



Processing Technology

PALLMANN

Big in size reduction

The Pallmann Program

ENGINEERING AND SERVICE

Design and manufacturing
Research and development
Production scale testing
Laboratory analysis
Worldwide service
Spare parts
Controlling
Process Control
Installation & Start-up
Overhaul & Repair

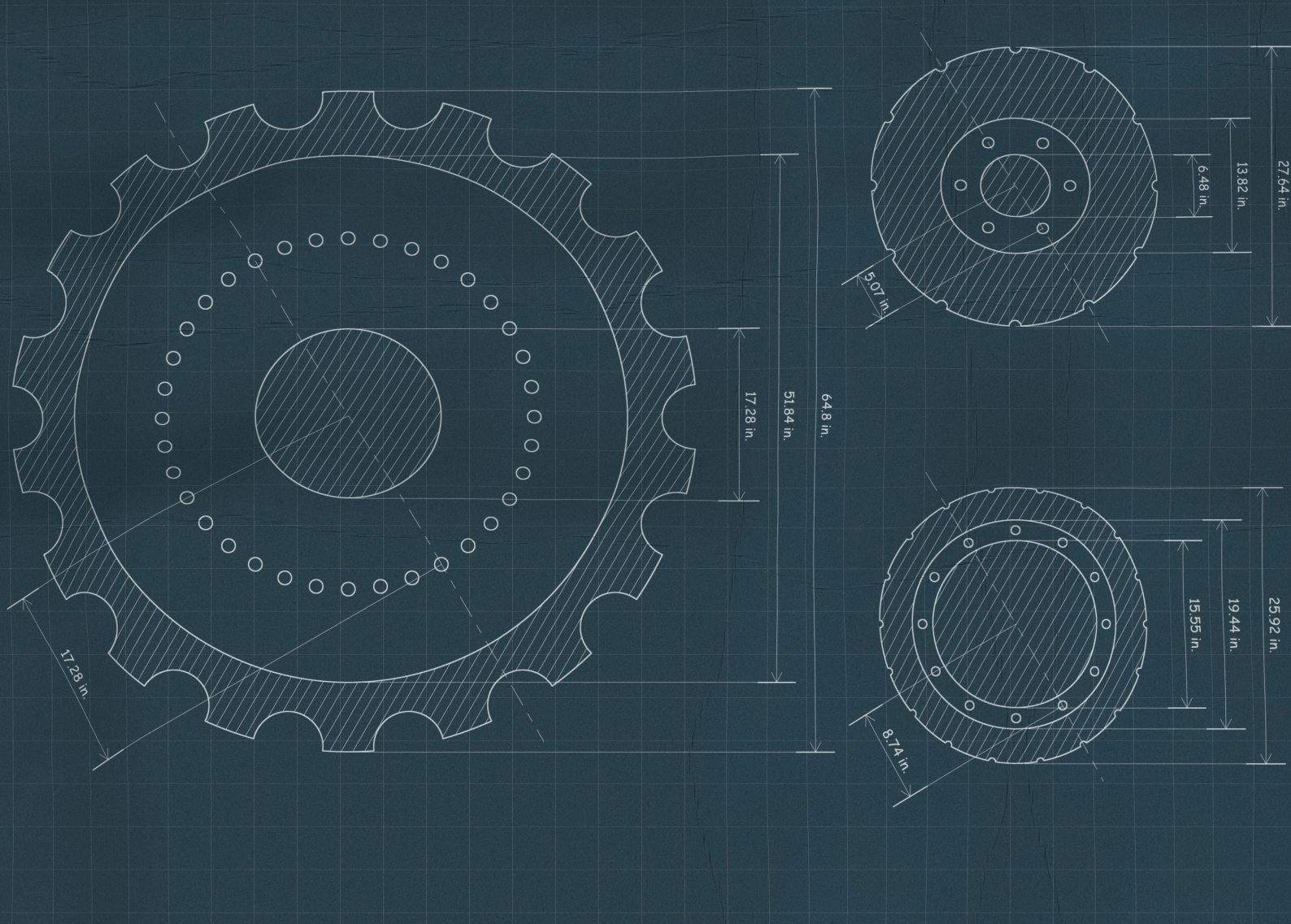
SYSTEM SOLUTIONS FOR

Pulverizing
Granulating
Agglomerating
Recycling

PRODUCTS

Agglomerators
Pulverizing Systems
Disc Mills
Turbo Mills
Pin Mills
Laboratory Mills
Universal Mills
Complete Grinding Systems
Knife Mills
Profile Shredders
Rubber Granulators
Pipe Crushers
Air-Swept Mills
Impact Mills
Industrial Granulators
Cryogenic Grinding Systems





Innovation from tradition

KNOW-HOW FROM OVER 120 YEARS OF EXPERIENCE

PALLMANN Maschinenfabrik is part of the Siempelkamp-Group and one of the leading manufacturers of machines and complete system solutions for the preparation and size reduction of nearly all materials with the focus on the wood industry, the recycling of residual and waste materials, the plastics industry, the gentle preparation of foodstuffs, the pharmaceutical and the chemical industry.

Sound technical knowledge, manual skills and intensive endeavor for optimum technical and economic solutions – these are still today the typical characteristics of a Pallmann specialist.

As a pioneer in many areas of process technology, Pallmann has again and again developed new concepts and set new standards. "Pallmann mills" are known worldwide for their efficiency and quality.

With innovative ideas, long-time know-how and always focused on our customers' success, we are globally active and locally present. Flexibility, efficiency and productivity in the market, increase of product quality and the recycling ratio as well as quicker market launch of new products are goals that we actively support.

Pallmann is known worldwide for quality and reliability. For the further- and new development of machines and systems as well as for trials, we operate here at our headquarters one of the most efficient research and technology centers for size reduction technology worldwide. A variety of different machine types are available to make tests together with our customers with their own material to find the optimal solution for their applications.

As the world is constantly changing, we see our customer relationships as a continuously evolving process as well. A process that characterizes all procedures and decisions in our company.

Our worldwide presence is ensured by a coordinated sales network for machines as well as for spare parts and customer service.

Our own service center secures the supply of wear parts and supports the customers in training their operating personnel. In case of a machine downtime or maintenance work, our experienced service technicians can quickly solve the problems at the site.



Research and Technology Center

HEADQUARTERS IN ZWEIBRÜCKEN

In its headquarters at Zweibrücken, PALLMANN operates the world's largest Research and Technology Center for size reduction techniques and is working there on development projects that will determine the markets of tomorrow.

