EQUIPMENT & SERVICES

HOSOKAWA MICRON

HOSOKAWA
MICRON POWDER SYSTEMS

Combining the resources of

ALPINE • MIKRO • MICRON • VRIECO-NAUTA

HOSOKAWA MICRON POWDER SYSTEMS

Hosokawa Micron Powder Systems designs and manufactures powder processing equipment and systems for the Chemical, Pharmaceutical, Food, Mineral, Cosmetic and Plastics Industries in North, Central and South America.

Hosokawa offers the leading powder processing technology from the most respected brand names in the industry. We engineer our equipment to assure reliability, durability and optimal performance throughout the life of our machines and systems. With brand names such as Mikro, Alpine, Micron, Vrieco-Nauta, Stott and Vitalair, we guarantee the highest standards of quality and performance and the best solution for your processing needs.

Angle of repose analysis on Micron Powder Characteristics Tester PT-X

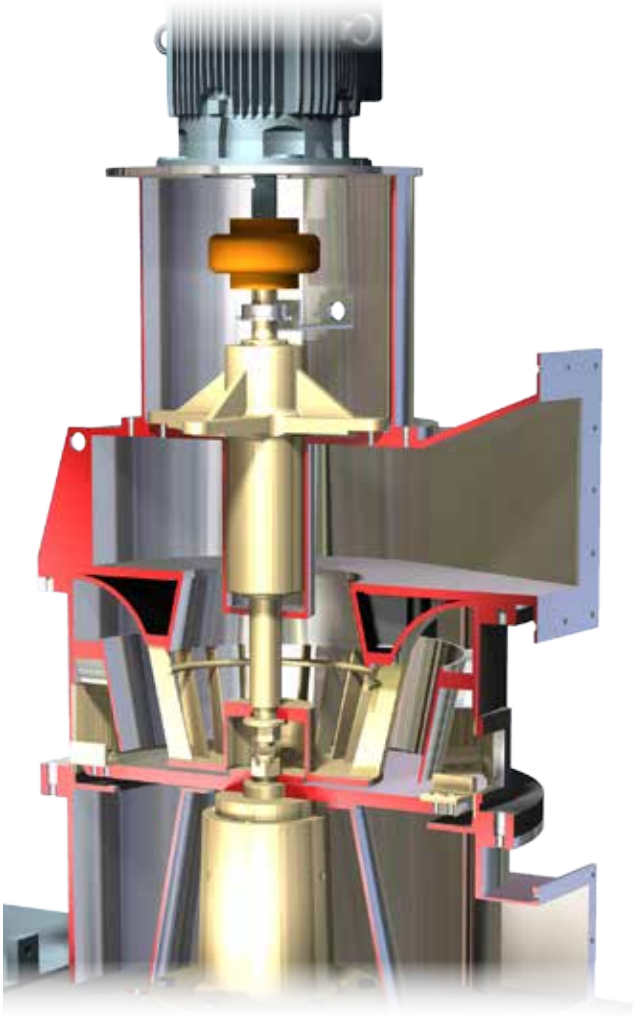
Hosokawa Micron Powder Systems in Summit, NJ

APPLICATIONS & TECHNOLOGIES

Since 1923, Hosokawa Micron Powder Systems has defined the standards of durability and performance through our leading powder processing technologies for:

- Fine to Ultra-Fine Size Reduction
- Classification and Separation
- Mixing & Drying
- Compaction, Agglomeration & Granulation
- Laboratory and Analytical Equipment
- Isolators, Glove Boxes & Down Flow Booths
- Hygienic Filling & Weighing Systems
- Process and System Engineering
- Testing and Analytical Services
- Contract Manufacturing
- System Validation & Optimization
- Service & Maintenance

CONTENTS

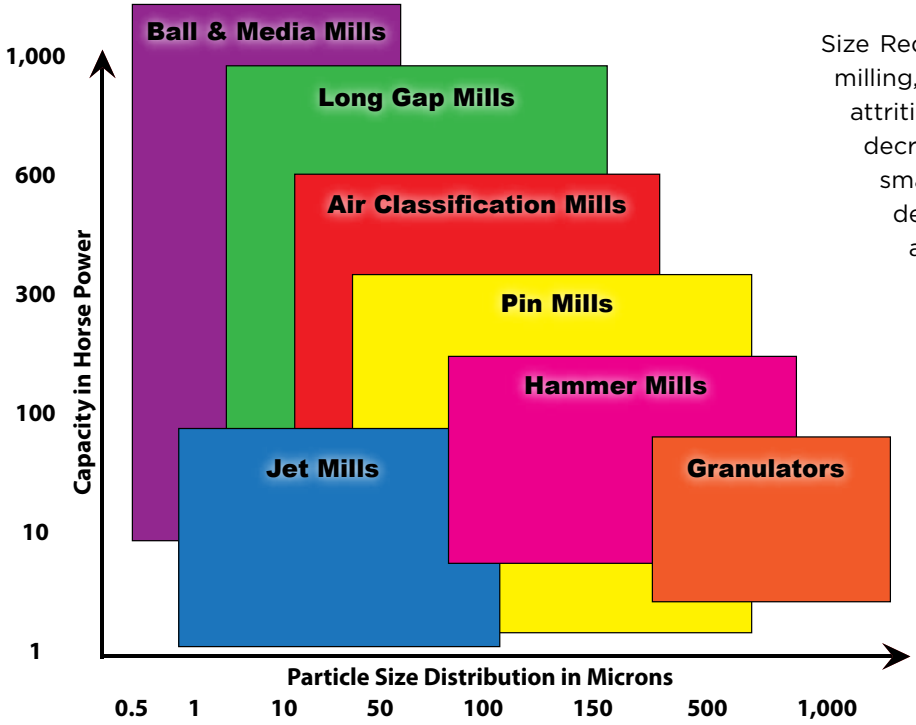


Mikro ACM® Air Classifying Mill with independent drives for rotor & classifier wheel

DESIGNED, MANUFACTURED, & ASSEMBLED IN USA

Hosokawa equipment comes with our pledge of performance and guaranteed dependability. All components are inspected and tested to ensure they meet our strict standards before being shipped to our customers. A majority of Mikro brand milling & processing equipment sold by Hosokawa Micron Powder Systems is engineered and built in Summit, New Jersey, USA.

COARSE TO ULTRA FINE SIZE REDUCTION

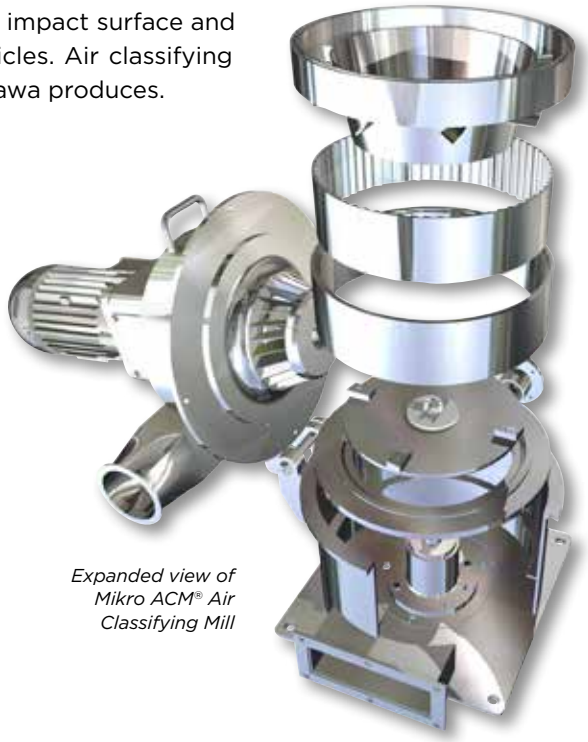


Size Reduction, also referred to as grinding or milling, is the process of using shear (cutting), attrition, compression or impact forces to decrease the size of large materials into smaller particles or powders. Hosokawa has developed some of the most advanced and precise size reduction systems for coarse granulation down to ultra-fine milling. Most of these machines can be tested in Summit, New Jersey and are available from laboratory scale to full production systems.

IMPACT MILLS

The most common size reduction systems used for grinding dry materials are impact mills. Impact milling is defined as a hard, solid object such as a hammer, bar or pin, moving at a high velocity coming in contact with a particle. The collision of the impact surface and particles cause the material to fracture and break into smaller particles. Air classifying mills, hammer mills and pin mills are some of the impact mills Hosokawa produces.

