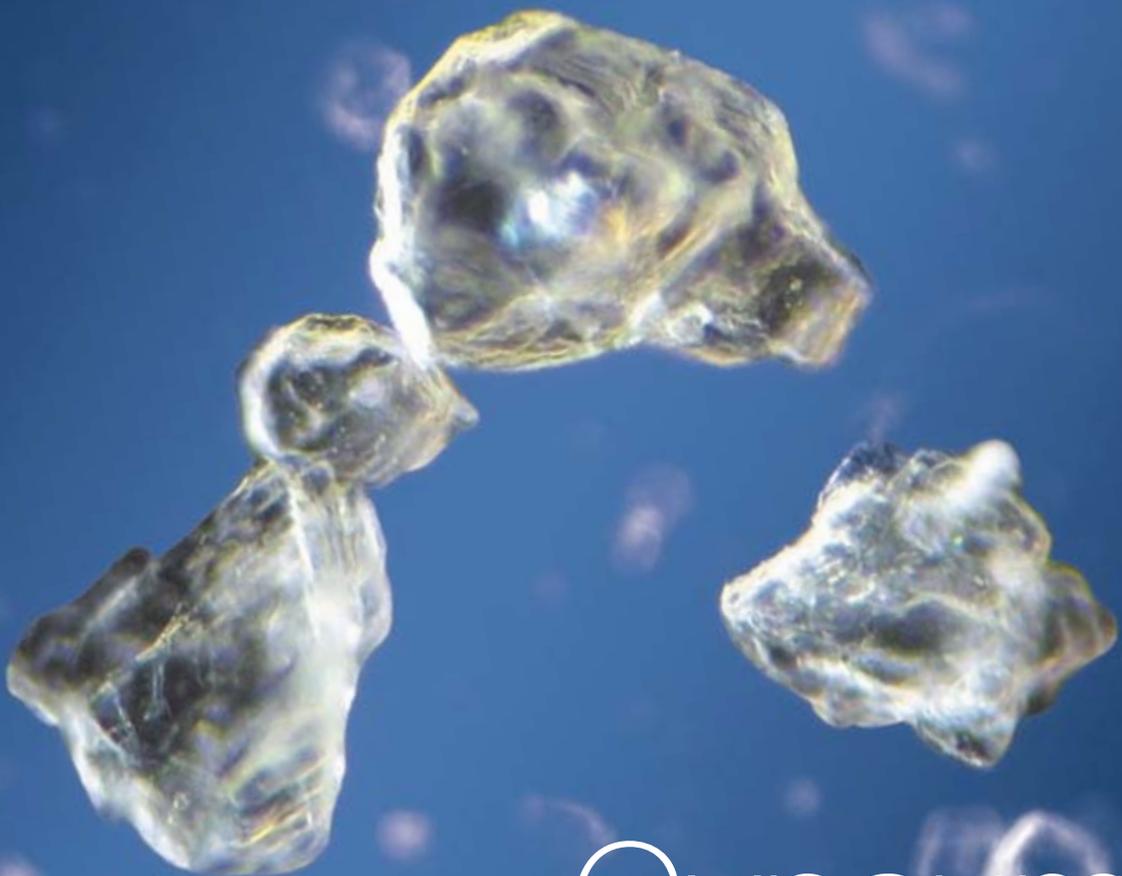




CLAUDIUS PETERS



Gypsum **TECHNIK**

We know how

claudiuspeters.com

gypsum 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 gypsum, cement, coal, 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 gypsum 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 gypsum 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 headquarters' 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 gypsum calcining systems**
- **Natural gypsum & synthetic gypsum**
- **Post-calcining treatment**
- **Stucco handling and packaging**
- **Raw material preparation**



Technikum interior with calcining test plant.

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



Gips AD gypsum processing plant, Bulgaria.

calcining & grinding

EM Mill

Maintenance-free grinding system with an outstanding service life

The Claudius Peters EM Mill is the preferred grinding and calcining technology for the production of finished products such as gypsum wallboard.

