TIETJEN
DAS ORIGINAL

It All Depends on the Grinding

Particle Size Reduction Technology for Your Application

- Grinding
- Pre-Crushing
- Grinding Module
- Plant Engineering

MADE IN GERMANY

This is Tietjen

We have been developing, designing, and producing hammer mills and size reduction technology in Germany since 1959. Complex customer requirements are our specialty: From first contact to design and delivery of the optimal plant, to after sales service, we are your competent partner for all types of impact crushing.

We develop your grinding solution and take care of the implementation – worldwide.

We Grind What You Want

We know that every customer has different requirements and needs. That's why we first try to understand our customers. Together with you, we define the goal of your grinding process.

Our customers benefit from our decades of experience in grinding. We convince with grinding solutions tailored to the customer process, sophisticated products, and innovative ideas.

In addition to size reduction, we also integrate our know-how of process steps such as sieving, sifting or mixing as well as the necessary conveying technologies into our plant concepts.

We also have a well-equipped technical centre where we carry out test grindings so that the customer can see what he will get.

Today, our grinding solutions are used where reliability and a defined particle size distribution are required, among others:

- in the production of feed for animal nutrition
- in the production of high-quality pet food
- in the production of fish and shrimp feed
- in the wood processing industry
- in the energy industry
- in the food industry
- in ethanol and alcohol production
- in a variety of special applications

Advantages

Particle Size Reduction Process:

- Can be used for grinding many products
- Particle size distribution adjustable by varying the machine parameters (screen perforation, beater configuration and rotational speed)
- Optimized for coarse and fine grinding, depending on requirements
- Reliable grinding of even very heterogeneous or fat- and protein-rich feed materials
- Additional impact plates for optimum size reduction and narrow grist spectrum
- Peripheral speed of the beater up to 460 km/h

Operation and Profitability:

- Simple and cost-effective operation compared to other grinding technologies
- High availability and long service life
- Easy to maintain with low maintenance and service costs
- Screens and beaters can be changed quickly and easily
- Smooth running of the mill due to special rotor design with dynamic balancing
- Operation in both directions of rotation (except SD and HM)
- Stainless steel design possible
- After sales with decades of spare parts availability

Machine Safety:

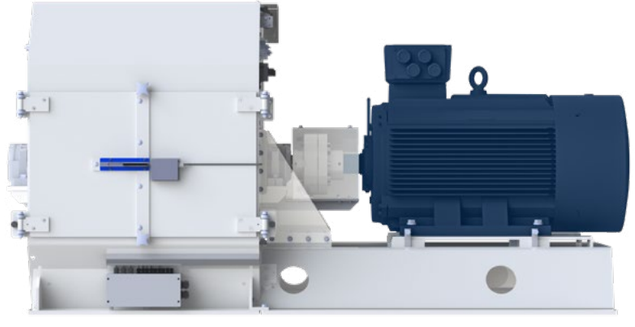
- Explosion protected and flameproof design according to ATEX possible, 0.4 bar pressure shock resistant, zone 21 (II 2D) inside and zone 22 (II 3D) outside
- Automatic door locking with standstill monitoring
- Temperature monitoring of bearings and grinding chamber
- Negative pressure monitoring of the grinding system

Tietjen Hammer Mills

Our hammer mills are universal and flexible grinders suitable for a wide range of products.

Whether coarse or fine grinding, small or high throughputs, a wide range of requirements is covered by our wide product range.

Our mills are characterized by their robust design and well-engineered technology. The machines are often used by our customers for several decades. Our focus is on an efficient and economical grinding process. All our mill types are designed to be maintenance-friendly and thus have a high availability.



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The best sustainability criterion is a long service life.

Thomas Runde
Managing Director at Tietjen

You can find detailed data sheets online:
tietjen-original.com/en/about-us/downloads

High-Speed Hammer Mills

Hammer Mill VL

- Ideal for lower throughputs
- Quick and easy screen change at standstill
- Good accessibility through front door, e.g. for cleaning

Hammer Mill VDK

- Universal mill for fine and coarse grinding
- Ideal for medium throughputs
- Quick and easy screen change at standstill

Hammer Mill LDE

- Ideal for medium throughputs
- Quick and easy screen change during idling, two-piece screen cage system
- If changing screen perforations or particle size distributions are required