PALLMANN offers you the opportunity to test your material and to establish solid data based on which you can make your proper investment decisions. Come and see for yourself in how many different ways we put our experience to work for you.

DESAGGLOMERATING
CRUSHING
SHREDDING

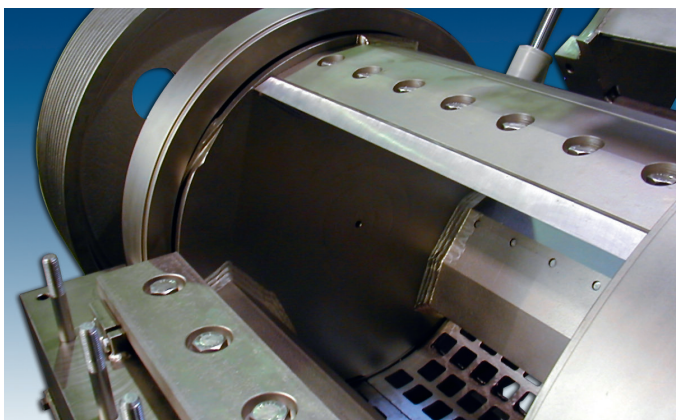
GRANULATING
CUTTING
CHOPPING

GRINDING
PULVERIZING
FIBERIZING

CRYOGENIC GRINDING
WET MILLING
DRY GRINDING

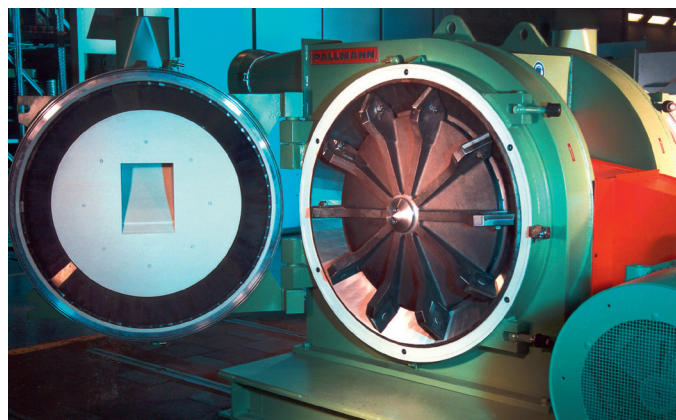
Top performance in size reduction

KNIFE MILLS



Material is fed to the cutting chamber via a chute. Size reduction takes place between rotor- and housing knives. The granular size of the end product is determined by an exchangeable screen installed in the lower part of the housing. Used for size reduction of elastomers, plastic film, fibers, rubber, cellulose, leaves, frozen meat vegetable or fruit.

TURBO MILLS



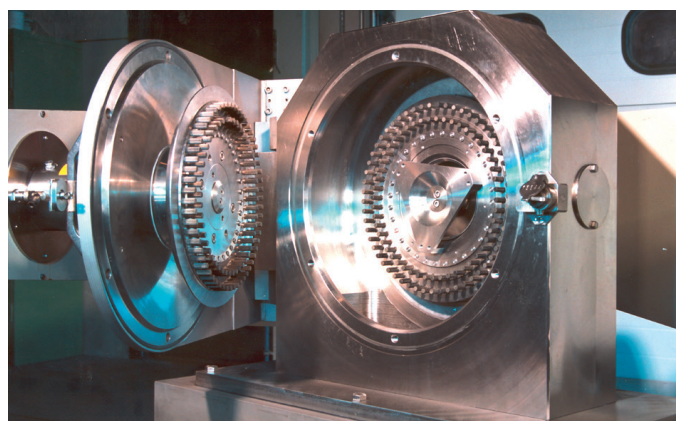
Size reduction through impact and friction effects as well as high-turbulent air whirls. Airflow through the mill determines the material retention time in the grinding chamber and thus also the degree of disintegration. Medium-fine to finest grinding and fine-defiberization of soft to medium soft materials.

AIR SWEEP MILLS



The material sucked into the mill is reduced by impact forces of collision of the particles among each other, as well as distribution onto the serrated grinding zone by the impeller fitted with beater plates. The suction air in heated condition is able to provide for a drying-grinding operation in a one-step process with a starting material moisture content of up to 60%.

BEATER MILLS



The material is reduced between a rotating and a stationary grinding disc. Mixing of different materials is possible due to high shearing effect. Grinding and pulverizing of dry, moist, greasy, crystalline or fibrous materials, breaking up of agglomerates, shredding, granulating, defiberizing.

A wide range of applications for the preparation of:

CELLULOSE

Powder production
Defiberizing
Ether and derivatives:
CMC
HPMC
EC, MEC, HPC, etc.

FOOD PRODUCTS

Spices powder
Herbs for extraction process
Wet bovine hide and pig skin for gelatine production
Sugar and salt
Beet pulp, etc.
Food ingredients
Rubber bales granulation for chewing gum production

FIBER MATERIALS, NATURAL AND SYNTHETIC

Aramid fiber
Hemp fiber
Textile recycling

BUILDING MATERIALS, SOFT MINERALS, INSULATION MATERIALS

Gypsum, plasterboard
Pulverizing of anhydride, talc, calcium carbonate, etc.
Cork

