CE:CV1-P1-1708

A WORLD-RENOWNED EQUIPMENT MANUFACTURER

享誉全球的专业设备制造商

世邦工业科技集团股份有限公司
Shibang Industry & Technology Group CO., Ltd.

LM立式磨粉机

LM series vertical grinding mill

文明的进程 细化的过程

The process of civilization, the process of dividing.

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Shibang Industry & Technology Group CO., Ltd.

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LM立式磨粉机产品概述

LM series vertical grinding mill product overview

LM立式磨粉机是我公司为解决普通工业磨机产量低、能耗高等技术难题而推出的新产品。本产品是在多年生产开发磨机的基础上，经过分析、研究国内外同类产品的优缺点，倾力打造的一款新型磨粉设备。该产品的性能已跨入国际同类产品的先进行列。

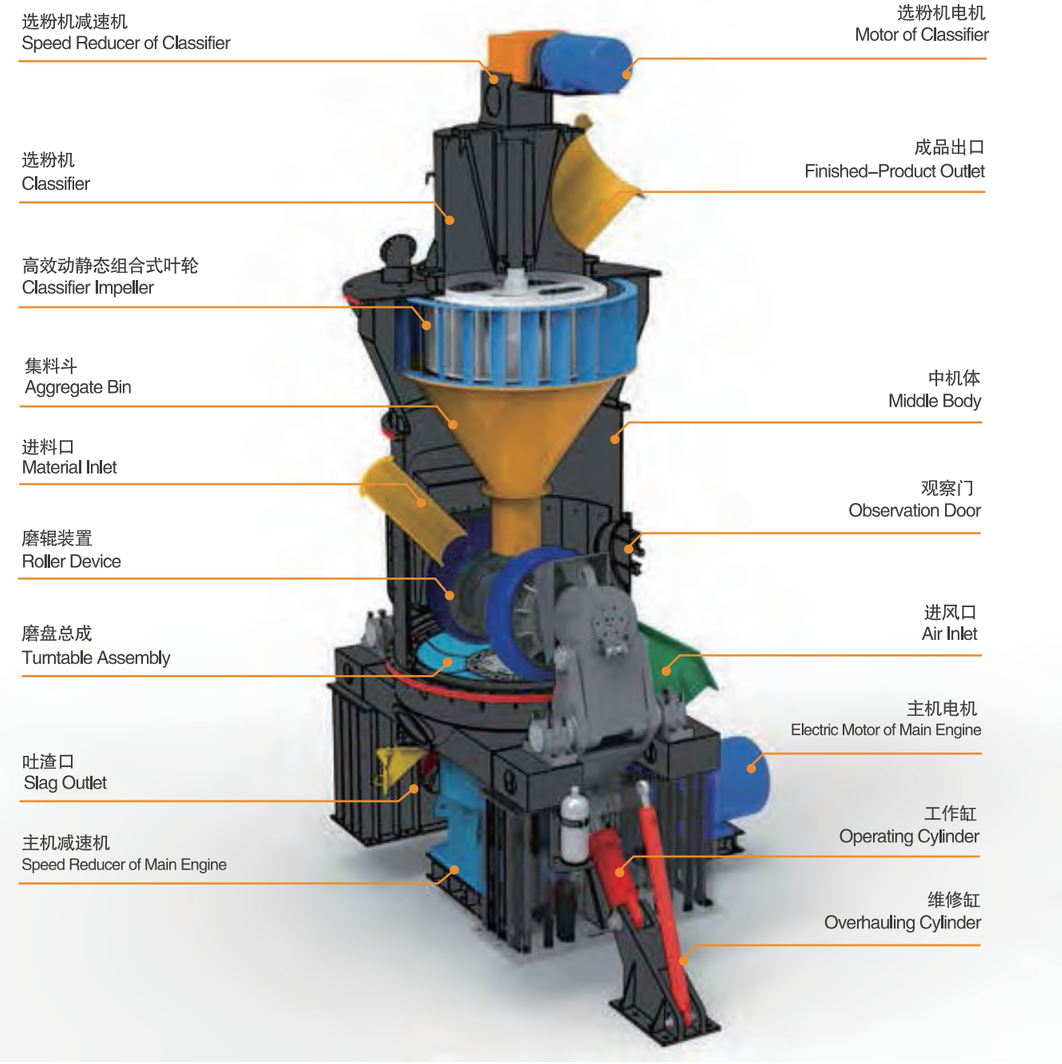
LM立式磨粉机是一种技术先进、性能优良、兼具烘干功能的新型磨粉设备。因为集烘干、粉磨、选粉功能为一体，LM立式磨粉机在水泥、化工、煤炭、电力等行业得到广泛的使用。LM立式磨粉机将逐渐成为粉磨行业的主流设备。

