polysius® Service Solutions

thyssenkrupp

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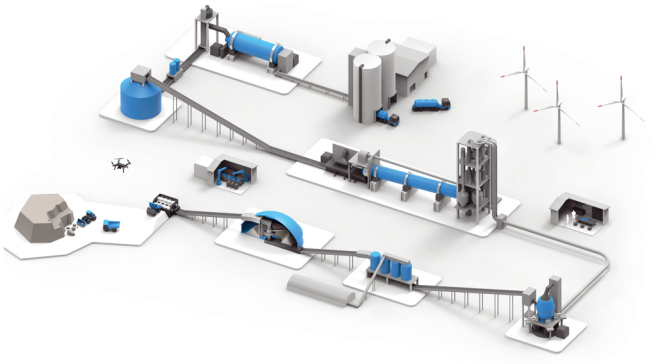


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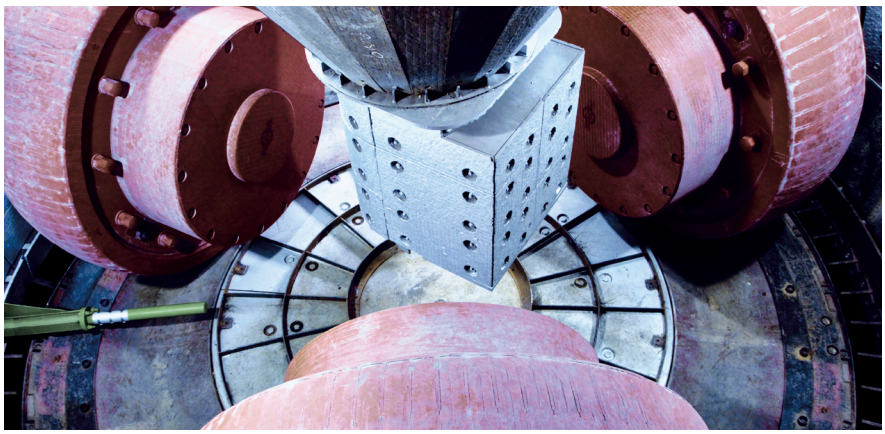
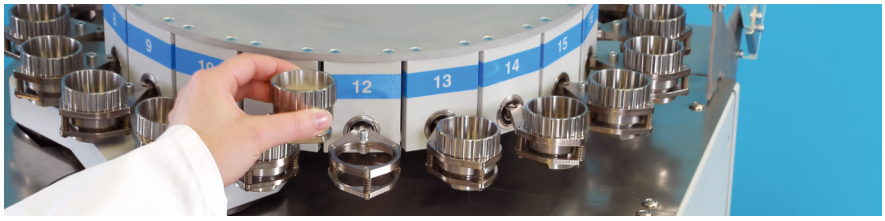




Not only can we provide state-of-the-art engineering services, but we also deliver service solutions during the entire life cycle of your cement plant – from inspection and maintenance, to the supply of innovative OEM spare parts – all to enhance your competitiveness. You can always count on our highly qualified service staff to provide the best solutions – hand in hand with you, our customers. With our global network and new digital service solutions, we are always at your side – no matter when or where.

We apply the competence and in-depth knowledge we have gained in over 160 years as an OEM and EPC provider to act as a reliable partner to our customers in offering tailored, innovative solutions and support.

"Service is a people-business that thrives on the trust of its customers"

Bernd Kripzak
(Head of Operating Unit Service, Polysius)

Services are crucial in keeping a cement plant running for decades. Fast and uncomplicated support, state-of-the art solutions and a partner with the required expertise – that is what cement plant operators are looking for. We offer all that it takes to meet these requirements:

Global network and local service support:

As a global company, Polysius has 20 service offices in 18 countries and 5 service centers. Thanks to this global network, we can lend our customers throughout the world a helping hand – quickly and reliably.

Spare parts management

We optimize your spare parts management and help you to identify the correct time to replace or overhaul components. It's not only about replacement – through our special spare and wear parts development, we increase the service life and thus the value of our products for our customers.

Field and workshop services

We offer local support when it comes to overhauling spare and wear parts, or when maintenance and servicing are needed. The know-how and experience of our experts makes all the difference.

Revamps and stoppages

Over the course of time, demands change. We therefore offer custom-tailored revamp solutions for our customers' plants and equipment, in order to meet these changing demands.

Asset management

With our asset management, we offer a holistic approach to reduce the overall operating expenses of a plant and optimize costs.

#grey2green
Join the future with our green technologies

With over 160 years of expertise and experience in the construction of large-scale industrial plants, we know that our customers need solutions that are easy to implement. We also take every step of the cement production process into consideration – ensuring coherent and measurable improvement. Our solutions for a green plant range from polysius® activated clay for more sustainable clinker production with calcined clay and polysius® fuel substitutions as alternative fuel solutions, to polysius® oxyfuel to drive climate neutrality and reduce the carbon footprint of the cement industry, and, last but not least, the CemCat NOx reduction solution.

