



# MILLING & GRINDING



TRUSTED BY THE BEST

**DINNISSEN**   
PROCESS TECHNOLOGY



# MILLING & GRINDING



The processing of raw materials often requires particle size reduction or lump breakdown. Dinnissen Process Technology supplies a wide range of energy-efficient milling, grinding, breaking and crushing solutions to fullfill these requirements. Our focus is on optimal capacity utilization and minimal waste.

The robust and proven designs - built in-house in the Netherlands - ensure reliability, and can be configured to meet even the strictest hygienic standards.

That's why the world's best producers in the food, petfood, feed, aqua feed and chemical sectors trust our hammer mills, breakers, pulpers, shredders, crushers and finishers to achieve exactly the right particle size.

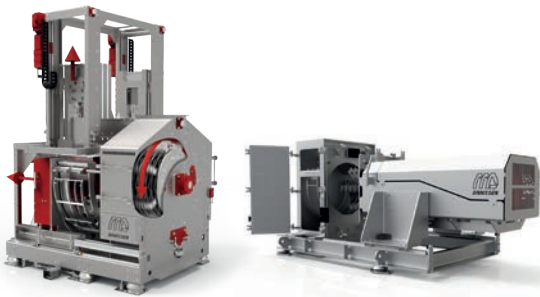


**SYSTEM INTEGRATION**  
 Complete milling & processing line

- Pneumatic conveying systems
- Pegasus® Conditioners
- Mechanical transport systems
- Sieve
- Hamex® Fast Exchange Hammer Mill



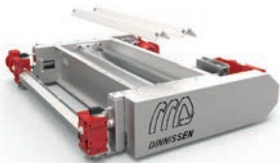
See why we are trusted by the best



- Hammer Mills
- Hamex® Hammer mill
  - Hamex® Fast Screen Exchange Mill
  - Hamex® Auto Screen Exchange Mill
  - Dinnox® Hammer Mill



- Breakers & Finishers
- Breakers
  - Hygienic Breakers
  - High Speed Breakers
  - Finishers



- Additional equipment
- Universal Mills
  - Nibblers
  - Crumblers
  - Shredders
  - Pulpers



- System Integration
- Complete processing lines
  - Optimization of product intake and outflow
  - Integration in your current processing line



# HAMMER MILLS



The Hammer Mill is a reliable solution for grinding soft to medium-hard products, such as grains, sugars and minerals. Its design principles have been successfully used by producers in various industries for decades. Dinnissen started building Hammer Mills in 1948, and - thanks to continuous innovation and development - made them more efficient, productive, reliable, (explosion) safe and quiet over the years.

Dinnissen offers different types of Hammer Mill: the Hamex® Hammer Mill, designed to handle virtually any milling challenge, and the D-Innox® Hammer Mill, designed for applications that demand strict hygiene standards.