Wet Hammer Mill NDK

- For grinding with simultaneous addition of process fluids, e.g. in the production of alcohol and ethanol
- Quick and easy screen change at standstill

Wide Chamber Hammer Mill W

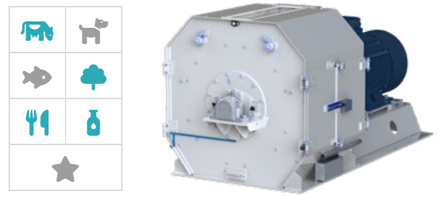
- For the grinding of moist or sticky products such as wood with up to 60 % moisture content
- Quick and easy screen change at standstill

Self-Conveying Hammer Mill HM

- Ideal for lower throughputs
- Self-conveying up to approx. 12 m
- Quick and easy screen change at standstill

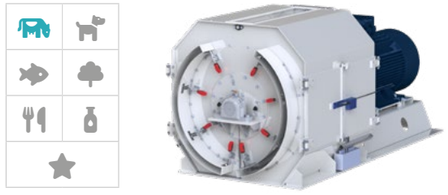
Large Chamber Hammer Mills

Hammer Mill GD



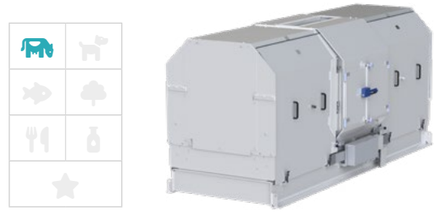
- Ideal for medium to high throughputs
- Quick and easy screen change at standstill
- Impact area can be additionally enlarged
- Rotor with beater frames for a quick change of beaters

Hammer Mill GDL



- Ideal for medium to high throughputs
- Quick and easy screen change during idling, 6-piece screen cage system
- If changing screen perforations or particle size distributions are required
- Rotor with beater frames for a quick change of beaters

Hammer Mill GDX



- Maximum flexibility in compound feed production
- For frequently changing requirements in the feed structure
- Fully automatic screen change during idling, 4-piece screen cage system
- Rotor with beater frames for a quick change of beaters

Hammer Mill FD

- Optimized for fine grinding, up to 98% < 400 µm possible
  – For screen perforations from 0.75 to 2 mm
  – Impact area can be additionally enlarged
- Quick and easy screen change at standstill
- Rotor with beater frames for a quick change of beaters

Straw Mill SD

- For grinding dry and fibrous materials such as straw, hay or alfalfa
- Quick and easy screen change at standstill
- Rotor with beater frames for a quick change of beaters

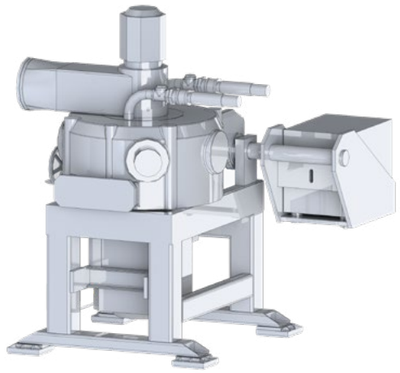
Meaning icon

- Compound Feed
- Pet food
- Fish feed
- Wood & Fibers
- Food
- Alcohol/Ethanol
- Special Applications

Meaning color

- Recommended Solution
- Possible Solution
- Not recommended

Ultra-Fine Grinding of Fish and Shrimp Feed



Impact Classifier Mill TICM

The impact classifier mill is specially designed for pulverization in the production process of extruded fish and shrimp feed. Fast rotating grinding tools and an integrated air classifier ensure finest particle sizes with a narrow particle size distribution.

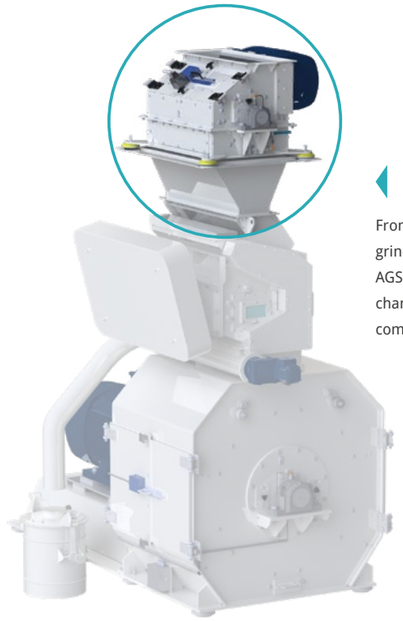
- For high demands on fineness and grist spectrum
- Finenesses of up to 98% < 200 µm possible
- Optimum quality of the extruded pellet due to homogeneous particle structure
- Energy-efficient ultra-fine grinding, no hammer mill required for pre-grinding

Pre-Crushing

Crusher CR 900

The Crusher CR 900 is a versatile machine for coarse crushing of bulk materials.