CHEMICAL PRODUCTS

Detergents
Fine chemicals, gel, soap products
Desagglomeration of polymers

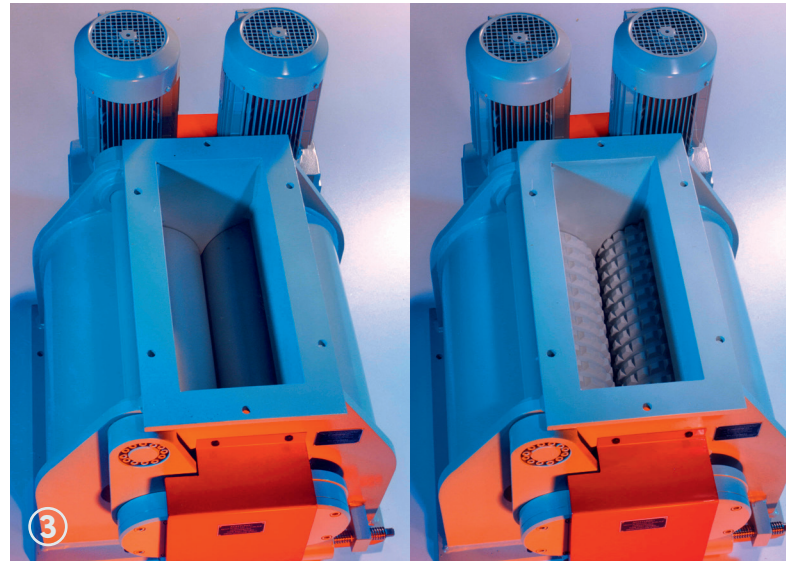
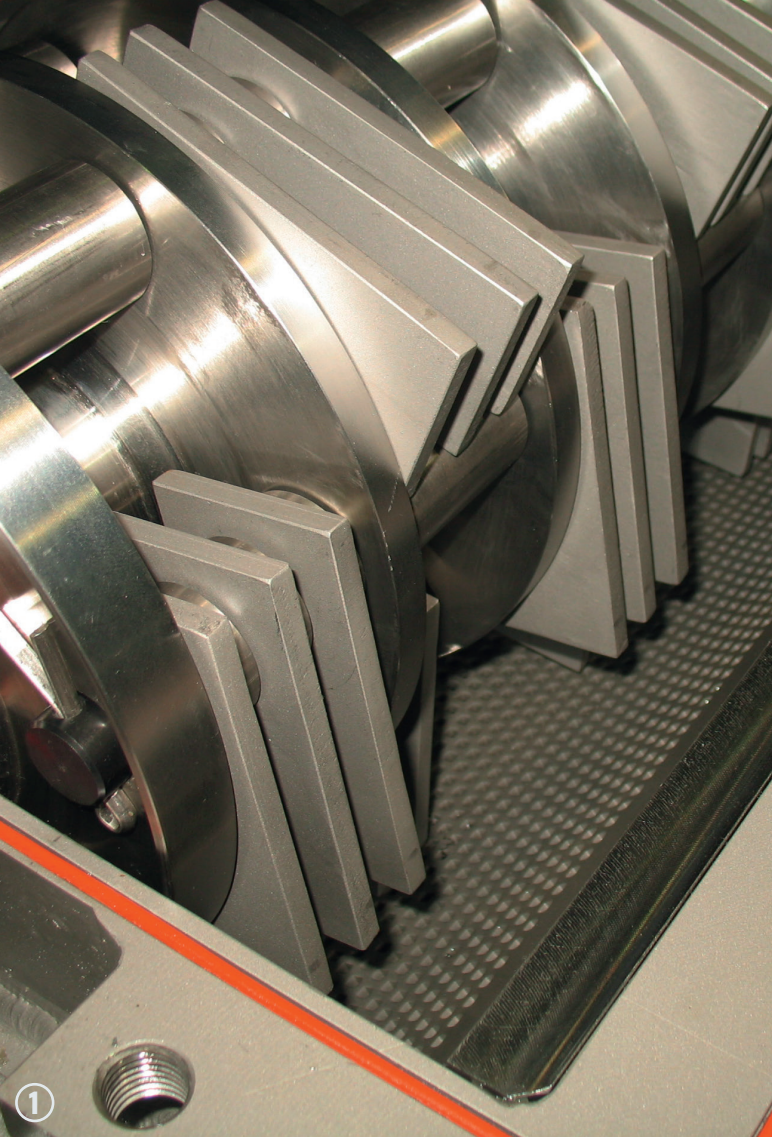
AUTOMOTIVE AND INDUSTRIAL PRODUCTS

Friction mass size reduction for brake pads

SOFT METALS

Aluminum, magnesium, copper, etc.





1. Hammer Mill, type PHM 2. Crusher, type PBD 3. Crusher, type PDWB

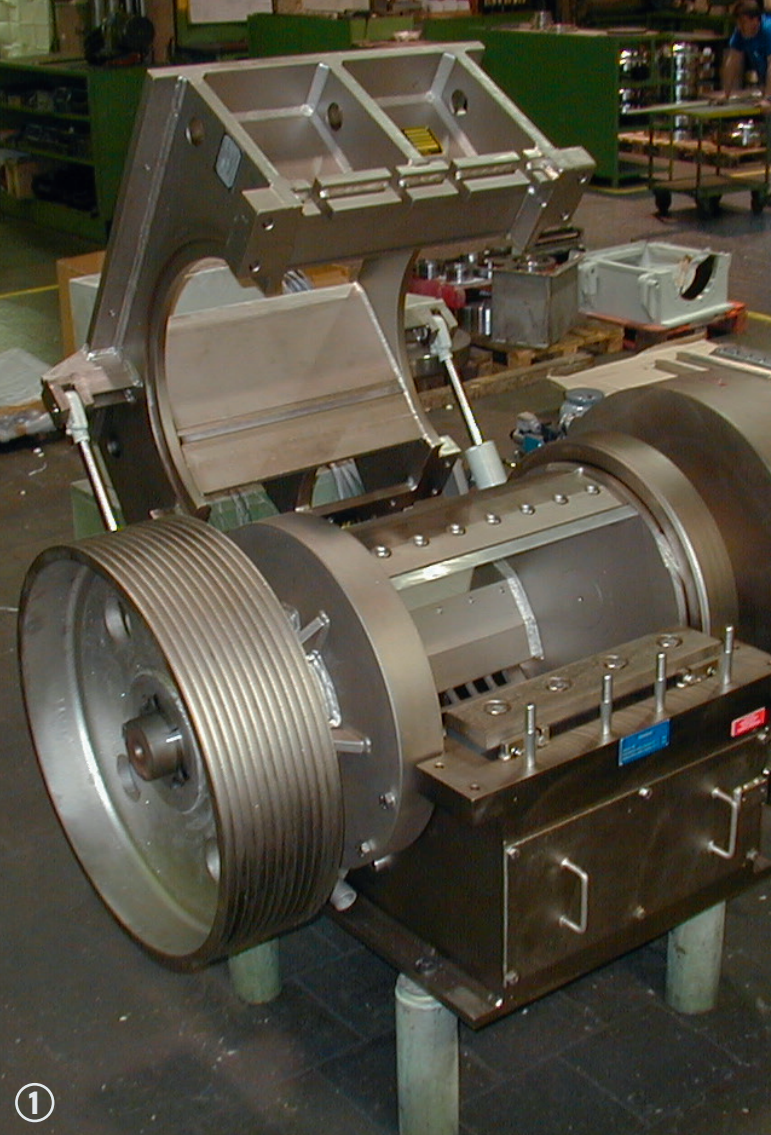
Pre-breaking/desagglomeration

Pre-breaking, coarse and fine reduction of all soft to medium hard materials at high throughput rates. Pre-breaking step in front of a pulverizer. Desagglomeration of base chemical products and agglomerates of the processing as well as metering, conveying, mixing, bulk storage and for speeding up reaction times. Production of powders with low amount of fines from brittle to crystalline materials.