Mikro ACM® Air Classifying Mill – Model 300



Expanded view of Mikro ACM® Air Classifying Mill

MIKRO ACM® AIR CLASSIFYING MILL

The Mikro ACM® Air Classifying Mill is an air swept mechanical impact mill with a dynamic air classifier designed to grind an extensive range of materials down to a D97 < 20 µm. The Mikro ACM® Air Classifying Mill is available in a range of sizes and can be supplied for laboratory use or large production demands. Capacities range from 0.5 lb/hr on a laboratory mill to several tons per hour on our production sizes.

- Grinds and classifies materials with a Mohs hardness ≤ 5
- Chemical, mineral, food, and pharmaceutical designs available
- 1 HP laboratory models to 600 HP production systems available
- Narrow particle size distributions with excellent top size control
- Heavy-duty, durable construction
- Stainless steel and special alloy designs available
- Wear protection options such as tungsten carbide and ceramic components
- Easy clean & SIP / CIP options
- PSR 10 bar (g) designs available
- System Validation & Optimization
- Service & Maintenance

Mikro ACM® Air Classifying Mill – Easy Access Model 75 with independent drives

Mikro® ACM Model	Rotor Power (HP)	Classifier Power (HP)	Max. Rotor Speed (RPM)	Approx. Air Flow (ft³/min)	Scale Up Factor	Optional Designs & Configurations							
						Coaxial Drive	Independent Drive	Easy Access / Easy Clean	High Speed Rotor	Pressure Shock Resistant	E-ACM Carbon Black Mill	Superfine Configuration	High Temperature Operation
1 ACM	1	1	22,000	60	NA		✓						
2 ACM	3	1	10,500	200	0.3	✓			✓	✓			
10 ACM	10	1.5	7,000	500	1	✓	✓	✓	✓	✓	✓	✓	✓
20 ACM	20	2	7,000	1,060	2		✓	✓	✓	✓			
30 ACM	30	5	4,600	1,500	3	✓	✓	✓	✓	✓	✓	✓	✓
40 ACM	40	7.5	4,600	2,000	4	✓	✓	✓	✓	✓		✓	
75 ACM	75	10	3,000	3,750	7.5	✓	✓	✓	✓	✓		✓	
100 ACM	100	15	3,000	5,000	10	✓	✓		✓	✓	✓	✓	✓
125 ACM	125	20	2,100	6,360	12.5	✓	✓			✓			
150 ACM	150	30	2,100	7,500	15	✓	✓			✓	✓		✓
200 ACM	200	35	2,000	10,000	20	✓	✓			✓	✓	✓	✓
250 ACM	250	40	2,000	12,500	25		✓			✓	✓		✓
300 ACM	300	50	2,000	15,000	30	✓	✓			✓	✓	✓	✓
400 ACM	400	100	1,500	20,000	40	✓	✓						
600 ACM	600	150	1,500	30,000	60	✓							

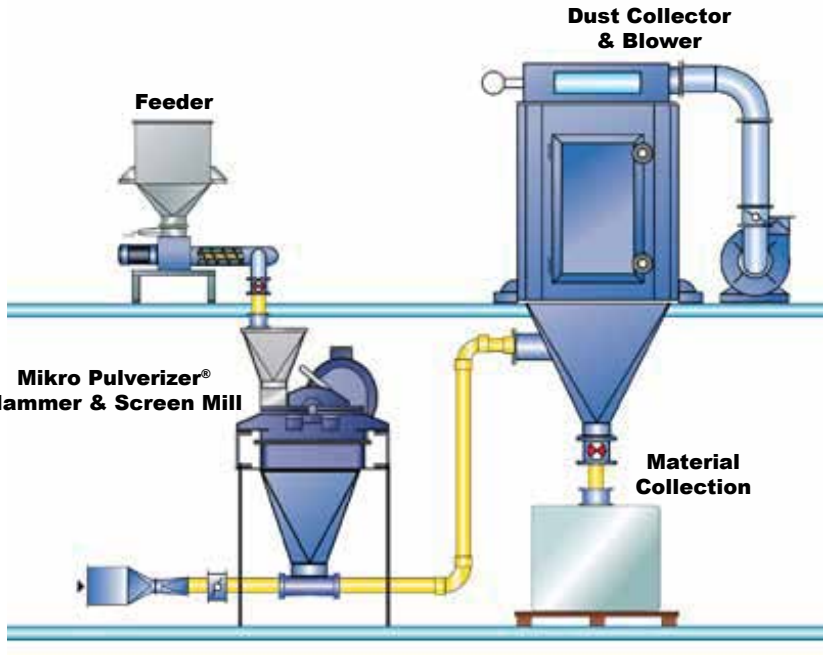
IMPACT MILLS

MIKRO PULVERIZER® HAMMER & SCREEN MILL

The Mikro-Pulverizer® Hammer & Screen Mill is a high speed mechanical impact mill designed for continuous size reduction of a wide range of materials down to D90 < 45 µm. Since its introduction in 1923, the Mikro Pulverizer® Hammer & Screen Mill has evolved into one of the most efficient and durable size reduction systems with thousands of installations worldwide.

Mikro Pulverizer® Hammer & Screen Mill – Model #3 in stainless steel

	SamplMill	Bantam	MP 1	MP 2	MP 3	MP 4	MP 44	MP 66
Motor (HP)	0.75	1	5	20	50	100	200	300
Max. Rotor Speed (RPM)	14,000	14,000	9,600	6,900	4,650	3,450	3,450	3,450
Approx. Air Flow (ft^3/ min)			60-80	150-200	450-600	600-800	1,000 - 1,500	2,000 - 3,000
Scale Up Factor	N/A	0.2	1.0	4.0	10	20	40	60



Typical hammer mill system configuration

- Suitable for chemical, mineral, plastics and cosmetic applications
- Laboratory to full production models available with 3/4 HP to 300 HP
- Capacity from 0.5 lb/hr to 30,000 lb/hr
- Hammer & knife rotors available
- Efficient & economical milling of soft to medium-hard materials
- No ancillary equipment required
- Compact, dust free design
- Fabricate PSR models available
- Cryogenic milling with nitrogen available
- Easy to clean & maintain

MIKRO® UMP UNIVERSAL MILLING SYSTEM

The Mikro® UMP Universal Milling System is a compact, high speed impact mill capable of coarse granulation or fine size reduction with interchangeable rotor configurations. The UMP is the next step in the evolution of the Mikro Pulverizer® Hammer & Screen Mill providing the same grind as the classic hammer mill while adding the flexibility of a pin disc or knife rotor.

- Capable of fine grinding to D97 < 35 µm
- Lab & production models available with 1 HP to 40 HP
- Capacity ranges from 5 grams/batch up to 3,000 lb/hr
- Suitable for pharmaceutical, food & chemical applications
- Energy efficient & economical to operate
- Designed for milling soft to medium-hard materials
- Fabricated stainless steel construction
- Variable speed rotor drive
- Cantilevered design for easy cleaning & rotor changes
- Cryogenic operation available
- Available with pin rotor, hammer & screen or knife configuration
- Isolator installations available for high containment applications

Mikro® UMP Universal Milling System – Model #1

Various milling options for the Mikro® UMP Universal Milling System

Model	LPM-2	UMP-B	UMP-1	UMP-2	UMP-3
HP	1	1.5	5 - 10	20	40
Hammer & Screen (LFS)					
Rotor RPM – Max	36,000	14,000	9,600	6,900	N/A
Scale Factor	N/A	0.2	1	4	N/A
Air Flow – SCFM Nom.	10	50	80	200	N/A
Pin Disc Rotor					
Rotor RPM – Max	36,000	27,500	18,000	12,000	9,000
Scale Factor	N/A	0.2	1	2	4
Air Flow - SCFM Max.	10	25	50	100	200

IMPACT MILLS

MIKRO LGM® LONG GAP MILL

The Mikro LGM® Long Gap Mill is an air classifier mill that uses a combination of attrition and impact forces for fine size reduction down to D97 < 5 µm.

- Grinds, classifies and even dries in one step
- Available from 10 to 1,000 HP
- Designed for chemical and mineral applications

MIKRO ATOMIZER® AIR CLASSIFYING MILL

The Mikro Atomizer® Air Classifying Mill is ideal for grinding heat sensitive and extremely cohesive material.

- Grinds, classifies and conveys in one step down to D97 < 25 µm
- Pilot to full production models available
- Operates at a low temperature due to high volume of conveying air

ALPINE® UPZ PIN MILL

The Alpine® UPZ is a flexible milling system designed for grinding a wide range of materials. The versatile design can be outfitted with pin discs, plate beaters or hammer grinding rotors.