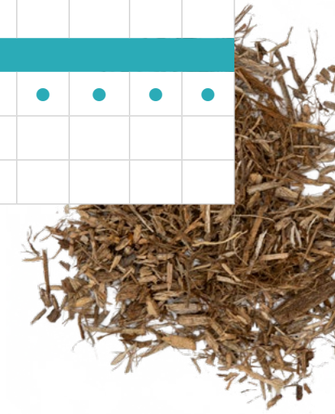
- To break up agglomerates
- Ideal for pre-crushing of pulses and pellets before the hammer mill
- Can be integrated in the grinding system or as a stand-alone solution
- Advantages of the Crusher CR for the grinding system:
  - Energy savings during grinding due to homogenization of the raw material
  - Protects against screen damages, as hard and coarse components are reliably crushed

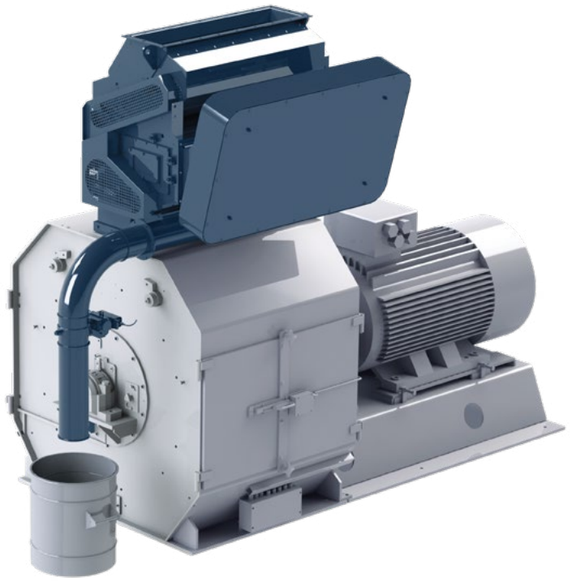


From coarse to fine grinding: Crusher CR, AGS AD feeder and large chamber hammer mill FD combined as a system

Our Particle Size Reduction Technology for Your Application

	Module Plant	VDK	LDE	VL	HM	GD	GDL	GDX	FD	TICM	SD	NDK	W	CR
Applications														
Compound Feed	●	●	●	●	●	●	●	●						
Pet Food	●	●		●		●	●		●	●				●
Fish Feed	●	●		●		●	●		●	●				●
Food	●	●	●	●	●	●			●	●				
Wood & Fibers	●	●		●		●	●				●		●	●
Alcohol & Ethanol	●	●	●	●	●	●	●		●			●		
Special Applications	●	●	●	●	●	●	●		●			●	●	●
Particle Size Reduction														
Pre-grinding/Crushing	●	●												●
Coarse Grinding (>1 mm)	●	●	●	●	●	●	●	●			●	●	●	
Fine Grinding (<1 mm)	●	●	●	●		●	●		●					
Ultra-Fine Grinding (<0.4 mm)	●									●				
Screen Change														
At Standstill	●	●		●	●	●			●		●	●	●	●
During Idling	●		●				●							
During Idling, Fully Automatic	●							●						





Advantages

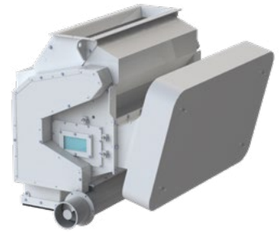
- The suitable feeder for every product
- Foreign body separation protects the mill and reduces downtime and spare parts costs
- Easy handling and cleaning
- Load-dependent control with our mill controller
- Explosion protected and flame-proof design according to ATEX possible, 0.4 bar pressure shock resistant, zone 21 (II 2D) inside and zone 22 (II 3D) outside

Tietjen Feeding Devices

The hammer mill can only be operated efficiently with an optimal charging of the feed material.