On the analysis of massive field applications of belt conveyors and on the premise of guaranteeing the product performance and quality, Shanghai SHIBANG Machinery Co. Ltd. (hereinafter referred to as SBM) has devoted itself to creating the B6X series belt conveyors closest to the user demands in line with the concept of both saving customer’ s investment and providing customers with products stable in performance.

Mainstruc ture / 主要结构

LM系列立式磨粉机主要有选粉机、磨辊装置、磨盘装置、加压装置、减速机、电动机、壳体等部分组成。分离器是一种高效、节能的选粉装置，磨辊是用来对物料进行碾压粉碎的部件，磨盘固定在减速机的输出轴上，是磨辊碾压物料的地方，加压装置是为磨辊提供碾压力的部件，向磨辊提供足够的压力以粉碎物料。

LM series vertical mill is mainly composed of a powder concentrator, a roller device, an abrasive disk device, a pressure device, a speed reducer, a electric motor and a housing. Separator is a kind of efficient and energy-saving powder concentrator. The roller is a component which is used for crushing the materials. Turntable is fixed on the output shaft of the speed reducer where the materials are crushed. Pressure device is a component which is used for providing the roller with enough crushing pressure to crushing materials.



Applicable scope / 适用范围

1、水泥磨：随着科学技术的进步，立磨在水泥行业中的作用日渐突出，它既可适用于生料及熟料的磨制，也可以作为预粉磨设备使后续磨机大幅度增产节能，已逐渐成为水泥工业磨粉的主要产品。

1. Cement Mill: Vertical mill has been playing an important role in the cement industry day by day with the development of scientific technology and it is not only applicable for grinding raw materials and clinkers but also can be used as a pre-grinding equipment which helps the sequent mill to substantially increase yield and save energy. Therefore it has gradually become the main products to substitute the cement industrial mills.

