



GEBR. PFEIFFER



**PFEIFFER PRODUCTS
FOR THE GYPSUM INDUSTRY**
FLEXIBLE. ECONOMICAL. RELIABLE.



MPS 180 GC gypsum calcining mill in Kazakhstan



Passion for grinding

// Tradition since 1864

As a family-run business with its head office in Kaiserslautern, Germany, Gebr. Pfeiffer has pioneered the development of modern grinding, separating, drying, slaking, and calcining technologies for more than 150 years. Today, some 500 qualified employees are all united in the endeavour to carry on the passion of our founder Jacob Pfeiffer. Our motto: long-term development rather than short-lived success. The result: ever new impulses ensuring our top ranking among the leaders in the industry.

// Quality made in Germany

One cornerstone of our success is our experienced staff, who develop every aspect of our products, and another is the high degree of vertical integration at our headquarters in Kaiserslautern - German engineering to the finest detail. Committed to providing the highest quality standards for our products and services, we are oriented entirely on our customers' individual requirements. Reliability and efficiency without any unplanned downtime: this is what Gebr. Pfeiffer stands for.

// The world grinds with Pfeiffer

Customers all over the world rely on Pfeiffer's innovative system solutions ensuring efficient production of cement, lime, gypsum, coal, raw material, clay and many other materials. Our clients profit from our global network of subsidiaries in India, Egypt, China, Brazil, Malaysia, Russia and the United States along with an extensive network of cooperations, representations and a selection of highly experienced service partners. So we are on the spot - worldwide.

Optimum process technology for each plaster product

// Our process know-how covers the entire plaster product range. In fact our machines can produce plaster of Paris and wall plaster as well as high-quality technical plaster and special plaster for the production of plasterboard products and gypsum blocks. We can supply individual machines to accomplish special tasks, and complete gypsum works where grinding,

drying, separating and calcining can be performed in one or several steps depending on the requirements. The gypsum preparation process that you need is perfectly planned by our engineers, taking into account both the quality of the raw gypsum and the quality of the finished product.



Grinding-drying in the MPS mill

// Heating natural gypsum or gypsum mixes in the MPS mill only until their surface moisture is fully evaporated is called grinding-drying. To do this, the mill is operated at a gas temperature of max. 90 °C after classifier. During grinding-drying the product temperature is approximately 80-85 °C, no calcining occurs and the dihydrate content of the gypsum remains unchanged. The dried dihydrate (natural gypsum) can for example be used to accelerate the production of various plaster products or in the production of fertilizers.

Partial calcining / multi-stage calcining

// Partial dihydrate calcining involves operating the MPS mill at high temperatures, which leads to complete evaporation of the dihydrate's surface moisture and to the water present in the gypsum crystals being partially expelled. For this process the mill is operated at a gas temperature of approx. 130 °C after classifier, with the result that the temperature of the partially calcined gypsum is approx. 125 °C after classifier.

For full calcining, the partially calcined gypsum is then fully transformed into a hemihydrate in a steam atmosphere in a downstream calcining stage. Gypsum produced in this way has long setting times and is ideal for producing plaster of Paris products.

