PMT
PowderMaker Technologies

Powder Managed Together

#powdermanagedtogether

A MEMBER OF GEDDY GROUP

GLOBAL EXPERT IN FINE GRINDING

NEW STANDARDS IN PRODUCT FINENESS

PMT is one of the leading companies in the field of dry grinding and classification of industrial minerals in the ultra-fine range. We develop and manufacture classifiers and spiral jet mills that are designed for maximum process stability and narrow particle size distribution. In order to meet the requirements of industries where the particle shape of the materials used is important, we have developed the PMT spiral jet mill. Our mills are specially designed to gently delaminate flake-shaped industrial minerals, achieving the finest grain sizes with top cuts below 1 µm.

ENGINEERING TO THE HIGHEST STANDARDS

We stand for reproducible quality, documented manufacturing processes, and consistent testing concepts throughout the entire life cycle. Through energy-optimized grinding technology and resource-saving designs, we also make a concrete contribution to European climate protection and sustainability goals in the powder and mineral industry.

FINENESS WITHOUT COMPROMISE

For many years, we have specialized in the dry fine and ultra-fine grinding of organic materials and soft to medium-hard industrial minerals with a high aspect ratio. Talc, mica, graphite, zeolite, wollastonite, barite or micaceous iron oxide – our customers rely on us to process these raw materials in such a way that they reliably fulfill the required properties in plastics, paper, paints and coatings, cosmetics, pharmaceuticals, and many other applications. Reproducible quality, process reliability, and economical operation are our top priorities.

Reproducible fineness down to 1 µm

At the heart of our portfolio are our proprietary spiral jet mill and our high-precision classifiers. With their integrated dynamic classifier and peripheral speeds of up to 190 m/s, they enable fineness down into the low micrometer range. The combination of gentle grinding and precise classification allows stable setting of defined top cuts in the submicron range.

Customized plant and system solutions

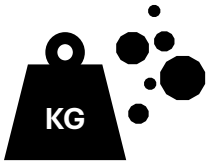
Our solutions are used both in customized plant concepts and in contract grinding plants on an industrial scale. This allows us to provide flexible support to our customers, whether to overcome short-term capacity bottlenecks or to open up new markets.

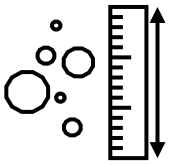
In a society that expects ever lighter, stronger, and more efficient products, precisely separated fractions are not a luxury but a prerequisite. High separation accuracy and homogeneous powder fractions are the basis for reproducible manufacturing processes and thus, product quality.

Dr. Jürgen Roth
CEO

❖ Sharp separation despite uniformity

The phenomenon of uniformity occurs when particles have the same settling velocity despite differences in size and density and can no longer be reliably separated in velocity-based separation processes. Our dynamic, high-performance classifier integrated into the spiral jet mill minimizes this effect by precisely adjustable peripheral speeds that provide sharp separation limits, low fines content, and reproducible product quality.





PRECISE GRINDING TECHNOLOGY FOR DEMANDING MATERIALS

❖ Industrial minerals

In the case of industrial minerals such as talc, mica, or barite with a flaky structure and high aspect ratio, grinding in conventional mills often leads to morphological destruction and undesirable rounding. The PMT spiral jet mill uses low-collision flow control for milling by shear forces, so that the flake morphology is largely retained. The dynamic classifier precisely separates particles and prevents over-grinding, resulting in narrow particle size distributions and reproducible functional properties.

❖ Chemical products

Chemical products such as pigments, petroleum coke, or melamine tend to agglomerate heavily, exhibit broad particle-size distributions, and feature sensitive surface chemistry. Conventional grinding technology easily creates hot spots, phase transformations, and metallic contamination. In the spiral jet mill, particles are accelerated virtually without contact. This reduces temperature peaks and foreign abrasion, while the high-performance classifier ensures a precisely adjustable top cut and stable, application-optimized powders.

❖ Natural products

Natural products such as algae, seeds, eggshells, or cocoa have complex microstructures and often high moisture or fat content. Conventional mills quickly lead to smearing, clogging, and thermal denaturation of valuable ingredients. The spiral jet mill from PMT operates without grinding media, with a small contact area and controlled process gas. This reduces temperature peaks, gently deagglomerates agglomerates, and preserves function, color, and sensory properties as much as possible.

OUR RANGE OF SERVICES

❖ Commissioning

Our commissioning service ensures that your PMT system achieves its full performance from day one. We support you from installation to stable production. Our specialists commission your system on-site, optimize process parameters, and train your operating personnel. This enables you to quickly achieve reproducible product quality, minimize start-up losses, and utilize the potential of PMT technology from day one.

❖ Repair

If you experience technical issues with your PMT system, our service teams are available to assist you quickly. We analyze the cause precisely, repair components, and document all steps. This reduces downtime, lowers risks, and reliably restores the performance of your production. You receive a technically and economically optimal repair solution, transparently calculated, with documented measurement results and reliable deadlines.

❖ Spare parts

Original PMT spare and wear parts ensure the long-term performance and availability of your system. Thanks to high stock availability and long-term delivery guarantees, we deliver the parts you need quickly and directly. This allows you to plan your processes, minimize production delays, and consistently maintain quality standards.

SERVICE & MAINTENANCE

❖ Integrated classifier

The integrated rotor-motor unit of PMT spiral jet mills combines a high-speed motor, a maintenance-free bearing system, and a vertically arranged classifier wheel. The patented rotor disc geometry enables circumferential speeds of up to 190 m/s, thus achieving maximum separation accuracy with d_{50} < 0.5 µm. The compact design, centrally integrated into the grinding chamber, reduces wear, increases plant availability, and provides the basis for reproducible grinding processes at high-throughput rates.

❖ Maintenance

We provide comprehensive support for maintenance. Our professional service for rotor motor units includes complete disassembly, cleaning, replacement of high-performance bearings, dynamic high-speed balancing, and documented measurement reports. We ensure predictable service intervals, maximum operational readiness, and transparent, optimized life cycle costs for your systems.