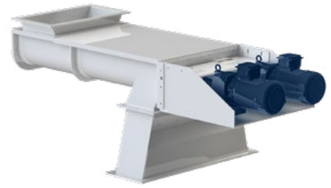
The distributed feeding of the product over the entire width of the mill has a significant influence on the grinding process and ensures lower wear operation. All feeders also serve to supply the aspiration air for grinding.

Air Gravity Separator AGS & AGS AD



- Foreign body separator for free-flowing products
- Separation of magnetic foreign bodies and heavy parts
- Feeding of the mill in combination with screw feeder TTS & TRS
- AGS AD with automatic foreign bodies discharge by an integrated screw conveyor

Screw Feeder TTS & TRS

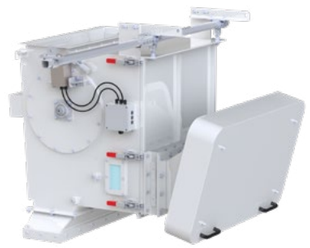


- Single, double, or triple screw design
- Suitable for products with poor flow characteristics
- Load-dependent feeding of the product onto the mill
- Ideal complement to the air gravity separator AGS & AGS AD
- Bridging of conveying distances between pre-hopper and mill

Vibration Feeder R

- Universal feeder for a wide range of bulk materials, also for heavy-flowing products and bulky material pieces
- Separation of magnetic foreign bodies
- Load-dependent feeding of the product onto the mill

Drum Feeder DA



- Foreign body separator for free-flowing products
- Separation of magnetic foreign bodies and heavy parts
- Load-dependent feeding of the product onto the mill
- Integrated explosion isolation to the pre-hopper
- Compact dimensions and only slight offset between inlet and outlet

Tietjen Grinding Module

The whole is greater than the sum of its parts. This also applies to grinding! Only with a grinding module that is tailored to the individual application and mill type top performance can be achieved.

The aspiration of the mill and the discharge of the ground product are as important as the grinding itself. For each application, our engineers choose the appropriate components to form a complete system from the raw material to the ground product. In doing so, they take into account the product characteristics and the structural space conditions in particular.

Advantages

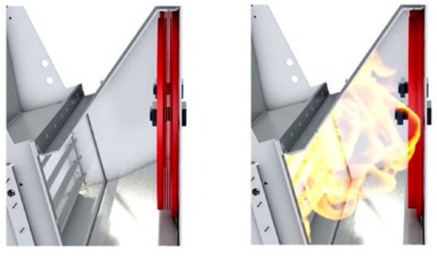
- Optimal grinding results
- High energy efficiency
- Perfect match of hammer mill, feeding device, aspiration, and discharge
- Individually adapted to the application
- Mechanical or pneumatic discharge
- Solutions even for difficult installation conditions
- Comprehensive explosion protection concept

Dust Explosion Protection

We also focus on explosion protection. Through our own research and development, we have contributed to making grinding plants safer today.
All our mills, crushers as well as feeders are 0.4 bar pressure shock resistant, flameproof and are delivered with EU Declaration of Conformity according to Machinery Directive and/or ATEX Directive.

However, comprehensive safety is only achieved in the overall concept with the components of the grinding plant and the safety technology. For example, rotary valves approved as a protection system prevent the spread of explosions to upstream and downstream plant components, or special valves ensure flameless pressure relief of the grinding module.

Relief valve E-Vent



Aspiration valve A-Vent

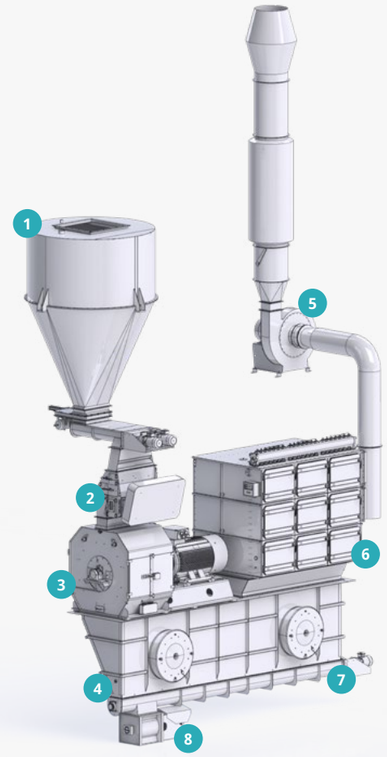
Grinding Module with Mechanical Discharge

1 Pre-bin for the feed material

2 Feeder for the load-dependent feeding onto the hammer mill with separation of foreign bodies and aspiration air intake

3 Hammer mill for grinding the product

4 Under-hopper for collecting the ground product. Dust particles in the aspiration air should be able to sink through a low air velocity to minimize the dust load of the filter



5 Fan for generating the air flow for the hammer mill aspiration

6 Bunker filter for separating the dust from the aspiration air. The filter dust is mixed with the ground product again via the under-hopper and the discharge screw.

