



VERTICAL ROLLER MILLS

UM Series



In-Built Reliability
for Cement Plant Application

- ✓ Raw Material
- ✓ Cement
- ✓ Slag
- ✓ Coal

Introduction

UBE Machinery Corporation Ltd. (UBE) has been supplying Vertical Mills for the last 60 years. UBE Mills are energy efficient and easy to operate & maintain. The Mills are available in wide range of capacity for all the applications. UBE has been pioneers in cement and slag grinding where “2-Way System” is applied to allow highly efficient grinding while maintaining vibration kept at minimum level. M/s. AMCL Machinery Ltd. (AMCL) has signed a Licensing Agreement in May 2019 with M/s. UBE Machinery Corporation Ltd., Japan to manufacture & supply state-of-the-art UBE Vertical Roller Mills for grinding applications related to Raw material, Coal, Clinker and Slag.

Reliable Performance

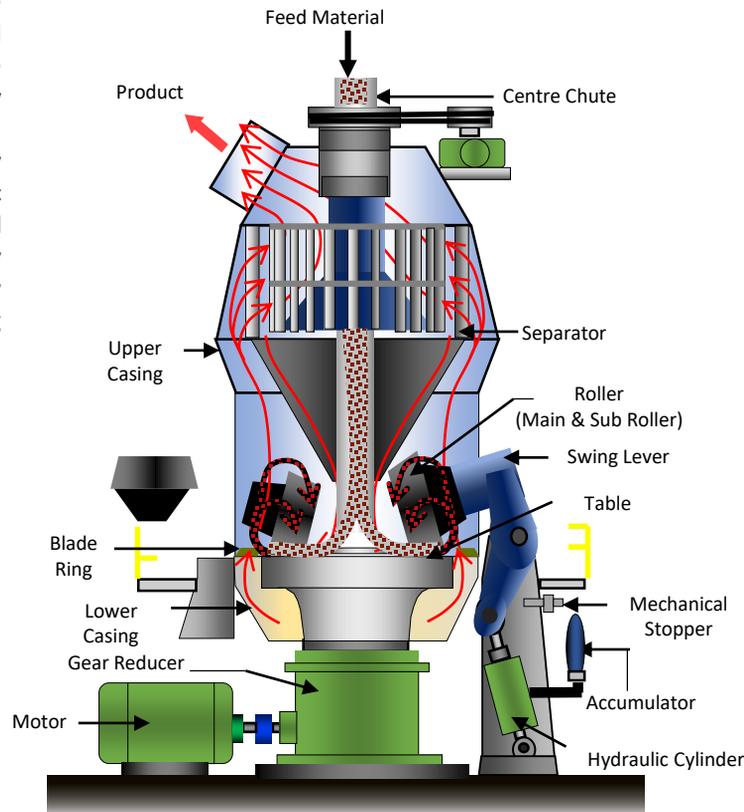
performs drying grinding classification and pneumatic transportation simultaneously

Construction

The mill consists of the lower casing, upper casing, table mounted on the vertical planetary gear reducer and grinding rollers supported by the swing levers. The separator is installed at the upper parts of the mill. The raw material fed through the air lock gate is ground between the rollers and table with the grinding force added by hydro-pneumatic spring system which consists of hydraulic cylinders, hydraulic accumulators and hydraulic unit, and the table driven by electrical motor through high efficiency vertical planetary gear reducer. At the same time, raw material is dried by hot gas induced through the louver ring installed at outer side of the table.

Working

This Machine is a vertical type roller mill which performs drying grinding classification and pneumatic transportation simultaneously. Material is fed at a constant rate through the chute and fall into the centre of table. Then material is centrifuged to peripheral of the table and is bited between the table and roller. It is then compressed and sheared for grinding. The grinding force can easily be controlled by adjusting the hydraulic pressure. A stopper is provided to avoid direct contact of the table and roller. The pulverized powder is dried with the hot gas which is absorbed by operation of the mill fan through the blade ring or nozzle ring around peripheral of the table and then sent to the separator. In the separator, it is classified into the product of specified particle size and introduced through the exhausting duct into the collector so as to be collected. Various particle size can be obtained easily by changing revolving speed of the separator. The tyres and rollers can be replaced simply by reversing the swing lever.