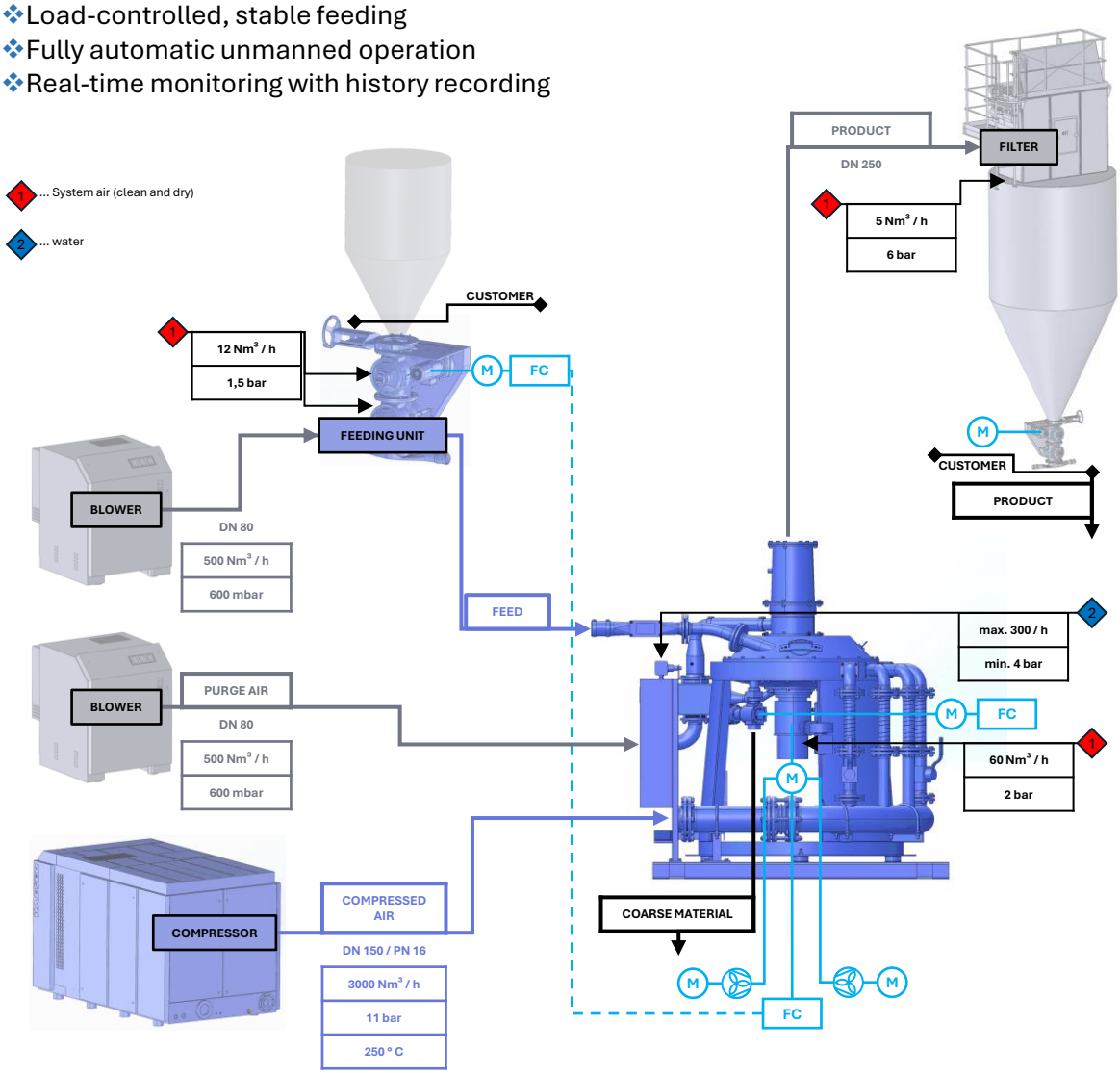
❖ Classifier discs

We supply modular classifiers made of high-strength aluminum alloy with a special coating, steel, or titanium, specially adapted to your product and wear requirements.

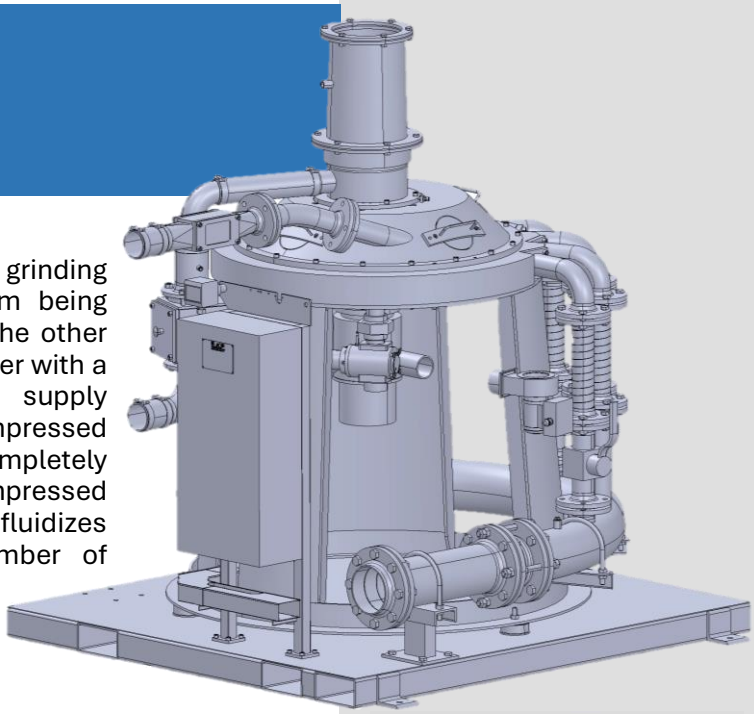
FULLY AUTOMATIC PROCESS CONTROL

The PMT system control enables centralized, fully automatic process control via an HMI panel and PLC system. Raw material feeding is regulated, depending on the load, via rotor current consumption, which serves as a measure of the load in the grinding chamber, preventing overloading and stabilizing the top cut for consistent final grain sizes. Optionally, we integrate remote access and complete data acquisition of all core parameters for real-time monitoring, trend analysis, and reliable reproducibility.

- Load-controlled, stable feeding
- Fully automatic unmanned operation
- Real-time monitoring with history recording

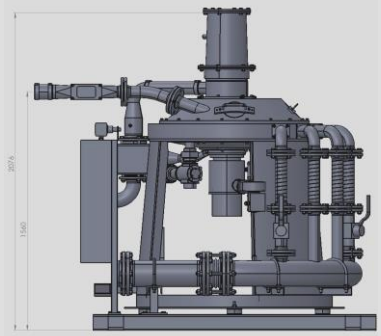


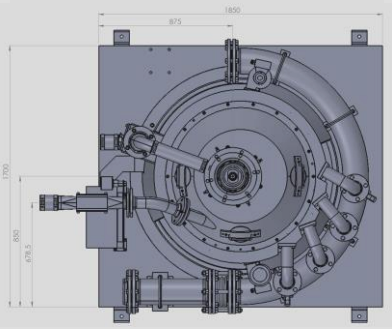
SPIRAL JET MILL
SJ 50 / SJ 15



Many jet mills use very small grinding chambers to prevent material from being deflected. PMT spiral jet mills, on the other hand, rely on a large grinding chamber with a high material load. This excess supply ensures that the energy of the compressed air jets is not wasted but is completely converted into the material. The compressed air introduced through the nozzles fluidizes and accelerates a maximum number of particles from the material bed.