> Feeding device  
with stone catcher  
and magnet

> Inlet

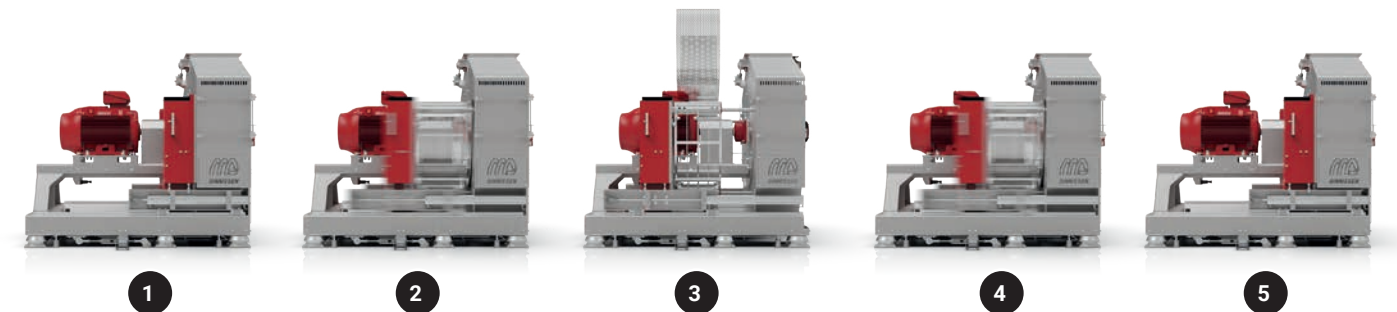
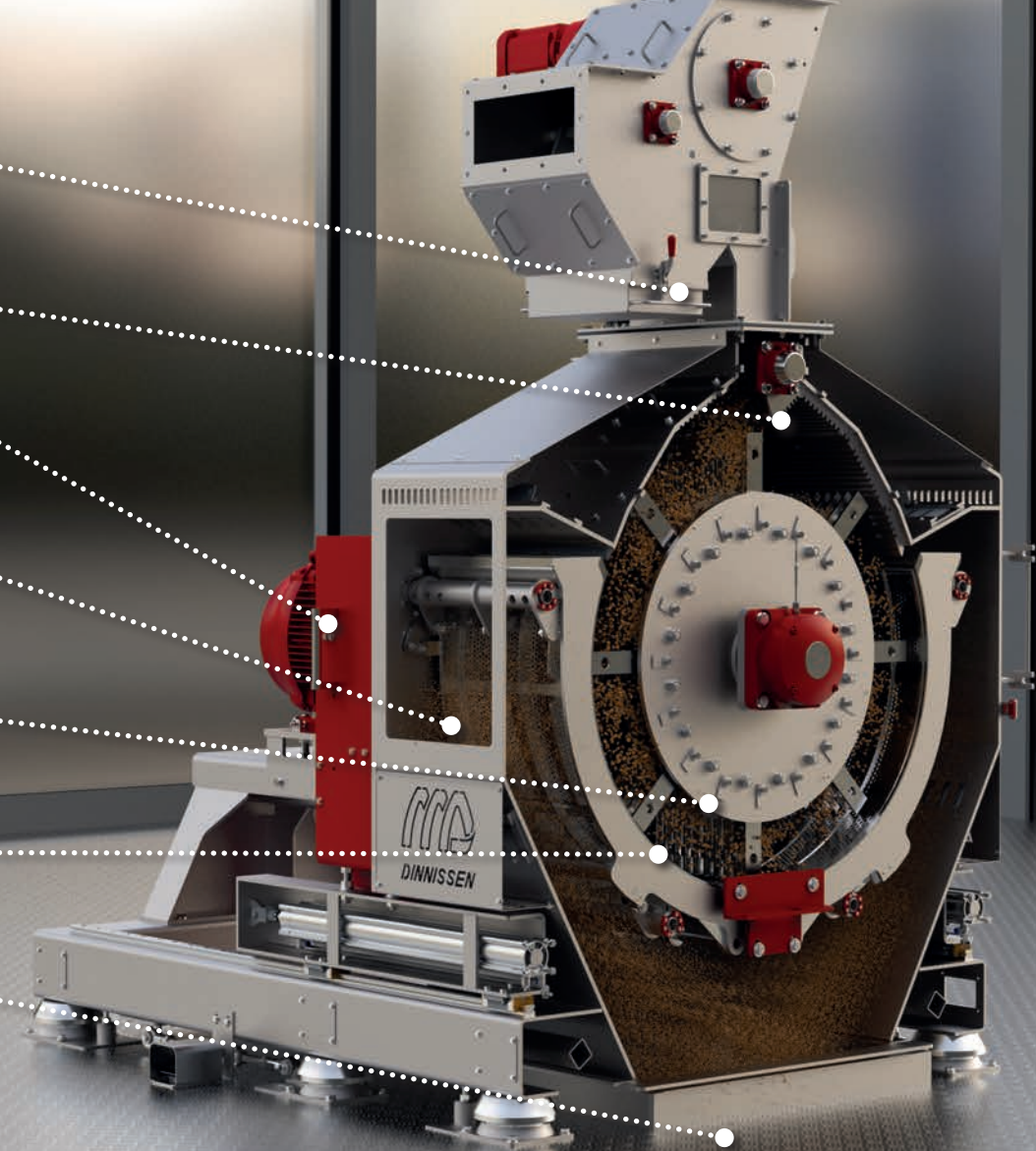
> Extractable  
screenholder

> Screen

> Rotor

> Hammer

> Outlet



## How Hammer Mills work

In the hammer mill, a rotor with hammers swings around. The resulting centrifugal force crushes the material against crushing plates inside the milling chamber. The crushed product then exits the hammer mill through exchangeable screens. Depending on the product properties, single hammers, double hammers or T-hammers are used.

## Screen exchange system

Hamex® Hammer Mills can be equipped with a screen exchange system. This allows for quick and easy screen inspection or exchanging, whilst the rotor keeps spinning. As there is no need to stop and restart the rotor, the Hammer mill's uptime is greatly improved. The clever design enhances safety as well.

## How screen exchanging works

1. Screen needs inspection or exchanging.
2. Without stopping the rotor, the screenholder moves out.
3. **FAST:** The screens can now be inspected/exchanged.  
**AUTO:** The screens are automatically exchanged.
4. Screenholder automatically moves back in.
5. Milling continues directly as the rotor has not stopped.





# HAMEX® HAMMER MILL



The range of Hamex® Hammer Mill has been refined throughout the years, resulting in three different models. These can be configured with options like different hammer types, airflow systems or frequency control. For special applications, we can provide a custom tailor-made solution.

