



PET FOOD

Efficient processing of valuable ingredients



**HOSOKAWA
MICRON GROUP**



» Flexomix continuous agglomeration system in our
Test & Development Center in Doetinchem

The Hosokawa Micron Group offers you innovative technology for customised solutions from one single source.

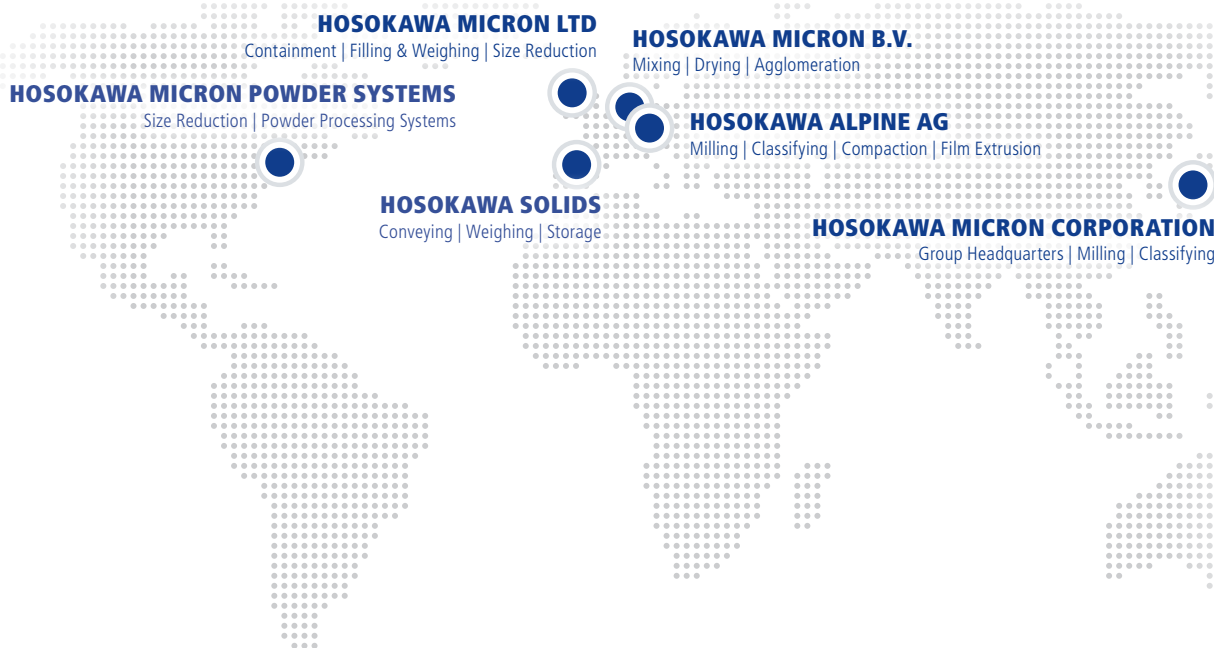
Due to 125 years of experience in your process, we deliver the highest quality machines for your plant and product safety.

Customers all over the world trust in our technologies and in the know-how of our experts.

YOUR ADVANTAGES WITH OUR PROCESS

- » DRY TECHNOLOGY WITH EASY CLEANING**
- » DURABLE, LONG LIFETIME EQUIPMENT**
- » AVAILABLE FROM LAB SIZE TO PRODUCTION SIZE WITH THROUGHPUTS OF SEVERAL TONNES PER HOUR**
- » EXTENSIVE RANGE OF PROCESSING TECHNOLOGIES**
- » PRODUCT AND PROCESS DEVELOPMENT IN OUR TEST CENTERS ALL OVER THE WORLD**
- » MAXIMUM FEED ACCEPTANCE FOR VARIOUS PET FOOD INGREDIENTS**

SIX TIMES COMPETENCE



TAILOR-MADE SOLUTIONS FOR

- › Herbs and spices | thickening agents | fibres and brans | presscakes | plant-based proteins | animal-based ingredients
- › Carbohydrates | proteins | dietary fibres | minerals | vitamins | fermentation products | pre- and probiotics | preservatives and antioxidants
- › Flavouring, structuring, functional and healthy ingredients
- › Tasty, beneficial and sustainable pet food for healthy pets and happy owners