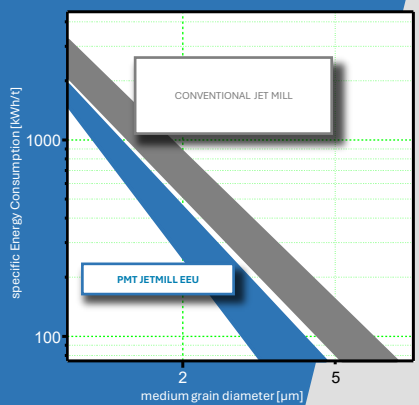
- Excellent top-size limitation of the finished product.
- Easy adjustment of product fineness by controlling the speed of the rotor.
- Controllable continuous discharge of hard grindable impurities (e.g., quartz).





PMT JETMILL – TYPE	SJ15-ER120	SJ50-ER100
FINENESS d_{97} [µm]	3 - 45	3 - 45
FINENESS d_{50} [µm]	0.5 - 10	0.5 - 10
COMPRESSED AIR [m^3/h]	800 - 1200	2400 - 3600
CLASSIFIER TYPE	2/260	5/260
PERFORMANCE FACTOR	1	4
CAPACITY (INDUSTRIAL MINERALS) [kg/h]	50 - 1000	200 - 4000

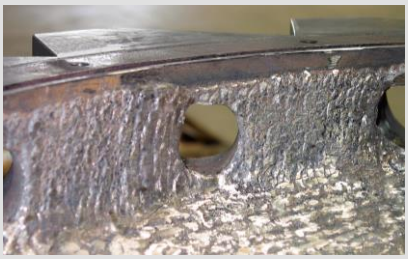
Fine grinding with compressed air is one of the most energy-intensive steps in mineral processing. The PMT-EEU system uses the heat generated during compression to convert thermal and pressure energy into higher jet speeds, thereby increasing the grinding efficiency, throughput, and separation accuracy of the entire process.

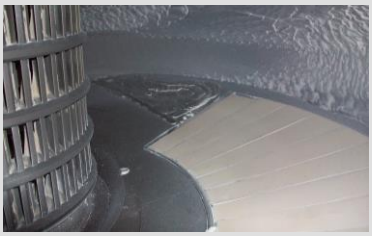


EFFECTIVE WEAR PROTECTION

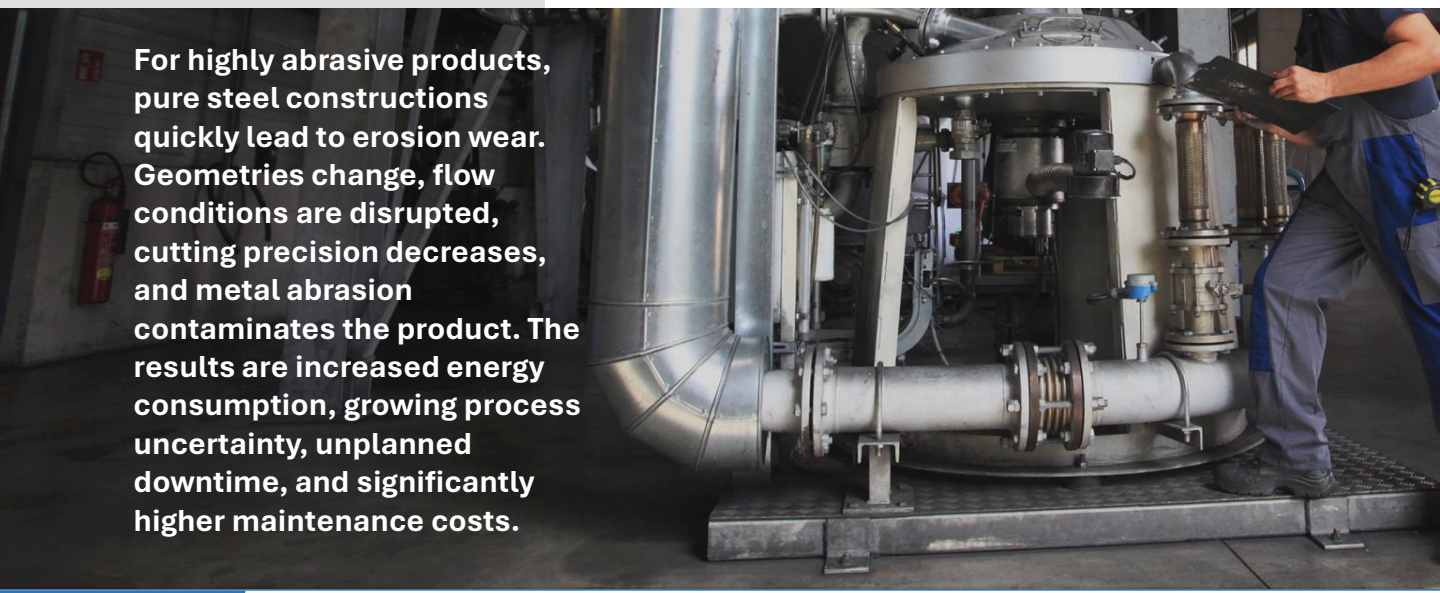
We offer replaceable sheet metal inserts made of highly wear-resistant steel (e.g., Hardox®). The plates are bolted or welded, easy to replace, and help protect the grinding chamber for a longer service life while also being easy to maintain.

One option is CPS1 welded armor, which is applied directly to highly stressed surfaces with a layer thickness of approximately 3 mm. The hard-alloy armor forms a tough, hard wear zone with very good adhesion, significantly reduces material wear, and stabilizes the flow geometry.





Al_2O_3 ceramic linings are used for extremely abrasive or metal-free applications, either specifically in flow hotspots or as full linings. The high hardness and chemical resistance of the ceramic minimize wear, prevent metal contamination, and increase the plant's long-term availability. At the same time, the flow geometry and separation characteristics remain constant over long periods, significantly improving process stability, the predictability of downtime, and compliance with strict quality and purity requirements.



For highly abrasive products, pure steel constructions quickly lead to erosion wear. Geometries change, flow conditions are disrupted, cutting precision decreases, and metal abrasion contaminates the product. The results are increased energy consumption, growing process uncertainty, unplanned downtime, and significantly higher maintenance costs.

MORE THAN JUST GRINDING

PROCESS INTEGRATION IN ULTRAFINE GRINDING

❖ Co-grinding – precise, homogeneous composition

In co-grinding, several raw materials are fed simultaneously into the grinding chamber via the fully automatic, load-dependent feeding system at a defined loading density and ground together. The fully automatic control system allows target recipes to be set directly in the grinding process. The intensive flow control in the grinding chamber results in a very homogeneous particle size distribution of the materials. The result is a co-ground product with a reproducible composition and a narrow particle size distribution, without an additional mixing stage.