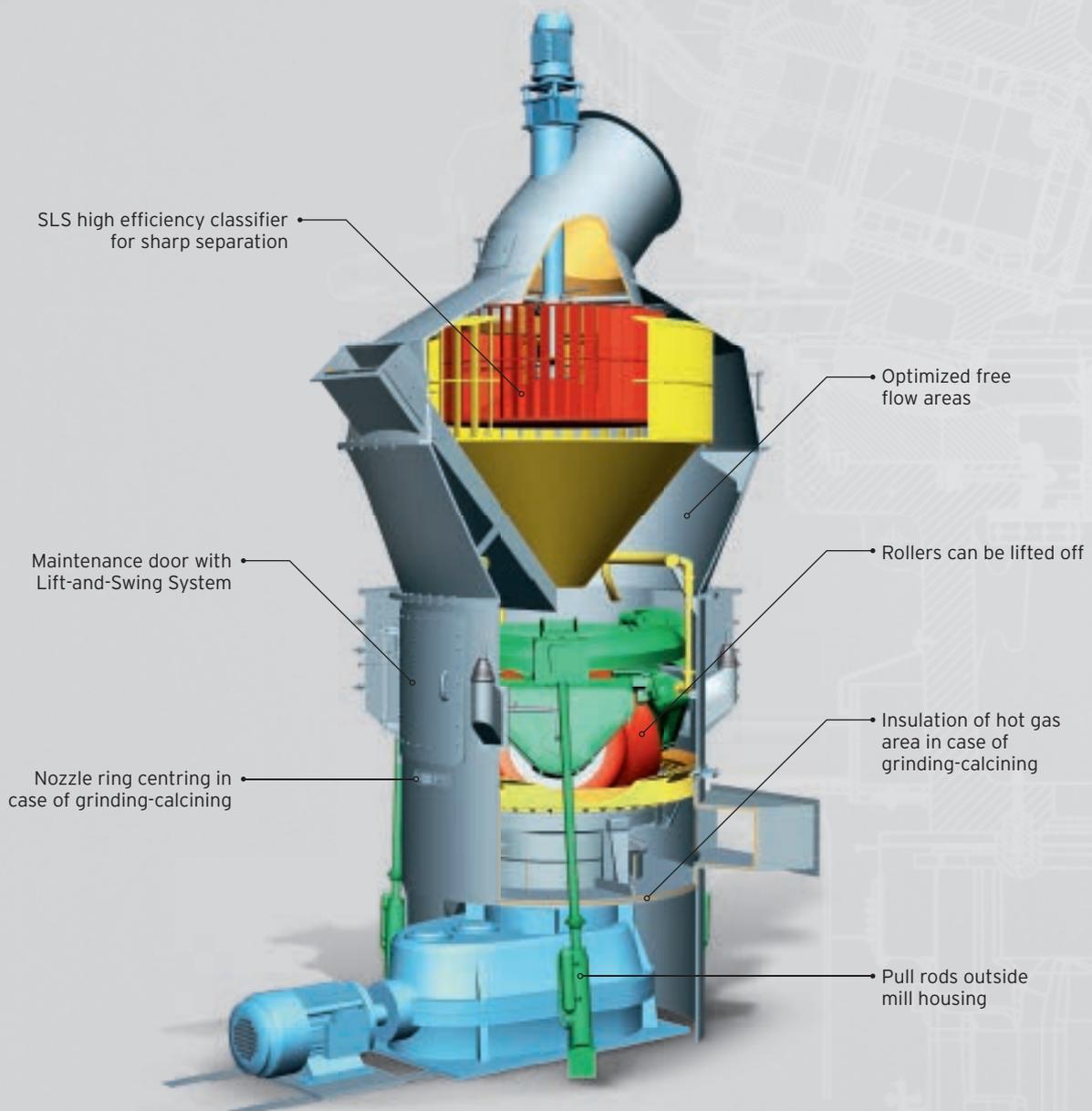
Grinding-calcining / single-stage calcining

// Grinding-calcining refers to the process of grinding, separating, drying and calcining gypsum to form hemihydrate plaster. The MPS mill allows mixes of natural gypsum, FGD gypsum and pre-crushed wallboard to be processed with ease. To completely transform the dihydrate into hemihydrate, the mill is operated at a gas temperature of max. 160 °C after classifier, the product temperature ranging between approx. 140 and 150 °C. The rapid input of thermal energy blasts open the gypsum crystals and releases part of the water they contain. This process is called "flash calcining" and creates gypsum crystals with a large surface area which react to the surrounding moisture. The gypsum calcined in the MPS mill sets quickly and is excellently suited to production of plasterboard.

Gypsum grinding with the versatile MPS vertical roller mill - with a fine tradition of quality grinding!

// With its ultra-high flexibility and consistent product quality, the MPS vertical roller mill is perfect for grinding, drying, calcining and separating. Reliable, energy-efficient and long-lasting, one machine is

enough for all degrees of fineness and all individual requirements, making it the ideal solution for combining multiple processes.