Various technical designs of hammer mills are available for a wide range of materials and applications in the field of process technology:

- for tearing and grinding of materials by impact force
- for defiberizing to shape of wool
- for intermittent deliberation and separation of composite material in one single process step, by screens able to open and close hydraulically according to time interval.

TYPE		PBD 32/43	PDWB 200–500	PHM 4–5	PHM 4–10
Scale-up factor	F=ca.	1.0	1.0	1.0	2.0
Infeed opening	mm	330 x 462	200 x 510	400 x 500	400 x 1000
Motor	max. kW	7,5	2.2 + 2.2	22	22–55



1. Knife Mill, type PS 6–9 2. Precision Knife Mill, type PS 5-10

Granulating

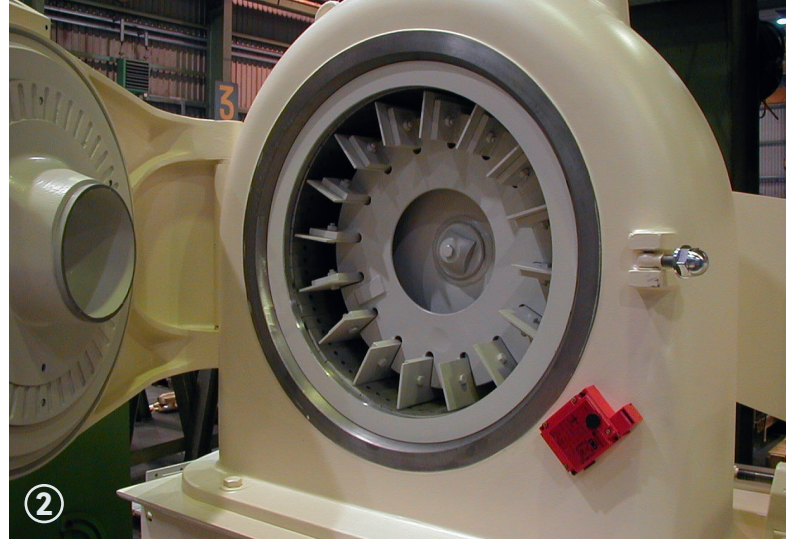
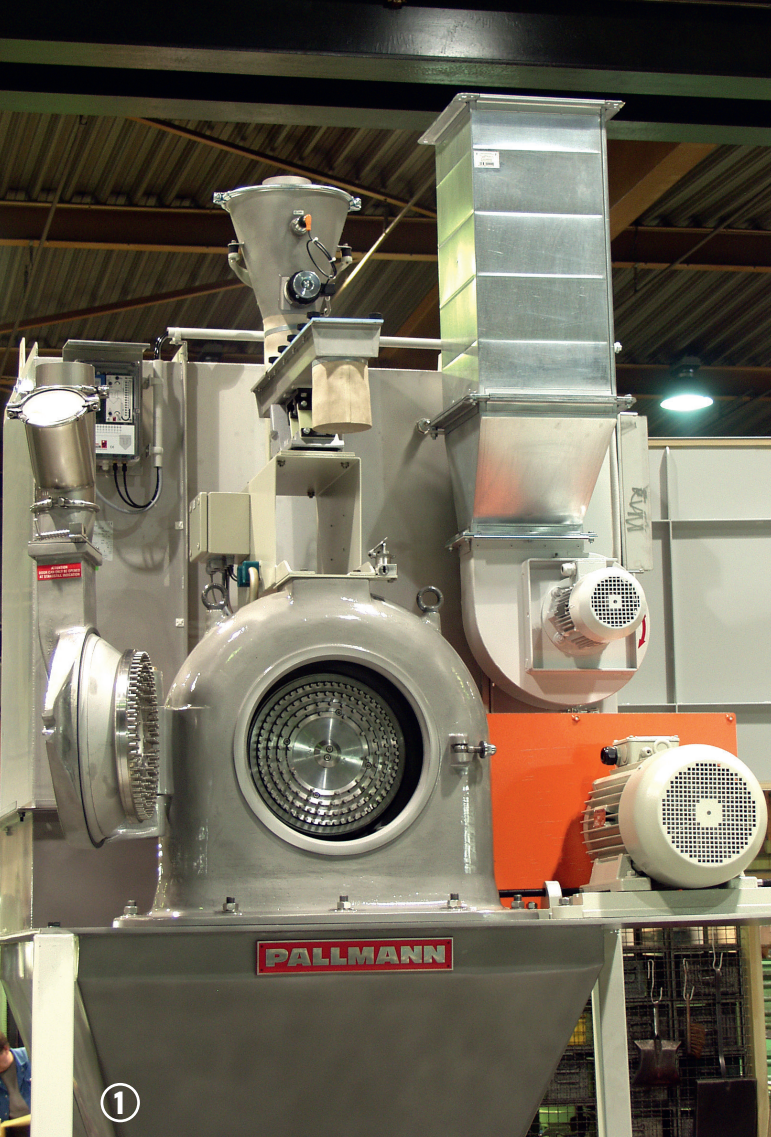
PALLMANN supplies complete lines of granulators, chippers and knife mills for the size reduction of materials which can be cut. Depending on the type of material and the requirements, different infeed systems are to be used: Belt conveyor, feed rollers, load controlled feeding with vibratory feeder.

The machines are equipped with open or closed rotors with straight cut, slanted cut and scissors cut. The feed stock is conveyed to the cutting chamber automatically or manually and reduction is performed between the rotor- and the hou-

sing knives which are pre-adjusted outside the machine. The granular size of the end product is determined by the screen mesh size chosen.

Where conventional techniques reach their limits, PALLMANN offers innovative solutions such as high speed knife mills for pulverizing of cellulose, granulators for the production of clean cut rubber chips, shredders for the size reduction of soft metals and scrap from the electronic industry, heavy duty granulators for polycarbonate purgings, cable waste, animal waste and leather waste.