- ❖ Defined recipe setting directly in the grinding process
- ❖ Homogeneous distribution of all materials across the entire particle size distribution

❖ Coating – functionalization in a single process step

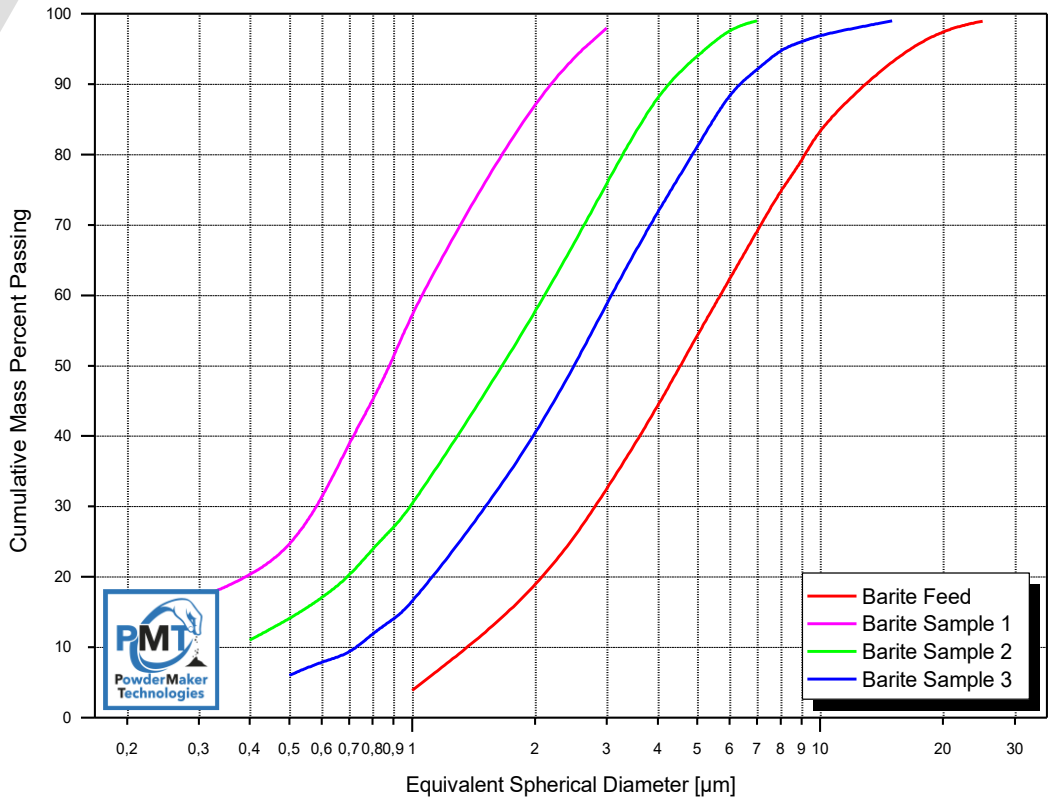
For inline coating, liquid additives are injected directly into the grinding chamber via fine atomizing nozzles and precise dosing units. The combination of grinding and flow control ensures that all particles in the gas stream are wetted by the additive film and evenly coated with it. This allows surface energy, wettability, or dispersibility to be specifically adjusted. Functionalization takes place directly in the grinding chamber, resulting in reproducible product properties and a clearly simplified process chain.

- ❖ Uniform, reproducible particle coating
- ❖ No downstream coating process necessary

PMT JETMILL SYSTEM SJ50

Datasheet Barite

TYPICAL PARTICLE SIZE DISTRIBUTION CURVES:



TYPICAL PRODUCTION DATA:

	Sample 1	Sample 2	Sample 3
d_{50} [µm] after Lasergranulometer Cilas 1064L	0,88	1,74	2,54
d_{97} [µm] after Lasergranulometer Cilas 1064L	2,65	6,40	12,10
Capacity [kg/h] [1])	300	1.600	4.500
Spec. Energy Consumption [kWh/t] [2])	1.260	240	85
Speed internal Classifier-Rotor [rpm]	7.200	3.200	1.500

[1]) Performance depends on the fineness of the feed material for the Jetmill and on the natural grinding hardness, which in turn is determined by the respective ore deposit. The values given are therefore only guidelines.

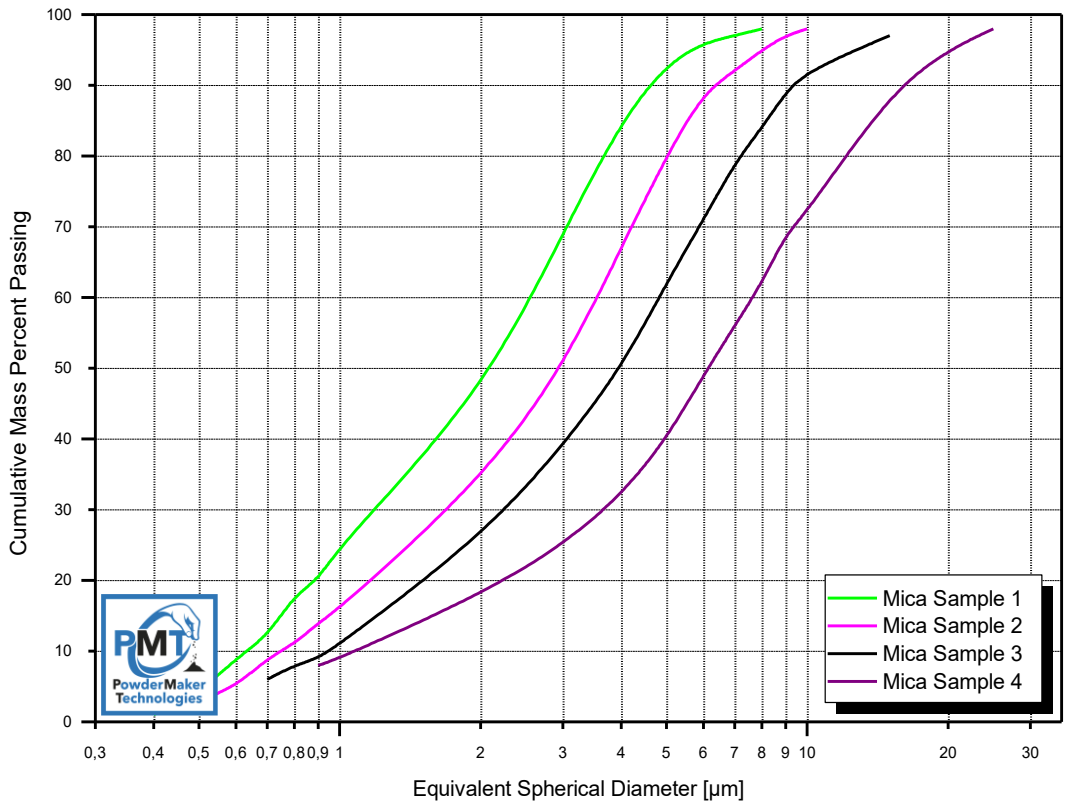
[2]) The data is based on operation with a compressor at 10 bar pressure, 185 °C air temperature, and 50 m^3/min intake air volume.