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

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

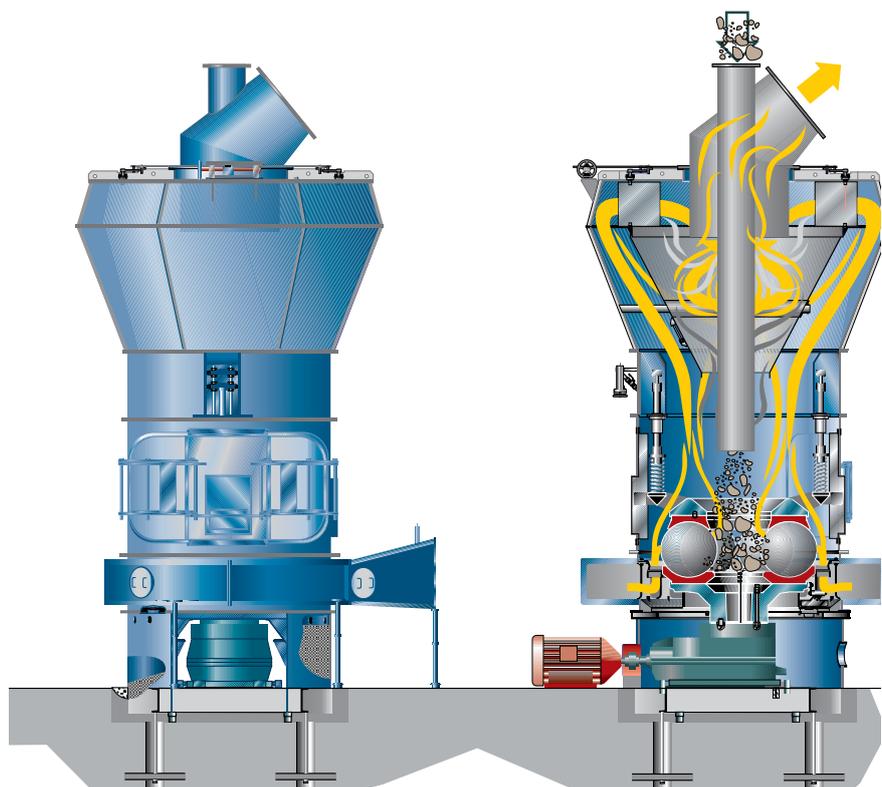
The EM Mill's high inlet gas temperature and direct heat transfer from the hot gas to the material, yields lower gas volumes, which in turn leads to optimal energy consumption.

Unlike traditional stationary milling rollers, the Claudius Peters EM Mill contains grinding balls which move freely, like giant ball bearings, between the grinding rings. In continuous operation, a material bed forms between these balls and the grinding ring but when the

Low material time within the mill enables fast reaction times from the control circuits. This



EM Mill grinding elements.



Claudius Peters EM Mill.

mill shuts down, the bed subsides and the balls sweep away the remaining material from the milling track.

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, while foreign particles on the grinding ring track are automatically rejected, with the scraper conveying them to the reject box.

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 raw gypsum into the upcoming hot gas stream, leading to maximum product quality and stability.

The grinding elements are almost entirely maintenance and adjustment free. And, when employing highly resistant materials, the EM Mill can achieve a service life of over 40,000 hours.

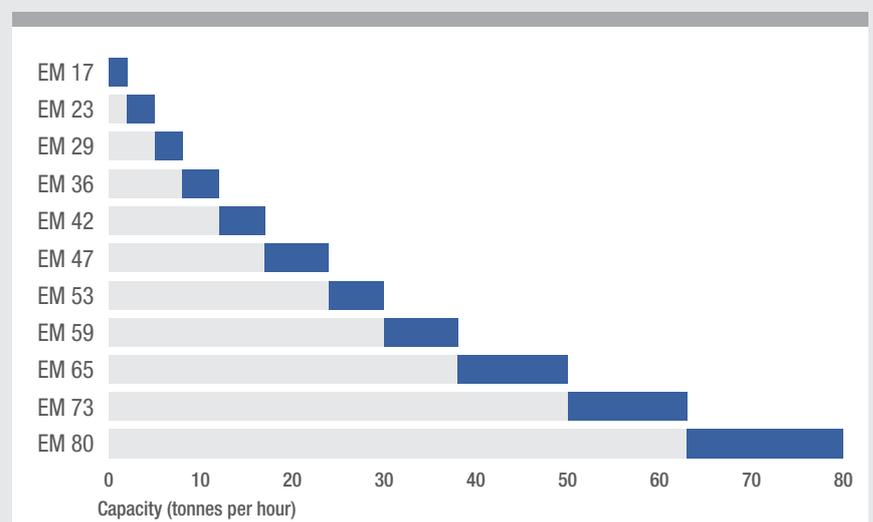
Achieving ever greater reliability and energy efficiency



EM Mill at Fassa, Calliano, Italy.

