



ALCHEMIST AUTOMATION SYSTEM

Your Production increase Through..  
Our Technology.... Alchemist



Design | Engineering | Manufacturing  
Supply | Installation | Erection & Commissioning | Training  
Serviceing | AMC for Bulk Material

## ALCHEMIST AUTOMATION SYSTEM

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# Business Activity



## About us :

Alchemist Automation is a firm Specializing in Automated Turnkey Solution Systems in Engineering, Design, Manufacturing and Supply, Installation, Erection and Commissioning Integration & Service.

We provide innovative technological solutions for a wide range of clients in the manufacturing and industrial processes industries with the support of our team of qualified experts in mechanics, electricity, automation, robotics, instrumentation, weighing and batching, Mechatronics, and information systems.

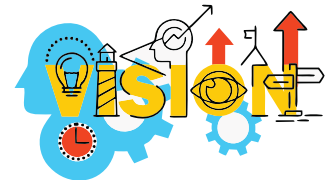
Our talented employees focus their energy on helping businesses meet the challenges of today's new economic realities, such as globalization, competitiveness and the changing commodity and energy prices.



## Our Vision :

Alchemist Automation vision is to become one of the leading engineering company within a decade having strong presence in domestic and global market. We believe every satisfied customer is an asset and we target to satisfy each and every customer walking in through our door.

We envisage achieving these ambitious growth plans as Green Progress meaning attaining the goals in symbiosis with environment and it's an integral part of our corporate vision.



## Our Mission :

We believe everything is possible with right efforts and dedication. We are confident that we will achieve our goal by,

- A. Quest for excellence.
- B. Trust and Transparency.
- C. Encourage innovative ideas for business development.
- D. In house design and detail engineering facility equipped with latest design software.
- E. Team work.
- F. Research and Development for innovative solutions.
- G. In house stringent quality and testing procedures complying with international norms.
- H. Flexible and adaptable organizational structure
- I. Continuous development and up- gradation of personnel, product and processes.
- J. Strong sales & service.
- K. Expansion and collaborations.



Leadership



On Time Execution



Quality Product



Customer Support

# The Alchemist Automation Solutions Provided are



## a) Weighing & Batching Automation :

PLC, SCADA Programming, Printing.

## b) Material handling :

Raw Material Unloading, Convey, Storage, Screening Weighing, Mixing, Feeding, Packaging, Dust Control System.

## c) Bagging & Packaging

## d) Equipments & Spares, AMC.

## A) Weighing and Batching Automation :

Weighing and Batching systems are critical in many fields of industrial production, and Alchemist Automation in this area cater to the wide range of industries and their specific batching requirements with absolute reliability and maximum precision.

The comprehensive range of products and systems for weighing and batching technologies from Alchemist Automation help to solve almost any weighing task flawlessly, including belt weighing systems, weigh feeders, container scales, even batching systems. Whatever the industry, our weighing technology makes a decisive contribution toward meeting quality, cost and deadline targets.

- ◆ Product Quality
- ◆ Increase Productivity
- ◆ Report Generation
- ◆ Weighing Accuracy
- ◆ Process Optimisation
- ◆ Ensured Safety

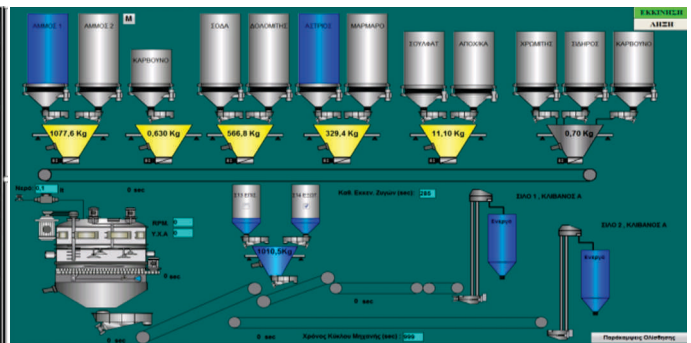
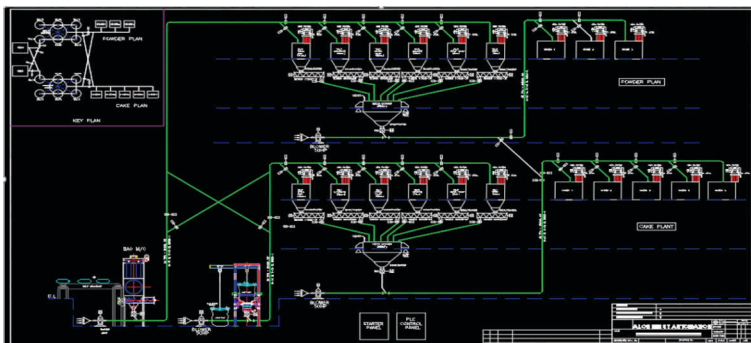
In order to achieve all the above in the manufacturing industry, Alchemist Automation offers customised Automatic Batching solutions.