Our vision of a green polysius® cement plant

Today, one of the key challenges facing the cement industry is reducing carbon emissions in the cement manufacturing process. With the green polysius® cement plant solutions, Polysius offers customers the opportunity of more sustainable cement production which also meets customers' economic efficiency and plant productivity requirements.

7%
The cement industry accounts for 7% of the world's total carbon dioxide emissions.

50%
With activated clay, the clinker factor can be reduced to 50%.

China has a 50–60% share of global cement production.

100
Fossil fuels can be entirely replaced by alternative fuels.

2030
Global cement production is forecast to increase to 4.83 billion metric tons in 2030.

Concrete is the second most widely consumed commodity after water.

Crushers

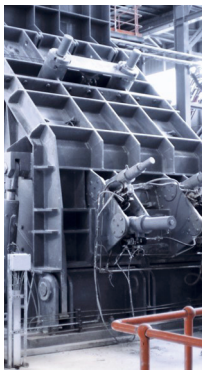
There are many options for upgrading existing crushing and grinding systems to the latest technological standards. No matter whether it's the optimization of operating conditions, adaptation to changed operating states, modern automation or geographical relocation, Polysius can always offer a complete solution. Not only do we look after plants that we have constructed, but we also look after those from other manufacturers. In addition, we modernize all types of crushers. Optimizations that we have already carried out prove that almost any plant has the potential for performance maximization and resource-consumption minimization.

We are one of the world's leading manufacturers of crushing and grinding plants. Thanks to our many decades of experience, we have excellent know-how that is deepened and expanded through the results of our own research and development projects. In our optimization work, we always choose innovative and highly efficient technologies and processes.
We are a one-stop shop for engineering, purchasing and commissioning: As an EPC contractor, we hand over a fully optimized plant on a turnkey basis and on the scheduled date.

At the start of the project, our experts precisely analyze the current condition of our customers' preparation plant and then develop a customized optimization solution. We then implement this solution in close cooperation with our customer. Through our precise advance planning, we ensure that downtime is restricted to the necessary minimum.

Among other items, our portfolio includes the capacity enhancement or re-commissioning of existing plants, the sale and engineering of single machines, plant availability improvement, adaptation to changed operating states, upgrading through innovations and new technologies, adaptation to current standards of occupational safety and environmental legislation, and modern automation solutions. For all our measures, a positive cost/benefit calculation is always paramount.

All kinds of crushers, screens and apron feeders can be modernized.



Impact crushers

- Different rotor designs with a hydraulically fixed blow bar system are available (welded and cast designs) for our own and third-party machines
- Various blow bar qualities are available
- An automatic gap system with a tramp iron protection system is possible as a retrofit package

Apron feeders

- More than 450 references worldwide
- Low-maintenance, thanks to robust design
- Various modifications are possible, such as
  - conversion of slide rail system to non-lubrication slide system
  - conversion from hydraulic to electric drive
  - conversion from plate feeder design to apron feeder design in less than three weeks

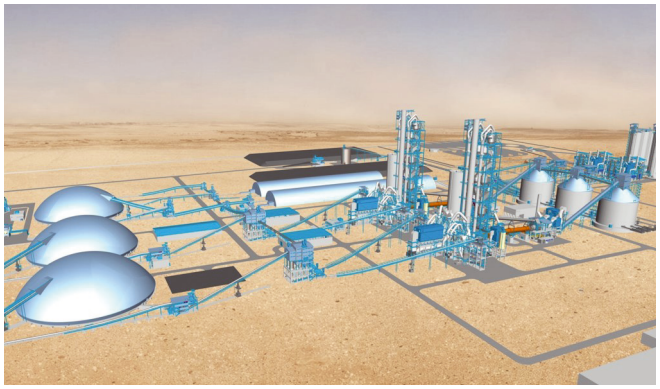
Screening machines

- Different screen coverings are available (plastic, wire, steel plates)
- A large range of different screen types is available: linear vibrating screens, circular vibrating screens, elliptical vibrating screens, eccentric vibrating screens, wobblers and roller screens, grizzly primary screens, vibrating screen feeders
- Various conversions, such as 1:1 replacements for screens, impact tables at wobblers/roller screens, automatic grease systems for wobblers

Hammer crushers

- World leader with more than 350 hammer crusher references worldwide
- Various hammer qualities are available
- Retrofit packages (rotors, baskets) are available for our own crushers and for third-party crushers
- Maintenance improvement with our rotor auxiliary drive, hammer lifting lug, hydraulic grate basket carrier or hammer extraction device
- Rotor repair/retrofitting is possible

Raw material blending and storage



Piles of limestone, gypsum or clay: A storage facility for bulk materials used in cement production lines typically looks like a low-tech operation. Building on its industry-leading expertise in this field, Polysius has brought high technology to bulk storage. The fully automated storage system that Polysius has designed, developed and put into operation brings the benefits of cost savings, enhanced reliability, more efficient and compact stockyard design, and healthier working conditions.