Your advantages at a glance:

» Flexible processing of an extremely wide variety of gypsum types

The MPS gypsum mills are equipped with dynamic high-efficiency classifiers which produce consistent target fineness degrees to meet individual requirements, ranging from 63 µm to 500 µm.

» Low capital expenditure

MPS mills need little additional machinery, no or little enclosed space, operate dust-free and produce minimal noise.

» High reliability and ease of maintenance

Thanks to high-quality wear materials, low specific wear rates, and modern concepts, maintenance times and costs are reduced to minimum.

» Low electric energy consumption

Electric energy consumption of Pfeiffer roller mills is reduced by up to 40% as compared with conventional ball mills.

» Optimum utilization of process heat

Thermal energy from process gases is used on Pfeiffer roller mills.

» Favorable control behavior

A short dwell time for the material to be ground along with remote control of grinding pressure and separating rotor speed ensures fully automatic operation of the MPS mill even with varying raw material characteristics.

Equipped for all requirements

No matter which kind of plaster you wish to produce, we will design your system to meet your exact needs; you can always rely on our products, our expertise and the experience of our process technicians. Work with us and produce a wide range of high-quality and flexible plaster products for all sorts of applications.



Plasterboard

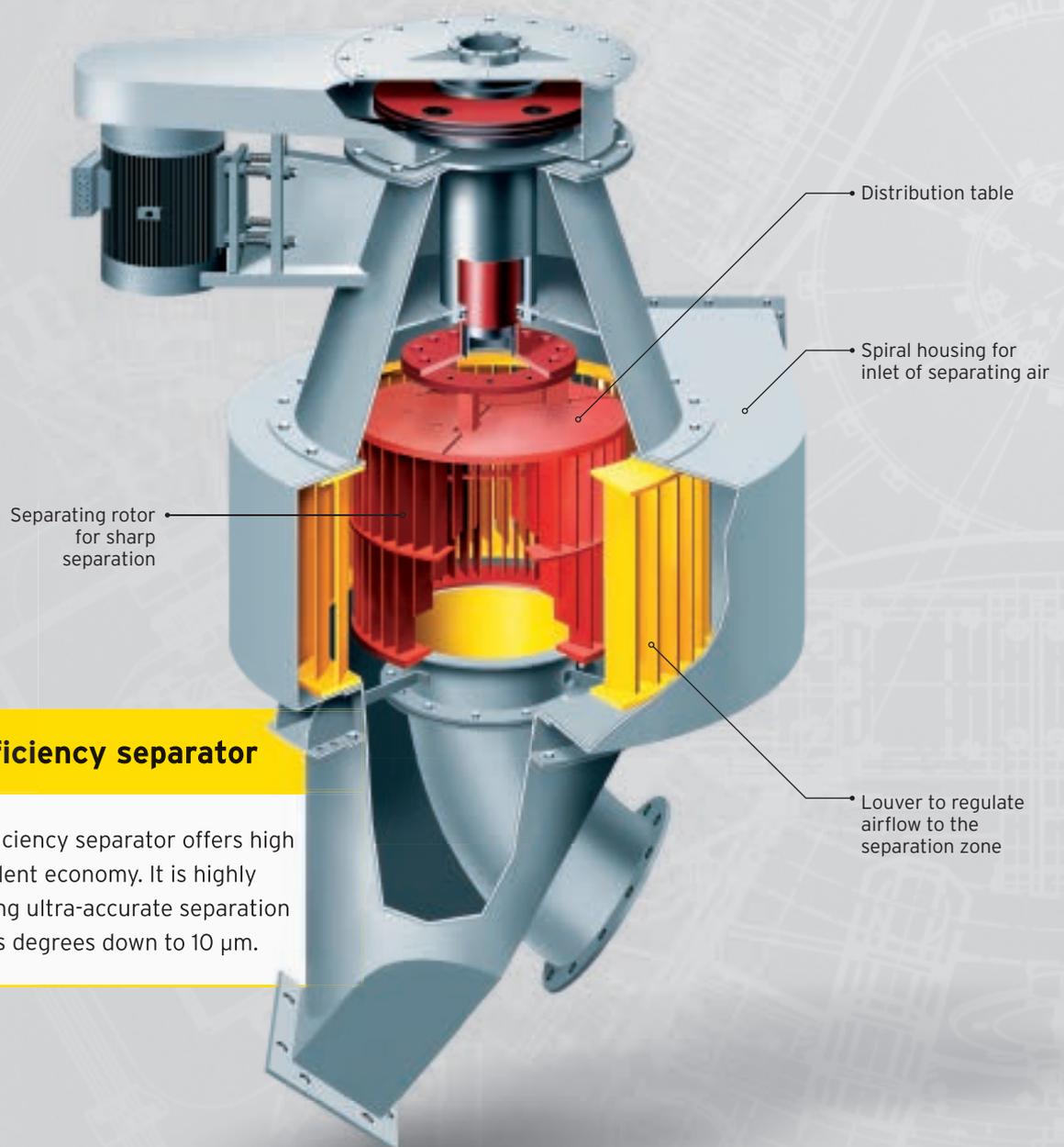


Plaster of Paris

Our separators - The result of consistent development

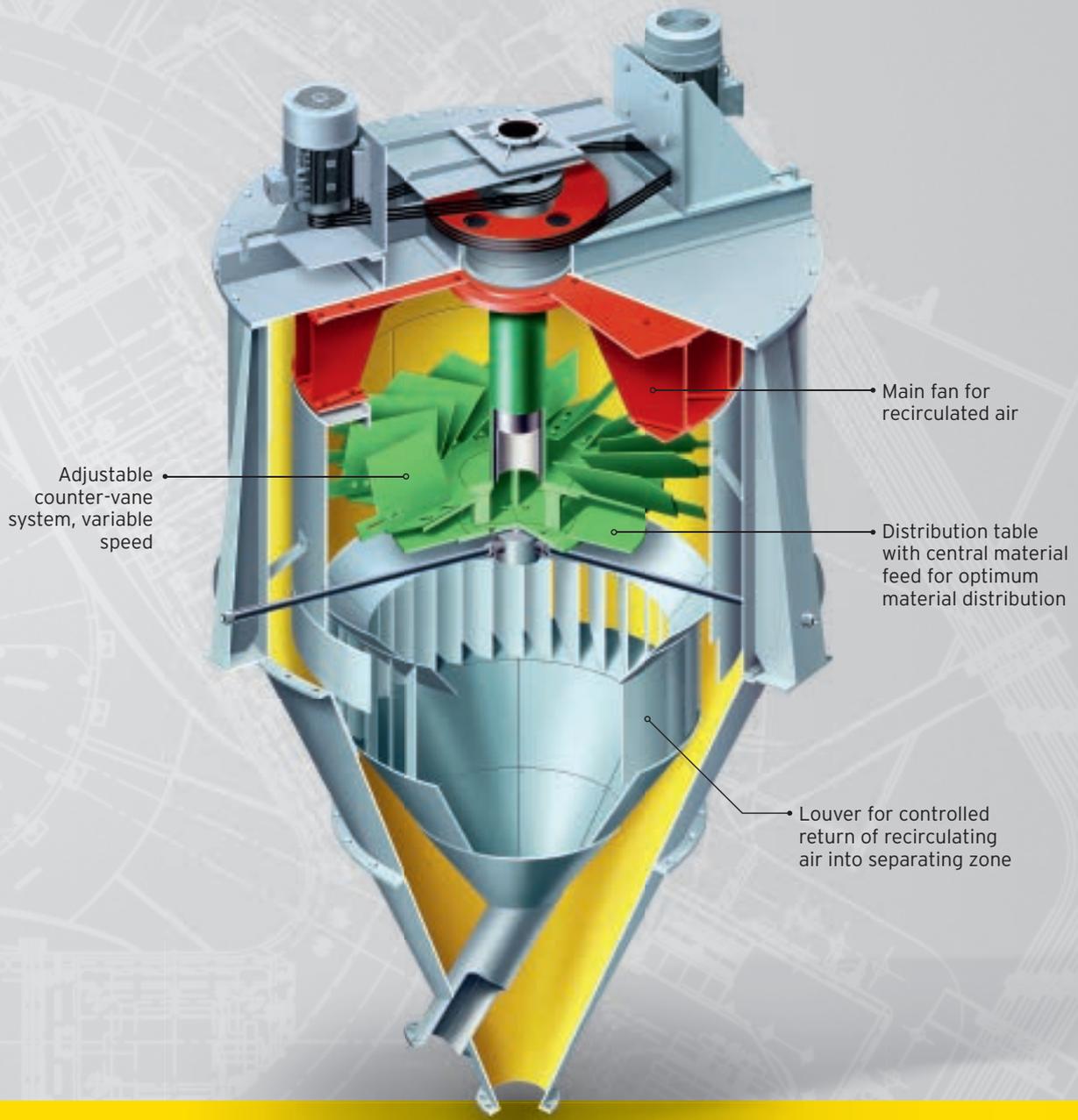
// No matter what kind of gypsum/plaster you wish to produce, all our separators are versatile and can be used for single-pass separation or in tandem with our