We provide batching systems by integrating and controlling storage, loading and unloading mechanisms with a programmable logic controller (PLC) and by using a SCADA / HMI.

Alchemist Automation can supply the complete batching system, including weigh hopper/tank, storage tank, pneumatic conveying equipment, valves & gates apart from other material handling equipment, raw material loading and unloading system with dust collection system thus providing a one-stop solution for weighing and batching requirements.

## Features :

- ▲ High accuracy, high precision weighing and batching
- ▲ Suitable for both liquids and powders, as well as for materials with very high or low bulk density which are difficult to flow
- ▲ Suitable for quantities from as low as 1 gram to as high as a few tons
- ▲ Capable of performing weighing on-the-go using stirrer and vibrating tank
- ▲ Mobile and monorail weighing options available.
- ▲ Screw feeders and vibro feeders available.
- ▲ Jumbo bag weighing system
- ▲ Jumbo bag unloading with weigh system available.





Alchemist Automation has been supporting the process industry by implementing turnkey projects through design and implementation of control systems using PLC, for integration of electrical and instrumentation systems. The combined capability of electrical, electronic, mechanical and control systems provide a comprehensive and long standing solution.

## Industry segments for which multiple solutions have been implemented are:

- ▲ Automotive and auto components
- ▲ Glass Industry
- ▲ Food
- ▲ Chemical
- ▲ Tyre & Rubber
- ▲ Chemicals, fertilisers and pesticides
- ▲ Refractories
- ▲ Friction material
- ▲ Water and waste water
- ▲ Ferro-alloy
- ▲ Ceramics & Insulators
- ▲ Animal feed
- ▲ Minerals



## B) Material Handling System :

### 1) Conveyors

Belt Conveyor, Roller Conveyor, Slat Conveyor, Gravity Conveyor, Sorted Conveyor, Chain Conveyor, Horizontal Conveyor, Inclined Conveyor, Scrap Conveyor, Trough Conveyor.



### 2) Vertical Conveyor, Screw Conveyor, Screw Feeder

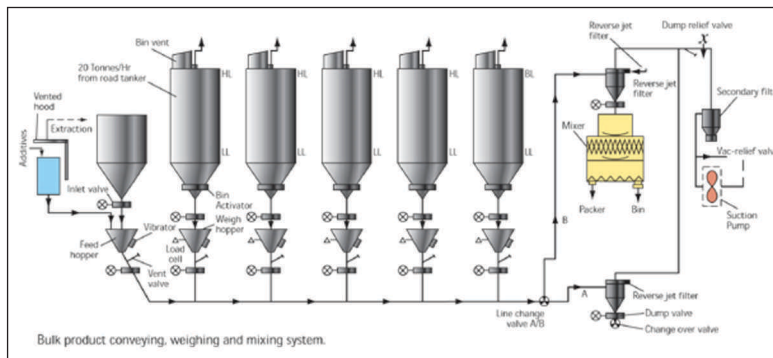




### 3) Pneumatic Conveying System – lean Phase & Dense Phase

The Pneumatic Conveying is necessarily custom made conveying system & based on product characteristics, particle size, throughput capacity, number of sources and number of destinations. Each pneumatic conveying system is designed & customized as per the application popularly known as custom conveyor system.

The provided solution is assured to be the best pneumatic conveying system solution for the application. Being the application experts & pneumatic conveying system manufacturer, we always assure to deliver best of both the worlds (commercial & technical worlds).



### 4) Bucket Elevator & Storage Silos, Hoppers, Ground Hoppers



### 5) Bag Dump Station



### 6) Jumbo Bag Unloading Station





## 7) Jumbo Bag Filling & 10 kg to 50 kg Bag Packaging Machines



## 8) Air Pollution Control Systems

Filtration systems, Scrubbers is borne Dust generated in plant due to handling, transferring, processing, loading / unloading etc. gets sucked and is routed through proper sized ducting network to DUST FILTERING EQUIPMENT.

