



SCAN ME



Welcome to
PRATER[®]
INDUSTRIES



2 Sammons Court
Bolingbrook, IL 60440



(844) 942-2966



www.praterindustries.com

www.praterindustries.com

ABOUT PRATER

Prater Industries is a dynamic manufacturing company with a century-old tradition of providing excellence in industrial equipment and solutions with a future-focused mindset. With a long history of being at the forefront of manufacturing innovations, we continue to anticipate changes in regulations, technology, and customer demands, and then work hard to meet these challenges head-on. We are an energetic team, always looking for new ways to transform and be at the leading edge of particle separation, size-reduction, and process solution challenges.

Founded in 1925 by Ralph Prater, Prater Industries (then known as the Prater Pulverizing Company) began by designing and manufacturing hammermills for the growing feed industry. The company continued as an intrepid, family-run business for decades.

As new opportunities presented themselves, Prater's entrepreneurial spirit kicked in to produce a wide variety of novel product and application solutions, including lump/cake/flake breakers, hammermills, fine grinders, air classifying mills, deck screeners, rotary sifters, and air classifiers as well as a full line of rotary airlock valves.

Today, Prater Industries operates under the IMI Holding Corporation umbrella and continues to thrive by providing ingenious and creative solutions for a wide variety of industrial applications.



WHY DO WE EXIST ?

Prater brings people together to provide process solutions that feed, nurture, and house the world.



WHAT DO WE DO ?

We develop and provide innovative, tailored material size reduction, separations and process solutions.



HOW DO WE BEHAVE ?

- Integrity
- Delivering Results
- Customer Focus
- Resilience
- Innovation
- Teamwork & Collaboration
- Continuous Improvement
- Adapting to Change



HOW WILL WE SUCCEED ?

We will create economic value centered on product and service knowledge.

We rely on delivering a higher level of application knowledge to consistently beat our competition



SPARE PARTS & SERVICE

Consult with our experienced, professional Customer Service Representatives with any and all equipment support inquiries.



BROWSE OUR PRODUCTS



Airlocks



Lump Breakers



Hammer Mills



Fine Grinders



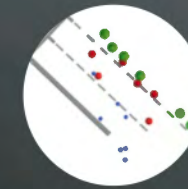
Rotormill



Air Classifying Mills



Rotary Sifters



Vibrating Screens



Air Classifiers



Rotordryer

Rotary Airlock Valve Feeders manufactured by Prater are designed to provide improved performance to bulk material processing and production operations. In dry material metering applications, our valves ensure accurate material loading and unloading while also functioning as highly efficient rotary airlocks; minimizing pressure loss throughout the system.



Our customers rely on Prater Rotary Airlock Valve Feeders to perform various functions such as:

- Feed process materials into pneumatic conveying applications
- Regulate the flow of material from one chamber to another
- Metering of process materials in loading and unloading applications
- Minimize air loss while transferring material between vessels with differing pressures
- Operating up to 500°F for standard models and up to 1000°F for custom models
- Compliance with NFPA-69 standards as well as being third-party tested

Prater's Rotary Airlock Valves can be configured and customized for most application requirements, especially for materials that may be highly abrasive. We understand the need for feeding more material at lower speeds, which is why our rotary airlock feeders are manufactured with larger pockets. In turn, this design minimizes air leakage, provides the benefit of longer life, and ensures a higher return on investment. Our rotary valves perform well wherever dry free-flowing powders, granules, crystals, or pellets are being processed.

APPLICATION SPECIFIC MODELS

- **Heavy Duty Models:** Prater heavy-duty PAV series is the workhorse of the industry with numerous options for rotor designs, seals, and accessories
- **Quick Cleaning Models:** Prater QTA and BAV series are designed with direct drive and 2-piece rotors for easy, tool-free maintenance. Pre-gapped rotors eliminate the need for post-installation adjustment. The BAV series is equipped with a linear rail system for easy rotor setup and removals

- **Abrasion Resistant Models:** This is the most durable model available anywhere. Hardened rotor tips, premium seals and specialty (tungsten, chrome, or ceramic) wear coatings are standard. Manufactured especially for use with abrasive materials
- **Blow-Through Models:** Prater's blow-through series is designed and manufactured specifically for applications that require discharging into a pneumatic conveying line. These Airlocks are ideal for free-flowing materials that require some assistance in clearing the rotor vane pockets. The design of the Prater Blow-Thru Airlock makes installation possible in low headroom applications and retrofits of existing rotary valves

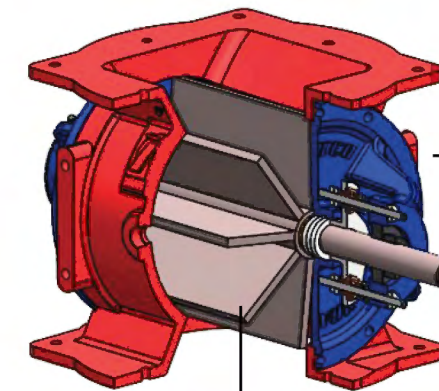
KEY FEATURES AND BENEFITS

Housings

- Precision machined, heavy-duty cast iron or stainless steel construction providing long life and durability with minimal air loss at operating temperature ranges. Designed for up to 15 psi differential pressure
- Our universal flange allows for the flange hole mounting pattern to match the customer needs
- CFR (Cubic Feet per Revolution): Industry leading CFR allowing up to 50% more volume per revolution. This enables the rotor to run at lower speeds than other manufacturers, increasing efficiency and equipment life. Alternatively it may allow for a smaller Prater airlock
- Large feed throat design for maximum fill of rotor pockets
- Compact size and head height allows for easy installation or replacement of most competitor airlocks
- Standard transitions required to replace competitor airlocks available

Drives

- Consistent 5.1 torque ensured by inverter-duty motors with integrated gearboxes and heavy-duty chain drives (Direct-drive available)
- Prater standard drives are a premium design that offers more HP for what others consider a heavy duty upgrade
- Quadralip seals provide maximum protection against contaminants
 - Uni-case housing ensures maximum oil, seal, and bearing lifespans while running with less noise



End plates

- Easy maintenance ensured with quick-change packings
- Designed with more space between the bearing and seal plate that allows for packing change with the valve fully assembled

Bearings

- Easily replaceable, outboard-mounted, maintenance-free lubricated bearings
- Bearings sealed for life to provide no-maintenance-required airlock lifecycle

Rotors

- Precision machined fabrication for industry-leading rotor-to-housing design clearance minimizes air leakage
- Eight-blade design for smooth operation and maximum seal ensuring minimal deflection as compared to 6 blade designs
- Custom-designed application solutions are available

Packing Glands

- Self-adjusting design ensures consistent load on packing to reduce leakage and help extend shaft seal life. Designed for simple maintenance

Lump Breakers and Flake Breakers



Lump breakers, also referred to as lump crushers or flake breakers, are required particle size reduction equipment for most material handling systems. They operate by introducing agglomerated product through an opening in the top of the unit. The lump breaking happens when the product's particles are crushed by the rotating blades as they pass through a set of stationary comb-like blades. The agglomerated product particles continue to be reduced in size until they are small enough to pass through and discharge below the unit through the optional screen.