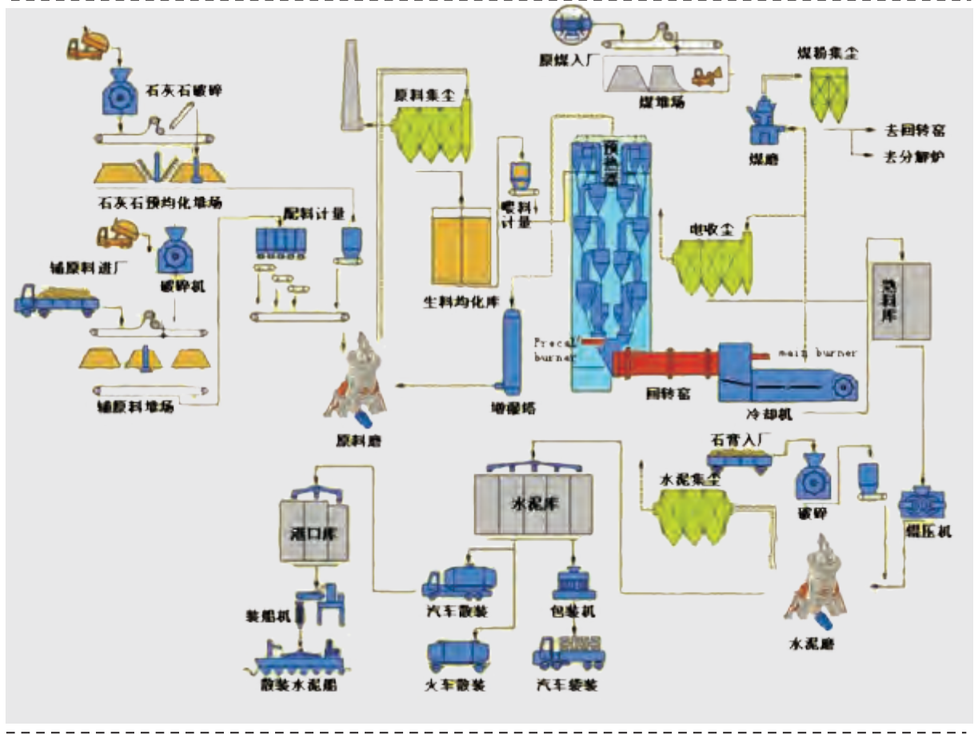
2、煤磨：煤是一种易燃易爆的矿物，普通磨机一般不能用于磨煤生产，立磨的磨煤工艺逐步趋于成熟。

2. Coal Mill: Coal is a kind of inflammable and explosive mineral. An ordinary mill is unable to be used for production of the coal mill and therefore the grinding process of the vertical mill has become matured gradually.

3、矿渣磨：随着工业技术的发展，矿渣的处理成为了工业生产中重要的一环，而立磨的结构特点决定了它在矿渣磨粉行业中的重要地位。

3. Slag Mill: Slag processing has become an important link in the industrial production along with the development of the industrial technology and its structure characteristics have determined the important position among the slag grinding industry.

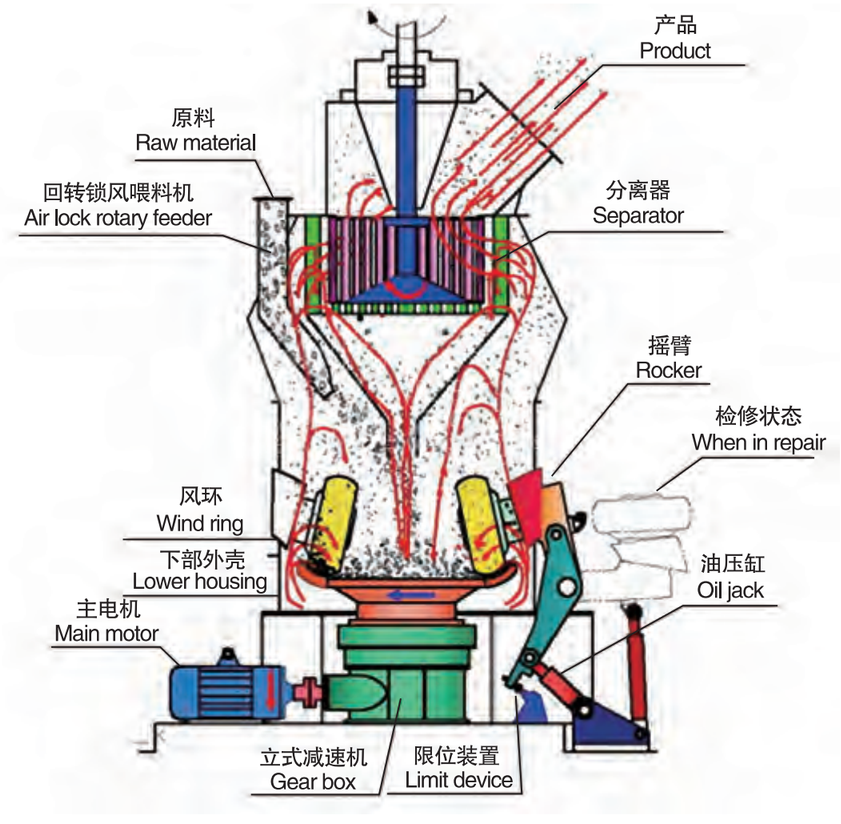
立磨水泥工艺 / Cement Process of Vertical Mill