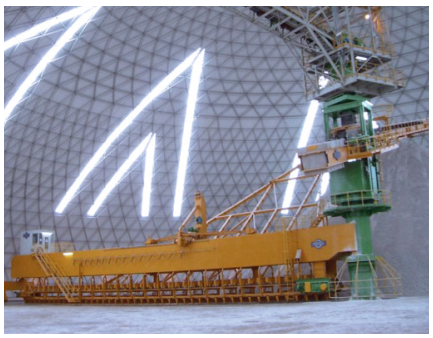
Benefit from cost savings and enhanced reliability

Blending beds and storage

In the cement industry, the different materials for the raw mixture and the cement are stored in piles where stackers and reclaimers operate. The operation of these machines can be automated. Different automation levels are possible and can be offered for new and existing installations:

- Fully automated stacking and reclaiming
- Fully automated pile change
- Fully automated first cut of a new pile
- Determination of pile volumes

Circular blending bed



Longitudinal blending bed

Longitudinal additive storage with walls

Longitudinal coal storage without walls

Various service solutions can be implemented in existing machines, in order to enhance operation. The service solutions are:

- Process audits for removing bottlenecks from the system
- Adjustment of the machines in the case of stickier materials
- Increase in stacking and reclaiming capacities
- Revamping of existing equipment, such as rake carriages, rake scraping elements or drive systems, to the state of the art
- Installation of improved chain scraper shovels or stronger chains with chain wheels

All the services offered improve system operation, reduce operating expenses and increase system availability.

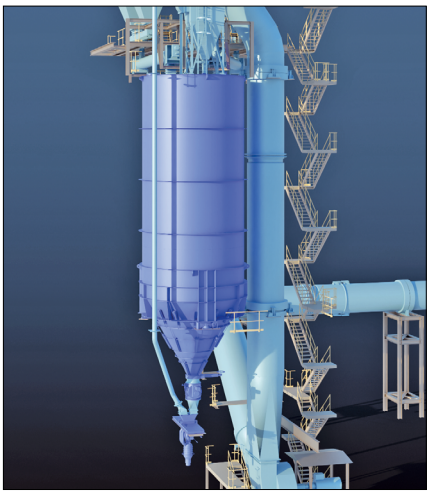
Silo technology and pneumatic conveying

Silo technology

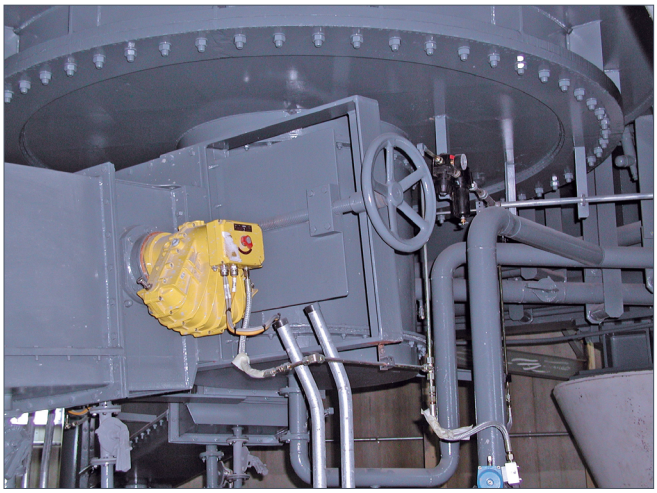
From small steel silos for process applications, to large storage silos made of reinforced concrete, with storage capacities of up to 100,000 t, the Polysius portfolio includes all the silo types that the cement industry needs. These different silos are used for various materials, such as raw materials, additives, raw meal, cement, pulverised coal, and all types of dusts.

