～15	9～23
外形尺寸 / Size(mm)	7300×7160×8310	8800×7500×9700	12550×5700×8355

★ 表二 / Table 2

名称 Name	项目 / Item	规格、技术数据 / Specification and technical data		
		MTM100	MTM130	MTM160
主机电动机 Host motor	型号 / Model	Y225S－4	Y280S－4	Y315M1－4
	功率(kw) / Power	37	75	132
	转速(r/min) / rotary speed	1480	1480	1480
选粉机电动机 Powder concentrator motor	型号 / Model	YCT200－4A	YCT200－4B	YCT250－4A
	功率(kw) / Power	5.5	7.5	18.5－4
	转速(r/min) / rotary speed	125－1250	125–1250	125–1250
提升机电动机 Lifter motor	型号 / Model	Y100L2－4	Y100L2－4	Y112M－4
	功率(kw) / Power	3	3	4
	转速(r/min) / rotary speed	1430	1430	1440
离心引风机电动机 Centrifugal draft fan motor	型号 / Model	Y225S－4	Y280S－4	Y315M1－4
	功率(kw) / Power	37	75	132
	转速(r/min) / rotary speed	1480	1480	1480
颚式破碎机 Jaw crusher	型号 / Model	250×400	250×400	250×750
	电机型号 / Motor model	Y180L－6	Y180L–6	Y200L2－6
	功率(kw) / Power	15	15	22
	转速(r/min) / rotary speed	970	970	970
电磁振动给料机 Electromagnetic oscillating feeder	型号 / Model	GZ2F	GZ2F	GZ3F
	功率(kw) / Power	0.15	0.15	0.2

注：生产能力受多种因素的影响，如原料的硬度、湿度、进料的级配、排料口大小、操作方法等，给出的破碎能力是当地的石料数据。

Note: The Crushing Capacity belongs to local stone data only because protection capacity may be impacted by various factors, for example: rigidity, humidity, graduation of feeding materials, dimension of discharging port and operating method etc.

MTM 中速梯形磨粉机

CUSTOMER SITE 客户现场