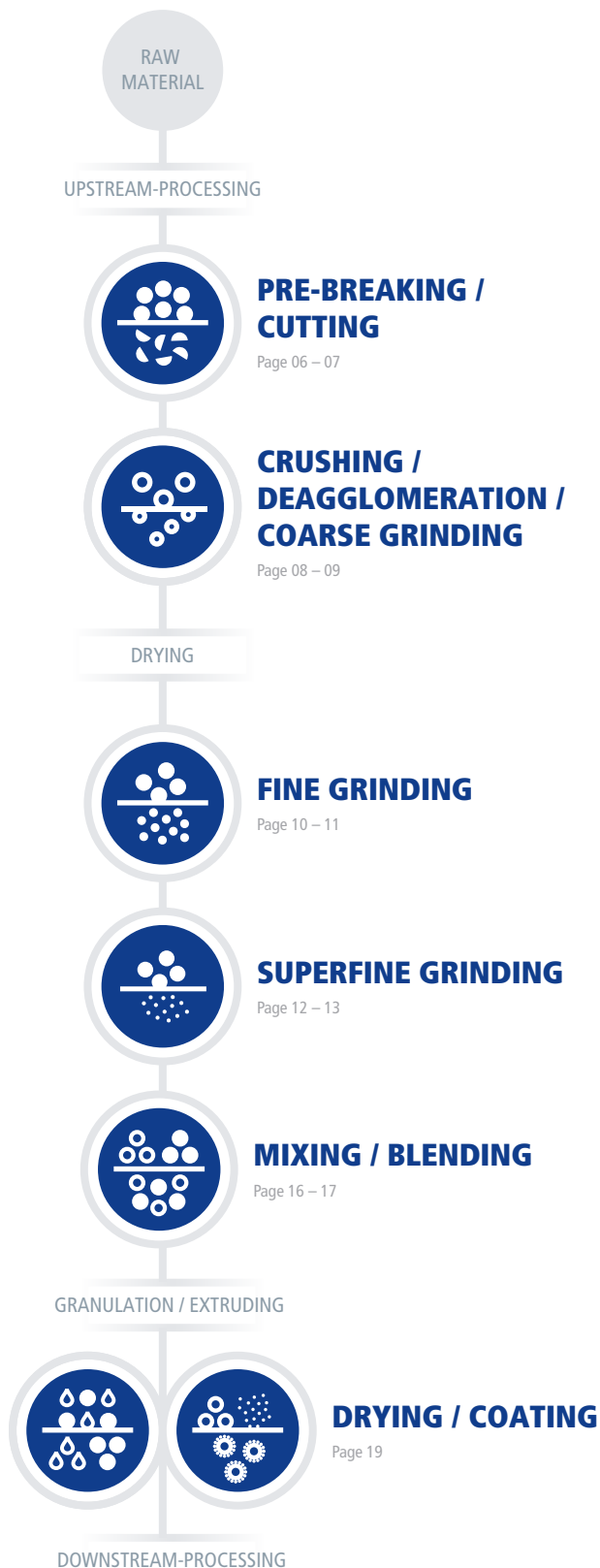
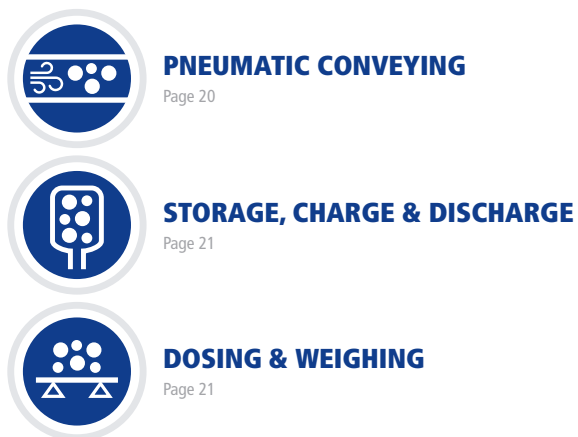
PET FOOD PROCESS TECHNOLOGY

High-quality pet food is increasingly important for pet owners to ensure the wellbeing and longevity of their companions. The production of pet food ingredients is a high-tech process comprising different steps for which high-performance machines and systems are needed – among others from cutting and crushing to grinding and classifying. As the raw material is derived from natural sources with varying characteristics, it is very important to develop a process that meets the customer's requirements exactly.