TYPE		PS 4–5	PS 6–6	PS 6–9	PS 8–12
Scale-up factor	F=ca.	1.0		2.7	4.8
Cross section	mm	400 x 500	600 x 600	440 x 925	620 x 1230
Motor	max. kW	18.5–45	90	75–90	110–160
EW optional	y/n	y	n		



1. Grinding installation with Pin Mill, type PX 2. Double Stream Mill 3. Dust collector with blower and muffler

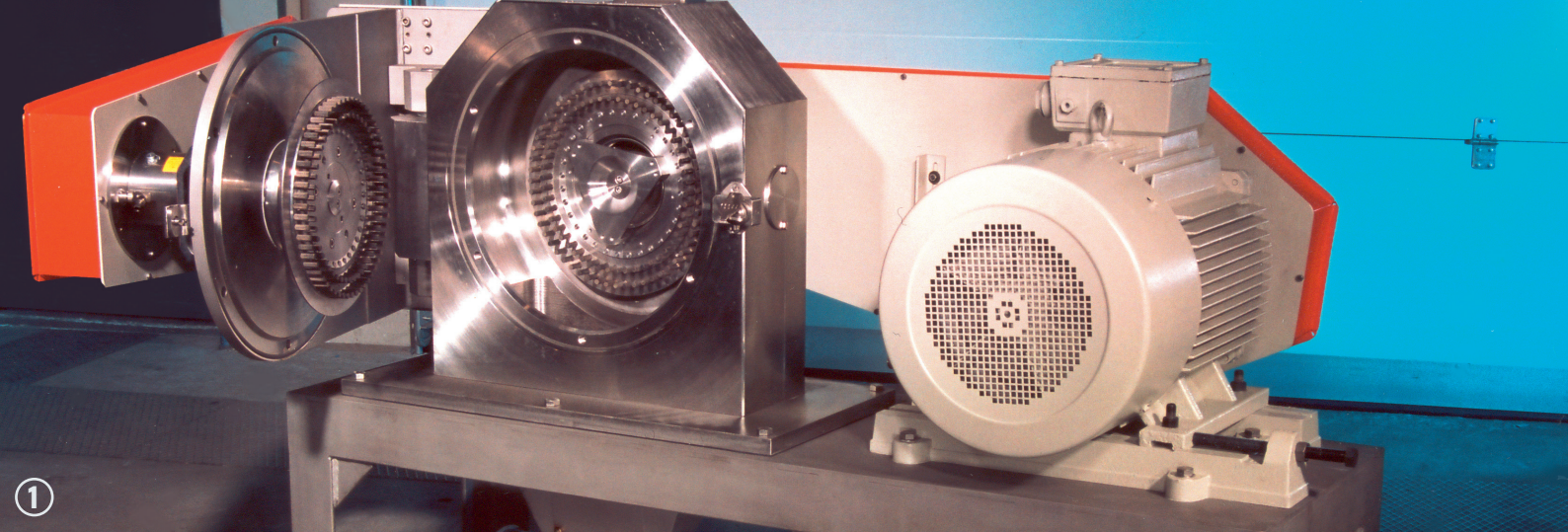
Pulverizing

THE RIGHT MILL FOR EACH REQUIREMENT

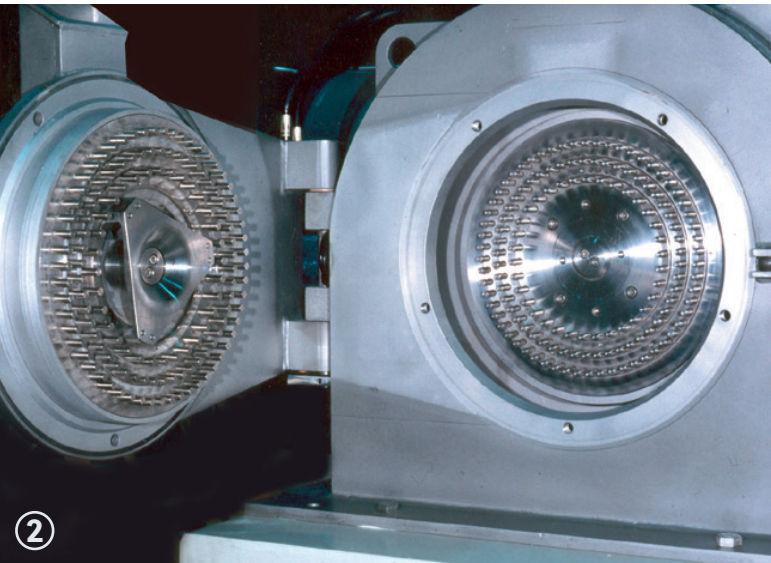
PALLMANN offers a large line of turbo mills, pin mills, universal mills, classifier mills, disc mills, hammer mills, screen mills and double stream mills for many different applications and materials for the chemical, pharmaceutical and feedstuff industry as well as the mineral, wood and plastic industry. PALLMANN engineers and supplies complete installations for any required capacity. Universal Mills, type PX are used for desagglomeration, preparing, coarse, medium fine up to 100 micron. All soft to medium hard materials (hardness 3 according to Mohs) for dry, moist or wet grinding, even of fatty

and adhesive materials. The feed stock comes centrally into the grinding chamber. Size reduction is done according to the requirements: Either between rotating impeller and stationary grinding path or between rotating impeller and stationary screen ring. The ground material is either sacked underneath the machine or mechanically or pneumatically conveyed. A lot of easily exchangeable grinding elements make the Universal Mill highly flexible for a large number of size reduction problems.

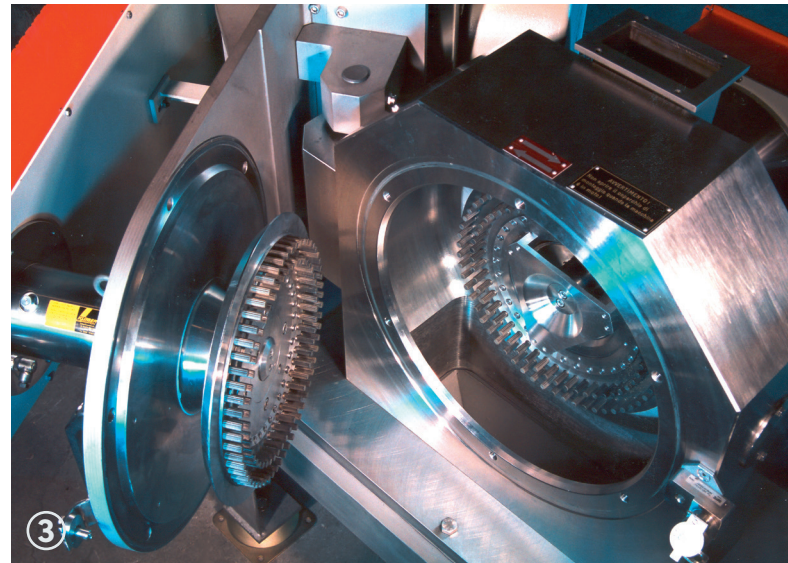
TYPE		PX 315	PX 630
Scale-up factor	F=ca.	1.0	4.0
Rotor diameter	mm	315	630
Motor	max. kW	22	75