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



Capacity range for EM Mills.

calcining & grinding

SmartGyp Homogenizer

Improves product quality while reducing costs

Claudius Peters' SmartGyp Homogenizers produce plaster of optimum quality with maximum efficiency. It further extends the Claudius Peters calcining range, improving production quality and reducing production costs at the same time.

The key component in this process is the Claudius Peters Homogenizer. It can be operated in a standard configuration under ambient pressure, or in an extended version, where the homogenizer runs under pressurized conditions. Fresh calcined gypsum is taken directly and continuously from the calciner at full calcining temperature and introduced into the homogenizer.

The homogenizer consists of a vertical reactor, where the reactor floor is covered by a fabric allowing even distribution of the fluidization gas. The gypsum bed then floats freely in the reactor making contact with the carried moisture. In addition, a central nozzle receives extra fluidized air that allows the gypsum to be transported from the floor of the reactor to the upper section of the homogenizer. This intensifies both the product mix and homogenization.

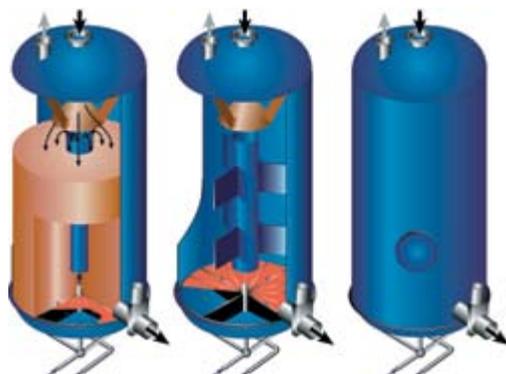
As indicated previously, processing pressure is one of the key conditions that significantly influences product characteristics. The Claudius Peters SmartGyp process, by utilizing a pressurized homogenizer, maximizes product improvement and provides a continuous operation processes where, under controlled conditions, the aging process can take place.



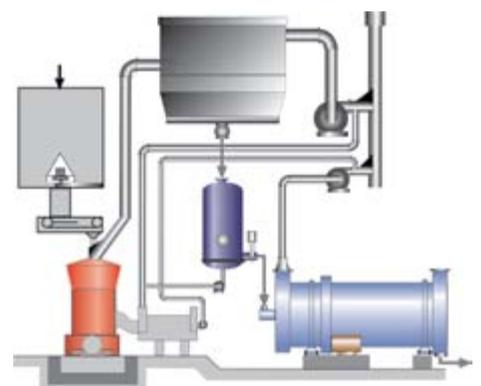
Claudius Peters Homogenizer.

SmartGyp Homogenizer:

- Suitable for virtually any calcining system
- Homogenizing product quality
- Stabilizes the product
- Optimizes board production
- Improves the water demand
- Reduces production cost
- Improves plaster production
- Efficient production of high strength plaster



Schematic diagram of homogenizer



Claudius Peters calcining process with integrated homogenizer.

Horizontal Impact Calciner (HIC)

The Claudius Peters Horizontal Impact Calciner has been specially developed for the calcining of synthetic gypsum, where fine raw materials with a high degree of free moisture, eliminates the need for grinding.