A common application for our lump breakers is to reduce deliberately compacted materials or natural agglomerations which often occurs during production, storage or shipping.

KEY BENEFITS

Prater Single-Shaft Lump Breakers (also called Flake Breakers and vice versa) provide a simple, durable, and economical means of conditioning materials that have become compacted or lumpy due to storage, transport, or blending. Simultaneous application of gentle impact and shear results in free-flowing materials with uniform size distribution. Many industries require size uniformity when blending, conveying, and packaging their finished products. Prater Lump Breakers provide cost savings, streamlined operating efficiency, and enhanced product quality.

Prater Dual-Shaft Flake Breakers provide the same benefit as Prater Single-Shaft Lump Breakers yet with a lower profile. Equipped with counter-rotating blades, these flake breakers are ideal for conditioning or granulating materials purposely compacted in densification equipment, recycling, or disposal operations.

These precision tools are helpful with a variety of products, including:

- Sugar
- Salt
- Resins
- Pigments
- Pasta
- Nutraceuticals
- Ceramic powders
- Kiln dust
- Hemp
- Filter cakes
- Fertilizers
- Chemicals
- Cereals

THEORY OF OPERATION

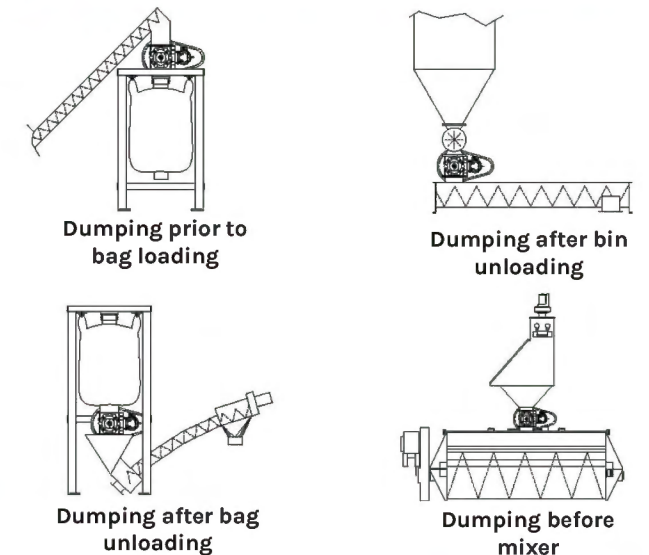
Material is gravity-fed into the top of the unit where rotor blades impact the lumpy or compacted material. Blades intermesh with each other or with stationary blades to ensure sufficient material contact. For harder lumps, an optional screen can be used to extend retention time. Fully de-lumped material exits by gravity discharge through the optional screen. Screens with different openings are easily interchanged to accommodate a variety of material types and to allow for specific output characteristics. Large operating clearances and low operating speed minimizes shear and impact that minimizes dust generation and size reduction of particles.



KEY FEATURES

- Durable, heavy-duty construction ensuring long service lifespan
- Mild steel or stainless steel models available, depending upon the application
- Easy installation and maintenance
- Easy replacement of internal components
- A wide spectrum of blade designs, tailored for the specific application
- Externally mounted bearings with optional air-purge seals to mitigate contamination
- Customizable screen sizes for any sizing application
- V-belt, cogged belt, or direct drive designs available
- Low-profile design fits in tight spaces, simplifies installation
- Optional wear liners and wear-resistant blades available
- Quick-clean capability for minimizing downtime
- Sanitary construction options as required by the application
- Integrated designs with bag-dump workstations or bulk bag unloading systems available
- Superior de-lumping for optimized product handling
- Heavy-duty dual- or single-shaft models available

SYSTEM INTEGRATION EXAMPLE



Full Screen Hammer Mills



The first product Prater (formerly Prater Pulverizer) developed was a hammer mill, and since that time our company has provided thousands of mills to customers in various industries. For over 90 years, we have relied on advanced technology to properly engineer our mills for new applications. Prater continues to provide solutions for some of the most demanding processing challenges with our innovative designs, industry expertise, and advancements that provide a shorter wait for your business' return on investment. Our Hammer Mills are commonly used for many different particle reduction applications, including those that require high capacities, extreme power efficiency, and uniform particle size.

With a Prater hammer mill, you can increase the mill's throughput capacity without having to increase its power requirements. Companies both large and small rely on Prater for efficient milling solutions and proven expertise.

KEY BENEFITS

Prater Hammer Mills are the premier choice for applications requiring high capacities, operational efficiency, and uniform particle size distributions. All Prater Hammer mills are equipped with our proprietary Full-Screen design that enhances end-product quality while simultaneously extending unit lifespan. Major applications include:

- Conditioning of agglomerated blends
- Granulating of almost any material
- Recycling operations
- Reworking of off-spec products

These hammer mills are ideal for a variety of products, including:

- Agricultural products
- Biomass materials
- Ceramics
- Cereals
- Chemicals
- Food processing ingredients
- Hemp
- Minerals
- Pigments
- Pulp and paper
- Wood

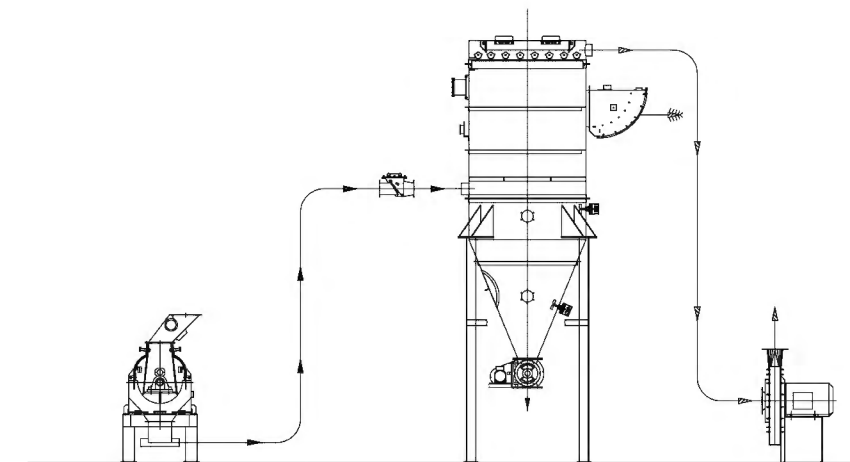
KEY FEATURES

- Durable, heavy-duty fabrication designed for superior operation and long lifespan
- 100% of screen utilized for maximum efficiency
- A variety of hammer sizes, patterns, and screen openings available to tailor parameters for each application
- Balanced HP to screen area for maximum power efficiency
- Symmetrical, precision balanced, and reversible rotors
- Durable pillow-block bearings enhance unit lifespan
- Rigid-frame screen mounting for uniform hammer-to-screen clearance
- Unique frame track designed for easy screen removal and exchange without tools
- Large access doors make cleaning and maintenance simple and quick
- Stainless steel and sanitary design available
- Optional wear liners and wear-resistant hammers for abrasive products