Polysius offers the following service products for the various silos:

- Spare parts for existing silos
- Replacement of aeration boxes
- Modification of existing silos, such as new material distributors on raw meal silos
- Delivery of new steel-plate silos
- Process-technology advice in the event of outlet problems with, for example, mill feed bins, as well as modification proposals
- Process-technology advice on the operation of raw meal silos, in order to increase the blending effect

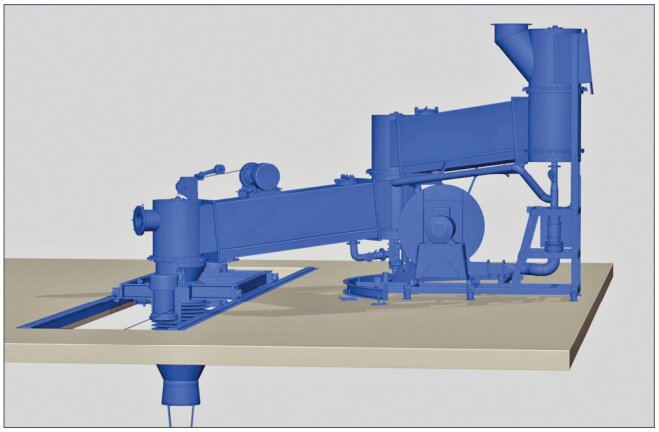


Pneumatic conveying and feeding



At Polysius, pneumatic conveying and dosing has an 80-year-long tradition and has been continuously advanced over this period. For example, the complete modular system for the polysius® pneumatic trough conveyor features all the components and inclinations to meet all process requirements in the cement industry. The portfolio also includes the modern, welded rotary flow-regulating valve with pneumatic actuators. In this sector, Polysius can offer the following service products:

- Spare parts for existing equipment
- Replacement of existing equipment with modern machines
- Increased performance of existing systems
- Modifications to existing systems, such as conversion from purely pneumatic raw meal or cement conveyance to a conveying system consisting of pneumatic trough conveyor and bucket elevator



For decades now, Polysius has offered various products for pneumatic tubular conveyance using the lean-phase/dense-phase procedure, such as the polysius® vertical conveyors, the polysius® pressure-vessel conveyors and the polysius® dosing conveyors. For pneumatic tubular conveyance, Polysius offers the following service products:

- Spare parts for existing equipment
- Optimization of existing systems
- Replacement of screw pumps with rotary airlock feeders, in order to reduce operating expenses

At the end of the process chain in a cement plant, cement and binding agents are loaded into tankers. Polysius has completely revised the mobile trough loader that can be used for all loading tasks, such that it is also suitable as a replacement for existing systems. Now, only pneumatic trough conveyors are used to ensure moveability of the bulkloading head in relation to the stationary connection to the system. Further transmission into the pivot points is implemented by means of three conveying joints. This means that practically any longitudinal and transverse travel of the bulk loading head is possible. A frequent application is movement in a longitudinal direction by 6.0 m and movement in a transverse direction by 0.5 m. Here, the bulk loading head can usually be lowered vertically by 2.0 m. For the first time, the trough loader offers complete mechanical and electrical pre-assembly in the workshop. Thanks to the use of the trough sections for the conveying route, the loading device can be supplied in just three completely pre-assembled and cabled loose parts. This means that replacement of a bulk loading spout is also possible later – even during a shift – in order to service it in the workshop, for example. This ensures a high level of availability of the loading point.

Mechanical conveying

Mechanical conveying technology has become increasingly important. Here, Polysius offers numerous different systems and machines. In addition to assistance with maintenance and operation, Polysius can offer consultancy services and service assignments in order to solve process-technology problems and respond to changes in the conveying-task requirements.

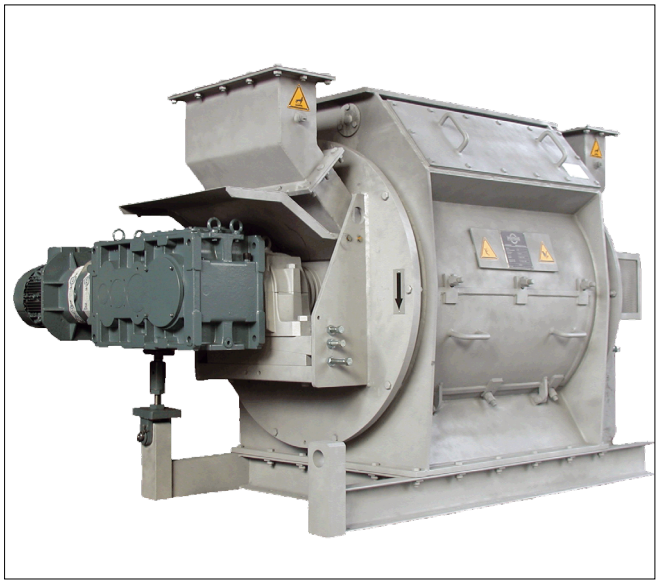
Coarse feed valve

Coarse feed valves serve as airlocks and as continuous feeding units for coarse-grained materials. They minimize the effect of false air in a grinding system operated under negative pressure and permit continuous further conveyance of the materials. The conveyed material is supplied to the feed valves at a controlled rate by, for instance, belt conveyors, bucket elevators, continuous conveyors, deep bucket conveyors etc.