grinding plants, as well as offering optimum material distribution and highly accurate separation.



SLV high-efficiency separator

The SLV high-efficiency separator offers high quality and excellent economy. It is highly efficient, achieving ultra-accurate separation and high fineness degrees down to 10 μm .



SUV/SUT distribution table separators

Both models excel with highly accurate separation and high throughput rates for separating degrees down to the 60 μm range. The SUV distribution table separator has a variable speed and allows fine adjustment at the touch of a button, even during operation. Almost identical, though without variable speed control, the SUT distribution table separator is a more cost-efficient option suitable for target fineness degrees which rarely change.

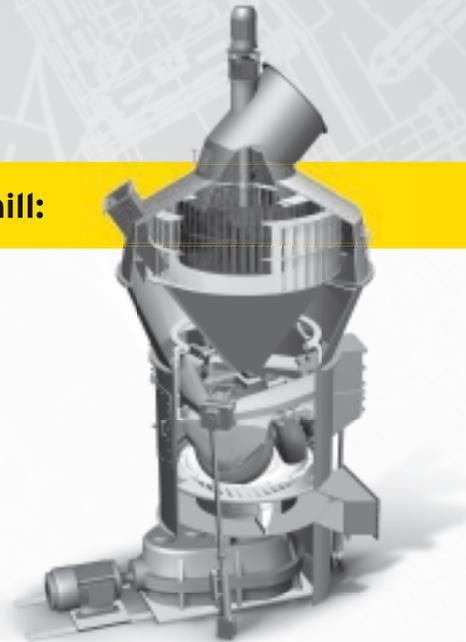
Unrivalled ease of maintenance

// Gypsum production is a hard job to do: To ensure utmost performance, even the best mill needs regular maintenance. This is true first of all for the wear parts of the grinding elements. To make sure you don't waste any production time, all of the Pfeiffer mills

are designed with the aim of keeping wear as low as possible and maintenance as quick as possible so that production interruptions can be kept to a minimum. Simple and economical.

Your maintenance benefits with the MPS mill:

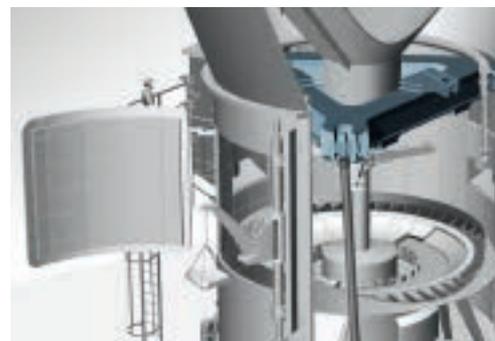
- » Rapid replacement of wear parts with the proven MPS Lift-and-Swing System
- » One single maintenance door arranged for best access
- » Safe and simple handling
- » Short downtimes



Design measures for wear protection

Mills have to withstand a lot. We therefore cover all the different wear zones with a range of materials which are perfectly adapted to the specific abrasiveness of the material you are going to grind. The grinding elements mainly consist of alloy cast iron as per DIN 1695, hardfaced cast iron or composite materials.