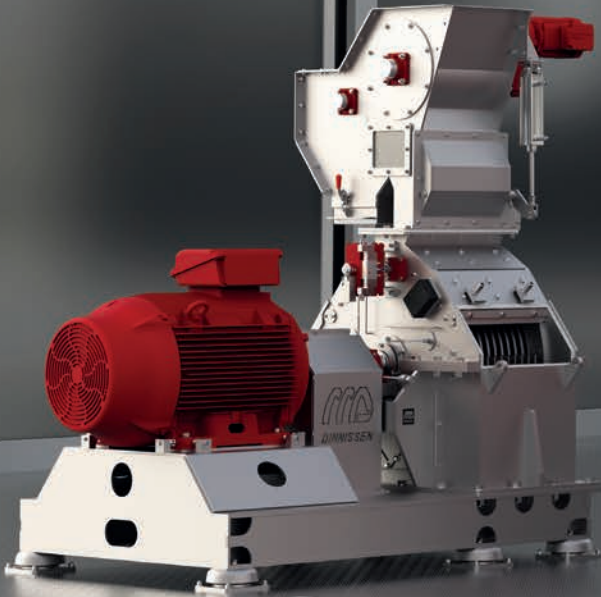
All Hamex® Hammer Mills are designed as follows:

- Durable design, robust construction
- Good accessibility
- Variable direction of rotation

The robust construction, great performance and our in-house production, quality control and testing make sure that Hamex® Hammer Mills are trusted by the best.



> Hamex® Hammer Mill



### Hamex® Hammer Mill HS

- Tip speed 130m/s
- Compact milling chamber
- Single, double, or t-hammers
- Air flow system

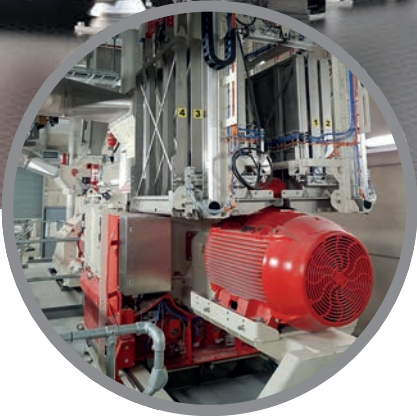
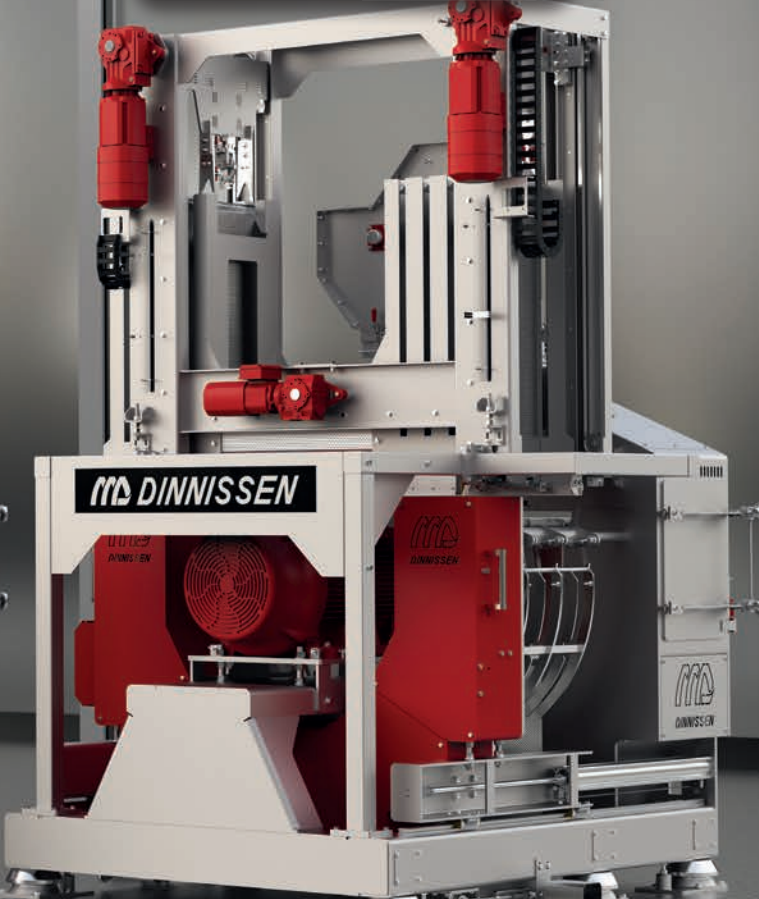
> Hamex® Hammer Mill  FAST SCREEN EXCHANGE



### Hamex® Fast Screen Exchange Mill LS

- Tip speed 100 m/s
- Large milling chamber
- Single or double hammers
- Air flow system
- Fast screen exchange system
- Lowered noise level

> Hamex® Hammer Mill  AUTOMATIC SCREEN EXCHANGE



SYSTEM INTEGRATION  
Complete milling proces line

### Hamex® Auto Screen Exchange Mill LS

- Tip speed 100m/s
- Large milling chamber
- Single or double hammers
- Air flow system
- Automatic screen exchange system, with 4-6 sieve sets.
- Lowered noise level