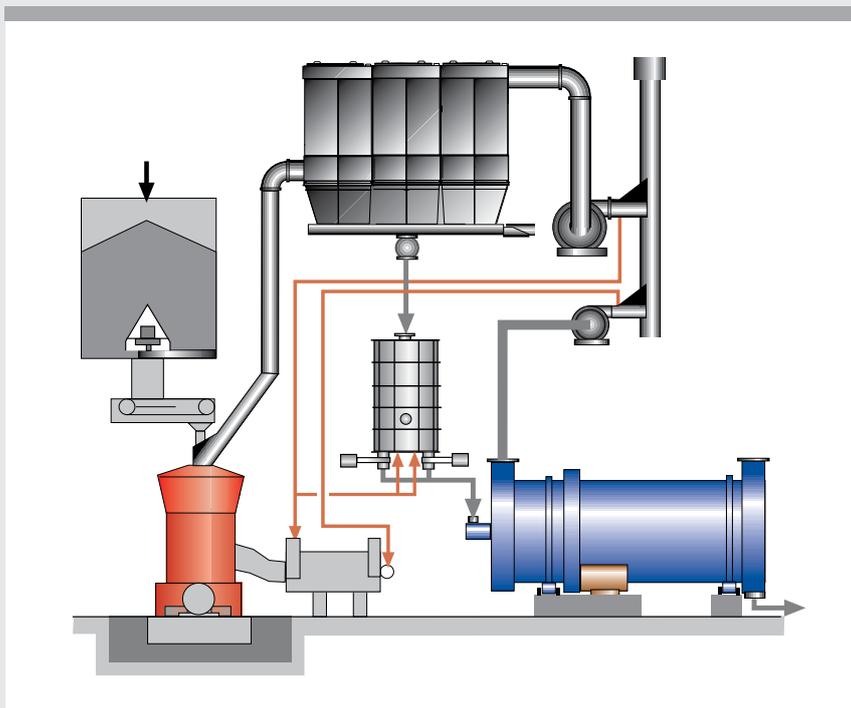
The Horizontal Impact Calciner is state-of-the-art technology capable of processing up to 100 tonnes of product per hour in a single calciner unit. Allowing direct, full calcining, it offers the added benefits of high stucco quality, efficiently calcined in one stage.

At the heart of this process is the calciner housing design based on the reliable EM Mill. This enables product to be evenly fed into the hot gas stream via the impact plate where crushing then takes place. In addition, the integrated classifier ensures the most suitable retention time of the product within the calciner, delivering synthetic gypsum of the highest quality.

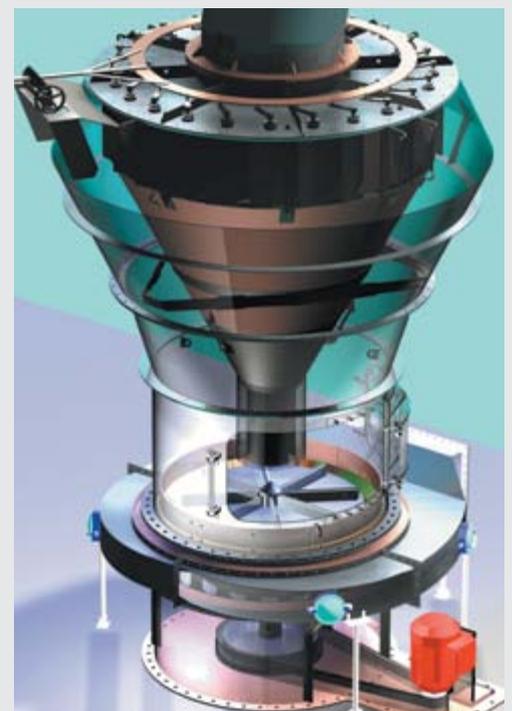
Horizontal Impact Calciner (HIC):

- Processing up to 100 t/h in single calciner unit
- Direct full calcining in proven mill circuit without a pre-heating process
- High reliability
- Downstream stucco treatment in CP homogenizer
- Stable and consistent stucco quality suitable for gypsum wallboard and plaster manufacturing
- High stucco quality with low water demand

Direct calcining technology for fine raw material processing



Calcining synthetic gypsum in Horizontal Impact Calciner.



Claudius Peters Horizontal Impact Calciner.

calcining & grinding

Flash Calciner

High energy efficiency for optimum plant performance

For high temperature calcination of pulverized gypsum, the Claudius Peters Flash Calciner is a highly efficient and reliable processing unit. Its ability to produce multi-phase plaster qualities with shorter setting times makes it ideal for wall plaster manufacturing.

The Claudius Peters Flash Calciner consists of single or multiple cyclone stages and contains no internal moving parts. This allows direct heat treatment at temperatures of over 500°C that produces a defined gypsum anhydrite.