Our Dust Control System satisfies all Pollution Control Board regulations and their requirements of Emission Norms. The system is designed with Optimum Power Economics and suitable Duct Sizing.





## 9) Industrial Automation



## 10) Vibro Feeders



## 11) Process Instrumentation

(e.g. Temperature Measurement and Controllers, Flow Measurement and Controllers, Density Measurement, Level Switches and Controllers, All Types of valves and Actuators, Vibro Feeders, Screw feeders etc.)

## 12) Gates

We are manufacturer of rotary air lock valve, control valve, slide gate valve ,butterfly valve, 2 way diverter valve , 3 way diverter valve.

## 13) Control Panels

Control panels (e.g. Electrical and Instrumentation, MCC panel, LT panels, pressure switches, sequential timer, and solenoid valve)

## 1) Powder Mixing Units

Blending powders is one of the oldest unit-operations in the solids handling industries. For many decades powder blending has been used just to homogenize bulk materials. Many different machines have been designed to handle materials with various bulk solids properties.

### A) RIBBON BLENDER :

Ribbon Blender comprises of a "U" shaped horizontal trough and specially design double ribbon agitator rotating within the "U" trough. The dimensions and configuration of the ribbons are carefully balanced to provide the movement of material within the container that avoids the dead spots and gives rapid product discharge.

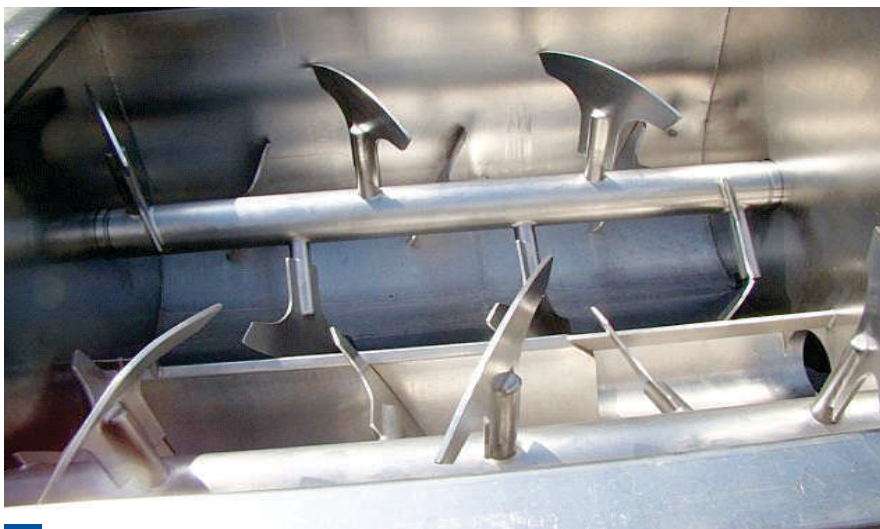


#### Features :

1. Extensive selection of drives, Seals, Agitators and discharge gate designs.
2. It is available in all grades of Stainless Steel, Mild Steel and special alloy steel.
3. Ensuring fast and efficient mixing.
4. Mixing capacity is approximately 70 to 80% of total vessel.

### B) PADDLE MIXER:

Paddle Mixer comprises of a "U" shaped or cylindrical horizontal trough and specially design paddles rotating within. Due to the defined angle of the paddles, the mixer shows an excellent axial and radial dispersion.