ON DEMAND



DURING THE WHOLE PROCESS:





PRE-BREAKING

Micron Pre-Breaker PB

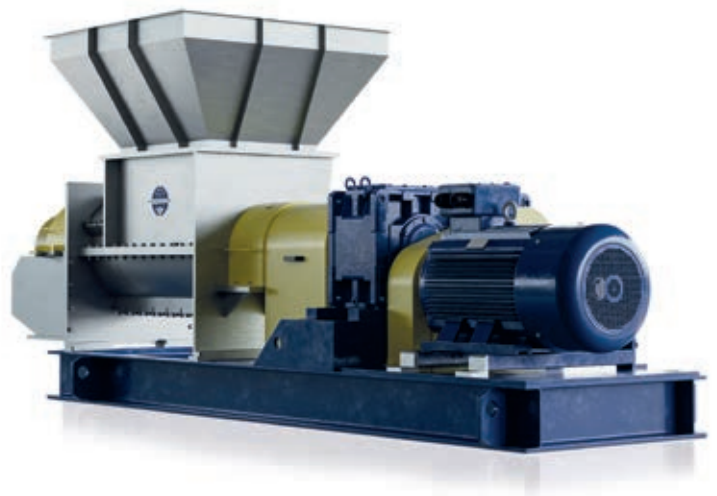
The Hosokawa Micron Pre-Breaker is one of the products in our line-up of horizontal shaft crushers and is designed for coarse size reduction. Often used as a primary crusher before other processing machinery.

The Micron Pre-Breaker fulfils these demands and offers users the highest machine availability, minimum downtime and highest process yields.

The low rotational speed and high torque enables the machine to be used to process heavy and tough materials at minimum temperature increase.

ROBUST CONSTRUCTION, LOW MAINTENANCE

- Robust construction in stainless-steel or carbon steel
- Available up to 150 kW for the most demanding applications
- Withstands the heavy loads and shock loads associated with processing bovine and porcine materials
- Low maintenance
- Energy-efficient and economical operation
- Carbon steel or stainless steel



➤ *Hosokawa Micron Pre-Breaker PB*



CRUSHING & CUTTING

Alpine Rotoplex Ro Granulator

The Alpine Rotoplex Granulator offers an efficient way to disintegrate pet food ingredients with a fineness of < 2 mm. The PSD (particle size distribution) of the final product can be easily adjusted by changing the rotor speed via FC (frequency converter). By selecting the appropriate sieve type and mesh size the PSD can be optimized.

The patented cross-scissor-cut rotor guarantees optimal material distribution (low dust forming) at maximum cutting performance. Dependent on requirements, different machine sizes with a capacity up to several tonnes are available.

ADVANTAGES OF ALPINE ROTOPLEX GRANULATORS

- Powerful, robust & compact design for a long lifetime
- Easy cleaning reduces labour costs
- Low dust formation for better post-handling



REFERENCE PRODUCTS



➤ Carrot



➤ Celery



➤ Herbs



CRUSHING / DEAGGLOMERATION

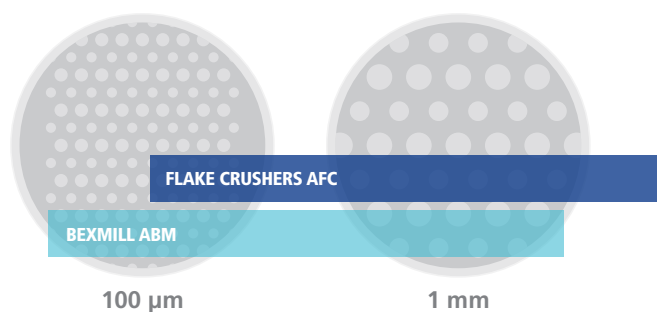
Alpine Flake Crusher AFC & Alpine Bexmill ABM

You place high demands on the crushing technology of your bulk materials? Our crushers are the perfect answer with which the requirements of the pet food processing can be satisfied – from laboratory-scale to industrial-scale production up to 10 t/h.

