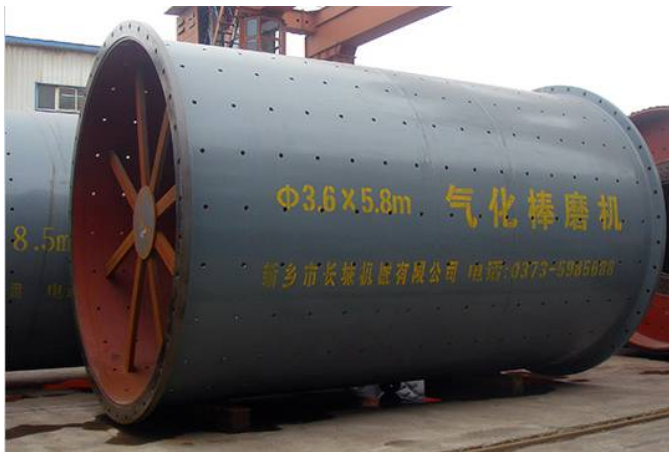


Grinding rod mills

The [rod mill](#), a tumbling mill characterized by the use of rods as grinding media, it is used for grinding ores, coal/coke, and other materials for both wet and dry applications. It consists of five parts including cylinder shell, feeding system, discharge system, main bearing and transmission system. Great wall Rod mill can be divided into dry rod mill and wet rod mill, it is widely used in refractory, chemical industry, metallurgy, glass and other grinding industries with relatively high requirement on product uniformity, as well as sand making industries. so users can choose proper rod mill according to their own actual situations.



Materials too wet for fine crushing and dry screening may be wet ground in a rod mill. Practice has demonstrated the ability of a rod mill to dry grind damp materials that will pack or plug other grinding equipment. And scrap loss are reduced by correct selection of liners for the specific grinding duty. Additional

benefit results from use of a backing material, such as rubber between the liners and the mill shell.

Wet Grinding Rod Mills

Historically, rod mills have been used as the first grinding stage after crushing in mineral beneficiation circuits. The rod mill product was further ground in ball mills before separation of valuable minerals from the host rock. With the advent of semi-autogenous (SAG) mills replacing secondary and tertiary crushing as well as first stage grinding, the rod mill has fallen out of favor for new large mineral beneficiation circuits. A recent application for a trunnion overflow rod mill is in the preparation of coal and petroleum coke slurries for Integrated Gasification Combined Cycle electric power generation and co-generation facilities. The relatively coarse open circuit rod mill product, plus the ability to not generate excess fines, is key to making high percent solid, low viscosity slurry capable of being pumped directly into the gasification reactor vessel. This service has been proven to be an excellent application for the traditional design rod mill.

Dry Grinding Rod Mills

End peripheral discharge rod mills are used most frequently for dry grinding operations. Grinding damp materials to moderately coarse products in open circuit is feasible by using hot air, inert gas, or combustion gases to air-sweep the rod mill. A recent new application for the end peripheral discharge rod mills has been the preparation of fuel for Circulating Bed Boilers (CFB). It is critical to have a coarse product with the fewest amount of fines for this product as the fuel

mass must be fluidized by combustion airflow. This same airflow will elutriate excess fines from the fuel mass before combustion is complete and reduce boiler efficiency through loss of the fuel fines with the ash.

The very low abrasion characteristics of the rod mill make it an excellent choice when burning highly abrasive coal waste material in CFB's. Other important dry grinding rod mill applications include milling of metallurgical coke for ore sintering plants, damp cinders for the manufacture of cinder blocks, calcined coke for electrode manufacture, silica sand and hydrated lime mixtures prior to pressing into sand-lime brick, as well as grinding ferrochrome, ferromanganese, limestone, and various metallic slags.

Bearings of rod mill

Trunnions and trunnion bearings design receive special attention. Hydrodynamic oil lubrication is generally used for Rod Mills equipped with the trunnion bearings 40" diameter or smaller. Larger sizes are arranged for full hydrostatic oil lubrication.

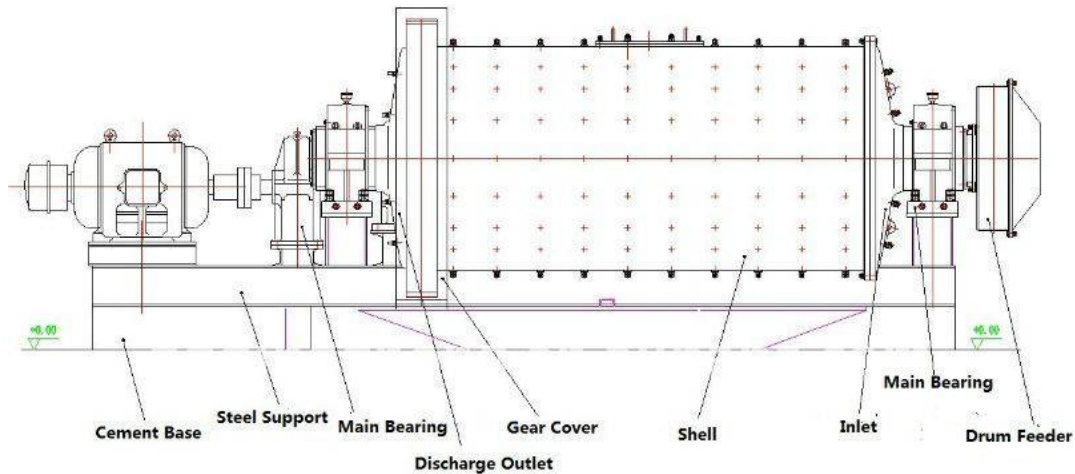
Auxiliary high pressure starting lubricators are available for bearings lubricated by hydrodynamic action. Hydrostatic lubrication systems for bearings are complete with high pressure pumps, heat exchangers, filters, and pressure and flow safeguards.

Pinion shafts are supported in roller bearings assembled on a unit base plate. Grease or oil lubrication is provided. Oil lubricated bearings may be connected with the oil circulating system used with the main bearings to provide a continuous flow of filtered and cooled oil.

Rod Mill is different with Ball Mill

1. Grinding media of Rod mill are steel bars. [Ball mills](#) are use of steel balls as its grinding media.
2. Rod mill is suitable for coarse grinding, when product granularity is between 1 to 3mm, processing capacity of rod mill is bigger than ball mill with same specification.
3. Rod mill has certain selective grinding effect because grinding media of rod mill and ores is in line contact. Hence, it has uniform product granularity and less over crushed ore grain.
4. Productivity of rod mill is generally about 15% lower than that of grid ball mill with same specification.
5. Feeding granularity of rod mill is generally 15 to 25mm. product granularity of rod mill can be up to 1~3mm.

Working principle of Ball Mill



During the work of rod mill, the motor drives through the reducer, driving the cylinder to rotate. The grinding media-steel bars in the cylinder body. Under the centrifugal force and friction force, grinding media will be elevated to a certain height, and then fell in purging fall state. The material to be milled will be fed continuously into the cylinder from the feeding mouth; they are crushed by the mobile shattered grinding media, and then discharged finished material through the overflow and continuous feeding power, for the next work step.