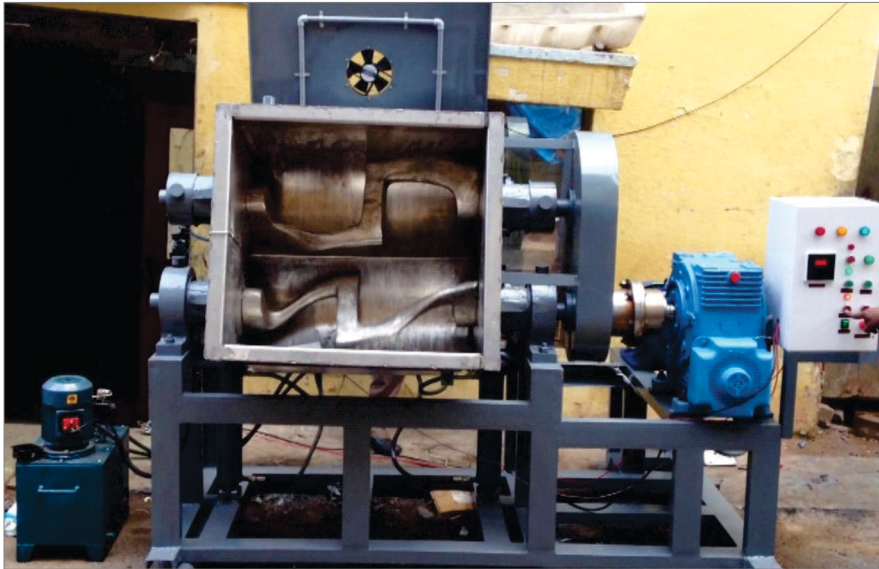
#### Features :

1. Extensive selection of drives, Seals, Agitators and discharge gate designs.
2. It is available in all grades of Stainless Steel, Mild Steel and special alloy steel.
3. Efficient mixing.
4. Mixing capacity is approximately 70 to 80% of total vessel.



## C) SIGMA MIXER :

Sigma mixer comprises of "W" shaped horizontal trough and specially designed "Z-Arms" rotating within. Sigma Mixer mainly used for Detergent cake kneading.

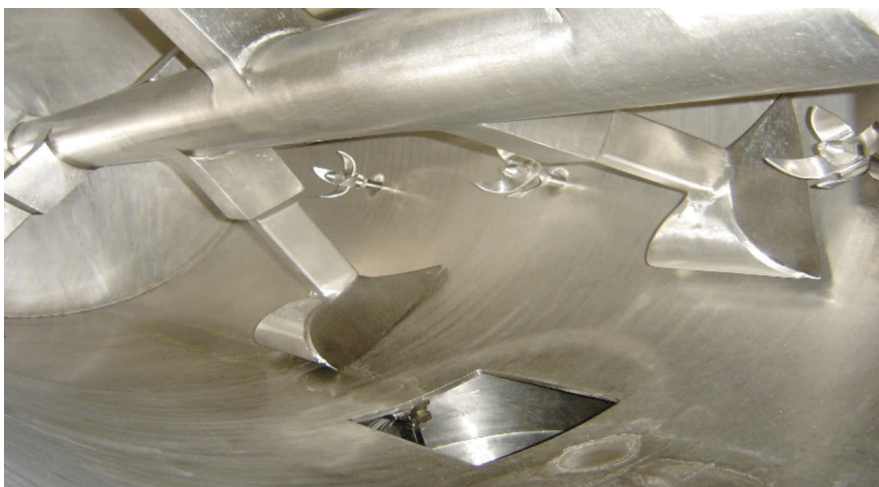


### Features :

1. Excellent mixing homogeneity in rapid time.
2. It is available in all grades of Stainless Steel, Mild Steel and special alloy steel.
3. Efficient mixing.

## D) PLOUGH SHEAR MIXER :

Plough Mixer consists of horizontal & cylindrical drum vessel, plough shaped shovel agitator, drive unit and chopper. The mixing elements create a mechanical fluidized bed mixing actions to hurl materials away from the wall of vessel into free space in crisscross direction and inversely back again. A fluid bed generated mechanically in this way, whereby the raw material is constantly involved in the mixing process, ensures maximum mixing intensity at even the highest feed rates and shortest residence times and allows addition of liquids.



### Features :

1. Perfect mixing result within short mixing time.
2. Flexible Design for different applications and industries
3. Efficient mixing.
4. Multiple mixing elements design.

## E) OCTAGONAL BLENDER

Octagonal Blender named due to its octagonal shape designed to process the larger volume of material into it. In this type of blender, whole octagonal rotates at slow speed and mixing takes place. Octagonal Blender is mainly used for pharmaceuticals product.



### Features :

1. Efficient mixing.
2. Easy clean design
3. Total discharge design
4. Low maintenance

## F) DOUBLE CONE BLENDER :

Double Cone Blender is an efficient and versatile machine for mixing of dry powders and granules homogeneously. The driving arrangement consists of a motor through a reduction gear box, S.S. baffles, are provided inside the blender. Safety railing along with limit switch and platform (optional) are supplied generally for bigger models.



