



CLAUDIUS PETERS

A close-up photograph of several large, dark, textured grinding balls. The balls are made of a material with a rough, pebbled surface. One ball in the foreground has a small, dark, circular hole. The balls are arranged in a cluster, with some in the foreground and others in the background. The background is a solid dark blue.

Grinding **TECHNIK**

We know how

grinding technik

About

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Since its founding in 1906, Claudius Peters has become one of the world's most respected engineering houses and an innovative world leader. Its German engineering excellence continues to set benchmarks for the design, manufacture and commissioning of materials handling and processing systems for the coal, steel, gypsum, cement, alumina and bulk-handling industries.

From conception and installation through to commissioning and after-sales support, Claudius Peters provides world-class service to the world's biggest pulverized coal producers.

The company is part of the Claudius Peters Group GmbH, headquartered in Buxtehude near Hamburg, Germany, with regional offices in the Americas, Asia and Europe.



Claudius Peters' headquarters, Buxtehude, Germany.

Technikum

Standing as a true leader within the grinding industry, Claudius Peters is able to engineer tailor-made solutions that meet any desired product qualities and system performance requirements.

Claudius Peters continues to remain at the forefront of materials handling and processing technology by maintaining a vigorous research, development and test program at the head-quarters' Technikum (Technical Center) in Germany. Trial and testing facilities ensure that every new application is fully evaluated before proceeding to full-scale plant.

Specific technologies include:

- **Tailor-made grinding systems**
- **Pneumatic conveying of the ground material**
- **Development and testing of new processes**



Technikum interior with grinding and pneumatic conveying systems.

State-of-the-art
technology to
meet any grinding
requirement



Claudius Peters' technical center with test grinding plant and 5000 m pneumatic conveying system.

grinding

EM Mill

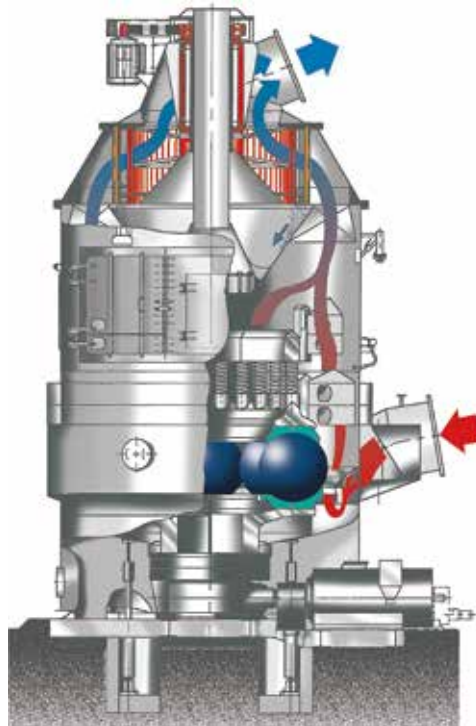
Maintenance-free
grinding system
with an outstanding
service life

The Claudius Peters EM Mill is the preferred grinding and drying technology for the production of pulverized bulk materials such as coal and petcoke, metal ores and other brittle minerals.

At the heart of its grinding system is the EM Mill, bringing the functions of grinding, drying and classifying together into one compact unit.

The Claudius Peters EM Mill produces highly uniform product quality with the fully automated control system managing the complete production cycle from start up to shut down.

Unlike traditional stationary milling rollers, the Claudius Peters EM Mill contains grinding balls which move freely, like giant ball bearings, between the grinding rings.



Claudius Peters EM Mill.



EM80 with static classifier.



EM73 with dynamic classifier.

Safe operation

In continuous operation, a material bed forms between these balls and the grinding ring but when the mill shuts down the bed subsides and the balls sweep away the remaining material from the milling track. This is an important safety feature when grinding combustibles, for example coal.

Discharge of rejects

The EM Mill's durable grinding system can withstand oversized particles without having to stop. Any shock force resulting from the balls moving over these obstacles is completely absorbed by the tensioning springs.