Benefits

- Operational Reliability
- Energy Efficient
- Easy Maintenance
- Commonality of Parts
- High Capacity

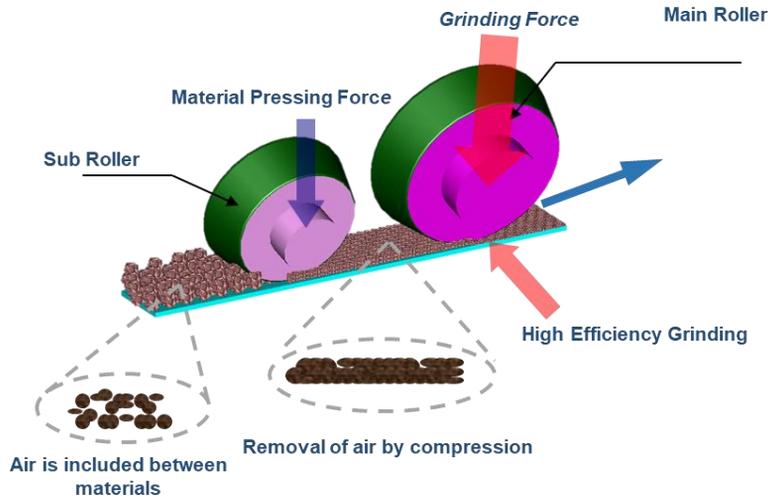
Smart Features

Two Way Grinding for Cement & Slag grinding

Efficient Grinding and Minimum Vibration

In the 1984, UBE developed the 2-Way System where de-aeration and compaction of the material bed on the grinding table is achieved by sub-roller pressing thereby improving the material coefficient of friction (μ). Over the years, UBE has the well-established 2+2 and 3+3 system of Main Roller and Sub Roller for Cement and Slag grinding. As a feature of UBE's sub rollers, they are designed to generate sufficient amount of load and are positioned near the dam ring on the circumference of the table.

Sub-rollers: remove the air contained in the material
Main rollers: bite down the material without slippage



Flat Table Liner And Conical-Type Roller Tires

Reduce abrasion and extend liners longevity

The combination of flat table liner and conical-type roller tires allows:

- easy elimination of foreign substances while minimizing the level of uneven abrasion
- easy restoration of hard-facing and extending its longevity.
- easy adjustment of the operating condition by changing the dam ring height and grinding power

Swing lever

Ease of maintenance and reduce downtime

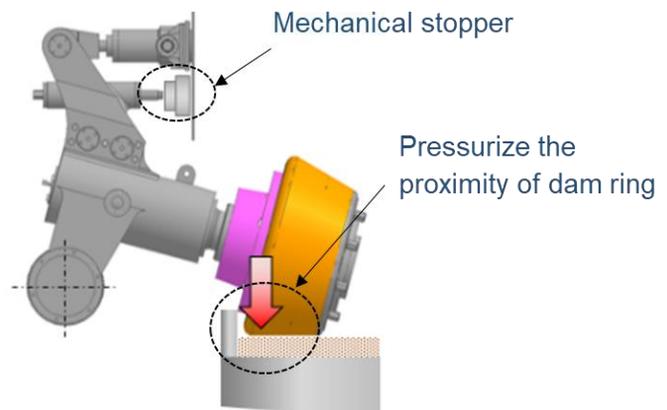
Inverting the swing levers allows the rollers to be released easily, resulting in maintenance to be performed efficiently



Mechanical Stopper

To avoid metal to metal Contact

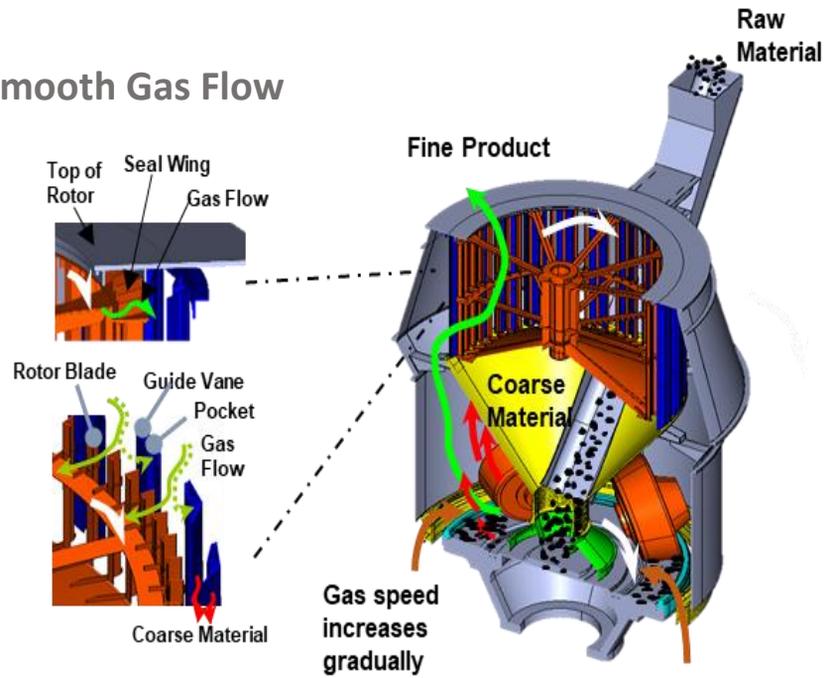
Features of UBE's sub-rollers is the fixation of gap between the sub-roller's and the table with mechanical stoppers. From the effect of these features, the air contained in the material can be deaerated efficiently and constant height of material to be fed to the grinding rollers. This contributes to stable operation