We also give all our gypsum calcining mills special protection from the high temperatures required for the calcining process. With all of these measures, we aim to ensure minimum wear and ease of replacement for the wear parts.





MPS180 GC - grinding-calcining in Croatia



MPS140 GC - grinding-calcining in Mexico



MPS200 GC - grinding-calcining in Russia



MPS180 B - partial calcining in Saudi Arabia



MPS160 B - grinding-drying in Germany

Precise analysis for optimum results at the Pfeiffer test station

// Detailed knowledge of material characteristics - this is what each individual plant solution is based on. Nothing is left to chance at Pfeiffer: we have a highly specialized test station for doing realistic testing and our own laboratories equipped with the latest analyzing equipment. Our experts develop processes and

determine parameters that are perfectly suited for the rating of your plant just the way you need it. Moreover, to increase the capacity of our machines, existing processes are optimized and modernized by our experts who are in close contact with universities and renowned research institutes.



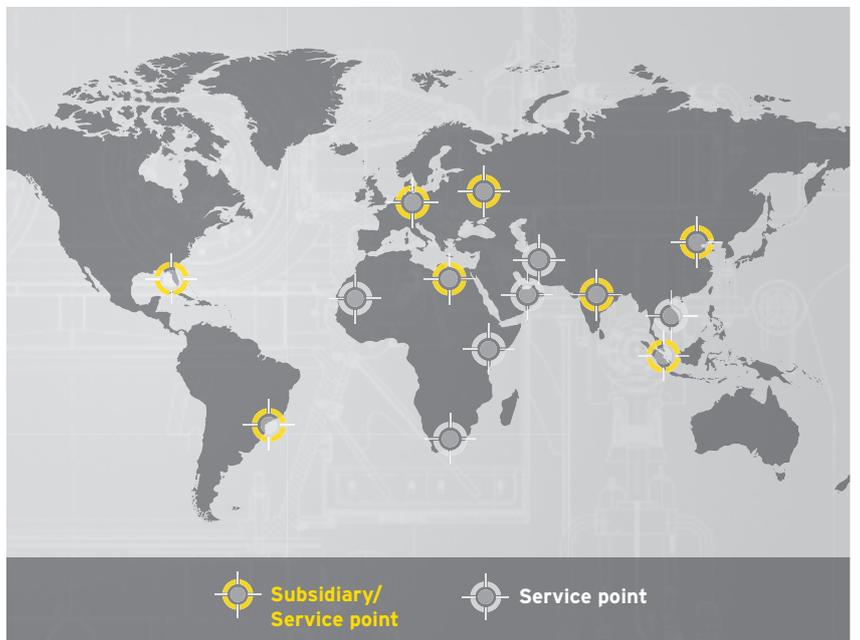
Range of services of the Pfeiffer test station:

- » Rating tests and feasibility studies on pilot plants
- » Upgrading and optimizing tests on pilot plants
- » R&D projects on pilot plants
- » Determination of grindability in the lab
- » Physical and chemical material characterization



Pfeiffer service: available worldwide

// With Pfeiffer, you profit from the wide range of services directly from the manufacturer plus a worldwide network of subsidiaries and experienced service partners who speak your language and will be on site rapidly. Our service team comprises skilled experts who are dedicated to using their knowledge and expertise for the sake of your productivity. No matter where your production site is: we will be there. Just ask us!



Our services at a glance:

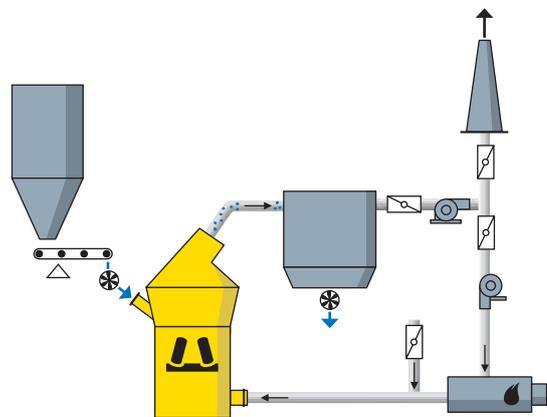
- » Installation and commissioning
- » Technical service
- » Test station/material analysis
- » Service contract, inspection and maintenance
- » Spare parts supply including original spare parts
- » Upgrading and modernization
- » Training sessions
- » Emergency assistance (e.g. in case of production outage)