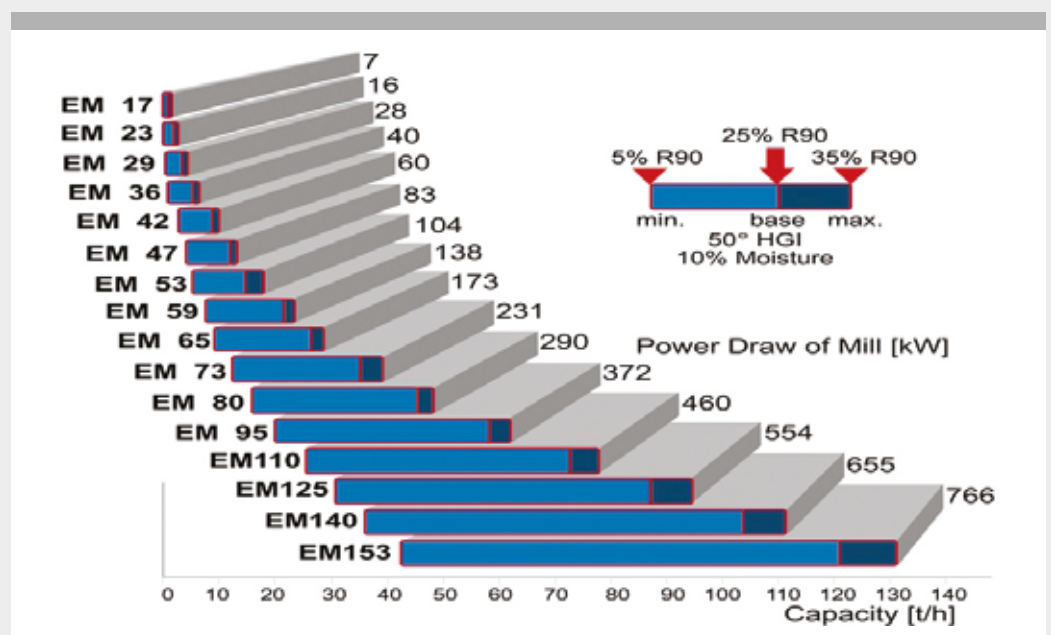
Reject box with double door system.

Achieving ever greater reliability and energy efficiency

The grinding balls automatically reject any foreign particle off the grinding track, they fall through the nozzle ring to the chamber below, and the scraper conveys them to the reject box. The reject box can be opened and inspected while the mill is in operation.

EM Mill:

- Simple operation and maintenance
- Highest availability
- Maintenance free grinding elements
- Constant product quality
- No bearings inside mill
- Optimal performance with inlet temperatures of up to 650°C
- Highest lifetime of grinding elements
- Ultrafine grinding with optional dynamic classifier
- Simple integration of other Claudius Peters equipment to provide maximum flexibility



grinding

Claudius Peters
EM-Mills —
investment in
constant
performance

The robust design with no bearings or lubrication points inside the grinding zone, permits the highest hot gas temperatures for achieving the optimum drying conditions.

Consistent mill performance

Constant movement ensures that the grinding balls maintain their perfectly spherical shape through the entire service life of the grinding set, delivering consistent mill performance throughout the grinding element's life cycle.

This movement also provides the most even distribution of fine particles into the upcoming hot gas stream, leading to a uniform charging of the classifier on top of the machine. This ensures a maximum product quality and stability by either a static or dynamic classifier.



Grinding elements after 25,000hrs maintenance free operation.

A wear life up to 40,000 hours depending on applications and various parameters can be achieved by employing highly wear resistant materials for the grinding elements.

Robust design and easy maintenance

The robust design with no bearings or lubrication points inside the grinding zone, permits the highest hot gas temperatures for achieving the optimum drying conditions.

Unlike many other mills, the EM-Mill's grinding elements function maintenance free. Additional costs and downtime for sealing, lubrication, oil changes and replacement of internal bearings are not required. Adjustments of internal features after e.g. a product change are also not required.



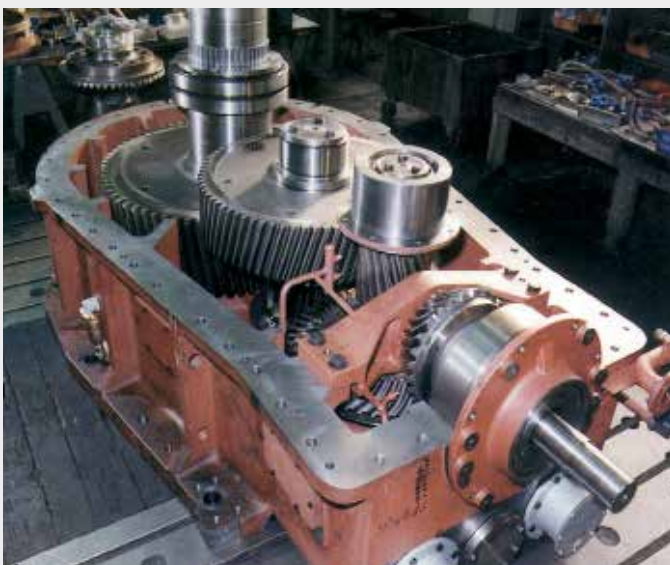
EM Mill grinding elements.