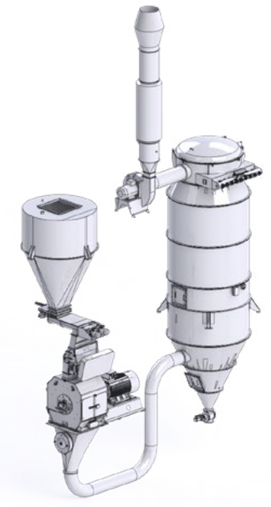
7 Discharge screw for transporting the ground product from the under-hopper

8 Rotary valve for discharging the ground product and as air lock of the grinding plant

Grinding Module with Pneumatic Discharge

In addition to mechanical discharge, it is also possible to pneumatically discharge the ground product after the mill. This variant is particularly suitable for high hygiene requirements, e.g. for food.

More information about the grinding module:
tietjen-original.com/en/products/machines/grinding-module



Plant Engineering

We do more than grinding, namely sieving, sifting, mixing, storing, conveying, and much more. As a solution provider, we not only focus on the mill, but also combine it with other process steps.

Together with our customers, we develop an individual process diagram, from the raw material silo to the finished product.

The combination of a hammer mill with a suitable sieving machine or classifier contributes to significant energy savings in grinding and increases product quality and process reliability.

Mixers homogenize the raw materials before grinding and thus increase the efficiency of the mill. We also offer options for mixing ground products with other components.

In addition, we provide complete solutions with suitable silo and conveyor technology, steel construction, and control technology.

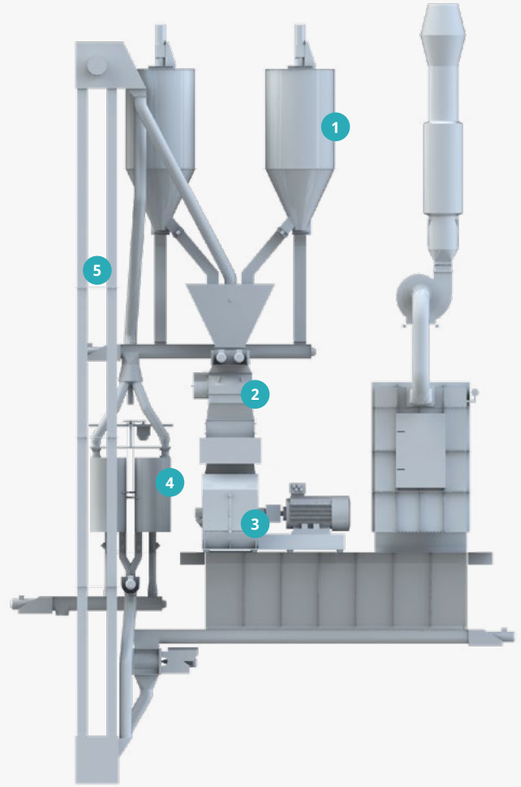
The realization of your project will be accompanied by our engineers and technicians until production start-up.

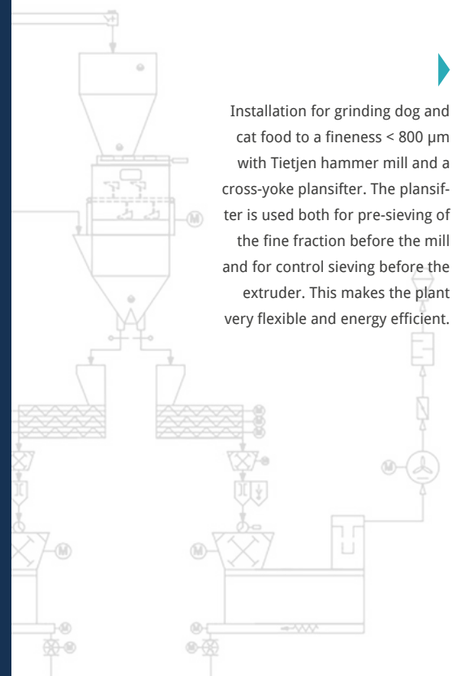
Advantages

- Complete solution from a single source
- Minimization of interfaces
- Optimal integration of grinding into the overall process
- Benefit from our process engineering know-how
- Integration of further process steps
- Consideration of framework conditions such as space conditions, regulations, occupational health and safety
- Comprehensive project support until start-up
- One contact person as project manager
- Mounting possible