Working principle / 工作原理

电动机通过减速机带动磨盘转动，物料经锁风喂料器从进料口落在磨盘中央，同时热风从进风口进入磨内。随着磨盘的转动，物料在离心力的作用下向磨盘边缘移动，经过磨盘上的环形槽时受到磨辊的碾压而粉碎，粉碎后的物料在磨盘边缘被风环高速气流带起，大颗粒直接落到磨盘上重新粉磨，合格细粉随气流一起出磨，通过收尘装置收集，即为产品，含有水分的物料在与热气流的接触过程中被烘干，通过调节热风温度能满足不同湿度物料要求，达到此要求的产品水分，通过调整分离器，可达到不同产品所需粗细度。

The mill roller is driven by the electrical motor through an electrical motor and the material will be fed to the center of the disk from the feeding port via an air-locking feeder and meanwhile the hot-blast air will be blown into the mill through the air inlet. Along with the rotation of the mill disk, the materials will move to the edge of the disk under the action of centrifugal force and grinded and crushed by a grinding roller when they pass through the circular groove on the disk. The crushed materials will be blown up by the vane at a high speed at the edge and the large-sized particles will fall onto the disk to be re-pulverized. The qualified fine particles will be grinded out along with the airflow and the finished products will collected by a dust collecting device. The materials which contain moisture will be dried when they are contacting with the hot airflow. The product can meet the requirements on the materials in different humidity by regulating the hot-blast temperatures as to obtain the moisture and the degree of thickness required by different products can be achieved by regulating the separator.



Product advantages
产品优势

运行成本低
Low Operating Costs

（1）能耗低：采用磨辊在磨盘上直接碾压磨碎物料，能耗低，和球磨系统相比节约能耗30%～40%。
（2）磨损少：由于工作中磨辊并不与磨盘直接接触，且磨辊与衬板采用优质材料制作，因此使用寿命长，磨损少。
（3）寿命长：磨辊辊套能翻面使用，使使用寿命延长一倍。

(1) Low Energy Consumption: The materials are rolled and crushed on the roller which helps to lower energy consumption and 30% to 40% energy will be saved comparing to the ball mill system.
(2) Less Wear: As the roller is not directly contacted the turntable directly and the roller and lining board is made of quality materials, therefore it enjoys longer service life and less wear.
(3) Long Service Life: The roller sleeve can be used by turning it over and its service life will be doubled.

磨粉效率高
Efficient Pulverizing

通过液压增压的方式可以增大碾磨力的大小，从而可以增大产量，提高磨粉效率；同时还设有限位器装置，只是对物料进行碾磨，防止磨辊磨环意外接触造成设备的振动甚至磨损。

Pulverizing power will be increased through pressurizing the hydraulic pressure so as to increase the pulverizing yield and improving pulverizing efficiency. Meanwhile, it is also fitted with a limit device which is only Through the hydraulic pressurization way can increase the size of the grinding force, thus it can increase the yield, improve grinding efficiency; At the same time also has a limiting stopper, only for the ground material, prevent grinding roll grinding ring accidental contact cause equipment vibration and even wear.

占地面积小，投资费用低
Small Floor Space and Low Investment

由于集破碎、干燥、粉磨、分级输送于一体，系统简单，布局紧凑，占地面积约为球磨系统的50%，而且可露天布置，因此能大量降低投资费用。

With an integral function of crushing, drying, pulverizing and grading, it features simple system and compact arrangement. Covering a half area of the ball mill, it can be placed in the open air which therefore is able to greatly reduce the investment costs.

