

## 01 The process of industrial waste treatment is imperative

Recently China gives regulations and fine standards about industrial waste resource: 25RMB per ton for Smelting slag, 30RMB per ton for fly ash, 25RMB per ton for general slag, 5RMB per ton for Gangue waste (and so on) is one-off levied as waste discharging fee by slate department, from 1st July, 2013. Therefore, the process of waste treatment, no matter steel slag, mineral slag, nickel slag, manganese slag or others, is gradually valued by more and more companies in this field.



**Steel Slag**  
Steel slag is the waste residue in the process of steel making, including converter slag and electric furnace slag, approximately takes 15-20% percent of crude steel capacity.

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**Mineral Slag**  
Mineral slag is the waste slag discharged from blast furnace during pig iron smelting. It could be concrete admixture after milling process.

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**Nickel Slag**  
Nickel slag is the solid waste generated by smelting nickel iron alloy. The nickel iron alloy is the main raw material for stainless steel.

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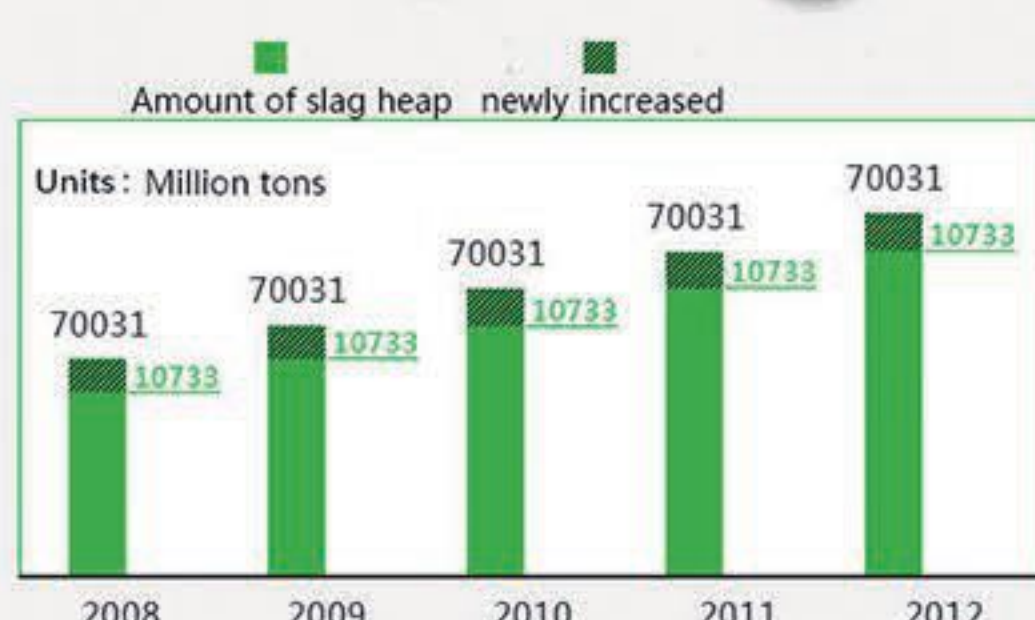
**Manganese Slag**  
Manganese slag is the waste of smelting Manganese. It could be the material of silicon manganese alloy after milling process.

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The Utilization chart of mineral and steel slag from 2008-2012 in China



The stock piling chart of industrial waste from 2008-2012 in China



The integrated vertical grinding system, pioneered by Great Wall Machinery, can deal with all the slag mentioned above. It has been tested and verified by more than 60 companies in China, and also benefits millions of money for them.

## 02 Better ROI (return on investment) rate: Recover costs in 1-2 years

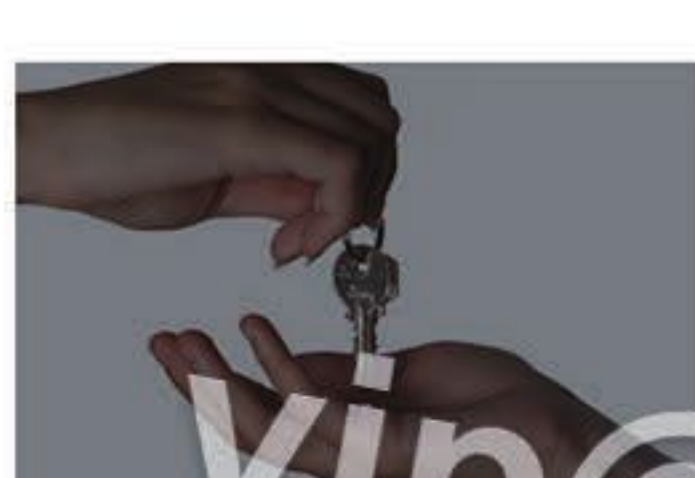
Take the 600,000 tons per year mineral slag milling production line for example, the economic benefit analysis as follows:

Note: the following data refer to the relevant experimental data in the industry and customer feedbacks.