Example of a grinding solution for pet food or fish feed consisting of:

1. Pre-mixers for homogenization before grinding
2. Pre-crushing of coarse ingredients, such as beans or pellets
3. Grinding to the required fineness for extrusion
4. Sieving machine for control sieving of the ground product and return of the coarse material to the grinding module. Optionally, the machine can also be used for pre-sieving of the fines before grinding.
5. Conveyor system for material transport to the individual process steps

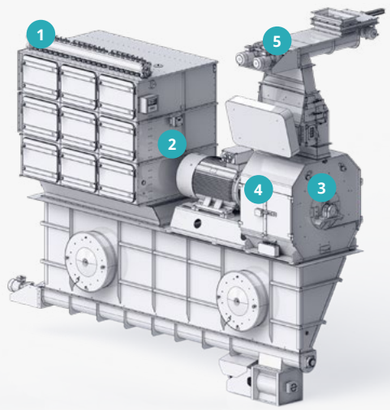




Installation for grinding dog and cat food to a fineness < 800 µm with Tietjen hammer mill and a cross-yoke plansifter. The plansifter is used both for pre-sieving of the fine fraction before the mill and for control sieving before the extruder. This makes the plant very flexible and energy efficient.

Measuring and Control Technology

To fully utilize the capacity of a plant for different products and to ensure its optimal performance, precise control is of great importance. All essential measuring and control equipment is therefore part of the standard equipment for our systems.

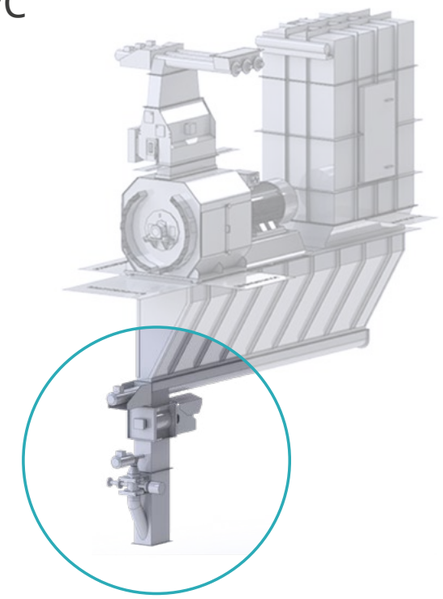


1. Air flow measurement to control the air volume for more energy efficiency
2. Vacuum controller for monitoring the negative pressure in the under-hopper for more process reliability
3. Temperature monitoring for bearings and grinding chamber for protection against overheating
4. Automatic mill door interlock with standstill monitoring for operator safety
5. Load-dependent feeding of the hammer mill via Tietjen mill controller for optimum utilization of the machine

Online Particle Size Controller OPC

The Online Particle Size Controller OPC continuously takes samples from the ground product and analyses them by means of a camera system and evaluation electronics regarding the particle size distribution.

- Evaluation and detection of screen damages in the mill
- Evaluation and detection of wear on beaters and screens
- Optimization of maintenance intervals due to grain size changes during operation
- Output of two alarm or limit values
- Integrated sampling with sample return to the process
- Different products or recipes without recalibration
- Easy to retrofit into an existing system via flared flange



Service and After Sales

A machine or plant has to produce. It is therefore important that service quality and spare parts availability are right to minimize downtimes.