1



2



3

1. Counter-rotating Pin Mill, type PPST 2. Cryogenic Pin Mill 3. Pin Mill

PIN MILLS, TYPE PST AND PPST

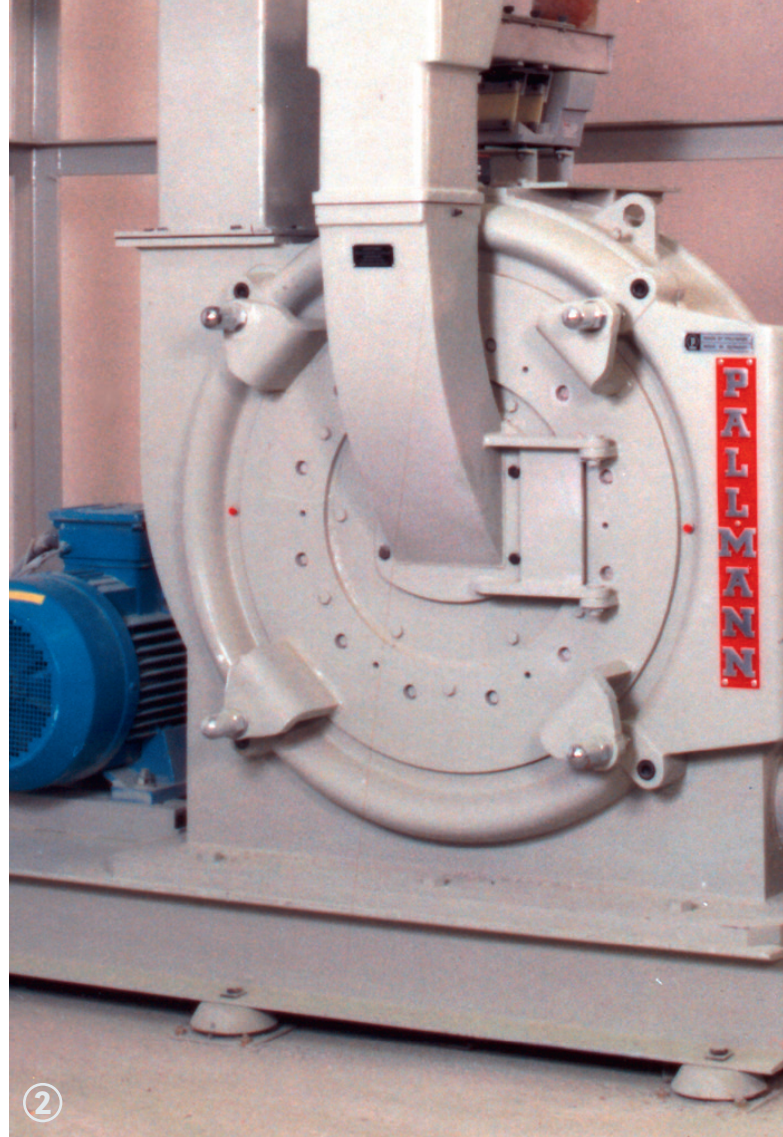
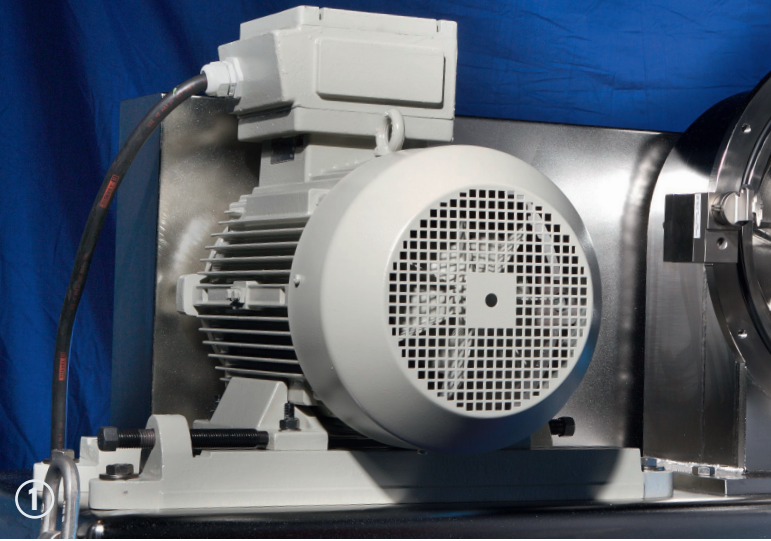
Pin Mills, type PST are used for fine to finest grinding of dry, brittle, or hard to grind materials.

Central infeed by dosing mechanism and magnetic separator. Grinding is done by impact and whirling between the concentrically mounted pin rows of the rotating and the stationary discs. Particle size is determined by speed, number and type of pins.

Pin mills, type PPST are high-speed, counter-rotating screen-less machines. Pin rows, concentrically fixed on rotor- and stator discs, micronize the particles. Special designs for cryogenic applications are available.

- Easy access to the grinding chamber due to large door
- Very fine powder due to high speed
- Special design for cryogenic grinding

TYPE		PPST 400
Scale-up factor	F=ca.	1.6
Rotor diameter	mm	400
Motor	max. kW	30+45