- Suitable for chemical, pharmaceutical and food processing
- Capable of fine milling to D97 < 50 µm
- Numerous models and configurations available from 1 to 300 HP

ALPINE® CW CONTRAPLEX PIN MILL

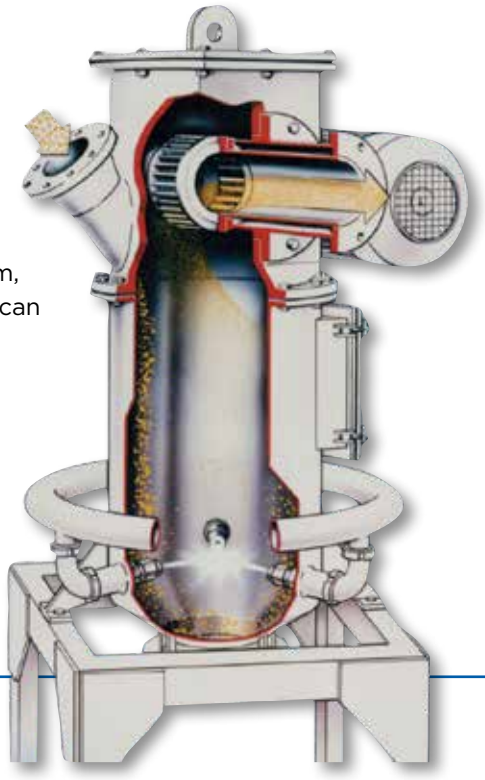
The Contraplex is a fine impact mill with two counter driven pin discs designed to efficiently grind moist, greasy and sticky materials.

- Capable of milling down to D97 < 20 µm
- Cryogenic operation possible with liquid nitrogen or other chilling gases
- The hinged door design permits easy cleaning & maintenance

JET MILLS

ALPINE® AFG FLUIDIZED BED OPPOSED JET MILL

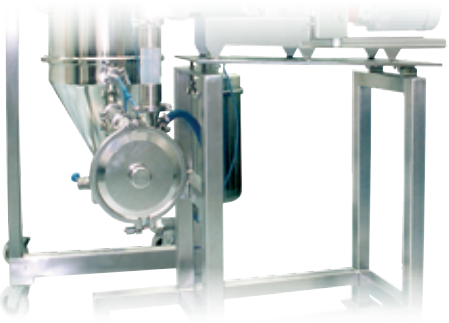
The Alpine® AFG Fluidized Bed Opposed Jet Mill is suitable for ultra-fine size reduction of many materials up to a Moh's hardness of 10. Compressed gas is accelerated through a series of nozzles at extremely high velocities. Particles are drawn into the accelerated gas streams and are ground via inter-particle collisions in the jet stream. In order to achieve ultra-fine particle sizes down to D97 < 3 µm, the AFG is equipped with a dynamic deflector-wheel air classifier that can be operated at varying speeds to alter product fineness.



- Laboratory to full production models available
- Steel, stainless steel and ceramic wear protection options
- Suitable for very hard and abrasive materials
- Designed for chemicals, minerals and pharmaceutical applications
- Special models for toner, graphite, pigments, abrasive minerals & chemicals available
- Can handle large feed particles

ALPINE® AS SPIRAL JET MILL

The Alpine® AS Spiral Jet Mill is designed for the micronization of pharmaceuticals and certain chemical powders. Material is injected into the grinding zone by gas nozzles. Material flows around the perimeter of the mill wall in a spiral manner resulting in particle-to particle attrition and impact against the mill walls. As the material gets finer and lighter the ground particles are drawn towards the outlet at the center of the milling chamber.



- No moving parts for CIP & SIP
- Capable of ultra-fine milling to D97 < 3 µm
- Fabricated housings available in surface finishes as high as 0.2 micron Ra

MIKRO® JET MILL MJM

The Mikro® Jet Mill MJM uses compressed air to fire particles directly towards each other through two opposed particle guns resulting in particle on particle size reduction. In some applications, a target can be aligned between the guns to adjust the grinding results. An internal classifier is used to control particle top size and reject oversized particles for further milling. This mill has similar operating principles to a fluidized bed jet mill and can achieve similar results with less energy.

- Pilot to production models available
- Suitable for medium-hard and abrasive materials
- Designed for chemical and mineral applications
- Easy to operate & maintain

GRANULATORS

LARGE PART GRANULATOR

Designed to recover large, thin walled parts including housings, helmets, bottles and automotive components. Our Double Angle Cut™ geometry provides a high shear slicing action which produces a clean, uniform granulate with minimal fines and maximum efficiency.

ALPINE ROTOPLEX®

The Alpine Rotoplex® granulator is a workhorse. It is the only granulator with a patented cutting technology, our Cross-Scissor-Cut®. This technology allows for multiple rotor rows and ensures even distribution of material across the entire width of the machine. The Alpine Rotoplex® is designed for the most difficult applications and ideal for different applications such as film recycling.

PRESS SIDE GRANULATOR

The Press Side Granulator uses a Double-Angle-Cut™, high shear rotor and bed knife geometry to provide a unique cutting solution that achieves clean, uniform granulate with extremely low dust and fines.

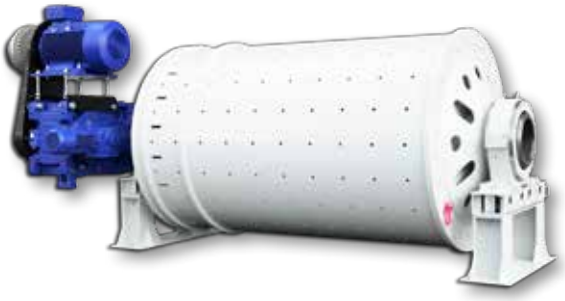
- High throughput rates & lower energy consumption
- Produces uniform regrind
- Available from pilot to production models

HEAVY DUTY GRANULATOR

Developed to granulate thick walled plastic components and other demanding applications at high rates. Design details such as a solid 6” rotor shaft, solid steel flywheel and precision drilled screen ensures durability and reliability even during continuous, heavy operation.

MEDIA MILLS & TABLE MILLS

Media Milling is a size reduction process using balls or beads that are rolled or tumbled inside a drum chamber to grind materials to ultra-fine sizes. These mills are often paired with classifiers that recirculate oversize materials back into the milling chamber for ultra-fine size reduction at high throughput rates and comparatively low energy consumption.



ALPINE® SO SUPER ORION BALL MILL

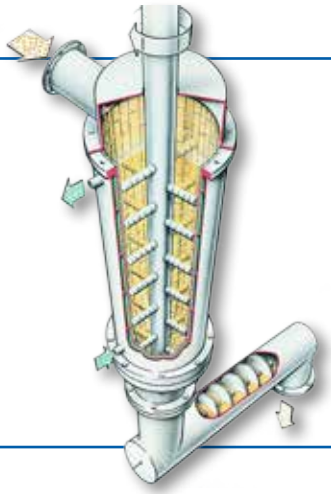
The Alpine® Super Orion Ball Mill was developed for the ultra-fine grinding of hard and abrasive materials. This durable media milling system efficiently and effectively pulverizes minerals and chemicals.

- Designed to mill down to D50 < 2 µm
- Systems capable of up to 100,000 lb/hr
- Numerous protective wear options & grinding media choices

ALPINE® ANR VERTICAL WET MEDIA MILL

The ANR is an energy efficient, low maintenance, vertical wet media mill designed for ultra-fine milling of concentrated mineral powder slurries.

- Capable of producing ultra-fine materials down to D97 < 2 µm
- Ceramic contact components ensure material purity
- Models for pilot and production scales available



ALPINE® ATR VERTICAL AGITATED MEDIA MILL

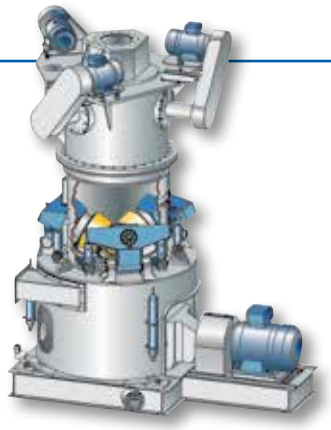
The ATR is a dry vertical agitated media mill that has a cylindrical grinding chamber capable of producing ultra-fine materials.