Term	Option 1	Option 2
Mill type	GRMS46.41 vertical mill	Φ3×11m ball mill (Circle flow)
Capacity (T/H)	105	19
Power consumption (Kwh/t)	37	75
Specific surface area (m <sup>2</sup> /kg)	430	400
Activity index	S95level	S75level
Profit (CNY/T)	360	0
Total investment (10 thousands)	5000 (Civil Engineering incl.)	2000
Technological process	Easy	Complicated
Construction period (Months)	5	8
Milling consumption (kg/t)	7	300
Noise	Small	Big
Earnings cycle	2 Years	More than 3 Years

To sum up: The grinding process of the Great Wall Machinery is the best choice for the process design and late return.

## 03 Mature clients' design: 6 services in one vertical mill



- 1 Inspection of raw materials
- 2 Solution design
- 3 Manufacturing
- 4 Installation and commissioning
- 5 Staff training
- 6 Turn-key acceptance

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## 04 The advantages of Great wall Machinery

### Perfect production process

#### Mineral slag processing

- 1 The slag by the car into the factory, the unloading hopper, the belt conveyor into the slag heap storage
- 2 The final slag fetched by the car into the unloading hopper, the belt conveyor into the slag heap storage after feeding calculation.
- 3 After drying and grinding process, the slag powder collected by long bag pulse. Then, they will be transferred to stock through air slide and hoist.
- 4 The split slag is fed to magnetic separator through belts, hoist.
- 5 The heat resource, during on milling and drying process, is provided by hot blast stove in front of the mill.



### Advanced grinding system

#### Lower investment costs, intelligent control

Gathering crushing, drying, grinding, selecting, transporting processes as one machine, the grinding system only takes 50% covered area compared with ball mill system. It is compacted layout and also can be installed out-doors. There is PLC/DCS intelligent control system on the mill, and can be easily remote control.

#### The degree of fineness can be adjusted

The advanced, high efficient and cage-style rotor separator ensures the specific-surface-area adjusting range between 400-550 m<sup>2</sup>/kg, and satisfy the fineness requirement from clients.

#### Less than 40KWH electrical consumption.

The level milling plate and conical rollers guarantee the material cushion stable enough, which means lower electrical consumption. 30-40% power is saved comparing with ball mill system.

#### Environmentally friendly and easy maintenance.

There is no dust-leaking because of negative pressure state, which leads the clean working and meet national environmental protection requirements. Changing grinding plates and rollers only needs spinning rocker and cylinder, which reduced the shut-down time.

#### Original accessories

All the roller, grinding plates, rockers and other spare parts are originally manufactured by Great Wall Machinery, which means the quality and timeliness is guaranteed.

#### 360RMB per tone in mineral/metal recycling process.

The rate of pig iron recovery could be as high as 0.2-0.3% by specially designed iron separator. It can produce 360 RMB per tone income when dealing with mineral or nickel slag. Recycling the iron also can reduce the consumption of spare parts on the mill, and as a precaution of metal concentrate, which is harm for the milling system.



## 05 Quality customers' project

In order to satisfy customers' requirement of total purchase, Great Wall Machinery has integrated the supply chain resources, and put the slag powder production line EPC project. We provide the turnkey service to customers from the project early stage to final running. Within two years, more than 60 customers choose to cooperate with Great Wall Machinery to build slag powder production line.



## 06 Great Wall strength

**Good technology**

Within the last 40 years, the company actively cooperate with vertical roller mills experts and scientific research institutions, and develop the high quality, energy saving, low carbon GRM series vertical roller mill.

**Short delivery date**

As Great Wall has the casting and casting capacity for large equipment, with the quality guarantee, the building period of total vertical roller mill production line can be shortened to 8 months.

**Widely customers**

Until now, we have more than 100 vertical roller mill customers, especially the slag/steel slag/nickel slag new type vertical roller mills. The customers all feedback good and have high credibility in our products.

**Advantages of line**

We have invested 50 million to build a 600,000t/a slag powder production line in 2010. This line is the first production line invested by equipment factory. Within 2 years, we have taken back the investment.

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## 07 Technical Data

Model and specifications	diameter of millstoneD (mm)	median diameter of rollerd (mm)	quantity of rollers	standard installed powerP (kW)	standard abilityQ (t/h)
GRMS26.21	2600	1600	2	1000	30
GRMS33.31	3300	1700	3	1600	45
GRMS35.41	3500	1800	4	1800	60
GRMS40.41	4000	1900	4	2240	70
GRMS43.41	4300	2120	4	2800	90
GRMS46.41	4600	2240	4	3150	90
GRMS48.41	4800	2240	4	3550	125
GRMS50.41	5000	2360	4	3800	140
GRMS53.41	5300	2500	4	4200	150
GRMS56.41	5600	2500	6	5000	160

Remarks: 1. Material medium friction (MFR) 0.9-1.0 2. Material moisture max. 15% 3. Refined poecler granularity 4200-4500 m<sup>2</sup>/kg 4. Fine points, moisture 0.5-1.0% 5. The concrete mill installed power and technology parameters will be adjusted appropriately basing on the actual material property and the requirements of owner

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