- Robust and uncomplicated technology
- De-agglomerates soft to medium-hard materials
- Fast tool change of rotor and screen
- Short cleaning times, easy operation
- No need for filter separation or an external blower



➤ Flake crusher AFC



➤ Bexmill ABM



COARSE & FINE GRINDING

Mikro-Pulverizer MP

The Hosokawa Mikro-Pulverizer Hammer & Screen Mill provides consistent, fine grinding for premium pet food production. Its robust, efficient design delivers optimal particle size, improving uniformity, palatability, and digestibility.

Equipped with a high-speed rotor and interchangeable hammer and screen combinations, it ensures precise control over various ingredients – from grains to pulses – offering reliable performance for both coarse and fine grinding.

INNOVATING PET FOOD PRODUCTION SOLUTIONS

- Flexible design for customizable particle sizes, from coarse to fine powder
- Compact, durable build for continuous, high-capacity operation
- Energy-efficient and easy to integrate into existing systems
- Wear-resistant components reduce downtime and maintenance
- Supports eco-friendly, cost-effective production with minimal waste



➤ Mikro-Pulverizer MP



FINE GRINDING

Alpine Ultraplex UPZ & Alpine Contraplex CW II

The Alpine Fine Impact Mill UPZ offers different tools to obtain the required particle size distribution and simple handling for fast product changes. For a higher fineness, the Alpine Contraplex Pin Mill CW II is ideal. With its wide chamber, a good throughput of sticky materials is possible and it achieves a particle size reduction down to 100 µm.

ADVANTAGES OF ALPINE FINE IMPACT MILL UPZ

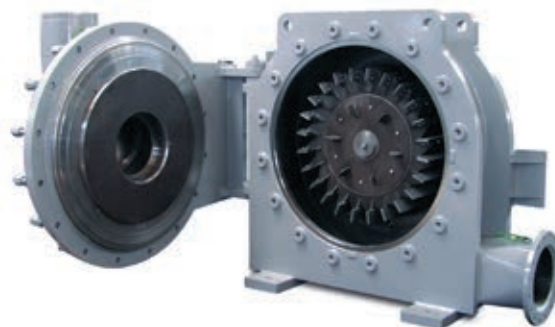
- Generation of products with low fines and good flow properties
- Easily interchangeable grinding elements for fast product changes
- Various machine sizes available to match your capacity needs

ADVANTAGES OF ALPINE CONTRAPLEX PIN MILL CW II

- Wide grinding chamber allows continuous production with sticky products
- High relative speeds for grinding to a high fineness
- Self-cleaning effect due to two contra-rotating pin discs