- Size reduction down to D80 < 2 µm
- Designed for minerals and fillers
- Double walled design can be used for water cooling applications

ALPINE® AWM TABLE ROLLER MILL

The Alpine® AWM Table Roller Mill combines compression forces and air classification to economically mill hard minerals. This system has adjustable milling parameters which allow operators to quickly modify process results.

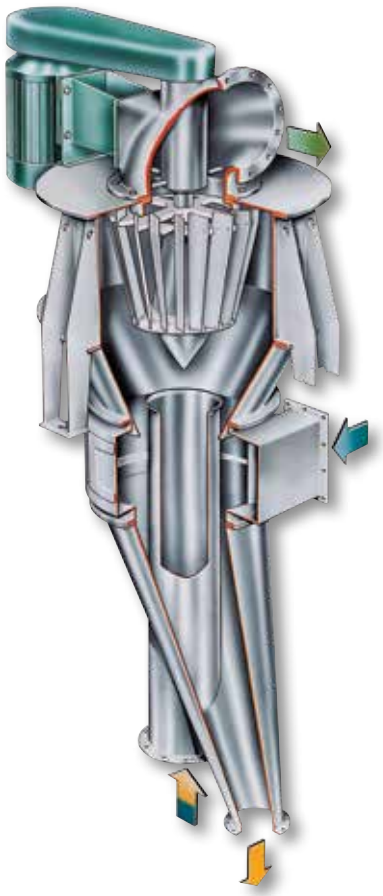
- Fine grinding down to D97 = 10 µm
- Designed for processing industrial minerals
- Integrated ultrafine classifier for particle size control

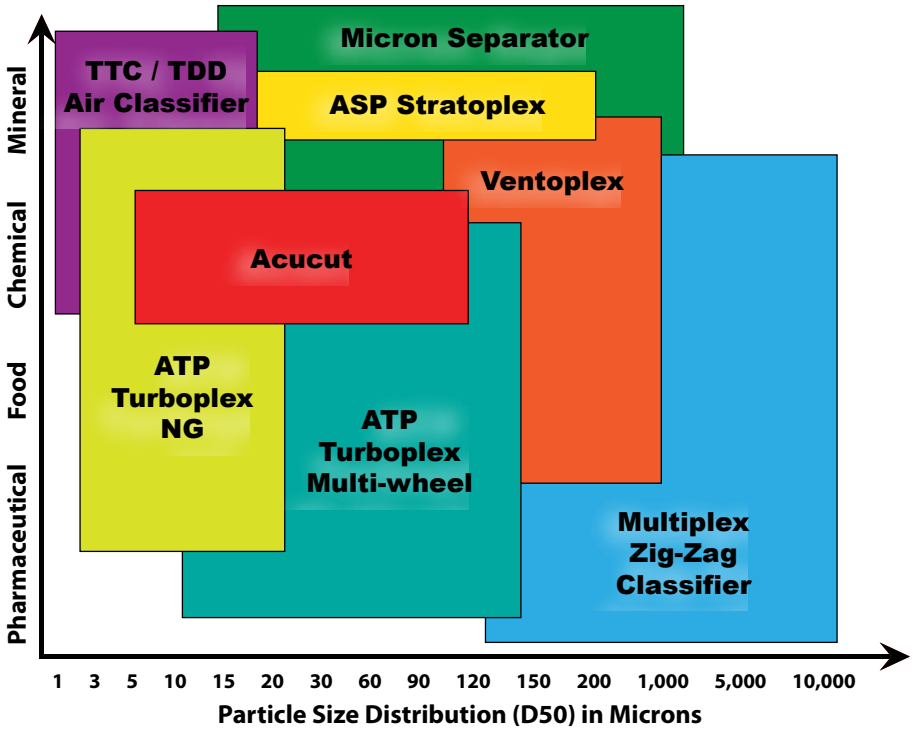


Air classifiers are used to separate materials by size into coarse and fine fractions. The separation point, which is usually referred to as the Cut Point can be controlled by adjusting the primary or secondary airflow in conjunction with the classifier wheel speed.

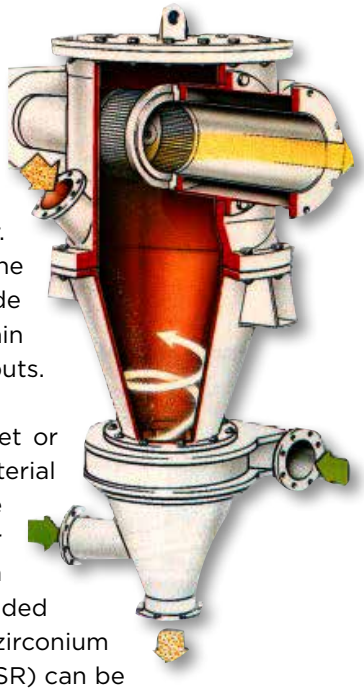
MICRON SEPARATOR MS

The Micron Separator MS is similar in operation to a Turboplex and is a great choice for applications requiring cut points between 15 – 150 microns. Similar to the ATP line these units can also be provided with feed options as well as wear protection to handle a variety of products.





ALPINE® ATP TURBOPLEX AIR CLASSIFIER



The Turboplex is suitable for Food, Pharmaceutical, Chemical and Minerals industries and is a highly efficient classifier. These air classifiers are capable of sharp cut points below 5 microns in applications ranging from few pounds to tons per hour. Since the sharpness of cut can be affected by the larger wheel diameters, Hosokawa can provide designs with multiple smaller wheels to maintain effectiveness while allowing for higher throughputs.

These units can either be fed via a gravity inlet or placed in a process stream where the feed material can be pneumatically conveyed into the classifier allowing for design versatility. In order to handle abrasive materials or to prevent iron contamination, the Turboplex can be provided with wear protection utilizing cast ceramic or zirconium wheels. The pressure shock resistent models (PSR) can be used to process explosive powders. Smaller models in the ATP line can also be provided with pharmaceutical finishes to handle CIP and SIP.

CLASSIFICATION & SEPARATION

MIKRO® ACUCUT CLASSIFIER

The Acucut utilizes dual stage operating controls to ensure sharp cuts and narrow band particle size distributions typically below 10 microns. With precise control of the air flow and rotor speeds this unit will produce precise, repeatable cuts, everytime. Options are available for effective control of product contamination, protection against corrosion, handling abrasive materials and classifying adhesive powders.

POLYMER SYSTEMS DEDUSTING SYSTEMS

The Hosokawa dedusting system can be retrofitted to most granulators or other process lines to remove fines, fibers, papers and other contaminates from processed materials. It uses controlled negative airflow to disperse materials and convey undesired contents out of the product stream as it is gravity discharged.

ALPINE® TTD ULTRA-FINE AIR CLASSIFIER

The Alpine® TTD Ultra-Fine Air Classifier is a high performance particle separator ideal for classification of soft to medium hard minerals at high throughputs and low energy consumption.

The classifying wheel has a new patented design for higher throughput rates and loading factors at high fineness values of up to D97 = 3 µm. Due to the low pressure drop, the Alpine TTD is considered one of Hosokawa's most energy efficient air classifiers.

MIKRO® CLASSIFIER

Hosokawa's Mikro Classifier CC is an in-line fines classifier that can handle a wide range of materials in many size ranges making cut points between 3 µm to 20 µm possible using unique internal dispersion systems.

ALPINE® TTSP AIR CLASSIFIER

The Alpine® TTSP Classifier is designed for high dispersion and maximum precision classification. It is used in toner dedusting applications with cut points between 3 µm to 10 µm.

CLASSIFIERS FOR SPECIALTY APPLICATIONS

- Alpine® Multiplex Zig-Zag Classifier
- Alpine® ASP Stratoplex Air Classifier
- Alpine® TSP Air Classifier
- Alpine® TTC Twin Turbo Classifier
- Alpine® Ventoplex

MIXING, COATING, & DRYING

VRIECO-NAUTA® CONICAL SCREW MIXER

The Vrieco-Nauta® Conical Screw Mixer is a three dimensional convective mixer with a rotating cantilevered mixing screw. The screw is suspended from an orbital arm, which rotates along the conical inner vessel wall causing convective mixing of particles and shear. Fast and full discharge through the bottom discharge valve is standard.