This type of feed valve is primarily used upstream of roller mills and ball mills for supplying coarse-grained bulk materials such as limestone and coal with a particle size range of 0–200 mm, depending on the size of feed valve involved. The feed valves are provided with heatable channels to prevent caking during the conveyance of moist or very sticky materials.

Polysius spring-plate cell airlocks are particularly worthy of mention. They are of a robust cast design and have been in use successfully for decades, for air sealing and dosing tasks. The application temperatures are between -40 °C and +450 °C, so they are also very well suited to use in material feeds in preheating systems. The throughput rates range from a few cubic meters per hour to 1,000 m³/h. In addition to the spare parts service for existing airlocks, substitutes for other existing airlocks can also be offered with the spring-plate airlock design.

Effective protection against false air

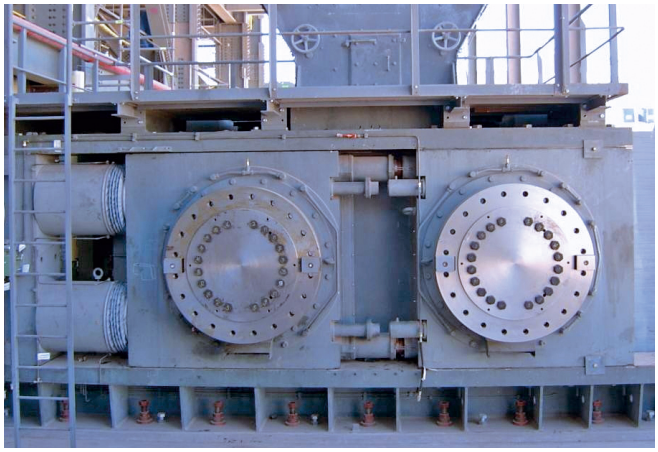


Coarse feed valves

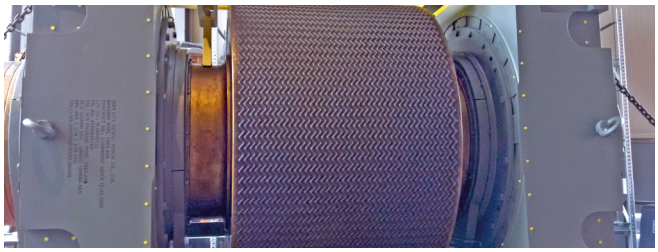
polycom® expert service
for high-pressure grinding rolls

Regular maintenance and inspections by our polycom® experts ensure consistent and reliable performance, as well as an extended service life of the polycom® roll units. Our experts record the exact status of your polycom® and recommend specific measures to optimize the operating conditions. In many cement plants around the world, our polycom® high-pressure grinding roll is a proven, reliable and energy-saving solution for grinding raw materials and cement. First sold in 1986, more than 95% of all polycom® high-pressure grinding rolls ever built are still in service today. With, in some cases, several decades of production behind them however, some of these high-pressure grinding rolls no longer achieve their full capacity, which leads not only to reduced throughput, but also to increased specific energy consumption.

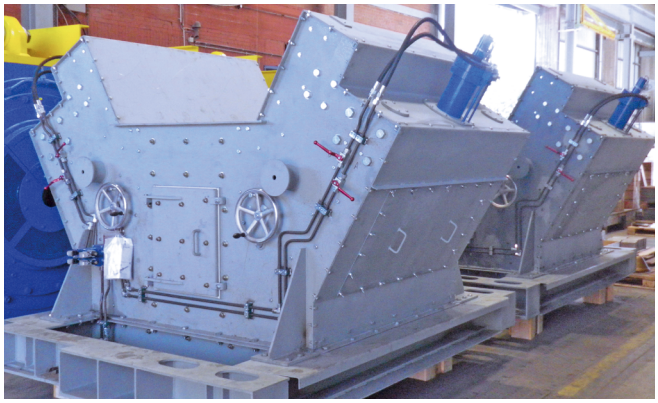
polycom® expert service provides clarity on the condition of the entire grinding plant and focuses on process technology and mechanical limitations on production. Any optimization required is implemented directly during the service. A detailed report with recommendations provides you with a sound decision-making basis for your medium-term and long-term strategies.



polycom® high-pressure grinding roll



Wear protection



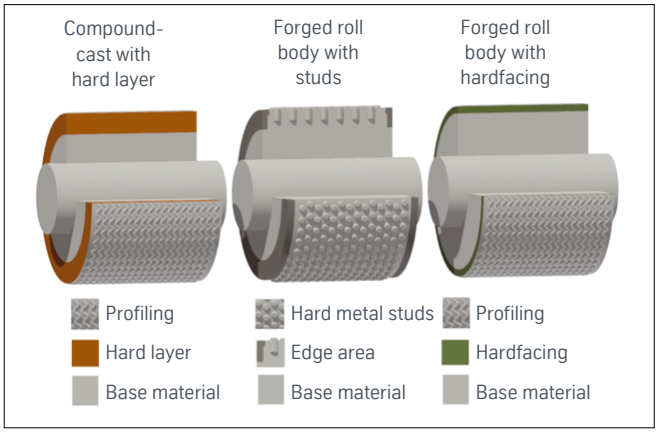
Feed unit

polycom® wear protection range

Polysius was one of the first to supply high-pressure grinding rolls, and is one of the world's leading suppliers. Two of our wear concepts, the compound-cast roll body and the forged roll body with studs, achieve maximum performance in a wide range of raw material, cement and slag grinding applications.