➤ Alpine Contraplex Pin Mill CW II



➤ Alpine Ultraplex UPZ

TECHNICAL SPECIFICATIONS

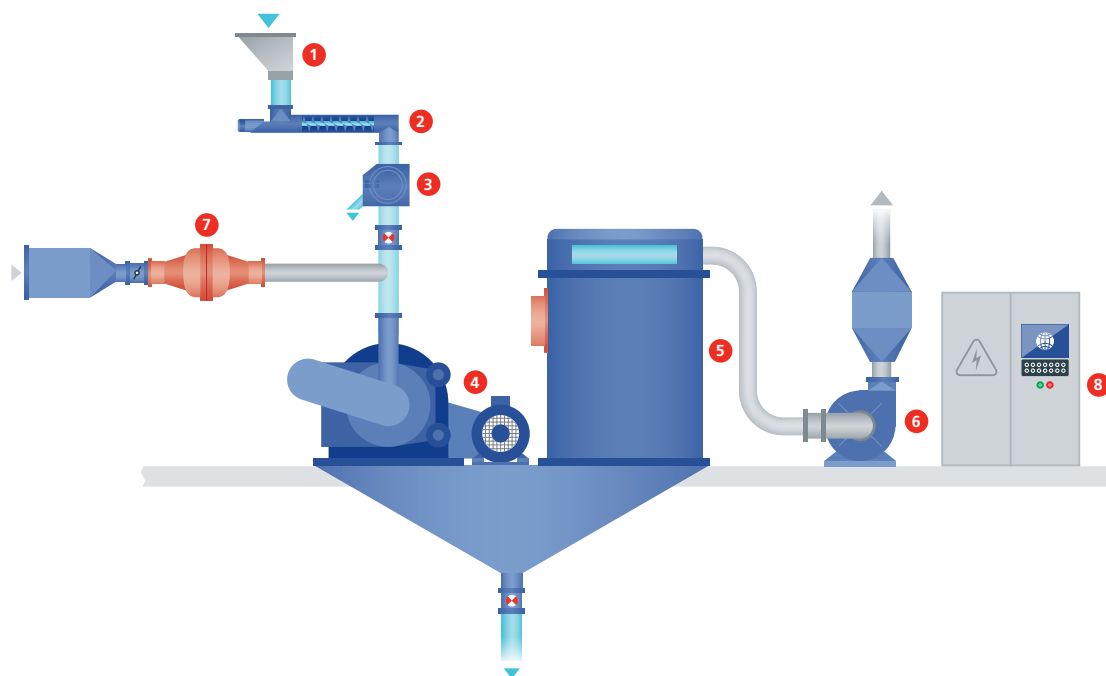
	UPZ 315	UPZ 630
Scale-up factor (F)	1	3.6
Drive (kW)	18.5	75
Max. relative speed plate beaters (m/s)	110	105
Total air flow rate (m ³ /h)	1,200	4,300

	CW 250 II	CW 630 II
Scale-up factor (F)	1	5
Drive – housing (kW)	15	75
Drive – door (kW)	15	75
Total air flow rate (m ³ /s)	870	3,700

Several machine sizes available.

FINE GRINDING PLANT

With Pin Mill CW II



1	Feeding bin
2	Feeding screw
3	Metal separator
4	Fine Impact Mill CW II

5	Automatic filter
6	Blower
7	Explosion barrier valves
8	Control cabinet



SUPERFINE GRINDING

Air Classifier Mill Mikro-ACM, Alpine Zirkoplex ZPS & Alpine Dual Mill ADM

Pet food ingredients occasionally need to fulfill special roles in recipes, for example as thickening agents. Therefore, pet food ingredient manufacturers are interested in ultra-fine powders with a uniform particle size. The combination of an ultra-fine grinding mill and an integrated classifier enables particle sizes below 100 µm with a precise top cut.

ADVANTAGES OF AIR CLASSIFIER MILLS

- Grinding and classifying in one machine for a uniform particle size
- High air flow rate for cool grinding and high product quality
- Excellent precision of cut and steep particle size distribution for a uniform product
- Low specific energy requirement for a cheaper production of fine particle sizes
- Compact and space-saving design for easy integration into the production process
- Easy to clean and maintain, enabling fast product changes
- Different sizes and designs available



➤ Alpine Classifier Mill ZPS



➤ Air Classifier Mill Mikro-ACM



DO YOU WANT TO **GRIND EVEN FINER?**

Our jet mill Alpine Microburst AMB is able to micronize your product below **< 10µm**.

TECHNICAL HIGHLIGHTS

Dependent on your needs, Hosokawa has different classifier mills in its portfolio which guarantee a precise top cut for a uniform product. Compared to other grinding systems a gentle and conditioned production process can be achieved due to higher air flow rates. A wide range of different machine sizes is available for your throughput requirements.



➤ Alpine Dual Mill ADM

TYPICAL APPLICATIONS



➤ Herbs



➤ Peas



➤ Fibres



➤ Algae



➤ Shrimp flour



➤ Spices



DRY GRANULATION

Alpine Roller Compactor ARC K

Compacting pet food ingredients offers several key benefits:

It reduces the bulk volume of raw materials, allowing for space-saving storage, especially important due to their typically low bulk density. The compacted form also minimizes dust and creates a cleaner, safer work environment. Additionally, improved material handling makes processing more efficient.