### Features :

1. Volume for optimum homogeneity is between 35-70% of gross volume.
2. Conical shape at both ends enables uniform mixing and easy discharge
3. Dust free bin charging system ensures minimum material handling.
4. Totally mirror polished from inside & outside.
5. Mixing times vary between 5 and 20 minutes depending on the mixture.



## G) V-CONE BLENDER :

V-Cone blender is used for dry blending of free flowing solids with the advantages of two feeding port and elimination of integral baffles due to its V-Cone Shaped body which enhanced the blending efficiency.



### Features :

1. Mixing times vary between 3 and 15 minutes depending on the mixture.
2. The unit incorporates a guard rail with electrical safety.
3. Efficient mixing.

## H) Y BLENDER :

Y blender is used for dry blending of free flowing solids with the advantages of two feeding port and elimination of integral baffles due to its Y-Shaped body which enhanced the blending efficiency.



### Features :

1. Capacity range from 5 Litres to 500 Litres.
2. Mixing times vary between 3 and 15 minutes depending on the mixture.
3. The unit incorporates a guard rail with electrical safety.
4. Efficient mixing.

## 2) Liquid Mixing Units :

Liquid mixing in stirred vessel can be classified as laminar or turbulent. Mixing is laminar or turbulent depends on the fluid properties: density  $\rho$ , viscosity  $\mu$ , and also a characteristic fluid velocity in the vessel and depends on the characteristic length scale of equipment.

The characteristic velocity is the tip speed or the impeller diameter times the rpm; the characteristic dimension is the impeller diameter.

### A) BATCH HIGH SHEAR MIXER :

Batch High Shear Mixer consist of single stage rotor that rotates at high speed within stationary stator. As the rotating blades of rotor pass the stator, they mechanically shear the contents. High Shear Mixers accomplish a variety of processing objectives including homogenizing, emulsifying, mixing, shearing the product.

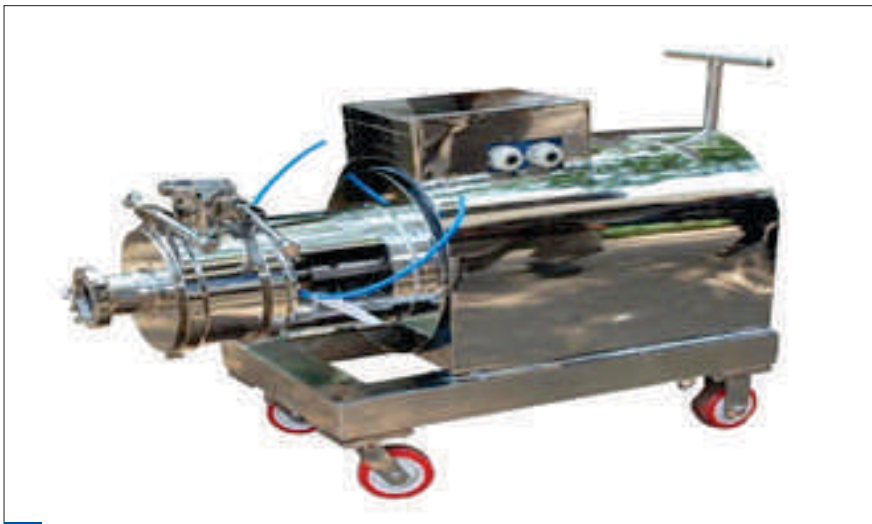


#### Features :

1. Rotation part is after dynamic and static balance test, low noise, prolong the service life.
2. Creates fine emulsion.
3. Rapidly dissolve solid particles with liquid.
4. Reduces particle size.

### B) INLINE HIGH SHEAR MIXER :

Inline High Shear Mixer is self-pumping mixer and aeration free that have the capacity to reach up to 3600 LPM. Interchangeable rotor and stator combination provide ultimate flexibility to adopt a variety of product formulations.



#### Features :

1. Self-pumping.
2. Rapidly dissolve solid particles with liquid.
3. Reduces particle size.



## C) HIGH SPEED DISPERSER :

High Speed Disperser consist of a driven vertical shaft and high shear disc type saw blade. The saw blade rotates at up to 5000 RPM and creates radial flow pattern within a stationary mixing vessel.



