



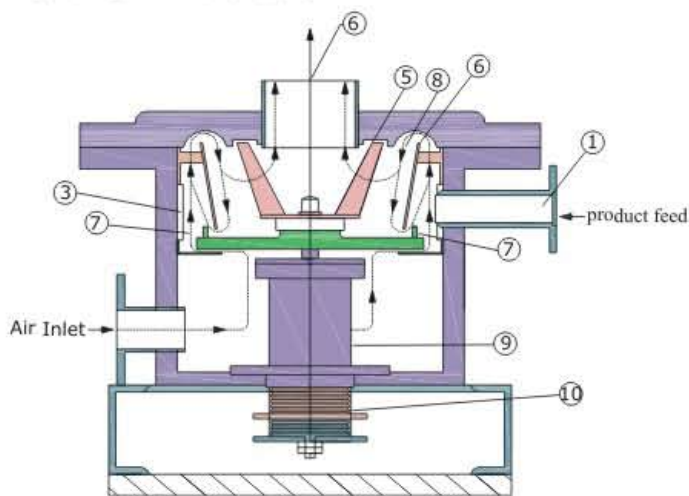
# ULTRA FINE ACM GRINDING SYSTEM



# Ultra Fine Acm Grinding System

## DESCRIPTION

Air Classifying Mill (ACM) is a compact micronizer and clear arrangement of elements with the combination of air swept impact grinding with integral dynamic classification used for fine and microfine size reduction of a wide range of products in all industries like Chemical, Mineral, Pharmaceutical, Food, Metal etc. Rejection of coarse material requiring further size reduction occurs totally inside the chamber by means of a positive material and air transport system. This feature combined with vertically orienting the classifier and impact drive shaft makes the air classifying mill the most efficient type of mechanical mill available.



**Cut View Section of ACM**

- |  |  |
|--|--|
| 1. Product Inlet                         | 7. Grinding Zone                       |
| 2. Grinding Rotor with Pins/bars         | 8. Separation Zone                     |
| 3. Liner Plate                           | 9. Bearing Housing with co-axial Shaft |
| 4. Shroud Ring                           | 10. Driven Pulley                      |
| 5. Classifier Wheel                      |  |
| 6. Product + Air Discharge to Bag Filter |  |

## PRINCIPLE OF OPERATION

The material to be ground is introduced to the tip of the rotating hammers through a port opening at the side of the mill. Feed material can be either pneumatically conveyed or screw fed. The rotating hammers attached to the impact rotor disc serve to fracture the process material with a striking edge velocity up to 140m/s.

A serrated liner mounted on the periphery of the grinding chamber in the hammer path serves to improve grinding efficiency by preventing particles from accelerating to the

speed of the hammers thereby increasing the relative speed difference.

The primary airflow passing through the narrow annular gap formed in between the liner and impact rotor disc in conjunction with the fanning action of the hammers transports the material to the top of the mill. A dispersion ring then directs the material downward toward the classifier. Baffles welded to a shroud ring straighten the flow of material and air so that particle vortexing at the dispersion ring area is avoided

The shroud assembly effectively separates the grinding zone from the classification as well as providing a defined path for the material and air to flow through.

Depending upon the air flow rate and separator speed adjustment, discrete particles are acted upon by either the center seeking drag force of the air that flows through the classifier or center fleeing centrifugal force created by the turning of the classifier wheel. Rejected particles fall by gravity and are pulled back under the shroud assembly to the spinning hammers for further impact.



## SIZE REDUCTION

The Mill operates on the principle of IMPACT GRINDING and usually employ rotor speed with a striking velocity of 140 m/s. Size reduction takes place by the impact of material particles on the rotating grinding surfaces and on the fixed liner.

## VANE CLASSIFIER

The characteristic feature of the ACM is the incorporation of an integral classifier. The classifier works on the principle of two opposite forces acting on the different particles, the coarse and the fine particles are segregated.

## CO-AXIAL SHAFT OF CLASSIFIER & ROTOR

One of the outstanding features is the co-axial shaft arrangement of classifier & grinding rotor, which makes the machine compact & easily accessible for cleaning & maintenance operation.

## CLEANING & MAINTENANCE

ACM is designed in such a way that all the individual components of the mill viz. the shroud ring, the liner plate, the classifier and the rotor plate are easily detachable for cleaning, in case of product change and for maintenance work. The top lid is hinged and tightened with fly nuts.

## SALIENT FEATURES

- Grinding and Classifying in one machine
- Cool and smooth grinding
- Steep particle size distribution
- Sharp classifier cut point, instantly adjustable.
- Easy cleaning and maintenance
- Low specific energy requirements.
- Compact space saving design, Low noise emission

ACM Grinding system consists of the following :

1. Feed Hopper
2. Screw/pneumatic Feeder with Rotary Air Lock
3. Air Classifying Mill
4. Reverse Pulse Jet Bag Filter
5. Discharge Rotary Air Lock
6. ID Fan
7. Inter Connecting Duct Work
8. Control Cabinet