To ensure the optimal design of your plant, we support you in cooperation with experienced technical partners through practical test series on a Jetmill SJ15-CR/ER120 (performance scale approx. 1:4), including evaluation and transfer to production scale.

PMT JETMILL SYSTEM SJ50

Datasheet Mica

TYPICAL PARTICLE SIZE DISTRIBUTION CURVES:



TYPICAL PRODUCTION DATA:

	Sample 1	Sample 2	Sample 3	Sample 4
d_{50} [µm] after Lasergranulometer Cilas 1064L	2,18	3,00	3,96	6,22
d_{97} [µm] after Lasergranulometer Cilas 1064L	7,6	11,2	14,8	23,1
Capacity [kg/h] [1])	285	470	800	1.310
Spec. Energy Consumption [kWh/t] [2])	1.340	810	475	290
Speed internal Classifier-Rotor [rpm]	5.700	4.200	3.000	2.200

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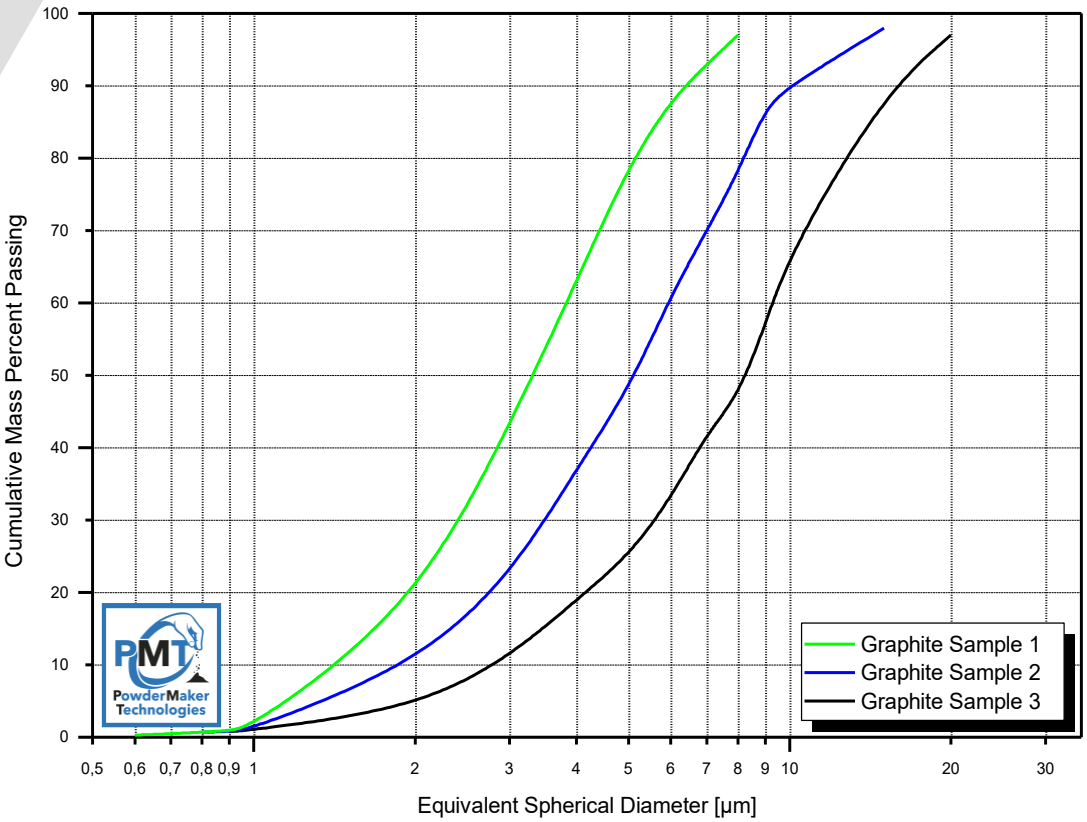
PMT JETMILL SYSTEM SJ50

Datasheet Graphite

TYPICAL PARTICLE SIZE DISTRIBUTION CURVES:



TYPICAL PRODUCTION DATA:

	Sample 1	Sample 2	Sample 3
d_{50} [µm] after Lasergranulometer Cilas 1064L	3,38	5,16	8,12
d_{97} [µm] after Lasergranulometer Cilas 1064L	8,4	12,9	20,9
Capacity [kg/h] [1])	185	320	770
Spec. Energy Consumption [kWh/t] [2])	2.060	1.190	485
Speed internal Classifier-Rotor [rpm]	9.700	6.700	3.700

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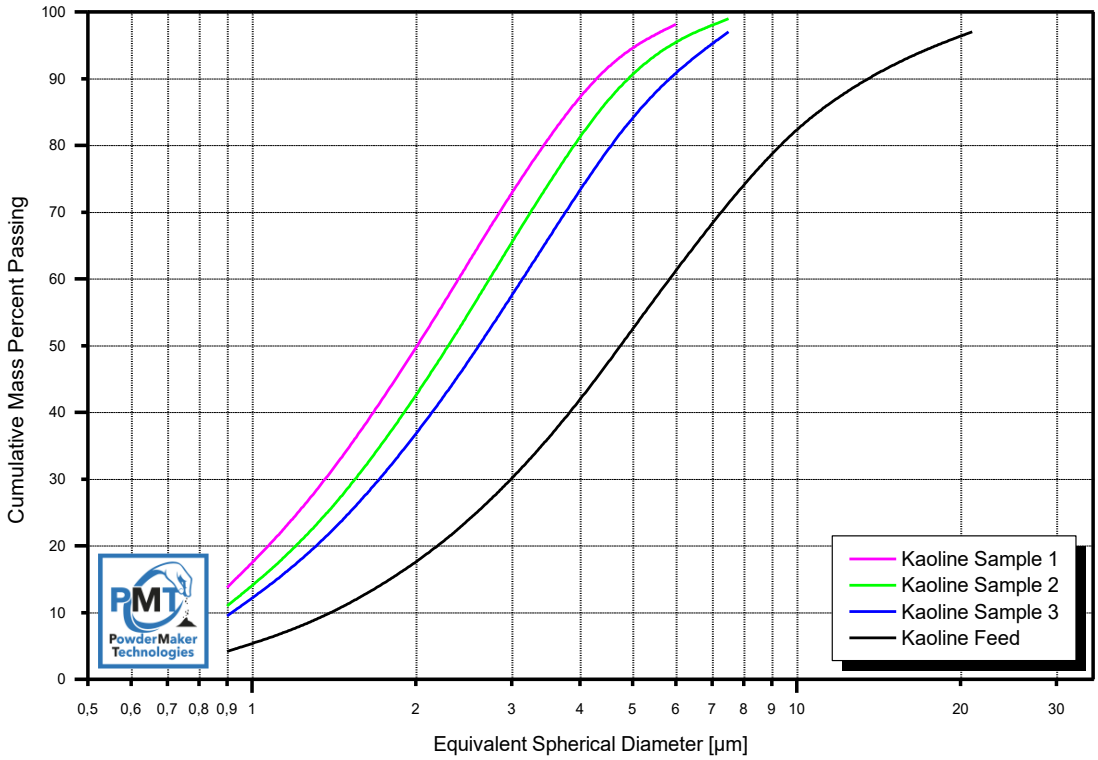
Datasheet Kaolin