GRANULATION BASIC WORKING PRINCIPLE

- Compaction of a powder by two counter-rotating rollers
- Agglomeration takes place through bonds between the particles under mechanical pressure
- Crushing of the pressed flakes to the desired granule size:
The standard machine here is a flake crusher, in which the flakes are gently crushed between a rotor and sieve. Thanks to different sieve types, many different granulate sizes are possible.



➤ *Alpine Roller Compactor ARC K with two Flake Crushers AFC and a Sieving Machine*



MIXING / AGGLOMERATION

Flexomix Mixer / Agglomerator

The Flexomix is a compact, continuous mixer / agglomerator for mixing of powders – with or without liquid addition. Its ultra-short residence time and flexible, self-cleaning mixing chamber ensure exceptional homogeneity and rapid throughput, all within a very compact design.

FEATURES AND BENEFITS

- Continuous process
- Capacities from 50 kg/h up to 40,000 kg/h
- Add multiple powders and liquids simultaneously during one operation
- Self-cleaning (flexible) mixing chamber
- Integrated system approach

TYPICAL APPLICATIONS

- Adjustment of moisture content ingredients of mixtures
- Lump free oil, fat, molasse addition to powders
- Continuous mixing of powders
- Thermal treatment by steam addition
- Agglomeration of pet food ingredients



➤ *High-Impact Mixer Flexomix*



MIXING / BLENDING

Nauta Conical Screw Mixer

The Nauta Conical Screw Mixer is well known in the world of processing feed and pet food. It offers a robust and versatile batch mixing solution for low-intensity mixing of different types of products with a variety of product characteristics.

FEATURES AND BENEFITS

- Batch volumes from 2.5 up to 80,000 litres
- Gentle mixing with minimum energy input and product distortion
- Highest level of mixing accuracy
- Process flexibility, working volume operating conditions
- Robust and simple design
- For batch and continuous operation
- Full discharge

TYPICAL APPLICATIONS

- Vitamins, minerals, nutrition (pre)mixtures
- Mixing of large batches (10 - 30 tonnes)
- Fragile components without distortion
- Veterinary premixtures
- Fat, oil, flavour addition to solids
- Thermal treatment (heating / cooling / sterilization)
- Live hopper for high fat / viscous mixtures



➤ *Nauta Conical Screw Mixer*



MIXING / BLENDING

Vitomix Ribbon Screw Mixer

The Vitomix Ribbon Screw Mixer is a vertical, low to mid-shear mixer, capable of ultra-short cycle times, up to four times faster than conventional ribbon screw mixers. It is specially designed for the addition of liquids and fats to powders without using choppers.

FEATURES AND BENEFITS

- Batch volumes from 50 up to 10,000 litres
- Fast mixing process
- For addition of oil, fat or flavour to products
- Gentle mixing with minimum energy input and product distortion
- Process flexibility in working volume and operating conditions
- Robust and simple design with cantilevered mixing screws
- Full discharge

TYPICAL APPLICATIONS

- Fat, oil, flavour addition to solids
- Fragile components without distortion
- Instantization by adding lecithin to animal feed powders
- De-dusting of feed mixtures
- Vitamins, minerals, nutrition (pre)mixtures



➤ *Vitomix Ribbon Screw Mixer*



PULPING OF WET INGREDIENTS

Micron Angle Disintegrator RA

The Hosokawa Micron high-performance Angle Disintegrator is a versatile and self-contained piece of equipment that is capable of handling multiple different processes.

The milling equipment is ideal as it can perform tasks such as pulping, blending and medium-fine or coarse grinding of hot, cold, wet, soaked and dry ingredients, resulting in very high-quality products as used with pet foods and blends.

VERSATILE, EASY-CLEAN, MULTI-PURPOSE

- Multi-tasking – performs multiple different processes
- Handles a wide variety of hot and cold materials and products
- Energy-efficient
- Hygienic construction, user-friendly and easy to clean
- Simple parameter adjustment
- Highly efficient reduction hammers
- Wide range of sizes & powers available



➤ *Micron Angle Disintegrator RA*



THERMAL TREATMENT

Conical Paddle Dryer

The CPD offers a flexible, economical and environmentally safe batch process for thermal treatment of a variety of products. Thermal processes like steam sterilization, modification, cooling, drying and mixing processes can be performed in one operation.