The grinding elements as well as all other inner parts can be exchanged through large side doors without dismantling the classifier on top of the grinder. There is no need for an empty space above the machine which makes the whole installation compact and economic.



Robust design and
easy access
enable efficient
maintenance

All inner parts can be exchanged through the mill door.



EM Mill gearbox.

grinding

Reliability in Coal Grinding

State of the art design ensures low maintenance costs and reduced energy consumption

Vertical roller mills grind, dry and classify coal in a single machine. State of the art design ensures low maintenance costs and reduced energy consumption

SAFETY

Claudius Peters grinding plants can operate under a variety of safety criteria.

In the safest process, inert operation, the oxygen level is lowered to less than 10% under all operating conditions. All values of O₂ and CO are continuously monitored and optimized automatically, thereby preventing dust explosions.

Alternatively when inert operation is not possible, for instance in power station service, the pressure shock resistant mill design provides the highest possible operational safety.

The ball ring grinding mechanism of the EM-Mills cleans itself automatically during the shutting down phase. Therefore, self-ignition of coal built up on the grinding ring track is effectively prevented.

Claudius Peters milling and grinding plants comply fully with international safety standards and regulations.



Coal grinding plant.



Coal grinding and injection system for 2 blast furnaces.

Adding value

Due to the high moisture content of so called 'low rank coals' (moisture content up to 60%) the requested residual moisture will be achieved in a two-step system only.

Prior to the coal grinding plant a raw coal pre-drying plant will be installed.

In a first step the pre-crushed coal (< 25 mm) will be pre-dried using higher temperatures than allowed for pulverized coal at a reasonable airflow and a low pressure drop.

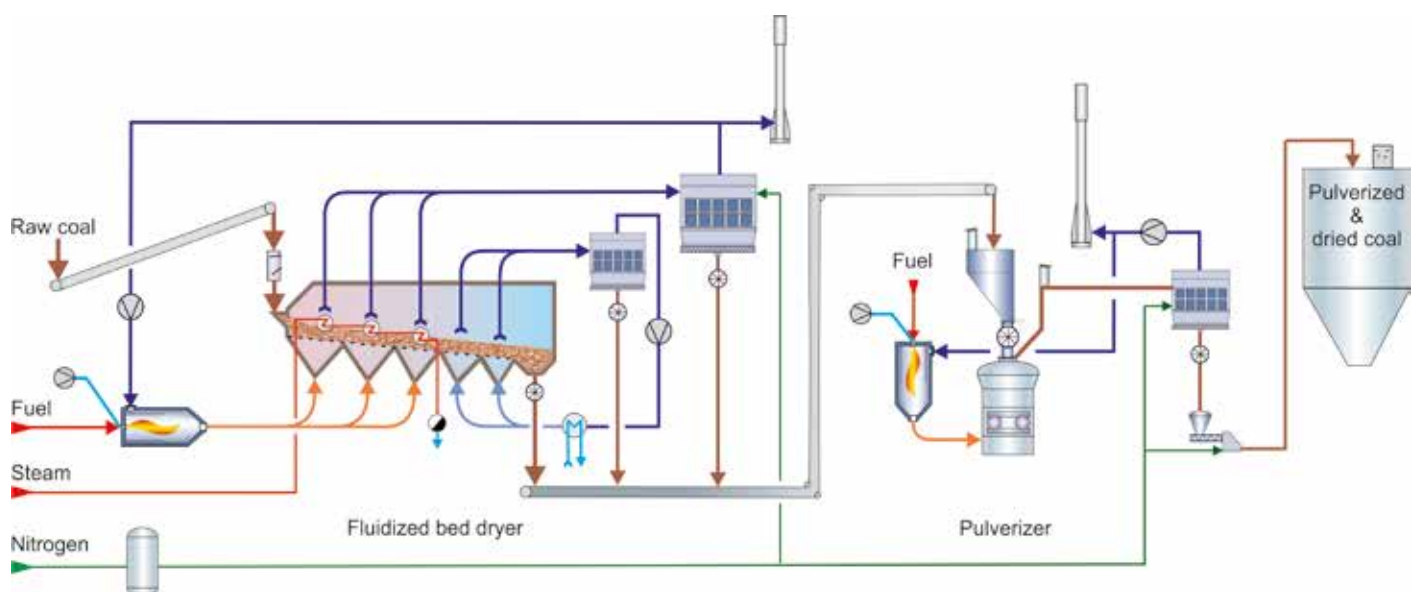
In a second step the coal will be ground to the requested fineness and further dried, if required.