Latest UNKS Separator

High Separation Efficiency and smooth Gas Flow

UBE discovered that there is uneven velocity within the separator. The uneven velocity is strongly affected by positioning of the separator outlet duct and its design. As a countermeasure for uneven velocity gas flowing into the separator, UBE installed a nozzle ring of ideal form to achieve optimized gas speed. To correct the uneven velocity gas flowing out of the separator, UBE designed a unique separator. The distinctive feature of this design is decentering of the outlet duct from the separator. By decentering the duct from the center of separator, it was possible to suppress the fast gas flow directly beneath the duct and smoothen the discharge of revolving airflow from the separator.



Features

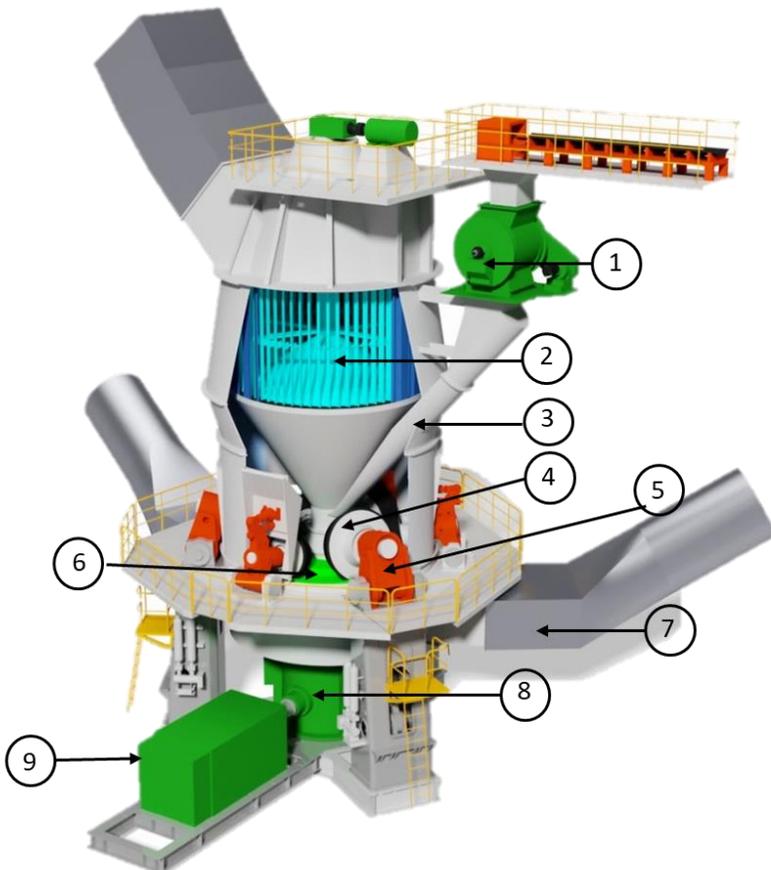
- ✓ Guide vanes allow smooth gas flow.
- ✓ Pockets allow stable return of rejected material.