TYPICAL PARTICLE SIZE DISTRIBUTION CURVES:



TYPICAL PRODUCTION DATA:

	Sample 1	Sample 2	Sample 3
d_{50} [µm] after Lasergranulometer Cilas 1064L	2,02	2,30	2,62
d_{97} [µm] after Lasergranulometer Cilas 1064L	5,20	6,60	7,20
Capacity [kg/h] [1])	170	250	400
Spec. Energy Consumption [kWh/t] [2])	2.200	1.500	900
Speed internal Classifier-Rotor [rpm]	9.700	7.700	5.700

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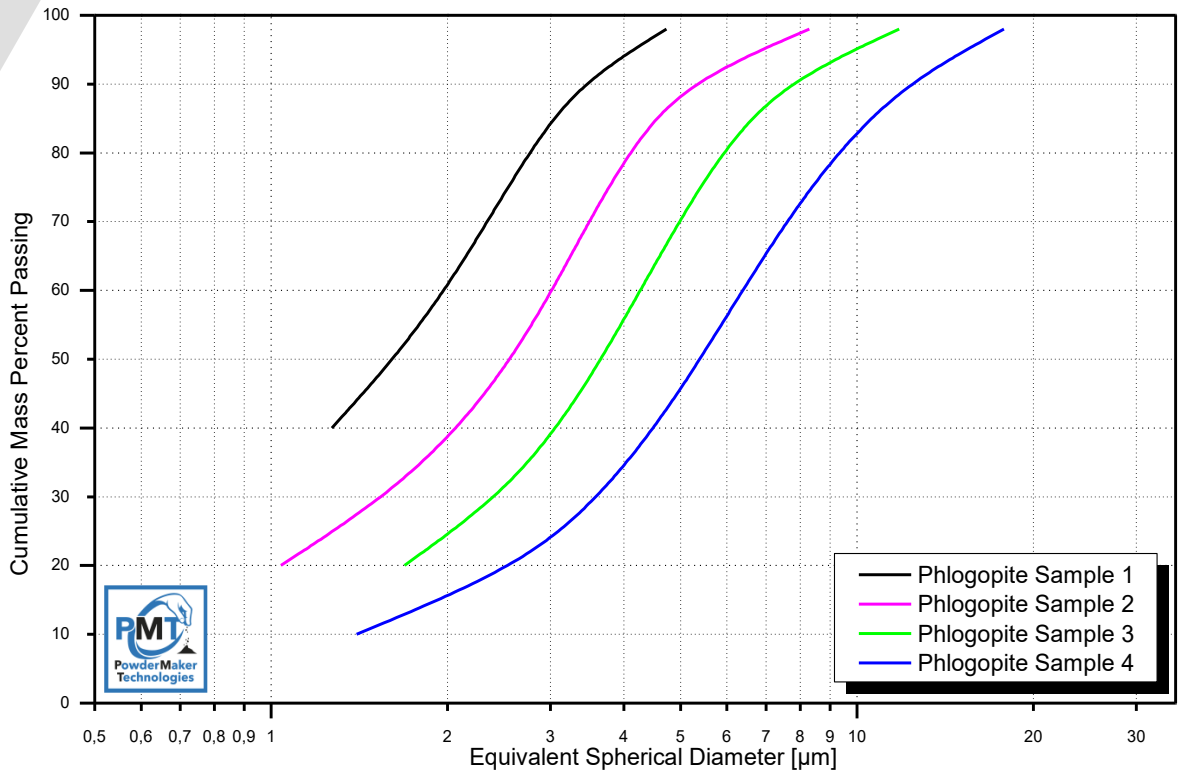
PMT JETMILL SYSTEM SJ50

Datasheet Phlogopite

TYPICAL PARTICLE SIZE DISTRIBUTION CURVES:



TYPICAL PRODUCTION DATA:

	Sample 1	Sample 2	Sample 3	Sample 4
d_{50} [µm] after Lasergranulometer Cilas 1064L	1,62	2,57	3,66	5,40
d_{97} [µm] after Lasergranulometer Cilas 1064L	4,50	8,20	11,40	17,10
Capacity [kg/h] [1])	250	510	840	1.300
Spec. Energy Consumption [kWh/t] [2])	1.450	730	440	285
Speed internal Classifier-Rotor [rpm]	6.700	4.200	3.000	2.200