THEORY OF OPERATION

The Prater Full-Screen Hammer Mill utilizes a specially shaped grinding chamber designed with distinct grind-and-release zones. Coarse raw product is fed into the chamber, using a rotary feeder or screw, by way of a product inlet at the top of the unit. High-speed hammers impact coarse material against stationary cutting plates fixed to the top of the pre-grind chamber. Impact with the cutting plates decreases the velocity of the material and guides it into the hammer path for maximum impact speed differential. Screen-to-hammer clearance is minimized at the 3 o'clock and 9 o'clock positions to amplify impact. As material moves toward the bottom of the chamber, hammer-to-screen clearance increases toward the 6 o'clock position to help with deceleration and egress of fully conditioned particles through the sizing screen. An adjustable diverter system prevents unfinished product from re-entering the inlet and product feed stream. Finished product is discharged via a hopper below the mill where a mechanical conveyor or pneumatic system can be utilized to remove the ground material. Prater provides a full inventory of hammers, screens, and other grinding elements that are available to satisfy almost any grinding application.

SYSTEM INTEGRATION EXAMPLE



Mega Mills



The Prater Mega Hammer Mill is designed to fill the gap between our standard hammer mills and our fine grinders.

KEY BENEFITS

The Mega Mill provides uniform grinding with minimal heat build-up. A unique cantilevered grinding rotor results in smooth, quiet operation that can be maintained 24 hours a day, 7 days a week. Prater's Mega Mills run more efficiently and with less airflow than conventional hammer mills. Our proprietary fabrication results in reduced downtime, low maintenance, and minimal power requirements. You will obtain a higher quality material and an increase in your bottom line.

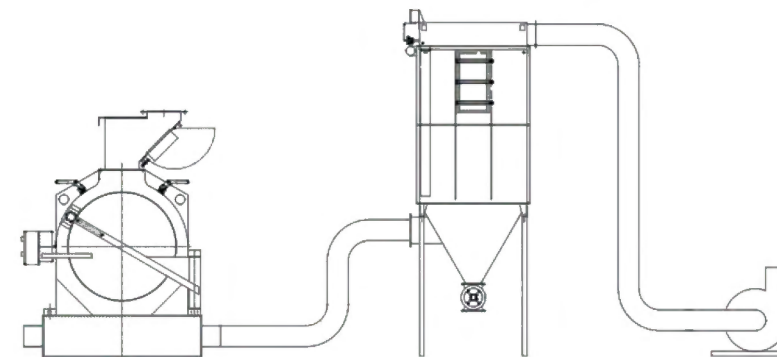
The Prater Mega Hammer Mill is ideal for the following materials and products:

- Animal feeds
- Biomass
- Cereals and grains
- Diatomaceous earth
- Fertilizers
- Hemp
- Pulses
- Salt
- Spices
- Sugar

KEY FEATURES

- Heavy-duty fabrication designed for long life
- Unique cantilever rotor design coupled with large hinged doors for ease of maintenance and cleaning
- Easy removal of rotor and screens
- Dynamically balanced rotor assembly and precision built bearing assembly designed for smooth performance and long life
- A dust-tight design ideal for use in a pneumatic-conveyor system
- Maximum screen-to-HP ratio ensures optimum capacity and uniform grinding with low heat buildup
- Multiple hammer styles and shapes for optimized processing of a wide variety of materials and products
- Strategically located interrupter plates amplify grinding action and allow for easy screen removal

SYSTEM INTEGRATION EXAMPLE

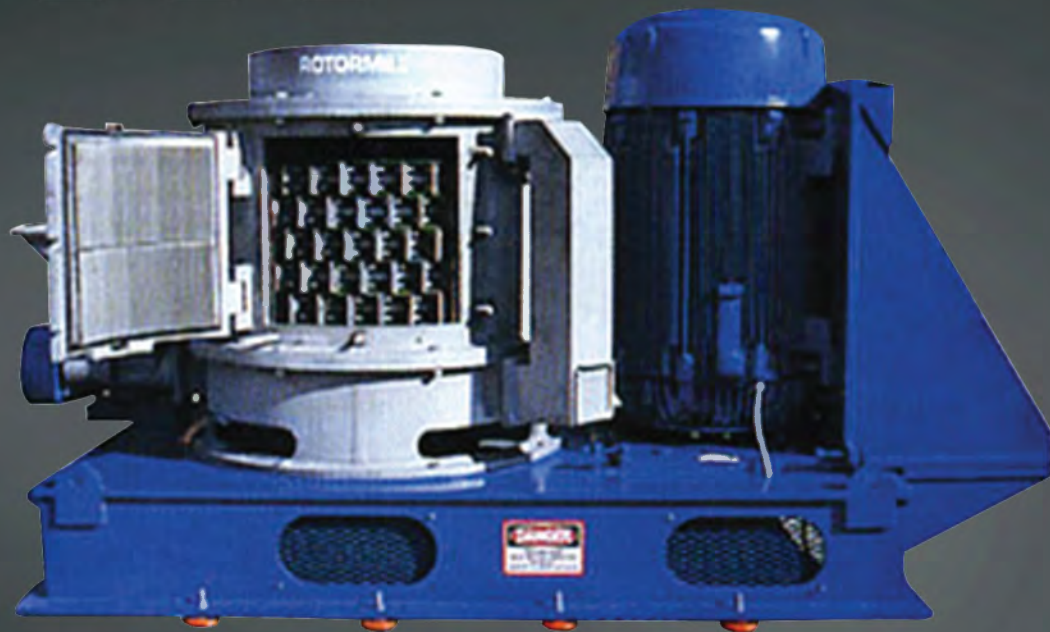


THEORY OF OPERATION

The Prater Mega Mill works on the principle of impact to crush particles. The Prater Mega Mill consists of a high-speed rotor with hammers fixed to support pins at their pivot point and equally spaced around the grinding chamber in a specific pattern. The rotor is supported by precision bearings, allowing the hammers to operate with very close tolerance to one or more screens fixed within the frame. Size reduction is created by the repeated impact from the hammers coupled with collisions as particles are accelerated against one another, the interrupter plates, and the screen surface.

Capacity and particle-size requirements can be regulated as needed by changing the size and number of holes in the screen, the tip speed of the hammers, the number and thickness of hammers, and the clearance between the hammers and the screens.