Combination of the two steps is the most economical and safe solution for the design of coal preparation plants for low rank coals.



Coal pre-drying plant.

Economic
preparation
process for low
rank coals



Flow diagram of coal preparation plant.

turnkey techniks

Complete turnkey
solutions for
cost-effective bulk
materials handling



Coal grinding plant for cement kiln.



Coal indoor storage with stacker and reclaimer complete the scope of Claudius Peters.



Claudius Peters EM Mill.



Bentonite grinding plant with dispatch silo.

Maximum reliability combined with efficient operating costs, makes Claudius Peters the ideal partner for your next project. From stockyard and materials handling systems to grinding and pneumatic conveying, storage, injection or dispatch system the bulk material industry can rely on Claudius Peters

Claudius Peters instill a real ethos of quality and care all the way down the line. From feasibility studies such as plant and raw material evaluation to process systems, including instrumentation

and control for the entire production process, through to the modernization of existing facilities to meet specific client and regulatory needs, Claudius Peters provides the complete package.

Innovation and know-how to drive efficiency even further

Claudius Peters techniks include:



Pneumatic conveying systems.



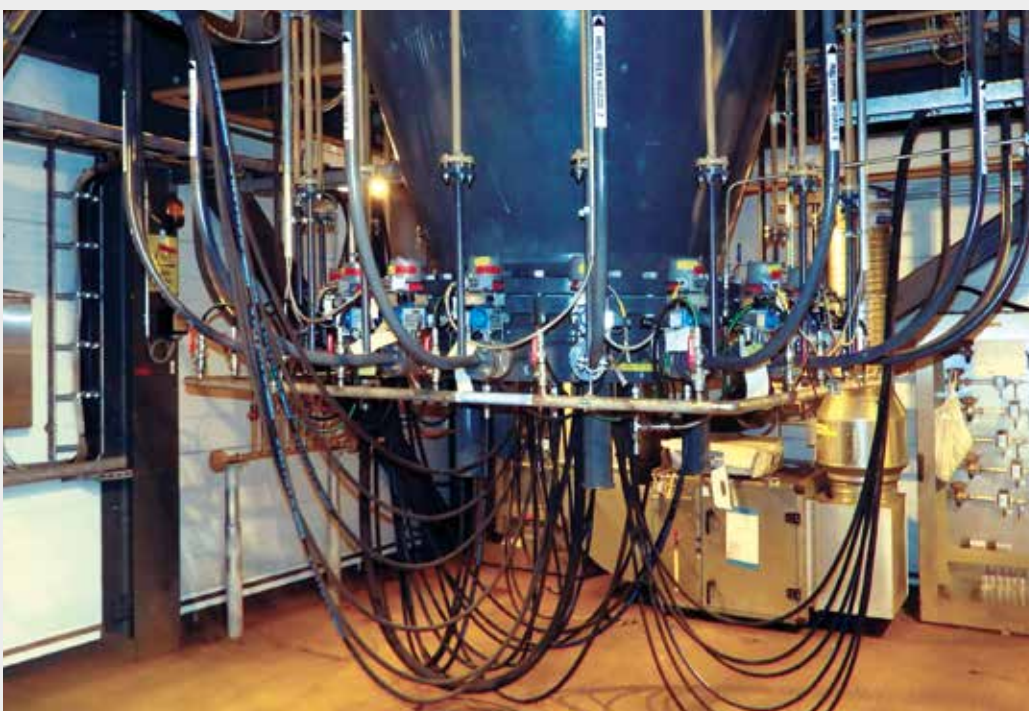
Silo technology.



High-pressure injection system.



Stockyard systems.



Coal injection with dynamic distributor.

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PULVERIZED FUEL SUPPLY
SILO SYSTEMS
STOCKYARD SYSTEMS
ALUMINA HANDLING SYSTEMS
MARINE POWDER HANDLING
TURNKEY PROJECTS

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