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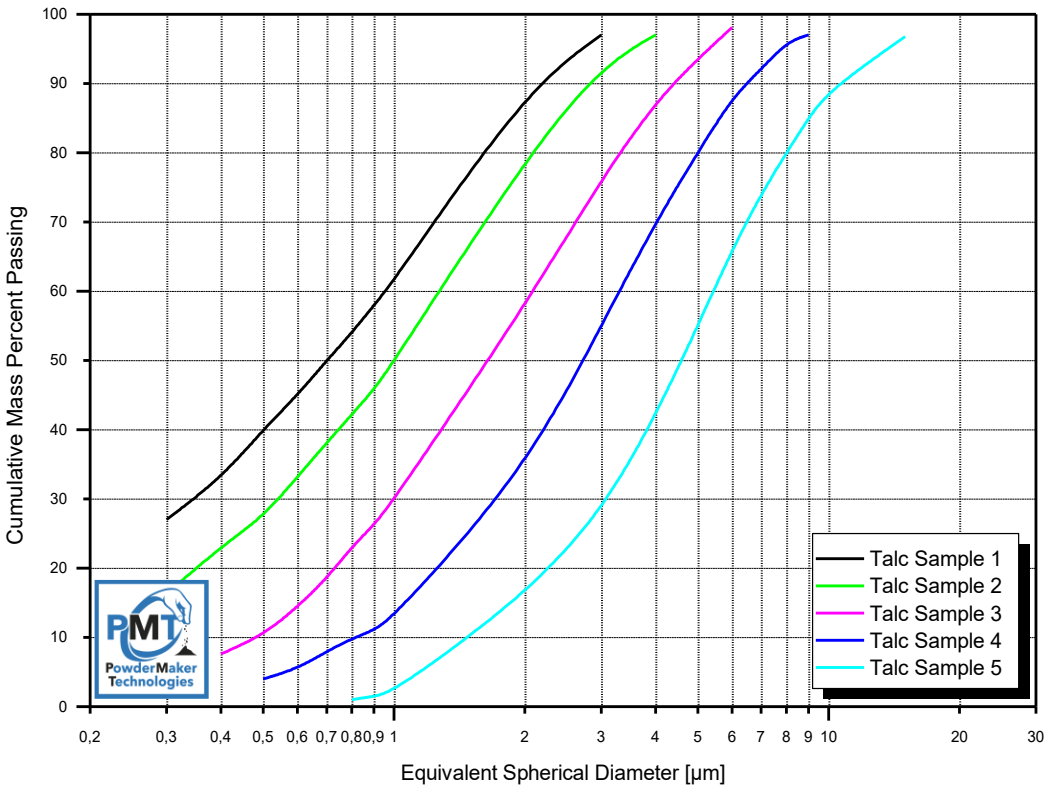
PMT JETMILL SYSTEM SJ50

Datasheet Talc

TYPICAL PARTICLE SIZE DISTRIBUTION CURVES:



TYPICAL PRODUCTION DATA:

	Sample 1	Sample 2	Sample 3	Sample 4	Sample 5
d_{50} [µm] after Sedigraph	0,71	1,01	1,75	2,81	4,58
d_{97} [µm] after Sedigraph	3,3	3,9	5,7	9,0	15,8
Capacity [kg/h] [1])	205	310	710	1.300	2.600
Spec. Energy Consumption [kWh/t] [2])	1.860	1.250	540	290	145
Speed internal Classifier-Rotor [rpm]	9.200	6.800	4.000	2.700	1.700

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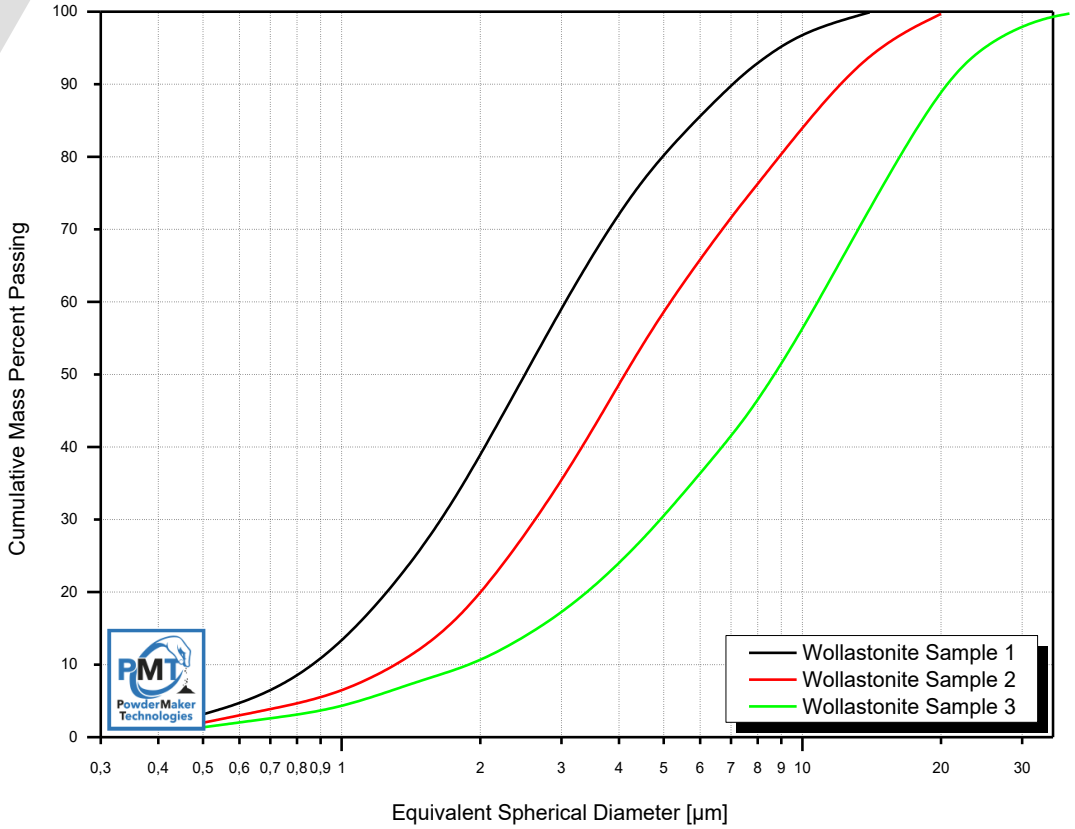
PMT JETMILL SYSTEM SJ50

Datasheet Wollastonite

TYPICAL PARTICLE SIZE DISTRIBUTION CURVES:



TYPICAL PRODUCTION DATA:

	Sample 1	Sample 2	Sample 3
d_{50} [µm] after Lasergranulometer Cilas 1064L	2,50	4,11	8,75
d_{97} [µm] after Lasergranulometer Cilas 1064L	10,57	16,45	29,32
Capacity [kg/h] [1])	286	600	1.406
Spec. Energy Consumption [kWh/t] [2])	1.301	620	265
Speed internal Classifier-Rotor [rpm]	7.700	4.700	2.700