IPEC Rotormill



IPEC was established in 1984 and began manufacturing and supplying Rotormills shortly thereafter. Prater Industries acquired IPEC and their product lines in 2021 to build on the IPEC legacy and allow Prater to reach a broader range of industries and applications. The IPEC Rotormill applies the operating concept of a “Long Gap Mill” because of the long annular gap path the process material takes from the inlet to the discharge. The grinding and milling occur from particle-on-particle collisions due to the extreme turbulence within the mill.

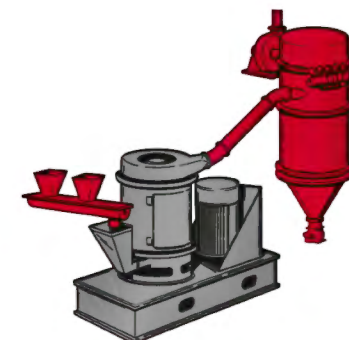
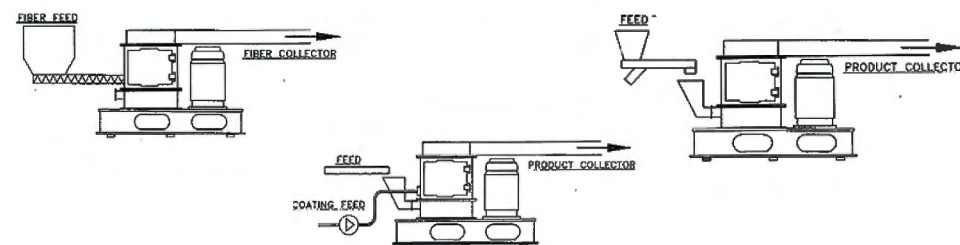
KEY FEATURES

- 10 models ranging in machine capabilities from 15 hp up to 750 hp
- Carbon or stainless-steel construction
- No special foundation required
- Adjustable air intake port
- Compact heavy-duty construction
- Heavy duty top and bottom bearings
- Rotor assembly dynamically balanced for smooth operation
- Large double doors provide easy access to interior
- Easy replacement or adjustment of internal parts
- Grinding plates and liners can be furnished with hardened material for extended life when grinding abrasive materials

THEORY OF OPERATION

- The pulverizing action of the Rotormill is supplied by a rotor which spins at high speed
- This rotor is supported by heavy duty bearings which are located at either end of the shaft. This provides the stability necessary for greater material loading while also extending bearing life. The bearings are out of the grinding chamber and are protected from contamination
- The rotor itself consists of two sections:
 - A - The lower section is a material distribution fan which provides the air flow for the grinding system. In addition, the fan helps to accelerate and distribute the feed material prior to the material entering the grinding chamber
 - B - The upper section is the grinding part of the Rotormill. It consists of several stages containing grinding plates which accelerate the air causing it to react with the grooved lining of the Rotormill. This interaction creates miniature pockets of rotating air at very high velocities. This air stream causes the particles to collide with each other and disintegrate while the heat caused by the size reduction is instantly absorbed by the rapidly moving air stream
- Adjustment of the grinding plates, the style of grinding plates, and air-flow, permit the fine milling of a wide variety of materials at high production rates without the temperature rise normally associated with the grinding of fine powders. In fact, many heat sensitive materials can be milled without cryogenic processing

SYSTEM INTEGRATION EXAMPLE



KEY BENEFITS

- By combining several operations such as de-agglomeration and surface coating into one operation, a Long Gap Mill eliminates the need for multiple material handling systems reducing cost and increasing process efficiencies
- Ability to grind materials that are difficult for a fine grinder or classifier mill such as:
 - Less friable products
 - Abrasive materials
- Continuous Fine Milling at high production rates
- Simultaneous Mixing or Coating during milling
- Fiber Fluffing

IPEC Rotordryer



IPEC was established in 1984 and began manufacturing and supplying Rotordryers shortly thereafter. Prater Industries acquired IPEC and their product lines in 2021 to build on the IPEC legacy and allow Prater to reach a broader range of industries and applications. The IPEC Rotordryer incorporates the concepts of the Rotormill along with a dryer system allowing the milling and drying of high moisture materials as well as slurries.

KEY FEATURES

- 10 models ranging in machine capabilities from 15 hp up to 750 hp
- Carbon or stainless-steel construction
- No special foundation required
- Adjustable air intake port
- Compact heavy-duty construction
- Heavy duty top and bottom bearings
- Rotor assembly dynamically balanced for smooth operation
- Large double doors provide easy access to interior
- Easy replacement or adjustment of internal parts
- Grinding plates and liners can be furnished with hardened material for extended life when grinding abrasive materials.

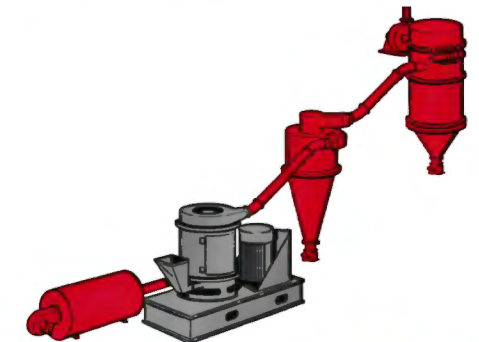
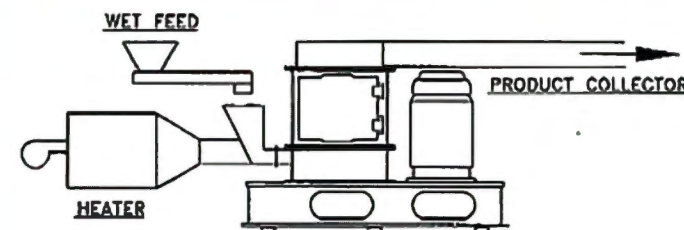
KEY BENEFITS

- By combining operations such as spin flash drying and milling, a Long Gap Mill with a dryer eliminates the need for multiple material handling systems which subsequently increases process efficiencies
- Ability to grind materials that are difficult for a fine grinder or classifier mill such as: Higher fat content and oily materials Slurries
- Simultaneous Drying & Milling of high moisture materials.