Benefits

- ✓ Lower pressure drop
- ✓ Lower vibration (i.e. stable operation)

Overview of

UBE- AMCL Vertical Roller Mill



1. Rotary Lock
2. Separator
3. Chute
4. Roller
5. Swing Lever
6. Table
7. Gas Inlet Duct
8. Gear Reducer
9. Motor

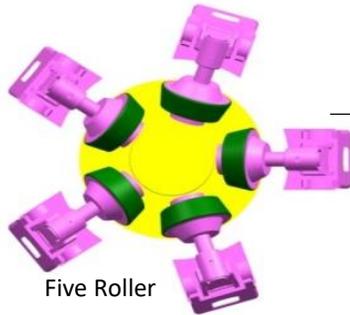
Raw Mill



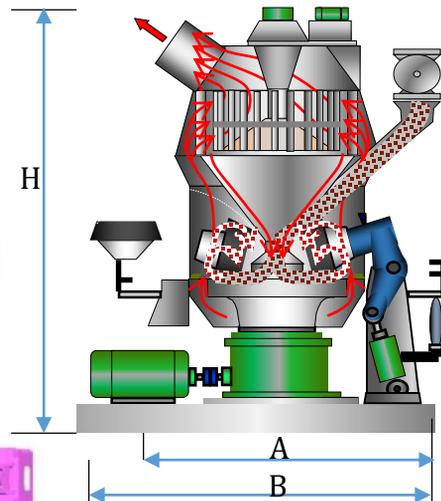
Roller Arrangement



Four Roller



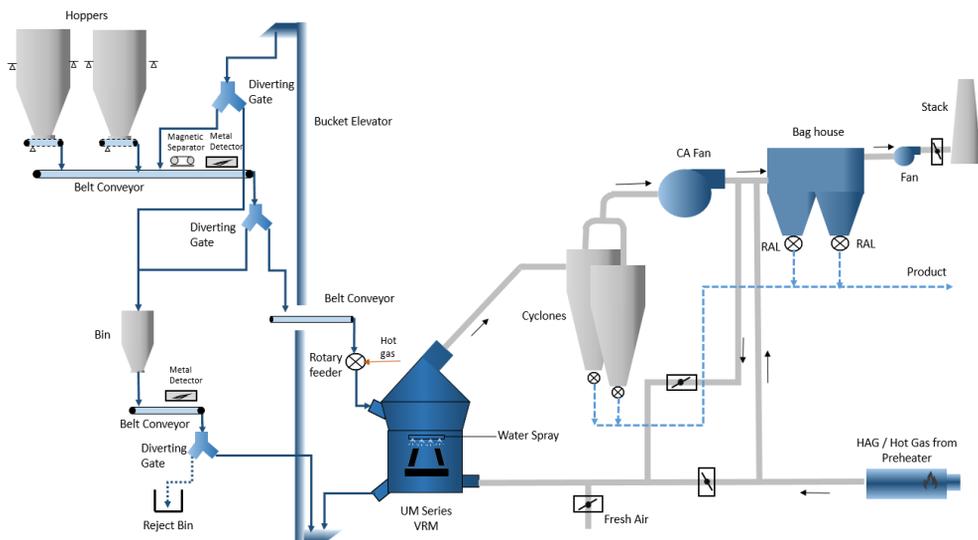
Five Roller



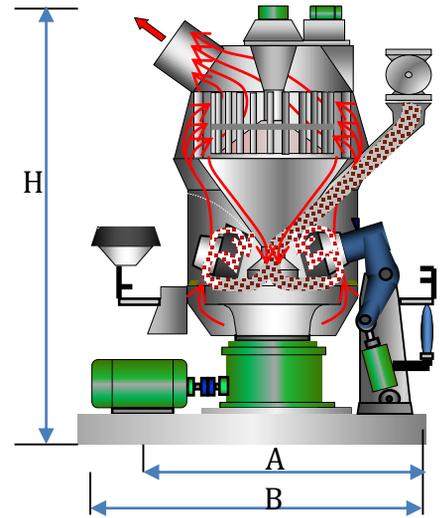
UM-series Raw Mill Models with details of structural dimension, product throughputs and driving power (approx. Values)

Model	Capacity (TPH)	Driving Power (kW)	A (m)	B (m)	H (m)
UM63.5	~750	6100 kW	12	16.2	21.6
UM59.5	~650	5300 kW	11.5	15.4	20.7
UM56.5	~550	4800 kW	11	14.7	19.8
UM53.5	~450	4300 kW	10.5	14	19
UM56.4	~450	4300 kW	10.8	14.5	20.1
UM50.4	~350	3600 kW	10.4	13.9	18.4
UM46.4	~250	2800 kW	9.4	12.6	16.2
UM40.4	~180	2100 kW	8.4	11.3	15.5
UM36.4	~150	1600 kW	7.7	10.3	14.5
UM32.4	~120	1200 kW	6.8	9.1	12.8