烘干能力强
Strong Drying Ability

由于热风在磨内直接与物料接触，烘干能力强，入料水份最高可15%，可为磨机系统节省一台烘干机，节约能源，通过调节热风温度，能满足不同湿度物料要求。

Featuring strong drying ability and a maximal feeding moisture of 15%, it can both save a drying machine and energy for the mill system due to the hot air contacts the materials in the mill and it can satisfy the materials in different humidity through adjusting the hot air temperature.

产品质量稳定
Stable Quality

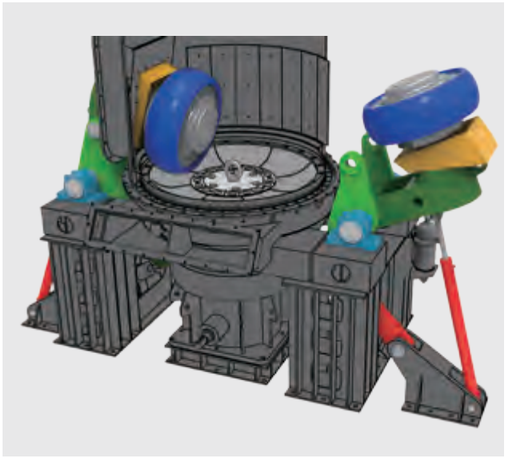
由于物料在磨内停留时间短，易于检测和控制产品粒度及化学成分，减少重复碾磨，稳定产品质量。产品中含铁量极少，且所含机械磨损铁易于去除，用于粉磨白色或透明物料时，产品的白度和净度高。

The product grain size and chemical composition can be easily detected and controlled due to the short stay of the materials in the mill so as to reduce repeated milling and stabilize the product quality. It features high whiteness and purity when being used in pulverizing white and transparent materials due to precious iron content and its contained mechanical wear iron is easy to be removed.

维修方便
Easy Maintenance

通过检修油缸，翻转动臂，可将磨辊翻出磨外，更换辊套、衬板方便快捷，减少停机损失，并且节约了劳动力成本。

Losses arouse from the shut down of the machine will be reduced and the labor costs will also be saved through hauling oil cylinder, turning over the rotor arm, replacing the roller sleeve and lining board conveniently.



环保
Environment-friendly

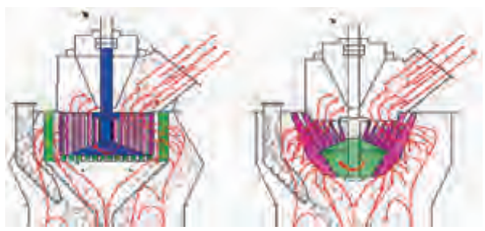
震动小，噪音低，且设备整体密封，系统在负压下工作，无粉尘外溢，环境清洁，满足国家环保要求。

Featuring small vibration, low noise and overall sealing of the equipment, there is no overflow of the dust and it is clean and environment-friendly when the system is working under load which is able to meet the requirements of environment protection by the state.

选粉精度高
High Precision of Powder Concentration

根据成品不同的粒度要求，选粉机分别采用了笼式选粉机（高效动静态选粉机）和锥形转子选粉机（高效动态选粉机）两种。

Both cage-type powder concentrator (High efficient dynamic and static powder concentrator) and cone rotor powder concentrator (High efficient dynamic and powder concentrator) are adopted respectively according to the different requirements on the grain size of the finished products.