THEORY OF OPERATION

- The Rotordryer incorporates spin flash drying along with the pulverizing action of the Rotormill
- Depending upon moisture content, the material is fed into a hot air stream and then into the Rotordryer or augured into the Rotordryer from the side. The hot air for the Rotordryer is supplied via an electric or gas dryer
- This Rotordryer rotor is supported by heavy duty bearings which are located at either end of the shaft. This provides the stability necessary for greater material loading while also extending bearing life. The bearings are out of the grinding chamber and are protected from contamination
- The rotor itself consists of two sections:
 - A - The lower section is a fan which provides the air flow for the grinding system. In addition, the fan helps to accelerate and distribute the feed material prior to entering the grinding chamber
 - B - The upper section is the grinding part of the Rotordryer. It consists of several rows containing grinding plates which accelerate the air causing it to react with the grooved lining of the Rotordryer. This interaction creates miniature pockets of rotating air at very high velocities. This air stream causes the particles to collide with each other and disintegrate while the heat caused by the size reduction is instantly absorbed by the rapidly moving airstream
- Adjustment of the grinding plates, the style of grinding plates, and air-flow, permit the fine milling of a wide variety of materials at high production rates without the temperature rise normally associated with the grinding of fine powders. In fact, many heat sensitive materials can be milled without cryogenic processing

SYSTEM INTEGRATION EXAMPLE



Fine Grinding Mills



Prater Fine Grinders (M Series Mills) are specially designed and built to grind free-flowing materials as fine as 200 mesh (73 microns) and produce uniform, narrow particle size distributions.

KEY BENEFITS

Prater Fine Grinders' highly efficient design permits ease of access to all internal components: one bolt allows for quick removal of the rotor.

Prater Fine Grinding Mills come in six standard sizes, ranging from the 3 HP M-19 pilot-scale lab mill to the 300 HP M-101 model. All Prater Fine Grinders are designed with standard safety features, including a trapped keydoor safety interlock system that prevents unintended access to internal rotating parts during operation.

Prater Fine Grinders are designed and precision-built for maximum operational efficiency and years of trouble-free operation.

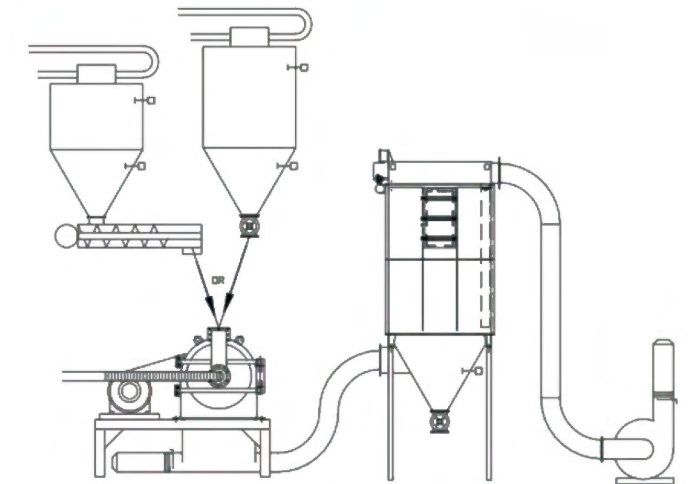
THEORY OF OPERATION

Prater Fine Grinders operate on the principle of high-speed impact. Raw material is metered into the center of the mill where rotor blades impact individual particles. Material is accelerated outward, creating more impact and shear across the face of stationary jaws and screens. These stationary surfaces also decelerate the particles, maximizing their impact speed differential as they rebound back into the rotor blade's path. When the particles are properly sized they are pulled through the screen apertures for transport to the next stage in the process.

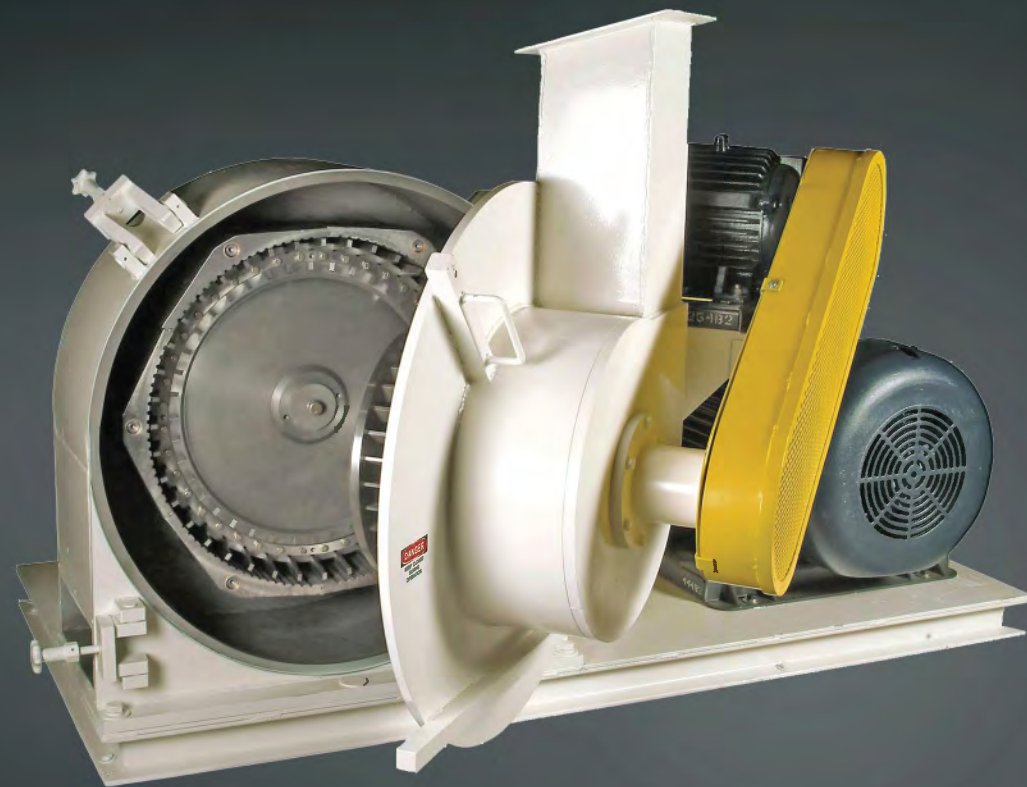
KEY FEATURES

- Durable, welded carbon steel or stainless steel construction
- Simple, single-stage grinding for most dry, free-flowing materials
- Precision tolerances between rotor blade and grinding jaw or screen for uniform size-reduction
- Large screen-to-horsepower ratio ensures maximum capacity for each model
- Interchangeable screen & jaw combinations for more versatility
- Large access door and streamlined interior for easy cleaning and maintenance
- Grinding blades, screens and jaws designed for easy replacement with minimal tools
- Outboard mounted spindle with high-grade labyrinth seals for maximum bearing life
- Standard-shaft grounding brush mitigates against internal electrostatic discharge
- Optional bearing monitoring package to complement existing predictive maintenance programs
- Ten-Bar shock-pressure-resistant construction available
- Sanitary construction features available

SYSTEM INTEGRATION EXAMPLE



Air Classifying Mills



Prater's Air Classifying Mills operate by using the combination of two-stage closed circuit grinding/milling with an interstage air classifier all in one convenient unit. The internal air classifier continuously recirculates particles that are larger than desired back into the grinding zone ensuring an optimal final product particle size. When faced with materials that can be difficult to grind or that require a narrower particle distribution, the unique capabilities of the air classifying mill are often necessary. Large access doors on the air classifying mills allow for quick inspection or cleaning of the main rotor and classifier rotor.