Flow Sheet of Raw Material Grinding



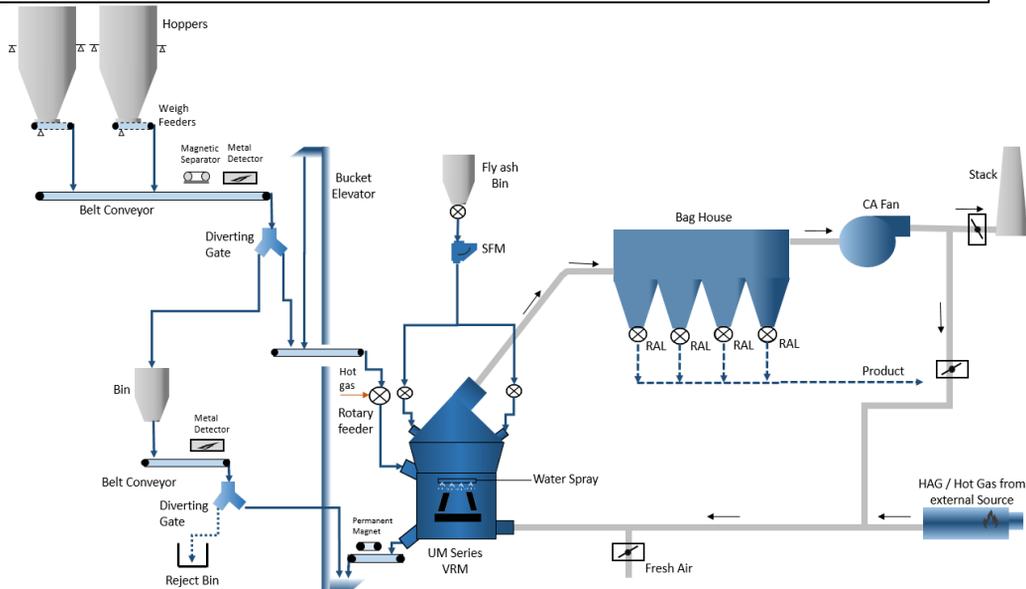
Cement/ Slag Mill



UM-series Cement / Slag Mill Models with details of structural dimension, product throughputs and driving power (approx. Values)



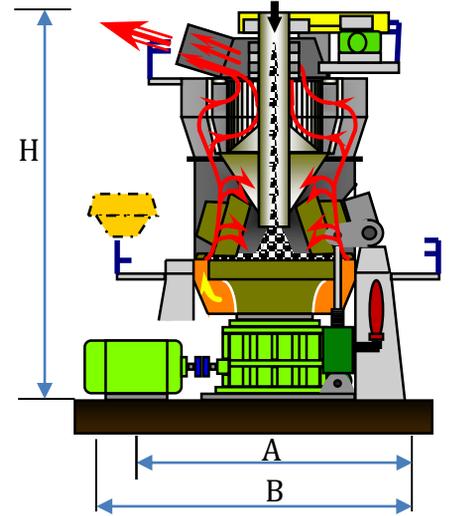
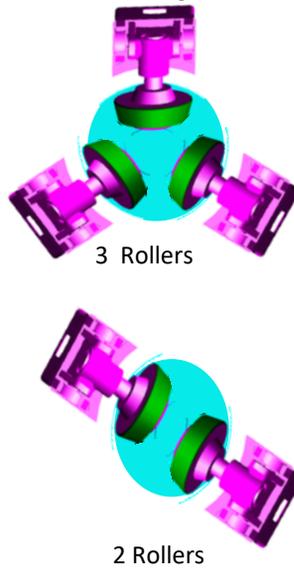
Flow Sheet of Cement Grinding