笼式选粉机
Powder Concentrator of Fine Mill

锥形转子选粉机
General Fine Powder Concentrator

System technological process
/系统工艺流程

单脉冲除尘器开路系统
Open-circuit System of Single Pulsed Jet Filter

本系统原料通过斗式提升机提升到需要的高度，在经过除铁后物料进入中间仓堆放，在事先设定给料量的情况下，封闭式定量给料机称量物料并把物料喂入立磨进行粉磨。立磨粉磨合格的产品用一台箱式脉冲布袋除尘器来完成收集，减少了设备台数，简化了系统配置。产品收集后用螺旋给料机通过斗式提升机送入成品料仓。此系统的特点是结构简单，所用设备甚少，设备投资少，没有烘干热源，运行成本低，适用物料比较干燥（水分<4%），不需在系统中进行烘干作业的情况。

The materials of this system is elevated to a required height by a bucket elevator and conveyed into and stacked in the intermediate bin after iron removing. Given a prior set feeding, the closed type constant feeder weights materials and feeds them into the vertical mill for pulverizing. The conforming products pulverized by the vertical mill is collected by a cage-type pulsed jet filter which helps to reduce number of equipment and simplify the system configuration. The products are conveyed into the finished product bin by spiral feeder through a bucket elevator. This system is characterized by simple structure, very few equipment, less equipment investment, no drying heat source and low operating costs. It is applicable for relatively dry materials (Moisture<4%) and the materials are not need to be dried in the system.

单脉冲除尘器系统（烘干）
Closed-circuit System of Single Pulsed Jet Filter (Drying)

本系统与单收集器系统区别在于系统中有热源（热风炉），产品可以在粉磨的同时得到烘干，为需要烘干的客户节省一台烘干机，并且部分携带热量的尾气可以得到循环利用，节省了大量燃料费用。

The difference between this system and the system of the single collector is that this system has heat source (Hot blast heater), the products can be dried when being pulverized and it will save a dryer for the client who want to dry materials and partial tail gas carries heat can be cyclically utilized and a large number of costs on fuels can be saved.

主要技术参数

Technical parameter

LM立式矿石磨，水泥生料磨

Technical Data of Vertical Mill for Mineral and Cement raw material

型号及参数 Models and parame-ters	转盘中径 Plate diameter (mm)	产量 Capaci-ty (t/h)	成品细度 Fineness of finished products		成品水分 Moisture content of finished products	入磨物料粒度D_{80} Feeding size D_{80} (mm)	入磨物料最大尺寸 Max feeding size (mm)	不需烘干入磨物料水份 Moisture content of drying-free feeding	需烘干入磨物料水份 Moisture content of drying-need-ed feeding	入磨风温 Feeding air temperature (℃)	出磨风温 Discharging air temperature (℃)
			μm	目 Mesh							
LM80K	800	4~10	170~45	80~325	<1%	<10	<20	<4%	4~15%	<350	70~95
LM110K	1100	5~15	170~45	80~325	<1%	<10	<25	<4%	4~15%	<350	70~95
LM130K	1300	10~28	170~40	80~325	⩽1%	<10	<38	<4%	4~15%	<350	70~95
LM150K	1500	13~38	170~40	80~325	⩽1%	<10	<40	<4%	4~15%	<350	70~95
LM170K	1700	18~48	170~40	80~325	⩽1%	<10	<42	<4%	4~15%	<350	70~95
LM190K	1900	23~68	170~40	80~325	⩽1%	<10	<45	<4%	4~15%	<350	70~95
LM220K	2200	36~105	170~45	80~325	⩽1%	<10	<50	<4%	4~15%	<350	70~95
LM240K	2400	40~130	170~45	80~325	⩽1%	<10	<50	<4%	4~15%	<350	70~95
LM280K	2800	50~170	170~45	80~325	⩽1%	<10	<50	<4%	4~15%	<350	70~95
LM340K	3400	80~240	170~45	80~325	⩽1%	<10	<70	<4%	4~15%	<350	70~95
LM370K	3700	120~300	170~45	80~325	⩽1%	<10	<70	<4%	4~15%	<350	70~95

注：1、入磨物料应是莫氏硬度小于7级的脆性物料。
2、当要求成品水份小于入磨原料的水份时才通入热风。
3、当粉磨难磨物料时，主电机功率取大值。

Note: 1. Feeding material's hardness below 7 Mohs degree.
2. Feed hot air on the condition that product humidity less than raw material humidity.
3. Adjust main motor to higher power when material is hard.