Since the polycom® high-pressure grinding roll was introduced in 1985, Polysius has continuously improved the wear protection of the rolls. Our customers can count on an optimal, reliable wear protection solution to meet their highly diverse requirements.

For moderate wear conditions, forged rolls with hardfacing are used as a cost-effective standard solution. Under high-pressure loads, fatigue-free compound-cast tires ensure low wear rates and an extremely long service life. Roll bodies with a range of different hard metal studs and side protection concepts are available for particularly abrasive environments.



quadropol® vertical roller mill

In recent years, Polysius has successfully continued step by step the development process for the quadropol® vertical roller mill concept. This compact and modular concept includes the latest market requirements regarding compact plant layout, efficient operation and reliable machine design. Moreover, it also reduces unscheduled downtime. Tailor-made solutions with interchangeable parts are available as well. We also offer spare and wear parts for our customers' quadropol® systems.

quadropol® vertical roller mill

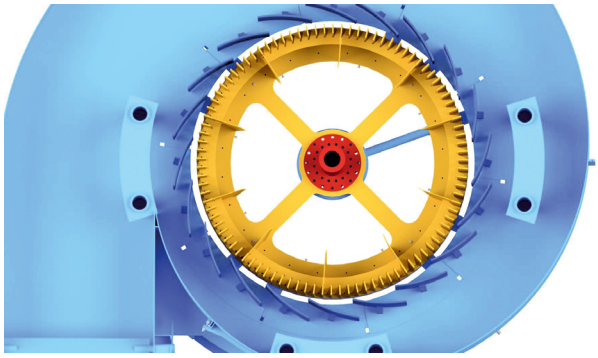
dorol double roller mill

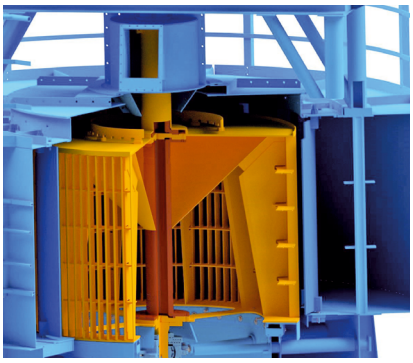
With almost 400 applications worldwide, this is a real success story. Decades of experience and further developments flow into our service for the dorol double roller mill. With our spare parts, but also with the tailored services, we increase the availability of our customers' mills. Our primary goal is to minimize the downtime of the plant. Modifications and upgrades help to increase availability, reliability and production as well as identify potential for energy savings.

dorol double roller mill

quadropol® and dorol expert service ensures improvement of mill operation by means of a comprehensive inspection by our experts. To achieve this, our specialists from the fields of process technology, mechanical systems and services analyze the entire mill system. On this basis, we immediately identify the optimization potential of the plant and can increase both performance and availability.

sepol® separator





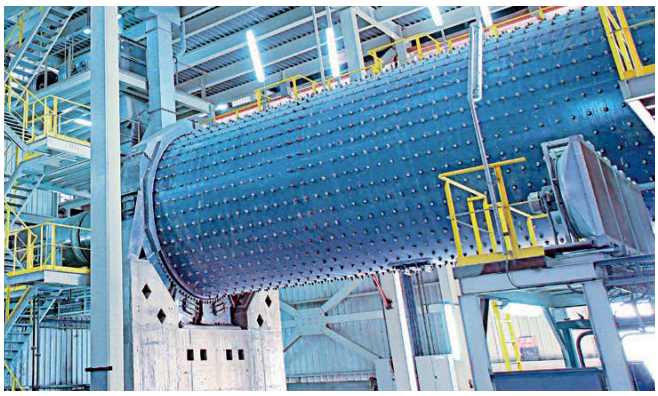
The higher the demands placed on the quality of the ground material and the lower the desired energy requirement of the overall grinding system, the more important the efficiency of the separator is.

High availability, high selectivity, low specific energy consumption, simultaneous product separation, cooling and drying, as well as short amortization periods combined with relatively low capital expenditure are the defining features of the sepol® high-efficiency separator.

All the requirements that define a future-proof system configuration are precisely fulfilled by the sepol® high-efficiency separator.