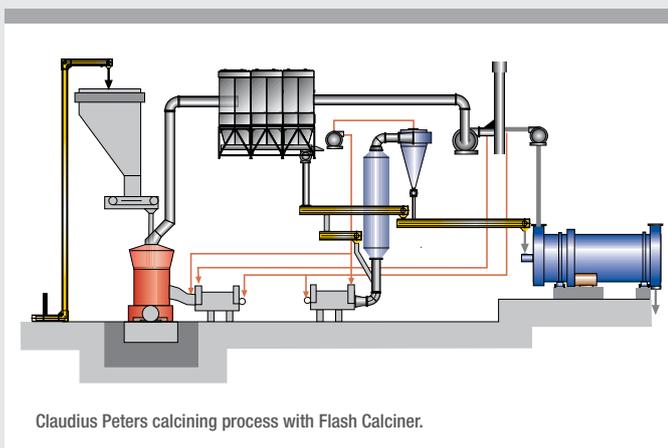
This calcining system, when used in conjunction with the Claudius Peters EM Mill, provides the optimum solution for the production of 'basic plaster' – the ideal basis for machine applied gypsum wall plaster.

The 'low burned gypsum' produced by the mill is partially metered into the calciner's flash pipe for processing at temperatures of around 500°C allowing the formation of defined anhydrite II – ideal for multi-phase plaster.

100% of the exhaust gases from this process are recirculated into the calcining system for enhanced fuel performance. This continuous heat recirculation minimizes exhaust gas losses and results in excellent plant performance and efficiency.



Air supply for Flash Calciner.



Claudius Peters calcining process with Flash Calciner.



Claudius Peters Flash Calciner.

Kettle Calciner

Claudius Peters' Kettle Calciners are used for the production of high-quality plasters and the processing of synthetic and natural gypsums.

Claudius Peters Kettle Calciner systems, in combination with the Claudius Peters mills are characterized by their homogeneous product qualities – particularly stuccos with increased setting time requirements, solidity and water/gypsum ratios. Their high availability, long life cycle and easy maintenance, combined with fully automatic operation reflect the latest in state-of-the-art technology.

In order to minimize energy costs, the exhaust gases from the kettle process are used for the pre-drying process, so that an additional hot gas generator may not be required. In addition, they can run both continuous or batch operations and can offer a fully automatic, continuous operation system.

The kettle works using indirect heat transfer. The crushed raw gypsum is heated and calcined by adding heat through the bottom, the walls and the flue passes. The constant mixing process within the kettle helps homogenize the material to be calcined and leads to a high quality product through an even warming of the gypsum.



Claudius Peters Kettle Calciner.

High quality output of both natural and synthetic gypsums

Reclaim Crusher

The Claudius Peters Wasteboard Crusher is a technology specially developed for the recycling of rejected gypsum boards.

Wet and dry waste products are loaded at the top, while slowly rotating screws break them up into chunks ideally sized for blending with raw gypsum or for further processing in other handling units.

The crusher consists of a heavy duty housing with counter-rotating reversing screws. Each screw is independently driven by a motor through a shaft-mounted gear reducer and electronic frequency drive.



Claudius Peters Reclaim Crusher.

cooling technik

Cooling Solutions

Efficient cooling systems customizable for any plant

Post calcining, materials at processing temperatures of approx. 150°C must be reduced to lower temperatures for further processing. Claudius Peters offers a choice of fast and efficient cooling solutions, based on proven technology:

The Rotary Drum Cooler

The Claudius Peters Rotary Drum Cooler can yield up to 100 tonnes of product per hour. It works on the counter-current indirect principle, with an air fan drawing the cooling air through a tube bundle, transferring the heat energy from the stucco into the air.

The heat energy of the cooling air in this process can be re-used as pre-heated combustion air, providing a considerable reduction in plant energy costs.

Material to be cooled is homogenized during the cooling process, thus combining mixing with cooling. The retention time allows effective reduction of unwanted by-products such as soluble anhydrite and dihydrate.

Direct Cooling Systems

Claudius Peters also offers direct cooling systems, ideal for smaller scale plants, whereby the product is cooled to required temperatures directly through ambient air drawn into the cooler.