KEY BENEFITS

The unique capabilities of the Prater air classifying mill (CLM) are designed to produce a finer grind and a narrower particle size distribution than standard mill designs. The Prater CLM mill is suitable for particle size ranges from 149 microns to a mean size of 5 to 7 microns.

Prater Air Classifying Mills (CLM) offers the combination of two-stage closed circuit grinding with internal air classification. Their unique capabilities outperform single-pass mills when handling difficult to grind products or those requiring a narrow particle size distribution. The Optional screen-less screen frame design reduces screen damage and wear while the secondary inlet provides additional air for an element of cooling.

Six sizes are available from the 3 HP CLM-18 pilot scale lab mill to the 250 HP CLM-101. All Air Classifying Mills come with standard safety features, including an automatic safety door interlock that prevents unintended access to internal rotating parts during operation.

Benefits of Prater CLM mills include:

- Final particle size range from 149 microns down to a mean size of 5 to 7 microns
- Capability to grind challenging materials
- Narrow particle size distribution made easy
- Highly uniform particle distribution
- Proven lower ΔT , temperature rise of the material from input to output, versus competitors from use of secondary pneumatic airflow

KEY FEATURES

- Durable, welded carbon steel or stainless steel construction
- Precision tolerances between rotor blade and grinding jaw or screen for uniform size-reduction
- Two-stage, closed circuit grinding for ultra-fine size reduction
- Interstage air classification for precise, on-line control and adjustment of particle size
- Large screen to horsepower ratio for greater capacity in each model
- Interchangeable screen & jaw combinations for more versatility
- Large access door and simplified interior for easy cleaning and maintenance
- Grinding blades, screens and jaws designed for easy replacement with minimal tools
- Outboard mounted spindle with high grade labyrinth seals for maximum bearing life
- Reversible rotor
- Standard-shaft grounding brush mitigates against internal electrostatic discharge
- Optional bearing monitoring package to compliment existing predictive maintenance programs
- Ten-Bar shock-pressure-resistant construction available
- Sanitary construction features available
- Minimal and quick maintenance
- Optional screen-free design to ensure minimal wear and tear

THEORY OF OPERATION

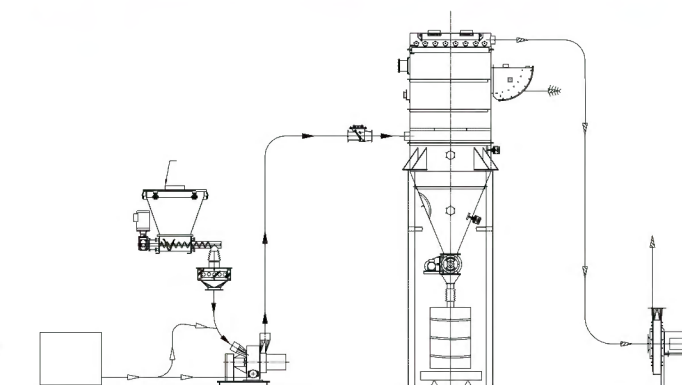
Three separate steps are taken when processing material through a Prater Classifier Mill. The initial grinding stage is similar to what is accomplished in the M Series Mills; however, a secondary inlet provides additional air for the second stage internal air classifier. This additional air also adds an element of cooling of the material being processed. Next, particles that are larger than specified are rejected by the classifier and are directed to the third stage, which is a separate part of the grinding rotor. Designed specifically for these more difficult to grind particles, this material is then redirected to the classifier, allowing only properly sized product to exit the mill.

First Stage Grinding: Convey air and metered product enter behind the rotor, where grinding blades impact and accelerate particles outward. Additional collisions take place against the jaws and screens until the particles are small enough to egress through the screen's apertures.

Classifier: Particles from first stage grinding are circulated outside the grinding chamber, where a secondary intake drafts pneumatic air to help fluidize and cool the particles. Material is pulled inward toward the classifying rotor, where size separation takes place. On-size particles pass through the rotor and are pneumatically conveyed to the next stage in the process while off-spec particles are rejected to second stage grinding. The air classifier rotor is independently controlled, allowing for precise control of particle size simply by adjusting the RPM using a Variable Frequency Drive, VFD.

Second Stage Grinding: Rejected particles from the classifier re-enter the grinding chamber in front of the rotor. Grinding blades again impact and accelerate the particles outward, where size reduction is intensified by 360 degrees of aggressive grinding ring segments. Reground, second stage product combines with product from the first stage and then returns to the classifier.

SYSTEM INTEGRATION EXAMPLE



Rotary Sifters



The Prater Rotary Sifter, or Rota-Sieve®, is designed for sieving operations in which bulk raw materials, blends, and finished products need scalping or sifting to remove foreign materials or particles such as plastics, strings, or insects.

KEY BENEFITS

The simple design and lightweight parts of the Rota-Sieve make standard inspections an easy and straightforward process.

Our rota-sieves are also ideal for the sifting, scalping and classifying of a wide variety of particles and products, including:

- Bulk, free-flowing powders
- Granulated substances
- Agglomerated materials

Our units are easy to maintain and designed for many years of maintenance-free life. Self-cleaning screen fabrics ensure that the Rota-Sieve® can separate to 200-mesh size without the need for anti-blinding mechanisms.

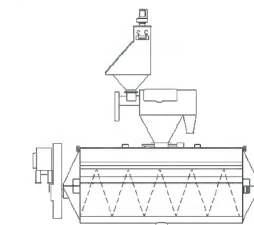
KEY FEATURES

- Standard stainless steel body and hoppers with numerous internal construction options
- Greater capacity relative to the size of the screen, providing more output using a smaller footprint than competitors
- Three bearings for improved rotor support and minimal wear to shaft seals
- Fully adjustable multi-paddle rotor for customized screening capability
- Rapid-removal of rotor specially designed for quick cleaning and maintenance
- Easily-inspected screens, either in place or when removed
- Adjustable screen frame designed for improved performance from a variety of screen fabrics
- Easy access to all internal working parts
- Low-noise, dust-tight, vibration-free operation without the need for external guarding
- Optional patented Rota-Trap® for pre-screening large-sized foreign materials
- Optional quick-clean designs with tool-free removal of internal parts
- Optional sanitary finishes and construction for specialty applications
- Options for compliance with USDA, FDA, BISSC, 3-A, and other U.S. and European regulators

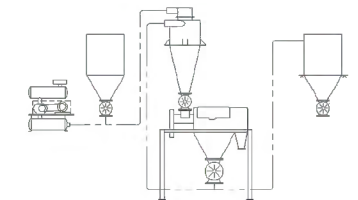
THEORY OF OPERATION

Prater Rotary Sifters harness the power of centrifugal force to fluidize and accelerate particles toward the screen surface. The sifter inlet is specially fitted with an auger that moves materials into the screening chamber, where rotor paddles accelerate the particles outward. Finer particles pass through the screen and are discharged into a large hopper. Rotor paddles are precisely pitched to force coarser material to the end of the chamber, where they are expelled into a separate discharge hopper. Over-size and near-size particles interact with the screening surface during operation, causing a natural vibration in the fabric that enhances free flow.