For more information on our services, visit our website:
www.gebr-pfeiffer.com

Technical data/ Flow sheets

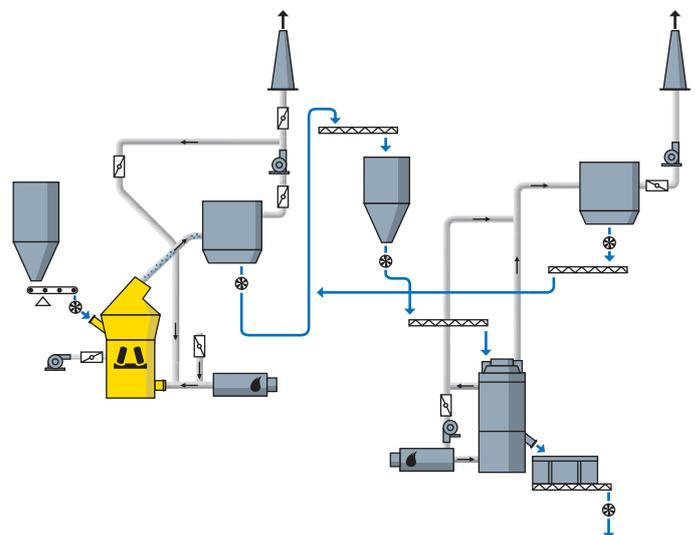
Grinding-drying and single-stage calcining

MPS mill Technical data	
Throughput rate	up to 150 t/h
Number of grinding rollers	3
Feed size	up to 60 mm
Feed moisture	pit moisture
Target fineness degrees	60 to 500 μm
Classifier	high-efficiency classifier
Material	natural gypsum, natural/ FGD gypsum mixes
Gas temperature after mill for grinding-drying	90 °C
Gas temperature after mill for single-stage calcination	160 °C



Multi-stage calcining

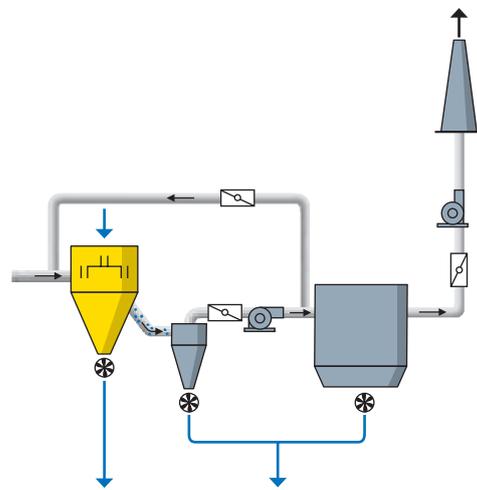
MPS mill Technical data	
Throughput rate	up to 150 t/h
Number of grinding rollers	3
Feed size	up to 60 mm
Feed moisture	pit moisture
Target fineness degrees	60 to 500 μm
Classifier	high-efficiency classifier
Material	natural gypsum, natural/ FGD gypsum mixes
Gas temperature after mill	130 °C



Separation in the SLV high-efficiency separator

SLV high-efficiency separator Technical data

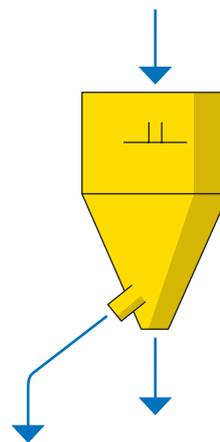
Feed rate	up to 200 t/h
Feed moisture	dry material
Target fineness degree	up to 10 μm



Separation in the SUV/SUT distribution table separators

SUV/SUT distribution table separators Technical data

Feed rate	up to 60 t/h
Feed moisture	dry material
Target fineness degree	up to 60 μm





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