The separator plays a key role in grinding systems equipped with tube mills, roller mills and high-pressure grinding rolls. Over 1,000 sepol® separators installed around the world confirm this effective functional principle.

polysius® tube mill



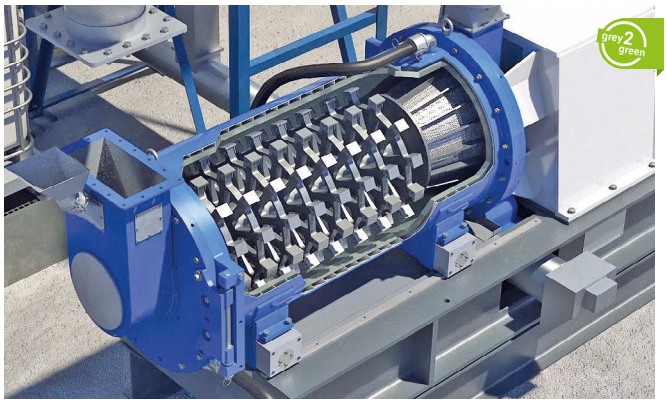
Our customers benefit not only from the decades of experience we have gained through successfully commissioning more than 2,200 tube mills, but also from our comprehensive scope of services, ranging from maintenance and OEM spares procurement, to the optimization of existing plants.

All work is individually designed and adapted for each customer

Cost-effective, reliable and energy-saving: With its high-performance range of tube mills for the grinding and drying of a wide variety of materials, Polysius offers solutions to suit every need.

The tube mill that best suits your respective application depends on many factors, including feed grain size, grindability, moisture and drying properties. In conjunction with our customers, we analyze the requirements and develop the optimal plant configuration.

polysius® booster mill



The polysius® booster mill –
#boostgrinding with our new innovation.

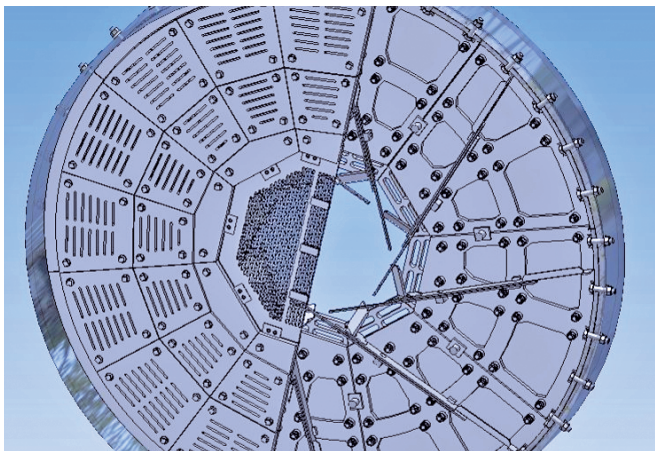
On our transformation journey from #grey2green, we have now come up with something new.

The polysius® booster mill is a dry agitated bead mill that significantly increases cement grinding performance and sustainability. With this additional-stage grinding solution, which is particularly efficient for finer grinding, our customers produce ultra-high performance cements or sustainable cements with a lower clinker factor without losing grinding capacity – while gaining flexibility.

diapol® 2.0 lifting diaphragm

With diapol® 2.0, we have once again significantly improved the intermediate diaphragm. For the first time, the air stream and the material are separated from each other effectively. In the case of the diapol® 2.0, the material falls directly behind the diaphragm, so that the entire mill volume is utilized during grinding. Since the individual segments are not rigidly connected to each other, but can slide against each other, there is no additional mechanical loading at the mill shell. We ensure high operational reliability.

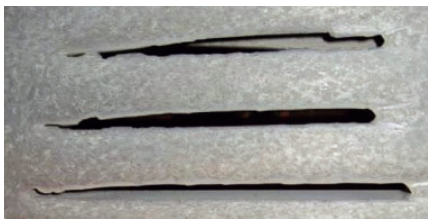
In addition to the intermediate diaphragm, there are three more types: the discharge diaphragm, the central discharge diaphragm and the pre-drying compartment diaphragm.
Their common feature is that the material flow can be regulated by adjustable lifter scoops, which makes it possible to control the filling level in the grinding compartment.



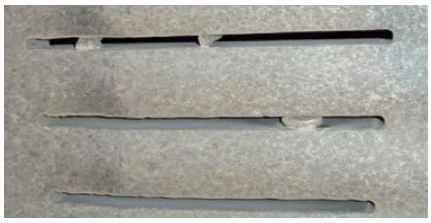
polalloy slotted plates and backwall plates

polalloy is an extremely wear-resistant material that is used for manufacturing slotted plates and backwall plates. Plates made of this material have significant advantages in comparison with products made of cast metal and rolled steel. polalloy offers a high level of hardness and excellent toughness, which minimizes the risk of breakage.