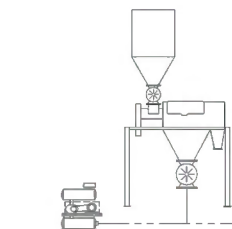
SYSTEM INTEGRATION EXAMPLE



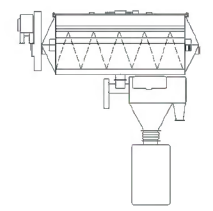
Sifting minor ingredients prior to blending



Inline sifting

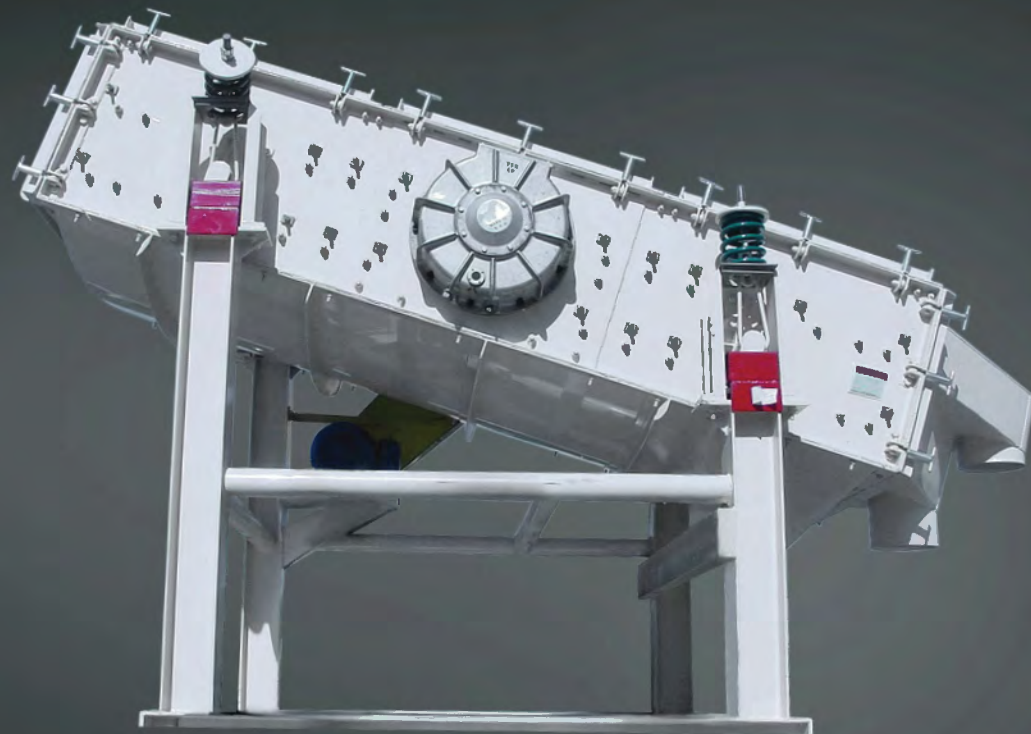


Sifting from bulk transfer receiver prior to pneumatic transfer



Sifting after blending prior to packing

Vibratory Screeners



The Prater Vibratory Screener is a heavy-duty, mechanical machine that separates particles into multiple size fractions, removes oversized particles or foreign material, removes fines from a process stream, or segregates excess liquid from finished products.

KEY BENEFITS

The Prater Vibratory Screener is designed so there are no dead areas along the screen surface. Vibration is isolated from the support framework ensuring smooth and quiet operation. Precise screen cut points enable exact sizing in the finished product. Finally, the vibrating screener is designed for low maintenance and requires minimal amounts of power and cost.

The vibratory screener is quite versatile in its application and can be ideal for operational activities in the manufacturing of the following products:

- Agriculture
- Bakery products
- Chemicals
- Cosmetics
- Food manufacturing and mixing
- Mining and minerals
- Nutraceuticals
- Pet foods and pet products
- Plastics
- Renewable fuels
- Spices

KEY FEATURES

- Specially designed for a long lifespan and industrial-scale use
- One-, two-, or three-deck models are available
- Sizing capabilities from 6 inch to 20 mesh (840 microns)
- Positive eccentric action provides uniform distribution over the screening surface, enabling efficient separation of coarse-sized materials
- Customizable screen sizes and body design
- Optional base or suspended ceiling mounting

THEORY OF OPERATION

The Prater Vibratory Screener utilizes a vibrating deck that is attached to one or more screening elements. Each of the screens is used to segregate and capture a specific size fraction of the aggregate particle mixture. Screening efficiency is much greater when a vibratory enhancement is added to the sizing process.

The Prater Vibratory Screener uses a revolving eccentric motion generator that provides a circular motion with a vertical plane. High frequency coupled with a short amplitude (stroke) provides maximum screening efficiency.

We discuss rotation, amplitude, and pitch below to explain the theory of operation better:

- **Rotation:** When operating (turning) in the forward direction (with the flow), all material moves downward gravitationally. With-flow rotation is used for capacity rather than high efficiency such as in scalping operations. When operating counter flow, the vibrator operates (turns) in a direction that is opposed to the particulate material's normal downward flow. With counter-flow, larger particles move down the screen faster, and smaller particles stay in contact with the screen longer, which adds to screening efficiency. As a practical point, the easiest way to change from flow to counter flow is to change the motor's direction.
- **Stroke or Amplitude:** Prater Vibrating Screens have a unique way of adjusting the amount of vibration imparted to the screened product. The correct stroke setting allows for stratification of the particle mixture during operation, giving individual particles maximum contact with the screen cloth.
- **Pitch or Downward Angle:** The correct downward angle, an adjustable parameter on Prater units, ensures that the material flows across the entire screen area at a uniform rate.

The proper combination of flow direction, stroke, pitch, and screen cloth size maximizes efficiency and capacity. These parameters are usually optimized ahead of full operational mode by utilizing testing runs.

Air Classifiers



Prater Air Classifiers are designed to provide ultra-fine separation and narrow particle distributions for dry bulk materials. Our air classifiers offer size separations in the range of 3 to 150 microns.

KEY BENEFITS

Prater air classifiers are ideal as a stand-alone process that includes a feeder and dedicated dust collection system. They are equally suited to “closed-circuit” grinding when coupled to a conventional milling system.