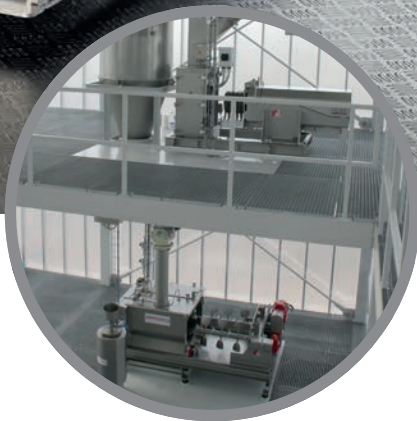
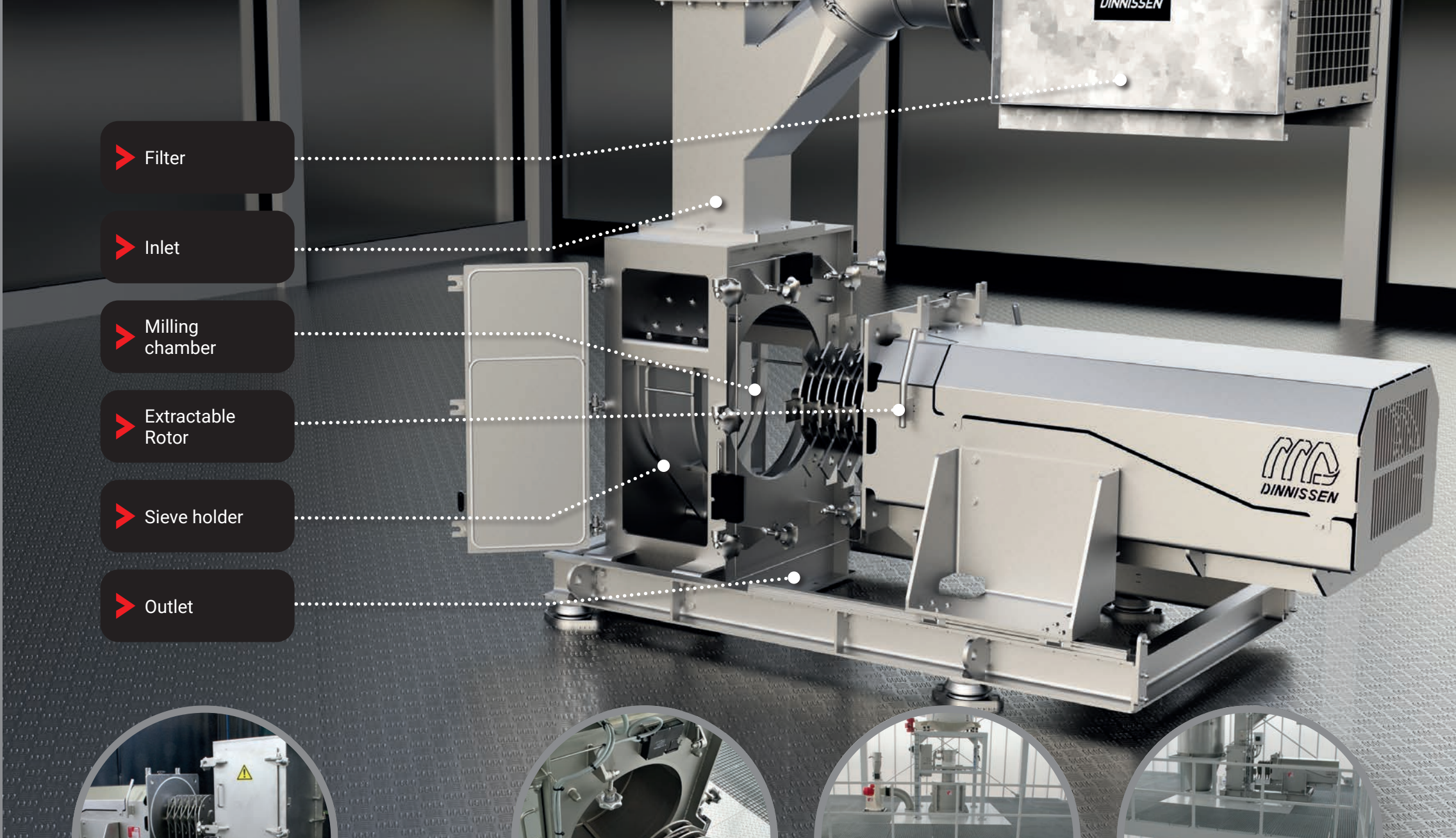
# DINNOX<sup>®</sup> HAMMER MILL



The Dinnox<sup>®</sup> Hammer Mill is designed for applications where hygiene is extremely important. It has a grinding principle similar to the Hamex<sup>®</sup> Hammer Mills, but features a stainless steel construction and an easy-to-clean and hygienic design with a cantilevered rotor. This allows the rotor to be driven completely out of the housing, to make it easily accessible for cleaning, inspection and exchanging the hammers. In addition, the screens are easily accessible through doors and can be quickly exchanged.