1. Turbo Mill, type REF 2. Turbo Mill, type PP

TURBO MILL, TYPE REF

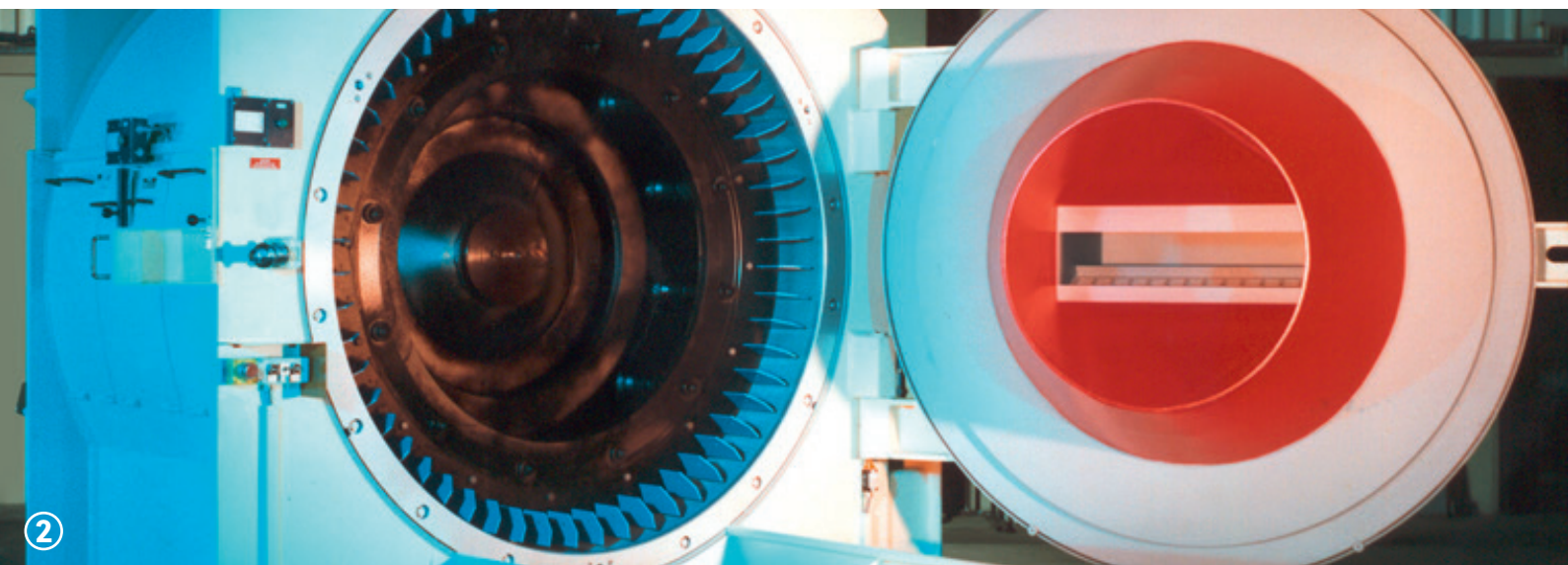
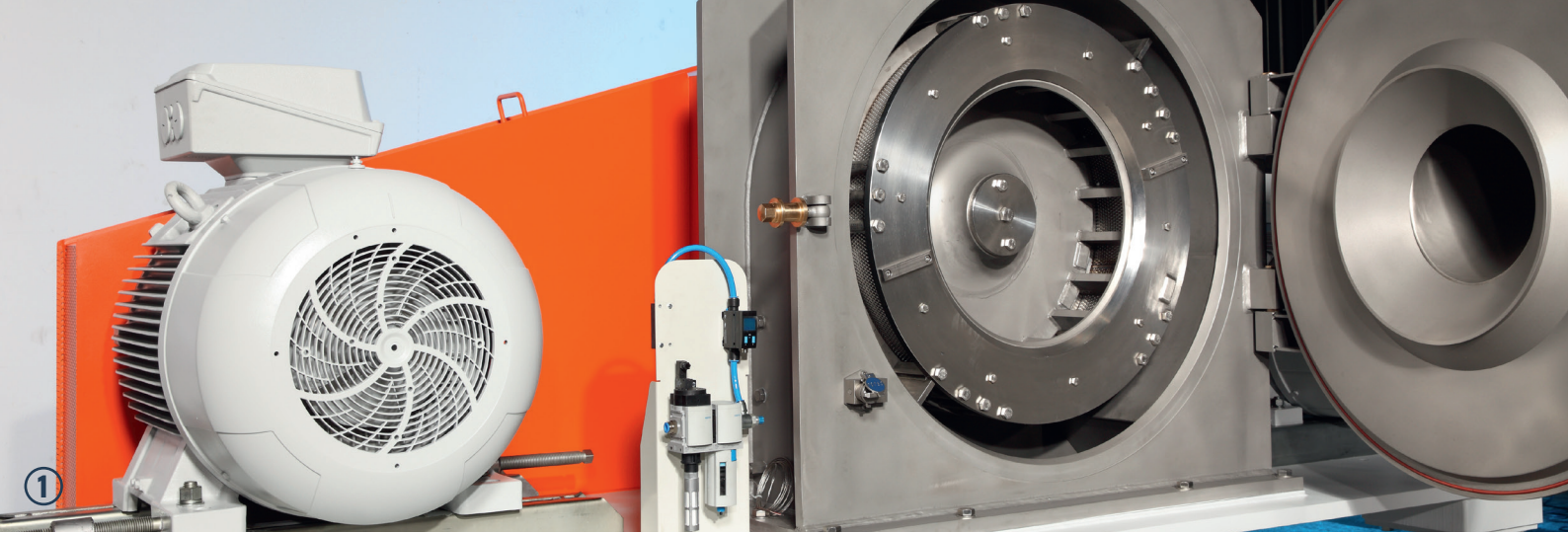
The Turbo Mill, type REF is used for medium to finest grinding and fiberizing of soft to medium hard materials (about 3 according to Mohs) to a particle size up to 5 micron. The desired particle size can be adjusted by different grinding elements and the air flow through the mill. The material remains in the grinding zone as long as it is fine and lightweight enough to be sucked and to pass through a gap behind the impeller wheel into a secondary chamber equipped with a fan wheel installed on the common shaft with the impeller.

The mill's construction has proven to be sturdy and reliable in hardest continuous operation. Typical mill use is in specific chemical and soft minerals grinding tasks. The smallest machine model REF 4 is also available as a stainless steel execution for high demand applications.

TURBO MILL, TYPE PP

The screenless Turbo Mill, type PP occupies a special position among the well-known grinding systems. Versatile configurations allow adaptations to specific pulverizing tasks. The baffle plate with grooved or serrated segments, counter-rotating to the impeller, allows to produce fine particles in harsh operation conditions.

TYPE		PP6S	PP8S	REF 4	REF 6	REF 8	REF 12
Scale-up factor	F=ca.	1.0	1.7	0.6	1.0	1.7	2.9
Rotor diameter	mm	600	800	400	600	800	1200
Motor	max. kW	11+30	18.5+45	22	45	75	132



1. Contra-Selector Mill, type PPS 2. Double Stream Mill, type PSKM

DOUBLE STREAM MILL, TYPE PSKM

Double Stream Mills, type PSKM are used for gentle pulverizing of dry or moist, soft to medium hard materials. They feature a wide range of applications such as fiberizing of fiber materials, food applications, e.g. dried gelatin pulverizing, wood flour grinding, and more. They ensure cool grinding at high throughput capacities and narrow particle size distribution.

CONTRA-SELECTOR MILL, TYPE PPS

Contra-Selector Mills, type PPS feature a rotating screen basket with an impeller on the inside. They are preferred for pulverizing of greasy, sticky and moist products. Thus, materials like press cakes, detergents, pigments, cellulose ether or spices can be processed to fine powders under ambient conditions.

—> Complete industry-tailored system solutions from PALLMANN ensure functionality and process stability.