Prater Air Classifiers are designed and built for superior performance and long life. Our proprietary design ensures that feed material entering the classifying vortex is unimpeded by any re-circulating coarse fractions. Additionally, an adjustable secondary air stream improves particle collection. Prater Air Classifiers can quickly be installed in existing air systems with minimal modification.

THEORY OF OPERATION

Prater Air Classifiers utilize adjustable centrifugal force to separate particles of different sizes within a pneumatic circuit. The raw product is conveyed through a primary air inlet. Once in the classifier, aerodynamic drag forces pneumatically act upon the particles. The force varies depending on the diameter and density of the particles in the classifier.

Spiraling particles are directed toward the classifier rotor, where one of two things occur, depending on particle size:

- Drag force on smaller, more aerodynamically particles exceeds the centrifugal force exerted by the rotor, and they pass through the machine as fines; or
- Centrifugal force overcomes the drag force, causing larger, less aerodynamically particles to accelerate away from the rotor. A cyclonic chamber collects this coarse fraction and enables discharge through a rotary airlock fitted to the bottom of the machine.

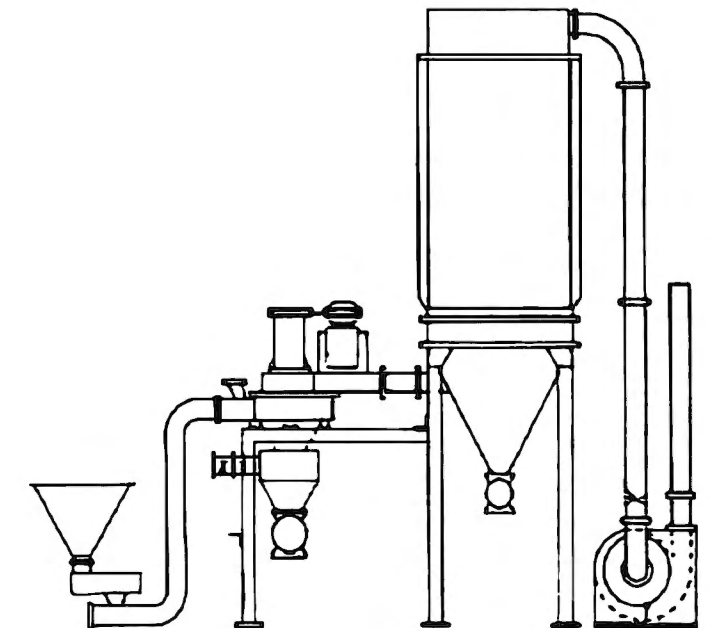
The balance between the drag force and the centrifugal force determines the cut-point. When the forces are equal, particles have a 50/50 chance of passing out of the system as fines. The cut-point is variable and can be controlled by adjusting the rotor speed.

Collection efficiency is enhanced by using a secondary air inlet, an adjustable air stream that moves upward into the classification zone. This airstream increases the residence time of agglomerated and near-size particles, thus allowing them to be classified with the fine product stream.

KEY FEATURES

- Durable, heavy-duty fabrication in either carbon or stainless steel
- State-of-the-art, precision manufactured, constant diameter rotors for the most efficient separation possible.
- Precise control of the cut point by varying rotor speed
- Adjustable secondary air system for greater capture of near-size particles
- Low airflow resistance (pressure drop) designed for low-power usage
- Optional ceramic, tungsten, polyurethane, or rubber lining for abrasive service

SYSTEM INTEGRATION EXAMPLE



TESTING and TOLL PROCESSING

WHAT IS TOLL PROCESSING?

Toll processing is a particle size reduction and separation service offered by Prater Industries for companies needing product-market testing, emergency production, product development, or ongoing production for those who do not wish to undertake the financial commitment for equipment or labor.

KEY FEATURES

- Testing supported by measurement of raw materials and processed goods utilizing the most recent methodologies available, including Malvern laser diffraction particle-size analysis
- Customers' operational process is precisely reproduced to exact operating protocols
- Strict adherence to customers' process goals
- Private labeling and repackaging is available

PRATER'S TEST/TOLL LAB OFFERS

- Coarse Grinding
- Fine Grinding
- Air Classification/Fine Material Separation
- Delumping/Product Conditioning
- Screening and Separation
- Compacting and Briquetting



TESTING

The Prater test lab represents a solid foundation upon which to serve our customers. Our global experience and the knowledge gained from our wide variety of products and services are combined with a high degree of personal attention to fully support the development of innovative, specifically tailored material size reduction, separation, and process solutions. We meet with each of our customers and mutually discuss their process goals to determine the appropriate equipment for meeting their objectives.

Prater testing and tolling equipment include:

- Rotary airlock valves
- Lump breakers
- Hammer mills
- Mega mills
- Fine grinders
- Classifier mills
- Centrifugal (Rotary) sifters
- Vibratory (Deck) screeners
- Air classifiers
- Compactors
- Briquetters

In addition to Prater equipment, we have vibratory and screw feeders, explosion protection equipment, and dust collectors that give us the ability to simulate pneumatic production environments. Our analytical lab utilizes a variety of particle-analysis methods to verify our results and direct testing toward the customer's stated needs. Our methods include standard screen analysis as well as modern laser diffraction analysis.

PARTS and SERVICE

Let us know how the Prater Customer Service and Support Team can serve you. You can connect with us by calling our Parts and Service Department at (855) 957-4608, and a customer care specialist will quickly respond.

Prater encourages all customers to consult with our experienced, courteous, and professional customer service representatives with any equipment support inquiries or concerns. They are available to assist with the following services:

- Equipment rebuilds
- Field service and repair
- Ordering replacement parts
- Parts inquiries and prices
- Parts orders
- Parts order history
- PM agreements
- Product manuals
- Returns
- Shipping inquiries
- Spare parts
- Technical support
- Technical documentation
- Warranty information



PREVENTATIVE MAINTENANCE PROGRAM

Prater is pleased to offer Preventative Maintenance Services for our valued clients. Customers who perform regular factory inspection and maintenance of their equipment report reduced downtime, lower annual part costs, and optimal operational activities.



WHY A CUSTOMER SHOULD KEEP A SPARE PARTS INVENTORY

Customers tell us that keeping an inventory of spare parts on hand makes for efficient operation. Such an inventory can:

- Minimize downtime and keep essential equipment running without interruption
- Insure against parts that may be out-of-stock at the factory
- Consist of any items that could cause extended downtime if a failure occurs
- Drastically minimize lead time on the replacement of non-stock parts
- Ensure you are never short on critical spare parts - if you need a spare that is critical to your operations and the predominant failure mode is an unpredictable catastrophic failure, then your planning horizon is effectively zero. You would do well to maintain a spare part.