### Features :

1. Creating radial flow.
2. Also used for high viscous product.
3. Reduces particle size.

## D) REACTION VESSEL :

Reaction vessel consist of agitator that rotating and mixing the fluids within the stationary vessel at low speed. Reaction vessels are at the heart of a chemical plant. They are where the chemical changes and reactions take place. Powder or liquid poured into reaction vessels using nozzles, connected to the top of the vessel, the conditions inside a reaction vessel are controlled to give the fastest possible chemical reaction.

### 1 ) Jacket Reaction Vessel :

Jacket Reaction Vessel consist of jacket around the vessel. It used to remove heat from exothermic reactions or provide the needed heat required to produce the desired endothermic reactions.



### Features :

1. Used for high temp required.
2. Agitator rotates at low RPM.
3. Powder adding and inspection manhole with safety sensors.

### Application :

1. Food
2. Chemical
3. Agro & Fertilizers
4. Plastics
5. Petrochemicals

## 2) Limpet Reaction Vessel :

The Limpet Vessel is equipped with closed rigid container for effectively holding gases and liquids at different pressure. The Limpeted Vessel is available in a sturdy construction that is easy to operate.



### Features :

1. Used for low temp required.
2. Agitator rotates at low RPM.
3. Powder adding and inspection manhole with safety sensors.

### Application :

1. Chemical
2. Food
3. Plastics
4. Petrochemicals



## 3) Drying Units :

Drying is an essential unit operation used in various process industries. The mechanism depends on the drying medium and the moisture content of the product being dried.

### A) FLUID BED DRYER :

Fluid bed drying is a process by which particles, typically greater than 50 microns, are fluidized and dried. In a fluid bed drying system, air is passed through a perforated distributor plate which provides significant air flow to support the weight of the particles. This gentle drying technique is an ideal way to evenly dry particulates to specific moisture content and can be used for both fragile materials and for even the most robust materials.



#### Features :

1. Reliable system, less downtime
2. Product is dried uniformly
3. Low energy consumption compared to other type of dryers
4. It can be used for both fragile materials and for even the most robust materials.

#### Application :

1. Food & Spices
2. Chemical & Detergent
3. Agro & Fertilizers
4. Pharmaceuticals & Nutrition
5. Plastics & Petrochemicals
6. Glass & Ceramics

### B) STD ATMOSPHERIC TRAY DRYER :

STD Atmospheric Tray Dryer is a batch process used to dry materials that are liquid or wet cake. The input materials are batched, placed into trays and loaded into the frame inside the dryer for drying. The resulting product can vary widely based on chemical and physical characteristics. It is equipped with electric heaters and forces the recirculating hot air with fan and forced exhaust.

The STD atmospheric tray dryers are customized according to the client's specification and the available capacities range from 6 to 196 trays per batch.



#### Features :

1. Electric heaters are the heating media for this dryer.
2. No leakage takes place for fast drying.
3. Insulated body for no heat loss.
4. Faster Drying due to Large Surface Area.

#### Applications :

1. Food & Spices
2. Chemical & Detergent
3. Agro & Fertilizers
4. Plastics & Petrochemicals
5. Paint & Pigments

## C) VACUUM TRAY DRYER :

Vacuum Tray Dryer is a static type of dryer used in various industries under vacuum atmosphere to dry temperature sensitive materials as well as pharmaceutical and allied products. It gives complete drying and vaporization of moisture of the product. The vacuum tray dryers are been customized according to the clients specification and the available capacities ranges from 6 to 96 trays per batch.



### Features :

1. Steam or Hot water used for drying purpose.
2. Gives High Quality Dried Material
3. Insulated body for no heat loss.
4. Faster Drying due to Large Surface Area.
5. Comparatively Dries Large Moisture than Normal Dryers.

### Application :

1. Food & Spices
2. Chemical & Detergent
3. Agro & Fertilizers
4. Plastics & Petrochemicals
5. Pharmaceuticals & Nutrition
6. Paint & Pigments



## 4) Size Reduction & Grinding Units :

The grinding of solid matters occurs under exposure of mechanical forces that trench the structure by overcoming of the interior bonding forces. After the grinding the state of the solid is changed: the grain size, the grain size disposition and the grain shape. Size reduction system also refers to the process of breaking down, separating, sizing, or classifying aggregate material.

### A) HAMMER MILL :

In hammer mills the material is pulled in to the grinding chamber by the hammers suspended from the rapid-running rotor to shred or crush aggregate material into smaller pieces by the repeated blows of little hammers. The hammers are free to swing on the ends of the cross, or fixed to the central rotor.