TYPE		PSKM 8–460	PSKM 10–530	PSKM 12–600	PSKM 14–660	PPS 6–180	PPS 8–240
Scale-up factor	F=ca.	1.0	1.3	1.6	2.3	1.0	1.7
Rotor diameter	mm	800	1000	1200	1400	600	800
Motor	max. kW	110	160	250	315	55+30	110+55



1. Turbofiner, type PLM 2. Turbofiner, type PLMW

Process Machinery

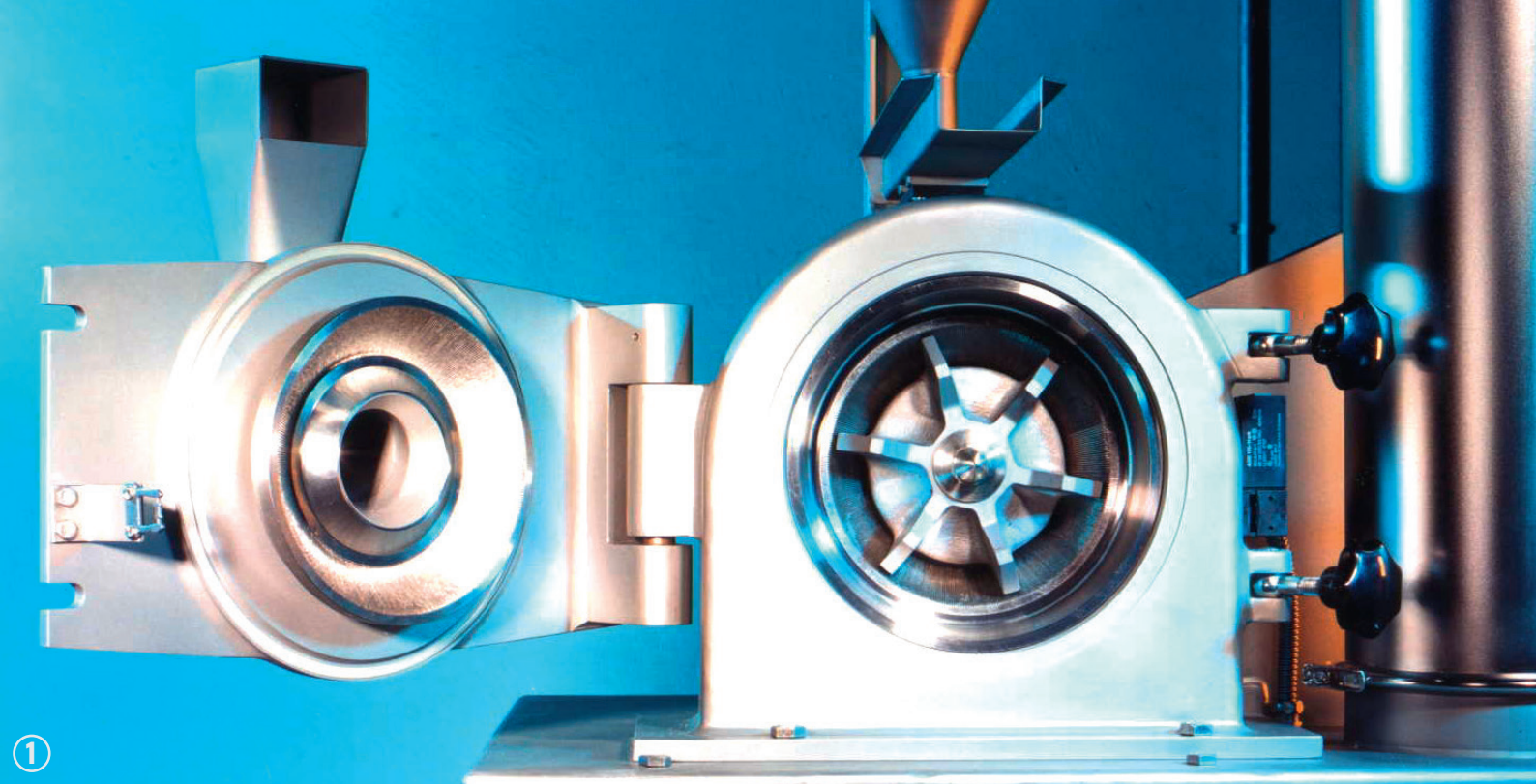
TURBOFINER, TYPE PLM

The Turbofiner, type PLM is a high-capacity size reduction machine for fine grinding of wet, pasty, heat-sensitive, organic and inorganic products into free-flowing powders. They are also used for grinding and drying in one step. The fineness of the material is determined by the retention time of the material in the grinding zone, the speed of the rotor, the grinding tools and the pattern of the profiles on the grinding path or in combination with a screening machine.

TURBOFINER, TYPE PLMW

The Turbofiner, type PLMW was innovated from the existing PLM machine for specific tasks. It introduces new special features, such as increased rotor speed, highly efficient process cooling for low temperature grinding where necessary by the type of material to avoid degradation, as well as an advanced machine design for optimized resistance against abrasive materials.

TYPE PLM/PLMW		800	1250	1800
Scale-up factor	F=ca.	1.0	2.4	5.0
Rotor diameter	mm	800	1250	1800
Motor	max. kW	45–90	132–200	250–560



1. Universal Mill PXL 18, type „Turbo Impeller“

Mills for laboratory and pilot plants

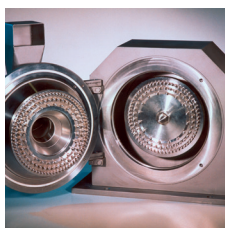
UNIVERSAL MILL, TYPE PXL

The Universal Mill, type PXL 18 is utilized for processing chemical materials, pharmaceutical products, food and feedstuff, fertilizers, drugs, spices, pigments, dairy products, minerals, cellulose and wood. This mill covers the full range of size reduction from coarse to superfine grinding down to minus 20 micron and product hardness up to 3 according to the Mohs scale.

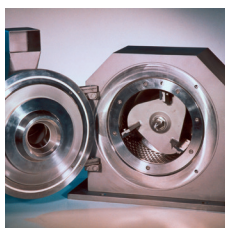
Due to the unique and wide selection of interchangeable grinding components and due to numerous possible combinations, there are hardly any limits to the field of applications for the Universal Mill, type PXL 18.

INTERCHANGEABLE GRINDING COMPONENTS

- Pin disc set
- Knife mill set
- Disc set PKM
- Turbo impeller
- Double stream impeller
- Wing beater
- Grinding track
- Screen ring
- Turbo mill set REF
- Circular beaters



PIN DISC SET



KNIFE MILL SET



DISC SET PKM



TURBO IMPELLER



WING BEATER



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