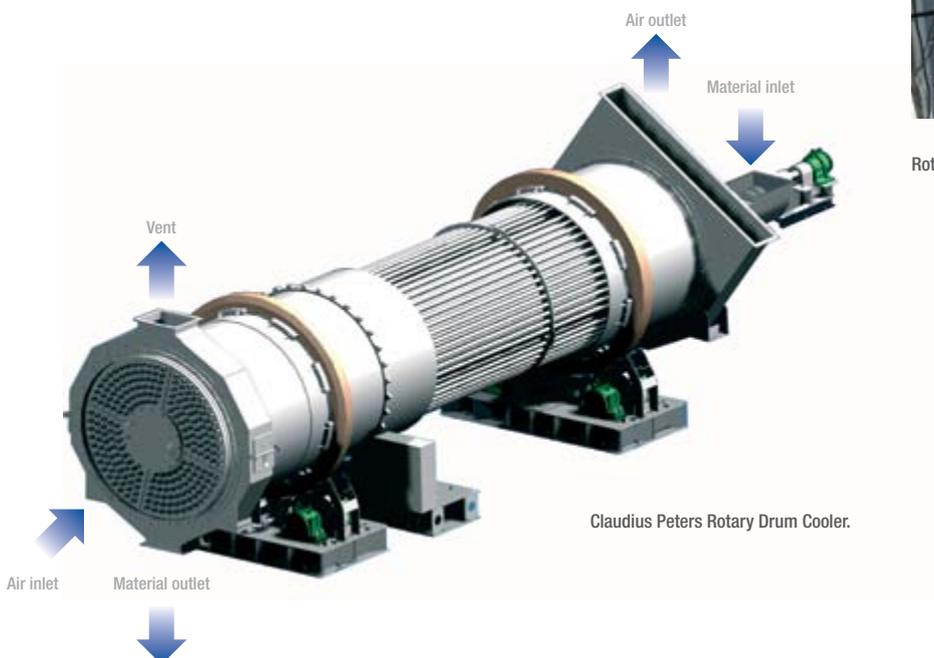
Materials are fed to the air flow, then separated through a filter unit. The benefit of this system is that it combines cooling with transportation. These systems are of simple construction for increased reliability and are ideally suited to plants with low to mid-range production capacity.



Claudius Peters suction cooling.



Rotary Drum Cooler side view.



turnkey techniks

Maximum reliability combined with efficient operating costs, makes Claudius Peters the ideal partner for your next gypsum project. From stockyard and materials handling systems to pneumatic conveying, storage, mixing, packing and dispatch systems, gypsum producers can rely on Claudius Peters.

Claudius Peters instil 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.



Packing machines.

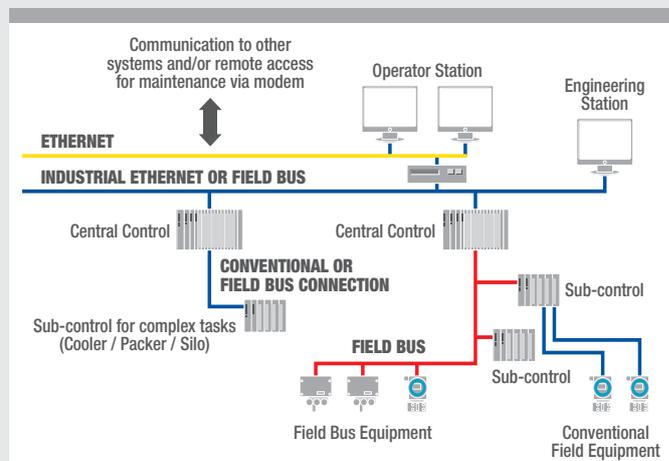


Stockyard systems.

Control Systems

Claudius Peters supplies a full range of automatic control and electrical systems, from basic engineering and hardware selection or software development to the installation and commissioning of services.

Fully automated solutions, including up to date network integration, give maximum flexibility to the many aspects of plant operation. In addition, software-based machine interfaces provide user-friendly management and control options, alarm records and preventative maintenance systems to further enhance operational efficiency.



Claudius Peters control systems overview.



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CALCINING

COOLING

DISPATCH

DOSING

DRY BLENDING

DRYING

GRINDING

PACKING

PNEUMATIC CONVEYING

PULVERIZED FUEL SUPPLY

SILO SYSTEMS

STOCKYARD SYSTEMS

ALUMINA HANDLING SYSTEMS

MARINE POWDER HANDLING

TURNKEY PROJECTS

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