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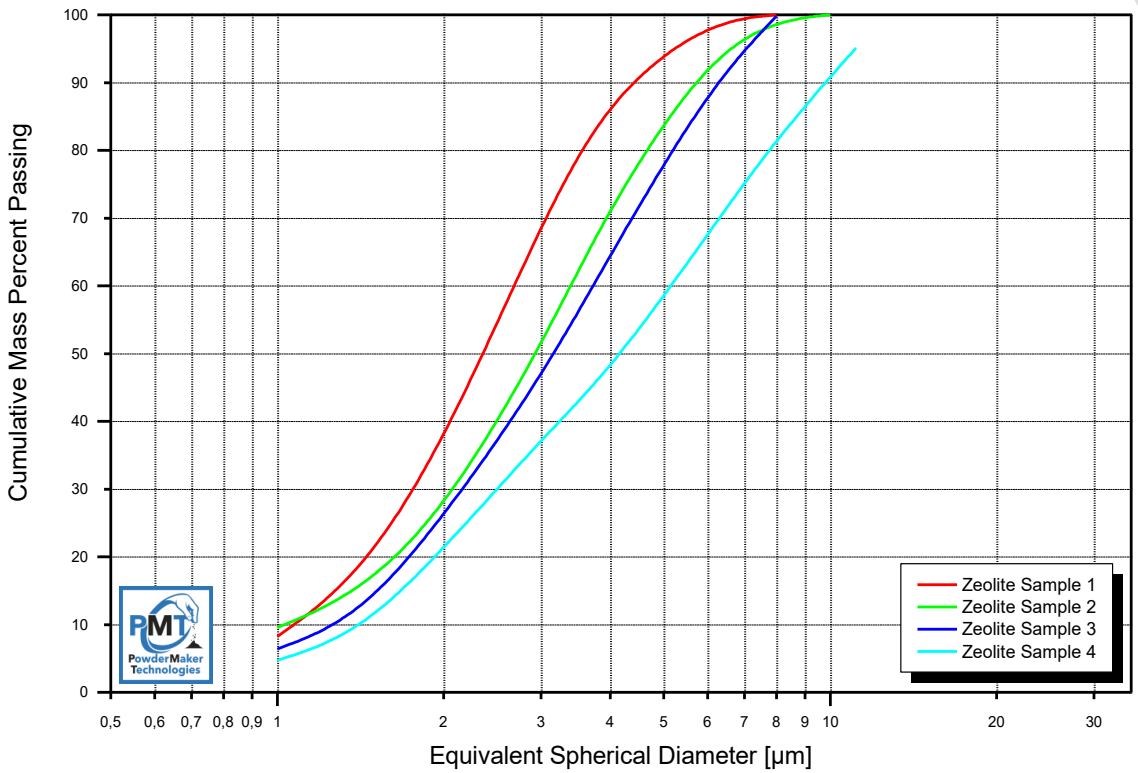
PMT JETMILL SYSTEM SJ50

Datasheet Zeolite

TYPICAL PARTICLE SIZE DISTRIBUTION CURVES:



TYPICAL PRODUCTION DATA:

	Sample 1	Sample 2	Sample 3	Sample 4
d_{50} [µm] after Lasergranulometer Cilas 1064L	2,2	2,6	3,2	4,2
d_{97} [µm] after Lasergranulometer Cilas 1064L	5,0	5,6	7,0	11,6
Capacity [kg/h] [1])	250	325	480	820
Spec. Energy Consumption [kWh/t] [2])	1.450	1.100	750	425
Speed internal Classifier-Rotor [rpm]	9.700	7.700	5.700	3.700

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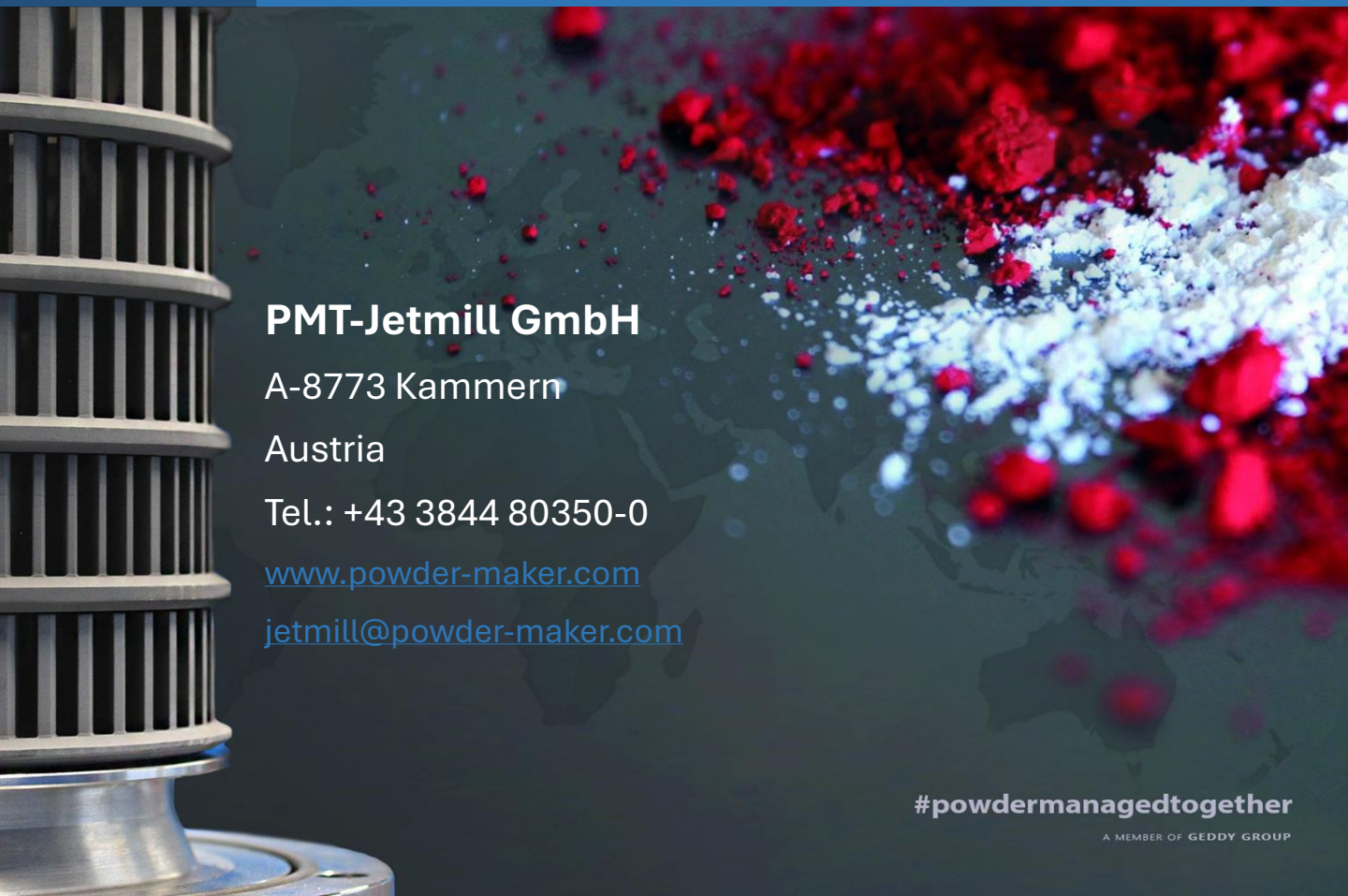

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A MEMBER OF GEDDY GROUP