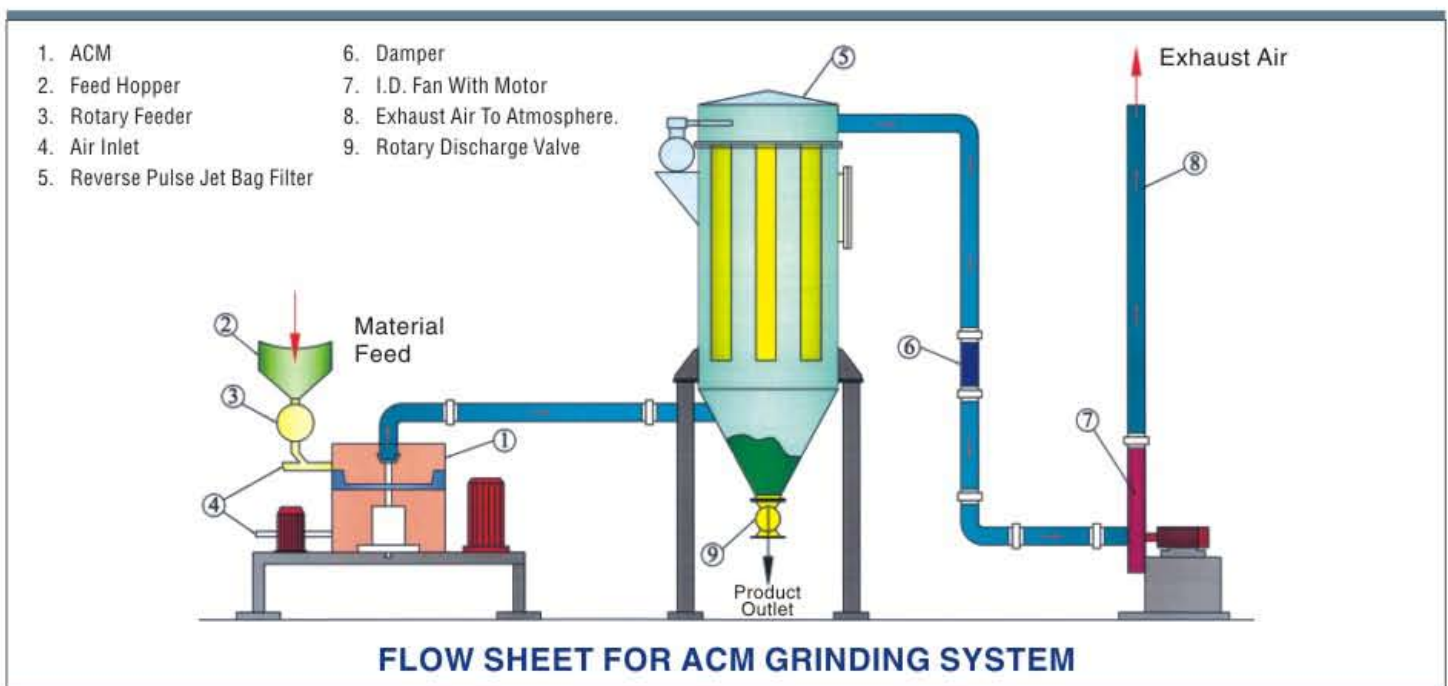
## APPLICATION

Ultrafine ACM can be used for almost the whole field of size reduction of products up to a hardness of 4 Moh.

Due to high air flow rates, the material has less tendency to heat-up and suitable for heat sensitive product size reduction.

Used in industries for Chemical, Pharmaceuticals, Drugs, Dye & its intermediate, Food Stuff, Minerals, Confectioneries, Cosmetics, Paints, Coatings, Resins, Plastics, Fungicides, Pesticides, Stearates, Aluminium hydroxide, Lime Stone, PVC etc.

Material of construction of contact parts could be Mild Steel, Stainless Steel etc.



## TECHNICAL DATA

MODEL		ACM-10	ACM-20	ACM-30	ACM-40	ACM-50	ACM-100
MOTOR FOR MILL	KW	7.5	15	22	30	37	75
MOTOR FOR CLASSIFIER	KW	1.5	2.2	4	4	5.5	11
SPEED OF MILL (Max.)	RPM	6000	5000	4500	4500	3500	2400
SPEED CLASSIFIER (Max.)	RPM	6000	4000	4000	4000	3500	3000
CAPACITY FACTOR		1.0	1.8	2.7	3.6	4.5	9.0

PRODUCT	FINENESS	CAPACITY ACM-10 kg/hr. (approx.)
Ammonium Phosphate	99% Through 200 Mesh	115
Dry Paint Powder (Epoxy/polyester ressin)	99% Through 170 Mesh	250
Fish Meal	99% Through 50 Mesh	110
Iron Oxide	99% Through 5 Microns	60
Lead Oxide	99% Through 325 Mesh	275
Lime Stone	99% Through 140 Mesh	460
Magnesium Oxide	99% Through 20 Microns	240
Melamine Resin	99% Through 140 Mesh	300
Milk Powder / Sugar Mixture	99% Through 20 Microns	150
Organic Pigment	99% Through 20 Microns	80
Phenolic Resin	99% Through 32 Microns	160
Potassium stearate	99% Through 35 Mesh	285
Sorbitol	99% Through 140 Mesh	225
Sulpher	99% Through 325 Mesh	210
PVC	99% Through 325 Mesh	220
Talkum	99% Through 20 Microns	100



### OTHER RANGE OF PRODUCT

<b>CENTRIFUGES</b>	<b>ROTARY VACUUM DRIERS</b>
# MANUAL TOP DISCHARGE	BUCKET ELEVATORS
# BAG LIFTING TYPE	SCREW CONVEYORS
# BOTTOM DRIVEN BOTTOM DISCHARGE WITH SCRAPER	RIBBON BLENDERS
# TOP DRIVEN BOTTOM DISCHARGE	BELT CONVEYORS
REACTION VESSEL	DRUM DRIERS AND FLAKERS
HEAT EXCHANGERS	ROTARY DRIERS
AIR CLASSIFYING MILLS (ACM)	ROTARY KILNS



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