- Stainless steel construction
- Easy to clean & hygienic design
- Variable rotor speed

- > Filter
- > Inlet
- > Milling chamber
- > Extractable Rotor
- > Sieve holder
- > Outlet



SYSTEM INTEGRATION  
Big Bag intake > D-Innox<sup>®</sup> Mill

SYSTEM INTEGRATION  
D-Innox<sup>®</sup> Mill > Pegasus Mixer



## Hygiene and food safety

The design of the Dinnox<sup>®</sup> Hammer Mill has been based on EHEDG guidelines. It features an easy-to-clean and hygienic design with a one sided bearing, extractable rotor and a stainless steel construction. To maximize food safety, Dinnissen designs and builds solutions in-house with full traceability.

## Features

- Compact, stainless steel construction
- Easy-to-clean and hygienic design
- Extractable rotor
- Great accessibility
- Variable rotor speed
- Capacity: between 30 and 6000 kg\*

## Models

MODELS	TIP SPEED
DINNOX-300	55 m/s
DINNOX-500	75 m/s



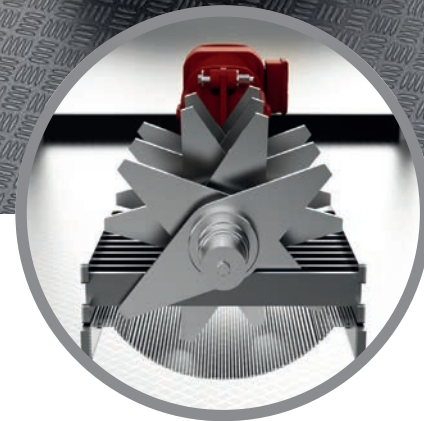
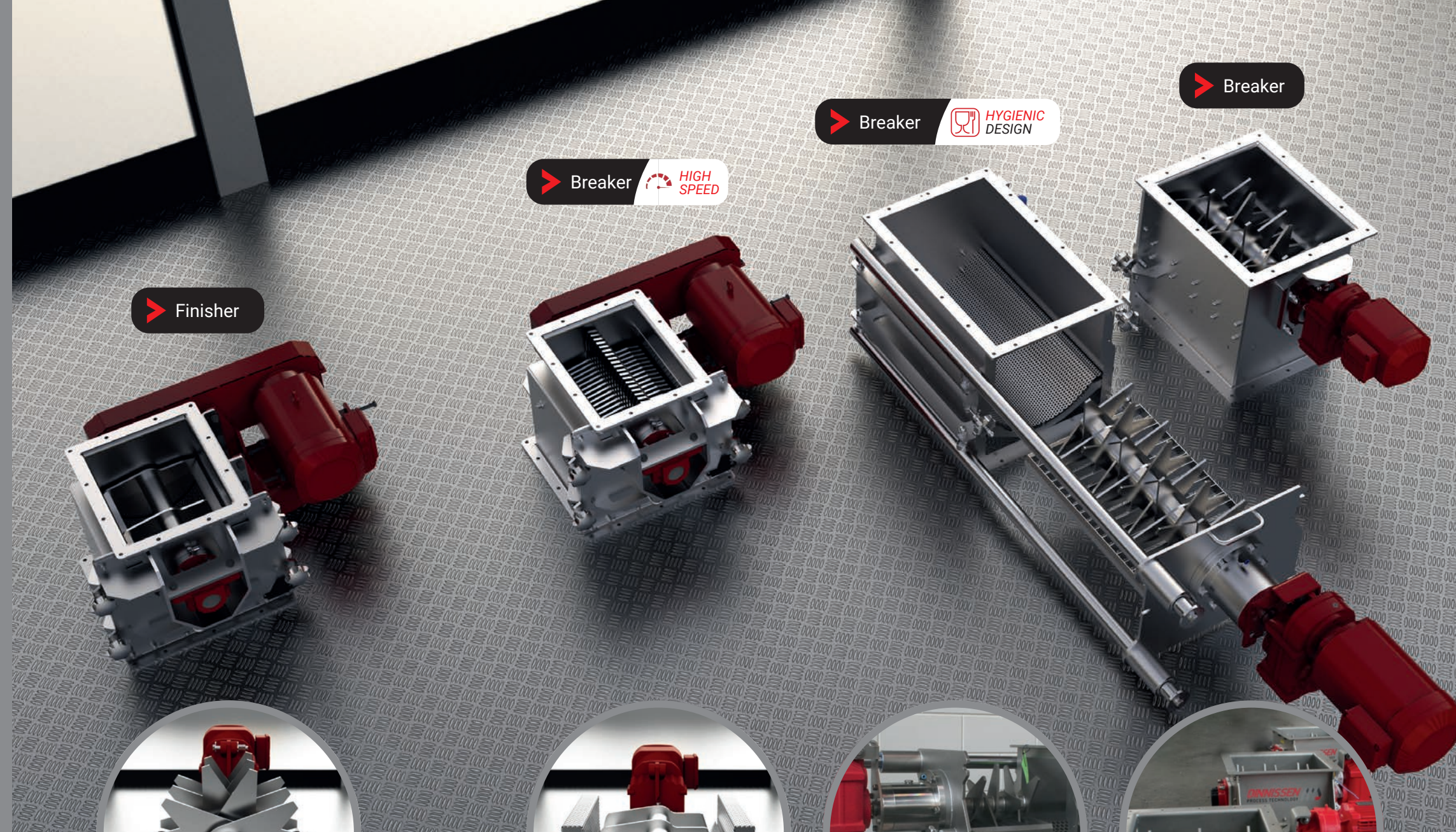