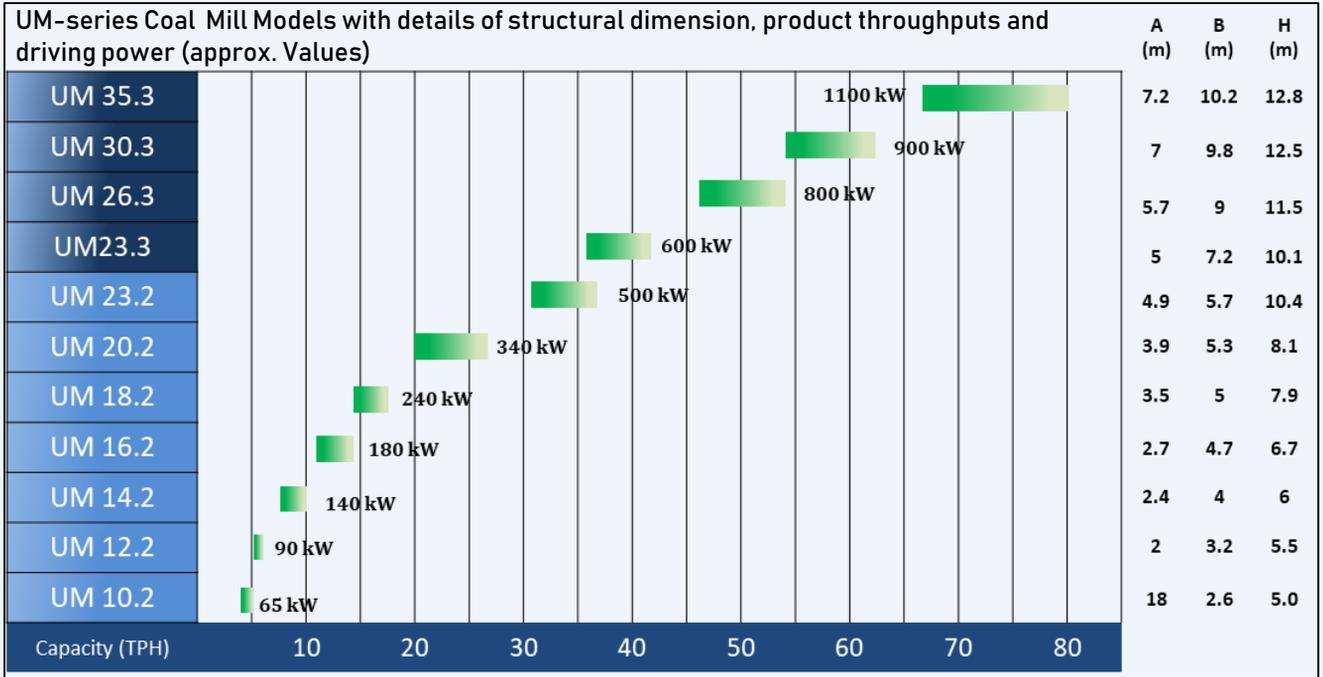
Coal Mill



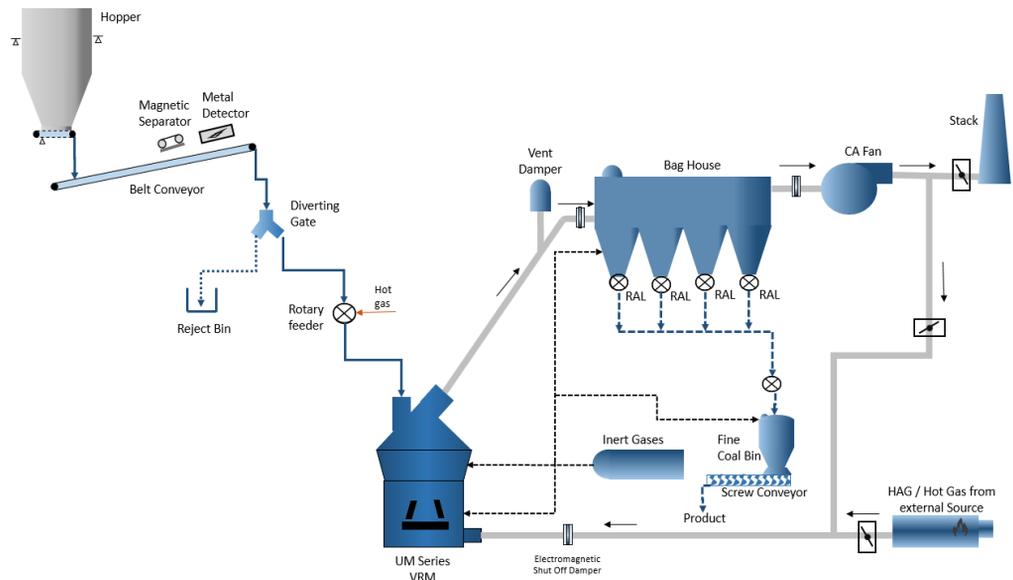
Roller Arrangement



UM-series Coal Mill Models with details of structural dimension, product throughputs and driving power (approx. Values)



Flow Sheet of Coal / Petcoke Grinding



We Cultivate the Engineering Solutions...



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