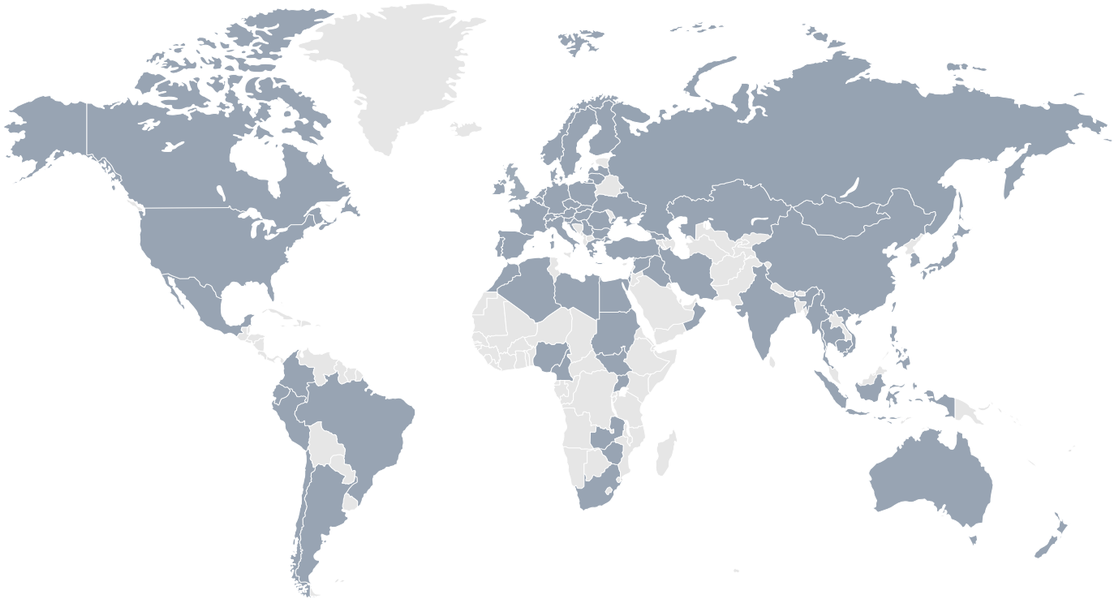
Whether you need a brief information or advice, order a few screws or the year's supply of wear parts, want an inspection or a complete assembly - we are at your side in any case and at any time. Because we know every detail of each of our more than 2,200 installed hammer mills, we can help you quickly and efficiently.

> With individual maintenance concepts, fast response times and our plant optimization, we increase the availability of your grinding system.

Christophe-Maria Schulze
Head of Service and After Sales

Our services

- Service worldwide
- Commissioning and plant optimization
- Flexible maintenance operations, also on weekends and according to customer request
- Inspection, maintenance and repair
- ATEX consulting
- Spare parts stock
- Spare parts availability guaranteed for 20 years
- Trainings on site and online



Installations Worldwide – Our references

More than 2,200 Tietjen hammer mills have been installed worldwide since 1959. Our customers range from small mills to global corporations. Our performance and quality are always convincing.

Good Feed, Good Food. Large Capacity Mill for Manufacturer of Compound Feed

Canada **Compound Feed**

Since 2020, a Tietjen large chamber mill GDL 25 has been improving the production of compound feed at a feed mill with associated farm supply in Ontario, Canada. It is one of many of our mills in North America that ensure a trouble-free grinding process.

Sustainable Production of Fish Feed

Vietnam **Fish Food**

The aquaculture market is rapidly evolving. The demand for safe and sustainable sources of fish is growing. At the company's site in Hai Phong in the north of Vietnam, the Dutch feed manufacturer has increased production capacity with a Tietjen FD 25 grinding system.

Grinding Solution for Pet Food Creates Yield Increase

South Africa **Pet Food**

The combination of a grinding module and a cross-yoke plansifter provides the customer with a maximum flexible and energy-efficient solution for the optimal grinding of raw materials to produce premium petfood for dogs and cats.

Bean Grinding for Gluten-Free Pasta

Sweden **Food**

Bean flour for making gluten-free pasta has been produced in Sweden since 2017 using one of our Tietjen hammer mills.

Wood Pellets as a Climate-Neutral Fuel

Croatia **Wood & Fibers**

Two kilograms of wood pellets are roughly equivalent to the efficiency of one liter of heating oil. Pellets are a contribution to breaking away from dependence on fossil fuels. Tietjen hammer mills ensure optimal size reduction of the wood for the pellet press.

Bioethanol Production

Poland **Ethanol & Alcohol**

In Poland, Tietjen hammer mills are operated in several lines to produce bioethanol. In addition to the grinding, our scope of supply also included the weighing, the conveying technology, the control system, as well as the installation and commissioning.

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