# BREAKERS & FINISHERS

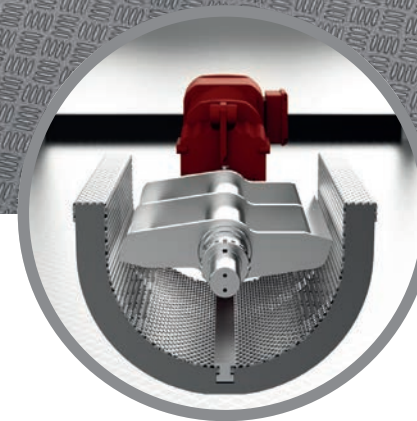


A breaker or finisher is designed to break lumps and agglomerates. It functions according to the rotor/stator principle; with vertical or horizontal blades on a central shaft in combination with stator combs mounted in the housing. The rotational speed, adjusted to your application, makes it possible to achieve high capacities at low energy consumption.

- Long service life and low maintenance thanks to the proven robust construction
- Trusted for decades in efficiency, capacity, and uptime
- Wide range of standardized designs
- Tailor made designs are optionally available



A breaker uses vertical blades and a static comb for deagglomeration.



Finishers use horizontal blades without stator.



Hygienic versions are highly accessible and can be cleaned easily and quickly.



## Breakers

### Designed to break lumps

- Steel or stainless steel
- Single or double rotor with vertical blades
- RPM control capability
- Compact, robust design
- Optional access doors
- Wide range of optional screens available
- Available in a wide range of sizes

## Finisher

### Designed for fine breaking

- Steel or stainless steel
- Single rotor with vertical blades
- RPM control capability
- Compact, robust design
- Optional access doors
- Wide range of optional screens available
- Available in a wide range of sizes

## Hygienic Breakers and Finishers

### Designed for food safety

- Stainless steel
- Easy-to-clean EHEDG design
- Extractable rotor for easy inspection and cleaning.
- RPM control capability
- Available in a wide range of sizes
- Validated by the food industry





# BREAKER INTEGRATION



Agglomerated bulk solids can be difficult to process efficiently. Therefore it may be necessary to integrate a breaker in your system. For example:

- Deagglomeration after your product has been processed, stored or otherwise compacted
- To improve secondary processing steps, such as milling, grinding and feeding
- Before pneumatic or mechanical conveying
- Before reprocessing, reclaiming or reworking
- After band driers.

Thanks to our in-house engineering and production, Dinnissen can design and adjust solutions to suit every integration challenge.

> Product intake

> Hygienic breaker

> Conveying

> Process control and automation



Big-Bag Conditioning & Emptying System with integrated Breaker



Big-Bag Emptying Station with integrated Breaker



Dima® Bag Emptying Station with integrated Breaker



Breaker integrated in a complete processing line

## Machine integration

If you have compacted bulk solids, you can improve your product intake capacity by integrating a breaker below a big-bag emptying station. This ensures that there are no more lumps that slow everything down. Combining machines can have a positive impact on capacity, product quality and process control.

## Innovative systems

Dinnissen has designed and built many different machines in many different markets. When you integrate these machines into each other, you are creating a system. We combine experience and know-how in different sectors with in-house engineering and production. This enables to come up with innovative systems and solutions.

## System Integration

Dinnissen is capable of designing, building, testing and installing complete processing lines, consisting of many integrated machines and custom systems. Dinnissen offers a unique one-stop-shopping experience for complete processing lines.





# OTHER SIZE REDUCTION EQUIPMENT



Whether you want to increase the surface area of your material, increase dissolution or absorption rates, improve pneumatic conveyance, achieve greater uniformity or to optimize material drying and mixing, Dinnissen can provide a efficient solution:

- Universal Mills
- Pulpers
- Nibblers
- Crumblers
- Shredders
- Custom solutions