- Suitable for pharmaceuticals, food, plastics, minerals, & chemicals
- Gentle mixing of free-flowing and segregative powders, pastes, slurries and liquids
- Available from 1 liter to 100,000 liters
- Fast & accurate homogenization
- Energy efficient operation
- Minimum heat generated

VRIECO-NAUTA® CYCLOMIX

The Vrieco-Nauta® Cyclomix is a high shear intensive mixer specially designed for fine cohesive powders, slurries and liquids. With excellent temperature control, it can perform multiple processes such as coating, heating and bonding.

- Fast mixing times from 30 seconds to 5 minutes
- Designed for high shear mixing and bonding applications
- 1 to 2,000 liter designs available

VRIECO-NAUTA® VITOMIX

The Vitomix is a mid-shear mixer capable of ultraquick cycle times. With a tip speed from 0.4 m/s to 6.0 m/s it has up to 8 times more transport volume than a conventional conical screw mixer. It features precise temperature control, lump free moistening and fast gentle mixing of powders, pastes and slurries.

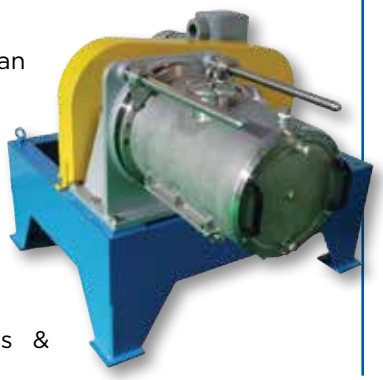
MIXING, COATING, & DRYING

VRIECO-NAUTA® MODULOMIX CONTINUOUS MIXER

The Modulomix is a continuous modular mixer based on proven Cyclomix® batch mixing technology. It has been designed specifically for the pharmaceutical industry and can be used for low, medium or high shear applications. The Modulomix has been designed to be compact with fast reactivity, minimum residue and rapid start-up and shutdown times.

NOBILTA™ DRY PARTICLE COMPOSING SYSTEM

The Nobilta™ Dry Particle Composing System can produce composite materials in a dry process by applying mechanical forces without any binders. It is also a multi-functional processing unit for precision mixing, particle coating particle surface modification and shape enhancement.

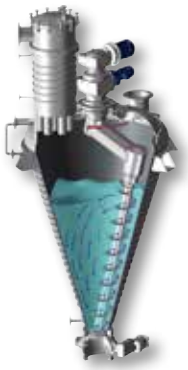


- Laboratory scale up to full production systems
- Designed for chemicals, pigments, cosmetics & pharmaceutical applications
- Ideal for heat sensitive and abrasive materials

SPECIALIZED MIXING EQUIPMENT

- Vrieco-Nauta® Horizontal Ribbon Mixer
- Micron Labomixer LV
- Vrieco-Nauta® Silomixer
- Mechanofusion® Dry Particle Composing System

VRIECO-NAUTA® VACUUM DRYER



Vrieco-Nauta® Vacuum Dryers use a combination of vacuum, low temperatures and the gentle mixing action of a conical screw mixer for rapid and uniform drying. Material temperature within the vessel can be efficiently controlled with the unit's heating & cooling jacket and continuous uniform material homoginization.

DRYMEISTER® FLASH DRYER DMR

The Drymeister® Flash Dryer combines drying, milling and classifying in a single system with inlet gas temperatures up to 600°C. The Drymeister is an economical alternative to spray dryers that can transform damp feed material into an ultrafine powder with an extremely narrow particle size distribution. This system is available from pilot up to full production models with 400 HP.

OTHER DRYING TECHNOLOGIES

- Mikro ACM® Flash Dryer
- Mikro LGM® Long Gap Mill & Dryer
- Vrieco-Nauta® Active Freeze Dryer

MIKRO AIR JET SIEVE™ MAJSx

The Mikro Air Jet Sieve™ — Model MAJSx is a highly accurate and reliable particle size analyzer designed for determining the particle size distribution of dry powders. The MAJSx is easy to operate and quickly determines particle size with a short series of test sieve screens. The system utilizes the pneumatic sieving principle that enhances the accuracy and reproducibility of particle size analysis. Use of this device has become a preferred method for such tasks as quality assurance of incoming raw materials and the confirmation of final product specifications.

- Analyzes materials from 20 µm to 4,750 µm
- Suitable for chemical, mineral, pharmaceutical, food, plastics and cosmetic applications
- Integrated analysis computer and vacuum pressure regulator
- Easy to use touch screen controls
- On screen step-by-step instructions
- Highly accurate & reliable results

MICRON PENETO PNT-N

The Peneto measures powder wettability, specifically speed and weight of liquids that penetrate the powder layer. This gives affinity between liquid and powder with easy measurement and computer operation. This method is widely used in the pharmaceutical and chemical industries to evaluate the surface characteristics between powder materials and various liquids.

MICRON VIBLETTE™ VBL

Micron Viblette™ VBL is a wet sieve particle size analyzer designed to measure materials down to 10 microns. The Viblette is well suited for cohesive or sticky materials that tend to blind test sieve screens. Liquid is sprayed through a rotating nozzle above the sample while intense vibrating forces break up films and deagglomerates cohesive materials. The dispersed sample is then dried, weighed and analyzed.

LABORATORY & ANALYTICAL EQUIPMENT

MICRON POWDER CHARACTERISTICS TESTER PT-X

The model PT-X is the latest model of the Hosokawa Micron Powder Characteristics Tester. It utilizes state of the art features to identify the specific characteristics of powdered samples for a wide range of applications. It is equipped with user friendly, multi-language software, which determines over 10 different material characteristics such as angle of repose, cohesion, aerated and tapped bulk density, uniformity and compressibility.

MIKRO® LPM LABORATORY PIN MILL

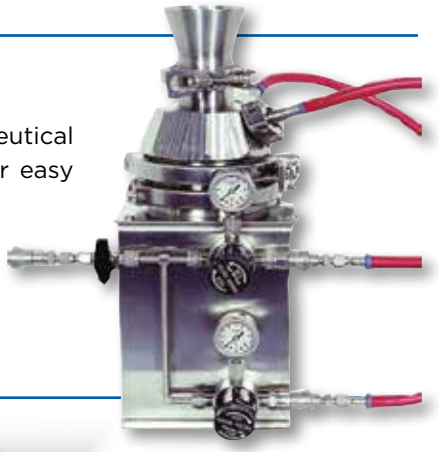
The Mikro® LPM Laboratory Pin Mill is the smallest model in the UMP line used for small sample grinding of 5 to 100 grams. The device is capable of producing materials down to D97 = 35 µm. This compact model has self-contained controls, product collection and can be operated in a small glove box or flexible isolator.

ALPINE® PICOLINE

The Alpine® Picoline is a series of miniature laboratory machines for processing samples down to 1 gram. The Picoline is ideally suited for research and development or for manufacturing expensive materials such as nanoparticles, pharmaceuticals, plastics, ceramics and specialty chemicals. The Picoline has a universal platform that includes all the necessary controls and mechanical components to operate different interchangeable process devices.

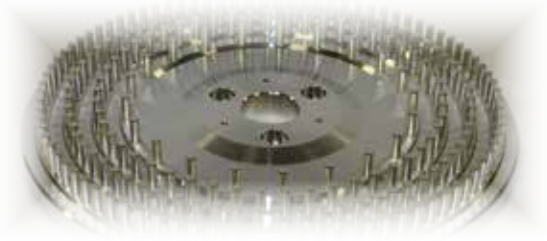
ALPINE® 50 AS SPIRAL JET MILL

The Alpine® 50 AS Spiral Jet Mill is designed for the micronization of pharmaceutical powders for laboratory research down to D97 = 3 µm. The AS is designed for easy cleaning CIP/SIP and has no moving parts. Material is injected into the grinding zone and accelerated by means of an injection gas nozzle. Material flows around the perimeter of the mill wall in a spiral manner. As material passes each additional high pressure gas port, it is reduced by particle-to-particle attrition and by impact against the mill wall.



OTHER LAB TECHNOLOGIES

- Mikro® Pneumatic & Vibratory Feeders
- Alpine® 100 AFG Multi-Processor
- Mikro® High Efficiency Cyclone
- Micron Labomixer LV
- Vrieco-Nauta® Mini Cyclomix



COMPACTION & DRY GRANULATION SYSTEMS

In some chemical processes, dust free bulk materials are required. Briquetting & granulation are used to agglomerate chemicals with or without the aid of binding agents so that powders can be safely and easily handled. These processes can also increase bulk density and therefore improve shipping efficiency

ALPINE® PHARMAPAKTOR

- Small throughput capacities: 50 – 800 kg/h
- Constructed in stainless steel for pharmaceutical & food grade applications
- Designed for high compression forces while being easy to clean and maintain

ALPINE® KOMPAKTOR

Alpine® Kompaktors are designed for compaction, granulation and briquetting of chemical and mineral materials.