FEATURES AND BENEFITS

- Batch volumes from 200 up to 15,000 litres
- Multi-purpose system; steam sterilization, drying, coating, heating, cooling and mixing in one operation
- Suitable for processing powders, leaves and grains in whole and ground products
- Fast processing, while preserving product characteristics
- Compliant with international feed standards
- Fully automated, recipe-driven system



➤ Conical Paddle Dryer



DRYING / COATING

DMR Flash Mill Dryer

The DMR continuous flash dryer combines drying, milling and classifying in one operation. It preserves valuable product characteristics and offers efficient drying of heat-sensitive products as well as process flexibility.

FEATURES AND BENEFITS

- Drying, milling and classifying in one operation
- Homogeneous and low heat impact on material, resulting in highest digestibility rates
- Ultra short residence time (typically 1 ~ 3 seconds)
- High evaporation rates up to 2,000 kg/hr
- Flexibility (multi adjustable for various consistencies)



➤ DMR Flash Mill Dryer

REFERENCE PRODUCTS

Product	Category	Capacity (input kg/hr)	End Moisture	Fineness	Used Machine
Ethanol extracted presscakes	Plant based	250 up to 4,000	adjustable 0.5 ~ 10 %	adjustable 100 ~ 500 Micron	DMR-1 up to DMR-5
Fish, poultry & cattle residues	Animal based	90 up to 2,500	adjustable 3 ~ 8 %	adjustable 120 ~ 800 micron	DMR-1 up to DMR-5
Insects (BSF-mealworm)	Insect based	150 up to 2,500	adjustable 3 ~ 8 %	adjustable 120 ~ 800 micron	DMR-1 up to DMR-5



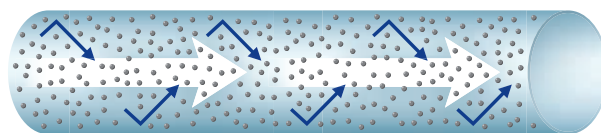
PNEUMATIC CONVEYING

Of various pet food ingredients

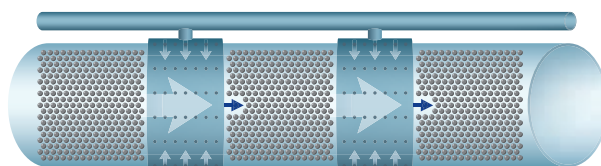
To guarantee optimum product quality, different conveying methods must be used at various process steps. Adapted to the product characteristics (grain size & shape, density, hardness, fat & water content, ...) as well as to the individual process requirements (capacity, conveying distance, environmental conditions, truck unloading, ...), the most advantageous system for pneumatic conveying is applied.

YOUR ADVANTAGES AT A GLANCE

- › Dilute phase conveying: simple and cheap implementation
- › Plug conveying: gentle to the product, almost no grain destruction
- › Preservation of aroma substances and essential oils through gentle conveying
- › Individually adapted processes as pressure or suction conveying system
- › Reliable, proven conveying systems



› Solids Fly Pneu



› Solids Puls Pneu

WE PRODUCE RECYCLABLE HIGH-BARRIER PACKAGING

- High performance blown films for mono-PE stand-up pouch
- Designed for recyclability

HOSOKAWA ALPINE BLOWN FILM EXTRUSION





STORAGE, CHARGE & DISCHARGE

Product-appropriate storage of pet food ingredients

The special properties of pet food place special demands on storage. This can be done in a mass flow silo with a suitable discharge aid, in big bags or sacks.

YOUR ADVANTAGES AT A GLANCE

- First in, first out
- Reliable, residue-free discharge
- Complete systems with full equipment
- Dust-tight
- Gentle handling of the material to be discharged



➤ Emptying silos, hoppers



DOSING & WEIGHING

Dosing and filling of pet food ingredients

Via dosing and weighing technology, your product arrives where it is needed in the right quantity: in the mixer or for filling of silo vehicle, big bag or bag. The weighing process is optimized by matching the dosing unit, scale and control system to the special requirements of the spices.