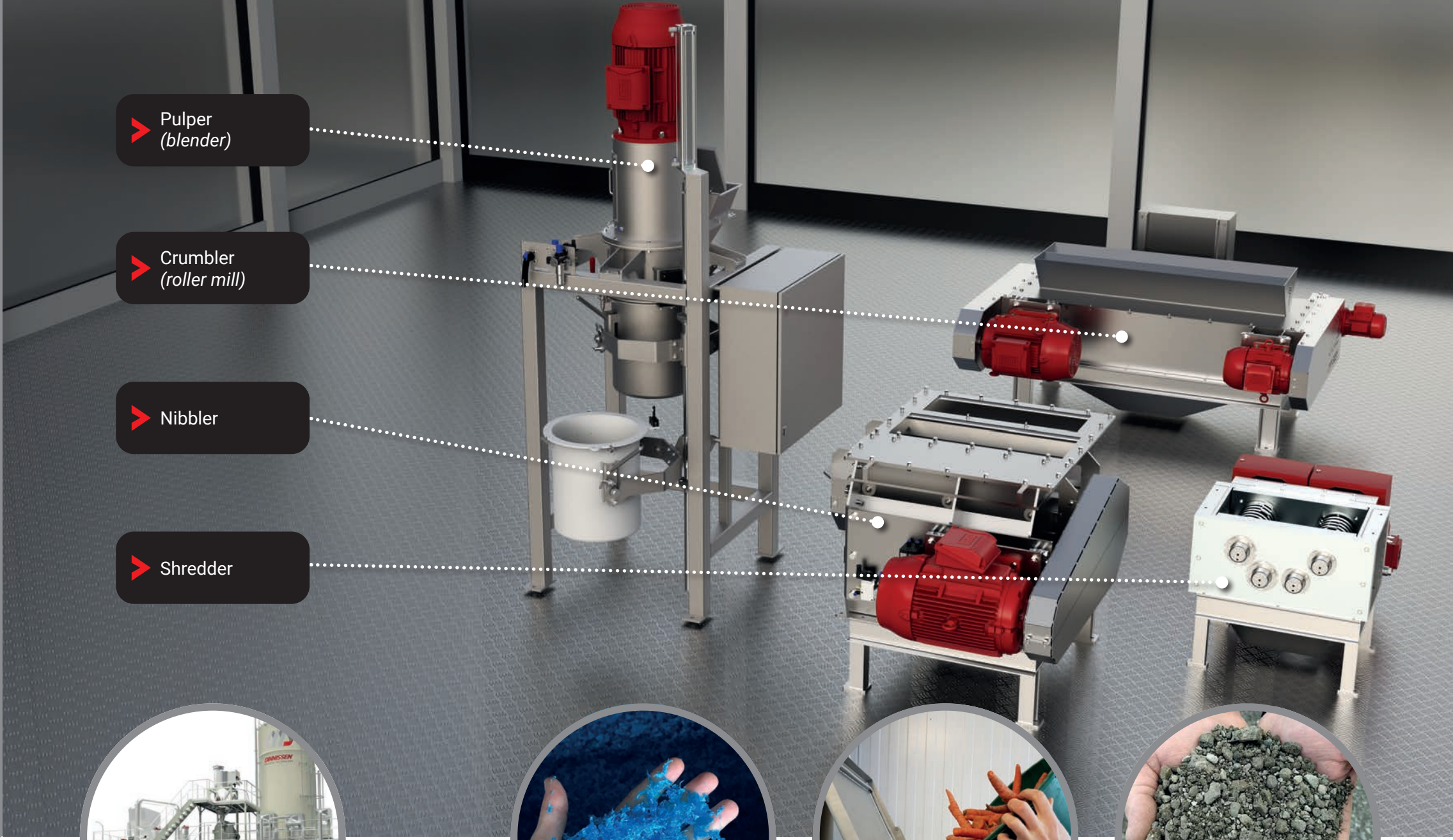
There are numerous methods to reduce particle size, break lumps or shred materials. Our experienced team of experts can help you determine which type of equipment suits your application best.

> Pulper  
(blender)

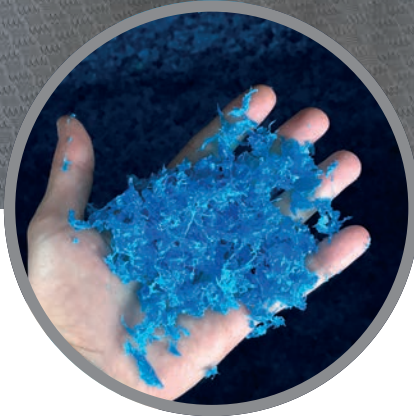
> Crumbler  
(roller mill)

> Nibbler

> Shredder



Complete sugar milling line with Universal Mills



Plastic shredding for recycling



Food loss and waste prevention



Crushed, screened and mixed asphalt, ready to re-use



## Nibblers

- Steel or stainless steel
- Custom rotor, for your specific product
- Wide range of screening grates available
- RPM control capability
- Optional acces doors
- Available in a wide range of sizes

## Pulpers (blender)

- Easy-to-clean, complies with the strictest hygiene requirements
- Ideal for achieving a very fine product
- Long service life due to the proven robust construction
- Suitable for the food and feed industry

## Crumblers

- Low finesse proportion leaving a larger part of the product usable
- Low heat generation
- High capacity

## Shredders

- Variable rotor speeds
- Uniform product reduction
- Adjustable cutting speed
- Easily changeable knives
- Divergently mounted cutting plates
- Safe and reliable



# CUSTOMER STORIES



GA Pet Food Partners (Lancashire, England) is one of Europe's largest pet food producers. It only produces private label brands which are exported to more than 40 countries throughout the world.