- Roller gaps are controlled and adjusted hydraulically
- Contact surfaces are available in mild or stainless steel
- Suitable for abrasive products, light materials & gas tight operation

TYPE ARC - CS

- Small compactor for laboratory & throughputs up to 800 kg/h
- Cantilever shaft design

TYPE ARC - MS

- Compactor for medium and high throughputs 0.5 to 120 t/h
- Middle shaft design

TYPE ARC - HK

- Special design for briquetting of ultra-fine charcoal dust

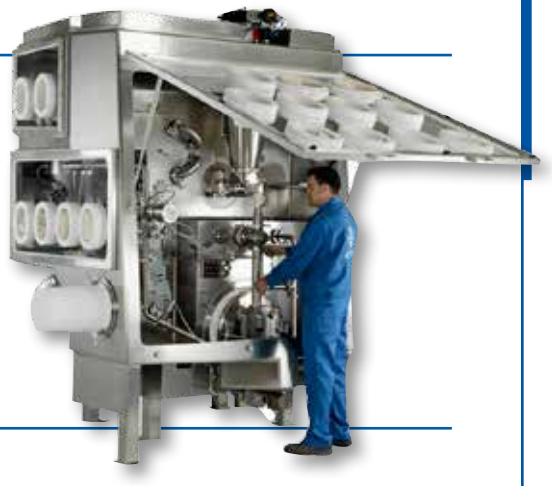
OTHER COMPACTION EQUIPMENT

- Alpine® High Pressure Roller Mill
- Alpine® Flake Crusher
- Alpine® Bexmill
- Alpine® Pre-Crusher
- Alpine® Gear Pelletizer
- Alpine® Bextruder
- Alpine® Bexroller

CONTAINMENT, ISOLATION AND FILLING, & WEIGHING

VITALAIR DOWNFLOW BOOTHS

Vitalair Downflow Booths protect operators from harmful dust and vapors generated during material handling processes by drawing contaminated air downwards, away from the breathing zone. These systems can achieve operator exposure levels (OEL) typically between 10 to 100 µg/m^3 or better. The fully customizable booths provide safer working environments for operators during material handling, transferring, sampling and loading processes.



RIGID WALL ISOLATORS

Hosokawa designs and builds a full range of pharmaceutical isolators including systems which are designed to achieve occupational exposure limits (OELs) down to 10 ng/m^3. The development of increasingly potent and potentially toxic pharmaceutical products and chemicals has led to demands for increased operator protection from exposure to harmful dusts. They are ideal for such critical processes as milling, micronizing, drying, dispensing and product pack off.

STOTT FILLING & WEIGHING SYSTEMS

Accurate weight controlled filling systems from Hosokawa maintain the highest standards of hygiene, dust control and product integrity. The Stott Filling and Weighing System delivers stable and repeatable weight readings with accuracies as high as +/- 0.10 g to meet exact product weight specifications. All Hosokawa filling systems incorporate internal filter and purge facilities. In cases where containment of the powder is required, Stott Filling and Weighing Systems can be incorporated within isolators, downflow booths and laminar flow booths to protect operators from potentially hazardous dust exposure.

STOTT HYGIENIC PACKING HEADS

The Stott Hygienic Packing Head provides a dust tight seal when transferring powder materials into IBCs or plastic bags. It utilizes an inflatable gasket to form a secure and air tight seal between material containers. Continuous liner options are available for high containment applications.

HOSOKAWA SERVICES

AFTERMARKET DEPARTMENT

Hosokawa manufactures some of the most sophisticated and dependable processing systems in the world. Although all of our equipment comes with our commitment to quality, parts do wear out over time and equipment requires service. The Hosokawa Aftermarket Department is committed to providing superior customer service and quick resolution to any production interruptions.

HOSOKAWA BRAND PARTS

Our Aftermarket Department highly recommends replacing worn or broken parts with Hosokawa brand parts. OEM components are specifically engineered and manufactured to meet your exact system specifications. The Aftermarket Department stocks over 25,000 different Mikro brand parts and assemblies. Many parts can be shipped in 24 hours, however, if production interruptions would seriously impact your bottom line, consider stocking parts from your equipment's recommended spare parts list. Our Aftermarket parts specialist can assist you with maintaining an essential parts inventory.

Mikro Pulverizer® Rotor Assembly

Mikro ACM® Rotor Disc

SERVICE & MAINTENANCE

Hosokawa's service technicians are highly trained field engineers with the equipment and process knowledge needed to quickly diagnose and repair your system. Our service technicians can offer a wide range of services.

- Maintenance Programs
- Repairs & Rebuilds
- Evaluation & Analysis
- On-Site Training
- Process Optimization
- Upgrades & Retrofits
- Emergency Service & Trouble Shooting

HOSOKAWA SERVICES

CONTRACT MANUFACTURING

Hosokawa offers a wide range of contract manufacturing services for chemical & mineral applications including coarse to fine size reduction, classification, mixing and blending and particle analysis. As an established leader in process equipment and systems, we offer the advantage of process expertise, and bring our customers years of experience in understanding the performance potential with a wide range of powders. With over 20 different powder processing systems available, Hosokawa is prepared to handle a wide range of contract manufacturing services.

Our facility is equipped with:

- Mikro ACM® Air Classifying Mills for medium to fine size reduction
- Alpine AFG® Fluidized Bed Jet Mills for ultrafine size reduction
- Mikro Pulverizer® Hammer & Screen Mills for coarse to medium grinding
- Systems for fine & ultrafine classification and particle separation
- Mixing & Blending equipment for batches up to 1,000 liters
- Complete analytical capabilities & product development services

TEST CENTER & ANALYTICAL LAB

Hosokawa Micron Powder Systems invites our customers to visit our Summit, New Jersey facility to observe the testing and evaluation of their product. Hosokawa has a highly skilled team of laboratory engineers with decades of experience who can discuss your test results with you. We offer an extensive selection of process equipment for material trials and analysis. Our test center features equipment for R&D testing and larger production scale systems for scale up evaluation.

Technical Capabilities

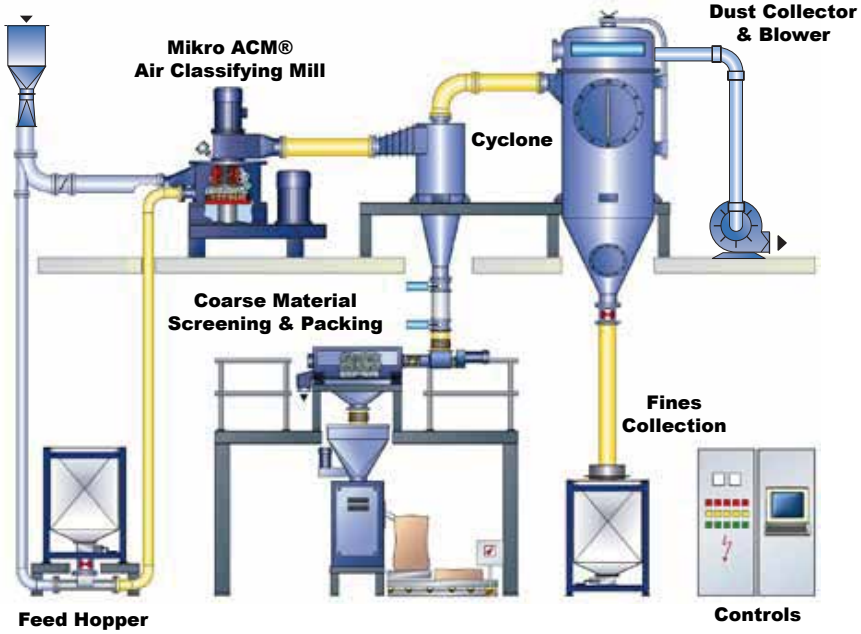
- Hammer & Screen Mills
- Air Classifying Mills
- Pin Mills
- Pre-crushers & Choppers
- Fluidized Bed & Spiral Jet Mills
- Compaction & Flake Crushing
- Granulators
- Flash & Vacuum Dryers
- Air Classifiers
- Low Intensity & High Shear Mixers
- Dry & Wet Particle Size Analyzers
- Powder Characteristics Tester
- Laser Diffraction Analyzer

OTHER SERVICES

- System & Equipment Engineering
- Equipment Validation & Commissioning
- Upgrade & Retrofit Equipment
- Refurbishing, Rebuilds, & Repairs
- Training & Educational Programs
- Process Equipment Rentals
- System Optimization

CHEMICALS

Hosokawa has an extensive history of processing chemical materials and can offer more than 90 different size reduction and powder processing systems to meet most requirements. Our test center has conducted evaluations and trials on thousands of chemical materials and has the expertise to provide equipment solutions for almost any dry chemical application.