LM立式矿渣磨，熟料磨规格、技术参数

Technical Data of Vertical Mill for Slag and Cement clinker

型号及参数 Models and parame-ters	转盘中径 Plate diameter (mm)	产量 Capaci-ty (t/h)	成品细度 Fineness of finished products		成品水分 Moisture content of finished products	入磨物料粒度D_{80} Feeding size D_{80} (mm)	入磨物料最大尺寸 Max feeding size (mm)	不需烘干入磨物料水份 Moisture content of drying-free feeding	需烘干入磨物料水份 Moisture content of drying-need-ed feeding	入磨风温 Feeding air temperature (℃)	出磨风温 Discharging air temperature (℃)
			μm	目 Mesh							
LM130N	1300	5~14	170~45	420	⩽1%	<10	<38	<4%	4~15%	<350	70~95
LM150N	1500	7~20	170~40	420	⩽1%	<10	<40	<4%	4~15%	<350	70~95
LM170N	1700	9~27	170~40	420	⩽1%	<10	<42	<4%	4~15%	<350	70~95
LM190N	1900	12~30	170~40	420	⩽1%	<10	<45	<4%	4~15%	<350	70~95
LM220N	2200	18~55	170~45	420	⩽1%	<10	<50	<4%	4~15%	<350	70~95
LM240N	2400	25~60	170~45	420	⩽1%	<10	<50	<4%	4~15%	<350	70~95
LM280N	2800	40~90	170~45	420	⩽1%	<10	<50	<4%	4~15%	<350	70~95
LM340N	3400	60~120	170~45	420	⩽1%	<10	<70	<4%	4~15%	<350	70~95
LM370N	3700	70~160	170~45	420	⩽1%	<10	<70	<4%	4~15%	<350	70~95

LM立式煤磨

Technical Data of Vertical Mill for Coal

型号及参数 Models and parame-ters	产量 Capacity (t/h)	煤粉细度 Pulverized coal fineness (R0.08)	煤粉水份 Moisture content of pulverized coal	入磨物料粒度D_{80} Feeding size D_{80} (mm)	入磨物料最大尺寸 Max feeding size (mm)	入磨物料水份 Moisture content of feeding	原煤哈氏可磨指数 Raw coal Hardgrove grindability index (HGI)	入磨风温 Feeding air temperature (℃)	出磨风温 Discharging air temperature (℃)
LM80M	4~6	5~20%	<1%	<10	<20	<15%	>55	<350	70~95
LM110M	7~10	5~20%	<1%	<10	<25	<15%	>55	<350	70~95
LM130M	10~17	5~20%	<1%	<10	<40	<15%	>55	<350	70~95
LM150M	16~22	5~20%	<1%	<10	<40	<15%	>55	<350	70~95
LM170M	20~30	5~20%	<1%	<10	<42	<15%	>55	<350	70~95
LM190M	26~40	5~20%	<1%	<10	<45	<15%	>55	<350	70~95
LM220M	35~50	5~20%	<1%	<10	<50	<15%	>55	<350	70~95
LM240M	45~65	5~20%	<1%	<10	<50	<15%	>55	<350	70~95
LM280M	65~100	5~20%	<1%	<10	<50	<15%	>55	<350	70~95
LM340M	100~150	5~20%	<1%	<10	<50	<15%	>55	<350	70~95

注：1、入磨物料应是莫氏硬度小于7级的脆性物料。
2、当要求成品水份小于入磨原料的水份时才通入热风。
3、当粉磨难磨物料时，主电机功率取大值。

Note: 1. Feeding material's hardness below 7 Mohs degree.
2. Feed hot air on the condition that product humidity less than raw material humidity.
3. Adjust main motor to higher power when material is hard.