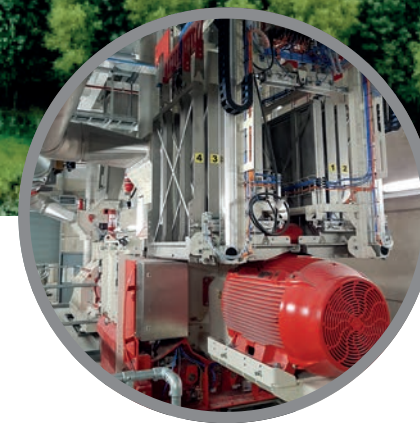
Their wish was to produce a new excellent line of dry pet food products for the top of the market. To achieve this, a special 26-metre-high production plant has been built called 'Ingredients Kitchen' that will set a new standard for pet food. It concerns premium solutions, where no less than 800 different pet food formulas with different ingredients must be processed on the same lines, at the premium quality level. In order to produce premium products, in many cases, premium machines are required. It is therefore that Dinnissen quickly came in to the picture.



Three Pegasus® Batch Mixers



One of the Hamex® 1200-HS Hammer Mills



One of the Hamex® 1500-LS-MG Hammer Mills



Overview of the entire Dinnissen processing line



## Complete milling/mixing line

For this project, Dinnissen has built an entire line to prepare the product for the extruder. The system consists of Pegasus® pre-mixers, Hamex® Hammer Mills, screening systems, pneumatic and mechanical conveying and bunkers. Two different Hammer Mills are used: the Hamex® 1000-LS-MG featuring automatic screen exchange, it runs at 1500 rpm for fine milling. And the Hamex® 1200-HS that, running at 3000 rpm, is used to mill materials that are rich in fats.

## Teamwork

GA Pet Food Partners did not believe that there was a single contractor in the market that had all of the technical and engineering disciplines under one roof that could offer the best possible solution for any situation. Therefore, for every part of the installation, individual parties were searched for, each specialised in their own discipline, with a view of letting them all work together as a team. "Only then will you be able to find and work out the best ideas", was the vision.

## Why Dinnissen

During the search to find such specialist companies, Dinnissen quickly came into the picture. The fact that they had devised numerous innovative solutions reinforced the impression that Dinnissen's professionalism could guarantee the highest expectations in the areas of volume, accuracy and production security. Furthermore, Dinnissen can be trusted for their experience in far-reaching automation, a clean and hygienic work floor and ergonomic workplaces for the machine operator.



# D-INNOCENTER



Our extensive testing and innovation center - the D-Innocenter - empowers us to develop and perfect new designs. Here, we conceptualize, develop, and perfect new designs, ensuring that our solutions are not only innovative, but also reliable. To quote our operational director Wouter Kuijpers: "trust is nice, proof is nicer". The D-Innocenter solidifies our reputation as a trusted partner.

Our customers use the D-innocenter for exactly the same reasons: to test new concepts, enhance product quality, and boost production efficiency. This has led to numerous innovations, such as our vacuum coating technology, extractable mixers and lean gravity blending.

When visiting our testing facilities isn't an option, you can simply send us a sample of your product. Upon analysis, we'll provide informed advice on the type of equipment best suited for your specific application.



*Pegasus® Vacuum Coaters*



*Product analysis by our experts*











*R&D testing with a Pegasus® R&D Mixer*



*Testing a fully operational processing line for one of our customers*



## Testing equipment

-  Bag & Big-Bag emptying systems
-  Pneumatic & mechanical transport
-  Feedervalue & micro dosing systems
-  Batch mixers, continuous mixers & vacuum coaters
-  Hammermills, breakers & finishers
-  Centrifugal sifters & vibrating sieves
-  Bag & Big-Bag filling systems
-  Sample takers & sample carousel

## Laboratory research

- Powder flow analysis
- Tap density analysis
- Bulk density analysis

## Complete processing lines

Within our D-Innocenter, we have the capability to construct and test an entire processing line for a customer. Once everything is functioning smoothly and meeting all specifications and desires, the line is disassembled into segments. These parts are then transported via containers to the customer. This way, a fully-tested and partially assembled line arrives at the client's location, reducing downtime on-site. It's just another way we strive to optimize efficiency for our customers at Dinnissen.



# MILLING & GRINDING



- ✓ In-house engineering, production and installation
  - ✓ Extensive service and testing facilities
- ✓ EG 1935/2004, ATEX-, GMP-, CE-, HACCP- en EHEDG
- ✓ ISO 9001, 14001, 27001 and 45001 certified
  - ✓ Over 75 years of experience

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BUREAU VERITAS  
Certification



ISO 14001  
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Certification



ISO 27001  
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Certification



ISO 45001  
BUREAU VERITAS  
Certification



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