Typical milling system for chemical applications requiring fine size reduction

COMMON MATERIALS & APPLICATIONS

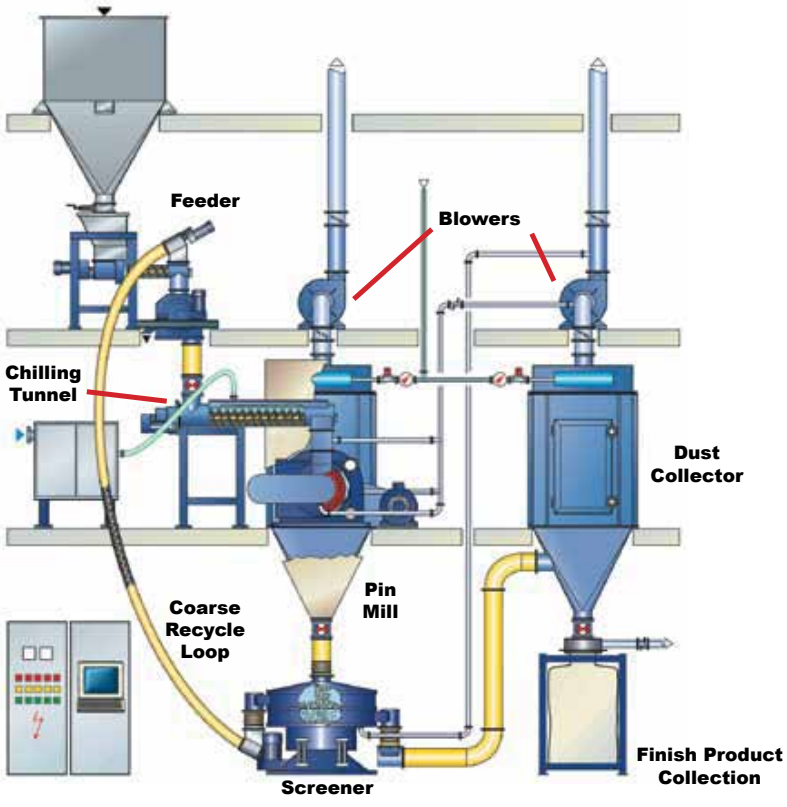
- Abrasives
- Aluminum Hydroxide
- Carbon Black
- Pyrolysis Carbon Black
- Cellulose
- Chemical Salts
- Color Suspensions
- Detergents
- Dyestuff
- E-PVC
- Explosives
- Fertilizer
- Lithium Carbonate
- Magnesium Hydroxide
- Metallic Powders
- Natural Rubber
- Phosphates
- Pigments
- Plastic Fibers
- Polyethylene
- Polystyrene
- Polyurethane
- Powder Coatings
- PVC
- Silica
- Silicone
- Sodium Bicarbonate
- Synthetic Resin
- Synthetic Rubber
- Teflon
- Tire Pyrolysis
- Toner
- Trona
- Tungsten carbide

FOOD

Hosokawa Micron Powder Systems provides the Food industry with some of the most reliable processing equipment available in today's market. With thousands of installations around the world, Hosokawa has the expertise to offer equipment and process solutions for most food processing applications involving size reduction, mixing, classification and drying. In addition to process equipment, Hosokawa offers fill weigh systems which can be integrated with our containment line of equipment to provide a dust free environment for packaging or handling of materials.

COMMON MATERIALS & APPLICATIONS

- Animal Feed
- Barley
- Berry Seeds
- Bran
- Calcium Phosphate
- Cellulose Powder
- Chocolate Crumb
- Cocoa
- Coffee Beans
- Corn Starch
- Dried Fruits
- Fiber
- Fish Meal
- Flavorings
- Food Seasonings
- Gelatin
- Herbs
- Lactose
- Legumes
- Milk Powders
- Mustard Seed
- Oats
- Pasta
- Peas
- Pectin
- Pigments
- Plant Extracts
- Potato
- Potato Starch
- Rice & Rice Bran
- Salt
- Seaweed
- Sesame Seed
- Soy Protein
- Soya
- Spices
- Sugar
- Tea Leaves
- Thickening agents
- Tri-Calcium
- Citrate
- Vitamins
- Wheat

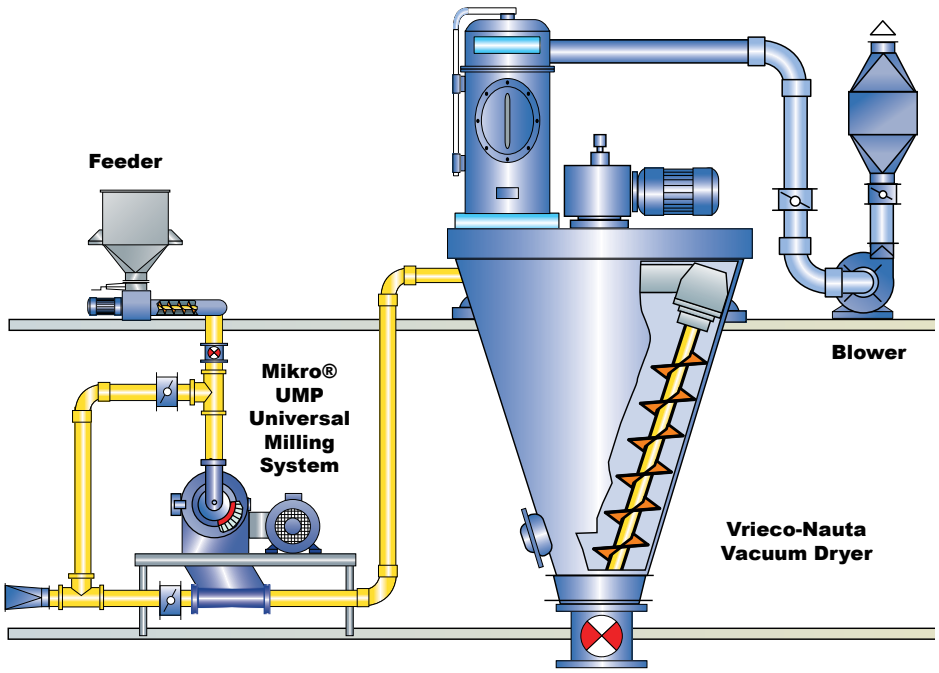


Cryogenic pin milling system with product screening & coarse recycling

PHARMACEUTICALS

Hosokawa Micron Powder Systems prides itself in understanding the needs and requirements of the pharmaceutical industry. Hosokawa is the industry leader in providing unique solutions to demanding cleaning requirements. Hosokawa globally serves the Pharmaceutical industry for size reduction, classification, mixing and blending, drying, hygienic filling / weighing and high containment applications and can provide fully validated systems.

To further enhance our process solutions, HMPS employs the latest control technologies (PLC / SCADA Systems) and works with our customers to comply with CFR 21 Part 11 (Electronic Signature & Electronic Records) as well as full system automation including Process Analytical Technologies (PAT) utilizing methods such as closed looped particle size analysis, mixing sensors etc. Through the use of our wide variety of process equipment located in our two clean processing suites, Hosokawa provides excellent facilities for testing and analyzing your materials to assist in new product & process development.