YOUR ADVANTAGES AT A GLANCE

- Integrated control system for high operational reliability
- User-friendly system
- Functionally reliable system technology
- Precise weighing and dosing technology
- Filling under hygienic conditions





TRY BEFORE YOU BUY

7 test centers worldwide are available for your service

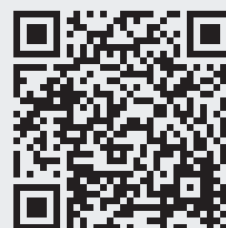
THERE ARE SEVERAL REASONS FOR TESTING

- Would you like to see our systems running and discover the Hosokawa experience with all your senses? Feel, touch and hear the systems and their products!
- At the same time, we discuss the technical special features of the projects with you, e.g. plant layout, ATEX issues etc.
- Are you still in the development stage and looking for the right process for your product? We provide testing equipment to conduct feasibility tests in lab size for small batches!



LOOKING FOR **GMP-COMPLIANT SOLUTIONS** FOR PET SUPPLEMENTS OR VETERINARY PHARMACEUTICALS?

We provide the right solutions.





INNOVATIVE TEST CENTERS

Our research and testing facilities can provide you with a wealth of machines and complete systems for the most varied plant configurations, all available on a global level. Precision, quality and innovative technologies: Do your testing with us.



YEARS OF EXPERIENCE

Profit from our many years of experience in the provision of solutions and our mastery of sophisticated processes. Well-known customers all over the world place their trust in the technology and know-how of the Hosokawa Micron Group.



GLOBAL SERVICE

Our Blueserv-Teams take care of repairs and maintenance, both on site and in our modern workshops equipped with the latest technology – smoothly, speedily and all around the world! The Hosokawa Micron Group – a partner you can rely on. Find out for yourself, you are sure to be impressed.



CONTRACT MANUFACTURING

The Hosokawa Micron Group is your professional and reliable partner for toll processing. We allow you to concentrate fully on your core business and to offset capacity bottlenecks without investment risks or long-term personnel commitment. Whether for a one-time project or a recurring job – our crew as well as our equipment are very flexible in adapting to your specifications!



ADVANTAGEOUS SYNERGIES

The know-how and experience of numerous specialists are bundled in the Hosokawa Micron Group to produce perfect solutions. Experience from a variety of customer segments in mechanical process engineering ensures that you, as the user, enjoy optimum solutions for practically every product – from an individual component to an entire plant.



HOSOKAWA MICRON GROUP

The **Hosokawa Micron Group** is a global leader in advanced processing systems and technologies for industries such as pharmaceuticals, chemicals, minerals, food, and plastics. With over a century of experience, the group offers innovative solutions for grinding, classification, mixing, drying, containment, recycling, analytical equipment and more, ensuring high quality and efficiency. Supported by a global network of R&D centers and manufacturing sites, Hosokawa Micron helps customers optimize processes, enhance product performance, and meet industry standards, solidifying its reputation as a trusted partner in high-performance processing solutions.

HOSOKAWA ALPINE AG

Augsburg, Germany
www.hosokawa-alpine.com
food@alpine.hosokawa.com

HOSOKAWA MICRON CORPORATION

Osaka, Japan
www.hosokawamicron.com
inquiry@hmc.hosokawa.com

HOSOKAWA SOLIDS SL

Zarautz (Gipuzkoa), Spain
www.solids.eu
commercial@solids.eu

HOSOKAWA MICRON B.V.

Doetinchem, Netherlands
www.hosokawa-micron-bv.com
food@hmbv.hosokawa.com

HOSOKAWA MICRON LTD.

Runcorn, United Kingdom
www.hosokawa.co.uk
info@hmluk.hosokawa.com

HOSOKAWA MICRON POWDER SYSTEMS

Summit, USA
www.hmicronpowder.com
help@hmps.hosokawa.com



Subject to changes.
All information in this brochure is purely informative and non-binding.
Our offers are decisive for the order.

© Hosokawa Alpine 2025.

0243-EN-2025-11_Pet-Food