#### Features :

1. Closed tolerance grinding to the main shaft.
2. Shaft rpm is 3000 rpm
3. Blower & Cyclone system also provide with Hammer mill.
4. STD fine size from hammer mill is 40 Mesh. Also the fineness of product may vary as per customer's requirement.

#### Application :

1. Spices
2. Detergent
3. Agro & Fertilizers
4. Plastics
5. Pharmaceuticals & Nutrition
6. Glass & Ceramics
7. Steel
8. Minerals

### B) BALL MILL :

Ball Mill consists of a horizontal rotating cylinder is partially filled with balls, usually metals, which grinds material to the necessary fineness by friction and impact with the tumbling balls. Ball mills are characterized by their smaller (comparatively) diameter.



#### Features :

1. Ball mills operate with an approximate ball charge of 30%.
2. Length of cylindrical shell 1.5 to 2.5 times the diameter.
3. Final product output between 0.09 mm and 0.4 mm in diameter.
4. Low rpm.

#### Applications :

1. Food
2. Glass & Ceramics
3. Steel
4. Minerals

## C) Impact Pulverizer :

Impact Pulverizer is used to reduce the particle size of a material. Impact mills pulverize the material upon impact. Blades of Impact mill can dynamically impact on the product with a high speed rotor. Impact Pulverizer mainly used for high capacity grinding. Also the sizes of grinding chamber may vary with increasing capacity.



### Features :

1. Closed tolerance grinding to the main shaft.
2. Shaft rpm is 3000 rpm
3. Blower & Cyclone system also provide with Impact Pulverizer.
4. STD fine size from hammer mill is 40 Mesh. Also the fineness of product may vary as per customer's requirement.

### Application :

1. Food
2. Spices
3. Agro & Fertilizers
4. Glass & Ceramics
5. Steel
6. Minerals

## D) Bead Mill :

Bead Mills consist of small steel beads. These beads are placed in a vessel along with the sample media. The vessel, beads and sample are vigorously agitated by shaking or stirring. Disruption of the sample occurs as the beads collide rapidly with the cells. A combination of the grinding beads and rotational effect produces a faster, more reliably effective lysing process for biological samples. Typically, a higher volume ratio of beads to cells produces a faster rate of cell disruption.



### Features :

1. Bead mills operate with an approximate bead charge of above 30%.
2. Length of cylindrical shell 1.5 to 2.5 times the diameter.
3. Used for small capacity.

### Application :

1. Food
2. Agro & Fertilizers
3. Pharmaceuticals & Nutrition
4. Minerals



## E) ATTRITOR MILL :

Attritor Mills are used for wet grinding limestone for flue gas desulphurization. The process uses limestone feed stock of approximately 6mm in size and wet grinds the limestone to 95% minus 325 mesh. The Attritor Mill operates in continuous processing mode. The grinding media used in continuous Attritors range in size from 2mm to 10mm in diameter. Carbon steel, stainless steel, chrome steel and ceramic balls are commonly used media.



### Features :

1. Fastest grinding & processing
2. Good temperature control
3. Simple & safe to operate
4. Low maintenance

### Application :

1. Food
2. Pharmaceuticals & Nutrition
3. PAINT & PIGEMENTS
4. Chocolate & Confectionaries

## F) MULTI MILL :

Multi Mill is portable type grinding machine used for high speed granulating, pulverizing, shredding, chopping and mixing of wide range of wet and dry materials. Multi Mill utilizes the principle of variable force swing hammer blades having both knife and impact edges rotating with a carefully selected screen to control the size reduction.



### Features :

1. Easily dismantled and cleaning.
2. Sieve sizes are: 0.5 mm to 10 mm diameter
3. Easy to movability.
4. Suitable for both dry & wet products.

### Application :

1. Food
2. Agro & Fertilizers
3. Pharmaceuticals & Nutrition
4. PAINT & PIGEMENTS



ALCHEMIST AUTOMATION SYSTEM

ISO 9001 : 2015 Certified Company

## Industries We Serve



Food Processing



Chemical



Dairy



Cement



Petrochemical



Brewery & Distillery



Agro & Fertilizer



Paint



Pharmaceuticals



Steel & Power

Mr. Vijay Pandit Sonawane - Business Head

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