Milling & drying system for pharmaceutical grade materials

COMMON MATERIALS & APPLICATIONS

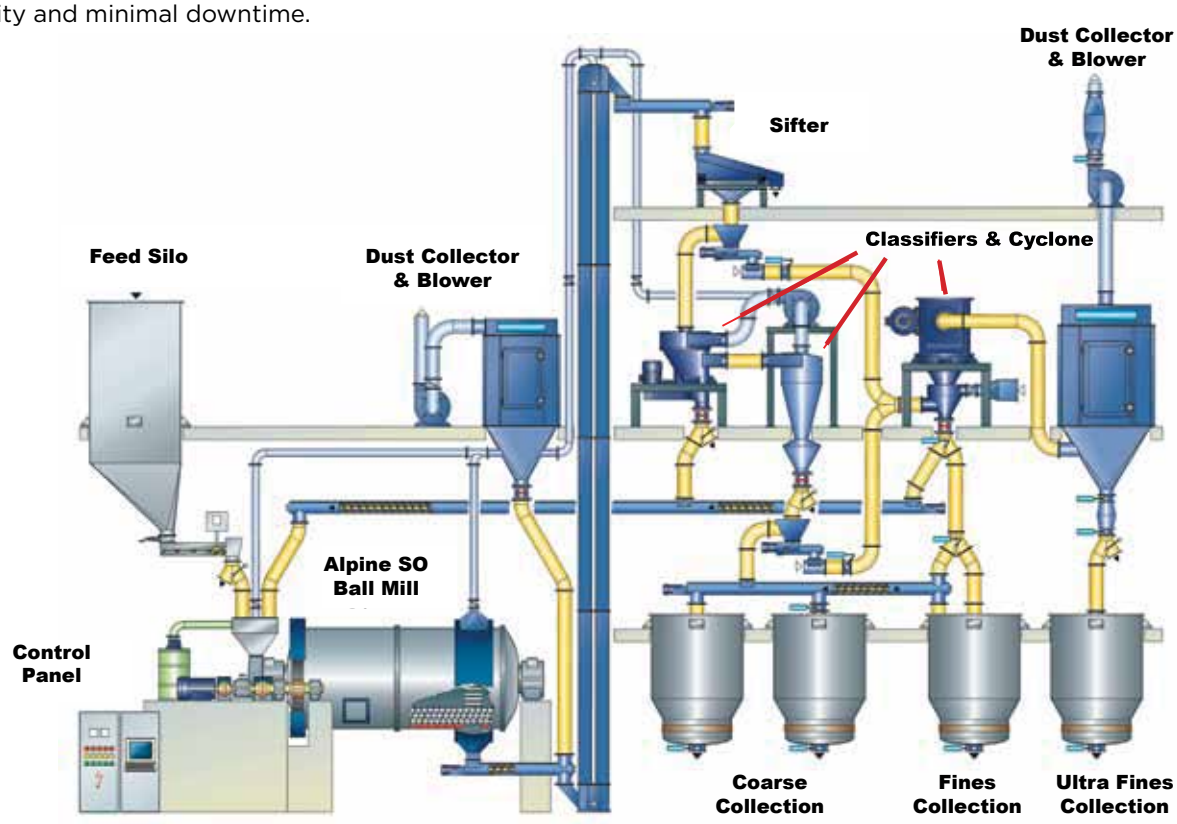
- APIs
- Excipients
- Nutraceuticals
- Homeopathic products
- Lactose
- Vitamins
- Cell Culture Media
- Inhalants
- Hormones
- Proteins
- Cellulose
- Dental Compounds

MINERALS

COMMON MATERIALS & APPLICATIONS

- Aluminum silicate
- Bentonite
- Calcium Carbonate
- Catalysts
- Ceramics
- Diatomaceous Earth
- Feldspar
- Fillers
- Glass
- Graphite
- Gypsum
- Kaolin
- Limestone
- Metallic Powders
- Quartz
- Rare Earths
- Refractories
- Talc
- Zinc oxide
- Zircon sand

Hosokawa's heavy duty milling and classification systems are well suited for hard and abrasive materials commonly processed in mineral applications. Our equipment is capable of grinding materials with a Moh's hardness of 9 down to D97 < 2µm at high production rates with narrow particle size distribution. Hosokawa offers state-of-the-art technology that is renowned for its high efficiency and reliability. Every system is engineered for high performance with maximum durability and minimal downtime.



Ball mill system with classifier to recycle oversized particles

OUR HISTORY

HISTORY IN NEW JERSEY

Hosokawa Micron Powder Systems has an extensive history of innovation, research and development. Over the last 90 years, Hosokawa Micron Powder Systems has been the leader in providing size reduction systems and powder processing solutions for the Chemical, Pharmaceutical, Mineral, Food, Plastics and Cosmetic industries.

Annual company picnic in 1951

- In 1923, the Pulverizing Machinery Company was founded
- The invention of the Mikro Pulverizer® Hammer & Screen Mill was the first fine grinding mill of its type at that time.
- During the World War II, the company processed millions of pounds of Magnesium for the war effort.
- To address the demand for finer materials, the company developed the first air classifying mill in the 1950's, the Mikro Atomizer®
- The development of the highly successful Mikro ACM® Air Classifying Mill followed in 1962.
- In 1985, the company was acquired by the Hosokawa Micron Group and was renamed Hosokawa Micron Powder Systems
- A new test center was built in 1988 to showcase a wide range of Hosokawa technologies for customer demonstrations.
- Hosokawa begins offering contract toll processing services for Chemical and Mineral applications in 1992.
- A new pharmaceutical testing facility was completed in 1995.
- The Mikro LGM® Long Gap Mill is introduced in 2001 to address the need for specialty grinding applications
- In 2003, The Micron Air Jet Sieve MAJSc, Hosokawa's first computer assisted particle analyzer was introduced
- The Mikro® UMP Universal Milling System was developed in 2007, offering a new design & the flexibility of various milling options.
- The Mikro E-ACM, specifically designed for grit reduction applications was introduced in 2008.
- In 2009, the company establishes the Hosokawa Educational Center, a free online library of educational videos and resources.
- The New Easy Access Mikro ACM® Air Classifying Mill was introduced in 2011 as a variation of the original ACM. It was specifically designed for food & pharmaceutical applications that require frequent and thorough equipment cleaning.
- In 2013, the Mikro Air Jet Sieve™ (MAJSx) was developed and introduced as Hosokawa's newest particle size analyzer.
- The new Mikro® Jet Fluid Energy Mill an economical ultra-fine jet milling system was introduced to the market in 2015.

HOSOKAWA MICRON GROUP HISTORY

Hosokawa Micron Corporation was established in 1916 as Hosokawa Iron Works in Osaka, Japan. Today, the Hosokawa Micron Group is a world leader in providing process solutions in the fields of powder and particle processing technology. Hosokawa Micron Group maintains facilities for research, engineering, manufacturing and service throughout the Americas, Asia/Oceania, and Europe. With over 100 years of experience, the Hosokawa Micron Group continues to advance the field of powder and particle technology for the future with the development and commercialization of ultrafine composite particles in the rapidly expanding field of Nano Particle technology.

FIND YOUR HOSOKAWA OFFICE

HOSOKAWA MICRON POWDER SYSTEMS

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Phone: (908) 273-6360 | Fax: (908) 273-7432
www.HosokawaEquipment.com
help@hmps.hosokawa.com

Providing size reduction systems and powder processing solutions in North, Central and South America for chemical, food, pharmaceutical, mineral, cosmetic and plastics industries.

NORTH & SOUTH AMERICA

Hosokawa Micron Powder Systems
Summit, New Jersey, USA

Hosokawa Polymer Systems
Berlin, Connecticut, USA

Hosokawa Micron de Mexico
Mexico City, Mexico

EUROPE & AFRICA

Hosokawa Micron Limited
Runcorn, United Kingdom

Hosokawa Micron France
Evry, Cedex, France

Hosokawa Micron B.V.
Doetinchem, The Netherlands

Hosokawa Bepex GmbH
Leingarten, Germany

Hosokawa Alpine AG
Augsburg, Germany

Hosokawa Micron Powders
Cologne, Germany

Hosokawa Micron St. Petersburg
St. Petersburg, Russia

ASIA & AUSTRAILIA

Hosokawa Micron Corporation Headquarters
Osaka, Japan

Hosokawa Micron Limited
Seoul, South Korea

Hosokawa Micron Powder Machinery Company Limited
Shanghai, China

Hosokawa Micron SDN
Kuala Lumpur, Malaysia

Hosokawa Micron Pvt. Limited
Chennai, India

EQUIPMENT & SERVICES

HOSOKAWA
MICRON POWDER SYSTEMS

Hosokawa Micron Powder Systems, located in Summit, New Jersey is a member of the Hosokawa Micron Group. We are a leading provider of equipment and systems for Size Reduction, Classification, Mixing/Blending, Drying, Particle Analysis, Compaction, Granulation as well as a full line of laboratory and analytical equipment. We also provide Contract Manufacturing, Complete Aftermarket Services and OEM parts, Equipment Leasing, Refurbishing, Product Development Services and Educational Programming. We serve the Chemical, Mineral, Food, Pharmaceutical, Cosmetic and Plastics processing industries.

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