During the patented manufacturing process, the through-hardened plate material is heated only slightly in its initial state; its structure therefore remains unaffected. In contrast to surface-hardened plates, wear thus remains almost constant, even after the first few millimeters. Moreover, when wear has been detected, only the most affected plate rings need replacing. polalloy has a hardness of 58 HRC and also offers excellent toughness. As a result, the risk of plate breakage can be minimized.



Cast plate after 7,450 operating hours



polalloy plate after 14,100 operating hours

polysius® fines cooler

In grinding systems, it is frequently necessary to install a supplementary cooler in order to reduce the temperature of the material being ground. In many cases, indirect and thus gentle cooling processes are preferred to direct cooling, such as water injection into the mill. Indirect cooling does not affect the product quality.

The fines cooler employs the indirect cooling principle; the coolant evacuates the heat without coming into contact with the material being cooled. Depending on the system requirements, either the fine material, the circulating material or the grit rejected by the separator can be cooled. The delivery range contains six different cooler sizes, for throughput rates of up to 180 tph. The fines cooler is used not only in the cement manufacturing process, but also for cooling fine materials in other industries.

The compact design of the fines cooler ensures straightforward installation in both new and existing plants.

Main advantages of this cooler:

- The intensive contact between the material and the water-cooled cylinder ensures good heat transfer despite the relatively small dimensions of the cooler.
- The forced movement of the material prevents deposits from forming.

The cooling capacity of the system depends on the individual application.
Selection of the cooler size to suit the application is based on the following data:

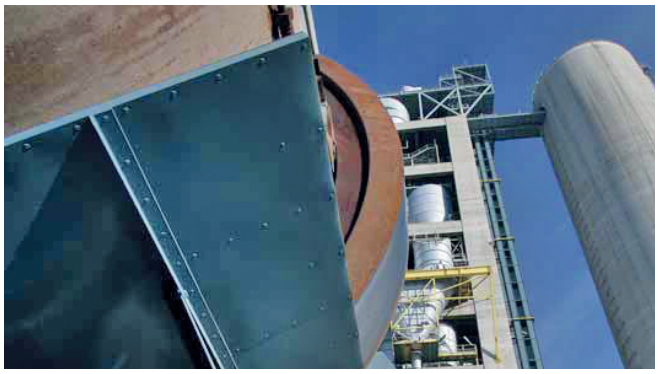
- Throughput
- Material inlet temperature
- Cooling water inlet temperature
- Required material outlet temperature or the amount of heat to be dissipated

Throughput rates of up to

180 tph

Drive unit of the fines cooler

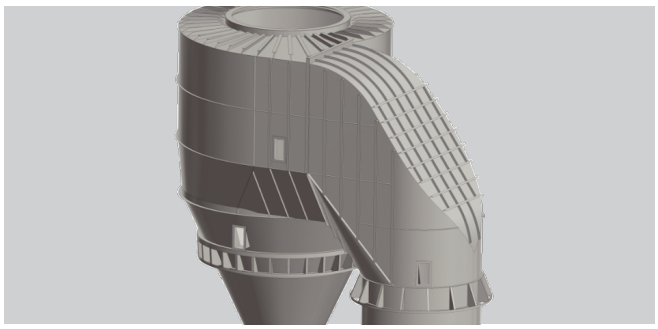
dopol® preheater



dopol® preheater

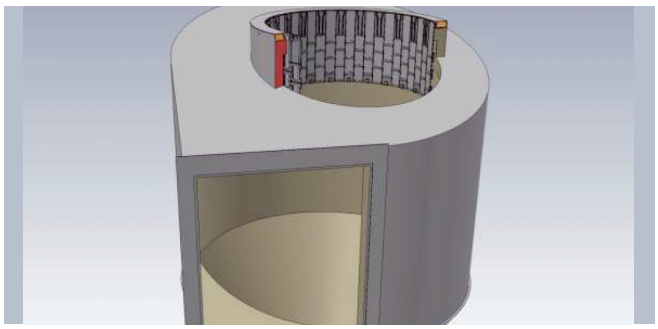
Multistage cyclone preheaters with integral calciner and tertiary air duct are indispensable components of modern kiln lines.

Polysius offers innovative preheater/calciner concepts that are nevertheless technically mature for the production of white cement and gray cement – both for new plants and for plant conversions. They are tailored to the desired production capacity, no matter whether it is less than 1,000 or more than 12,000 metric tons per day.



Cyclones without dip pipes

Simulation calculation with our prepol® program ensures high efficiency levels. The dip pipe for the lowest stage can be omitted. The new A-cyclone stage has become our standard. With this, the surface area for new AS and BS cyclones is up to 20% larger. With stiffener steel, the weight increases by up to 40%. Retrospective modifications are possible in any existing system.

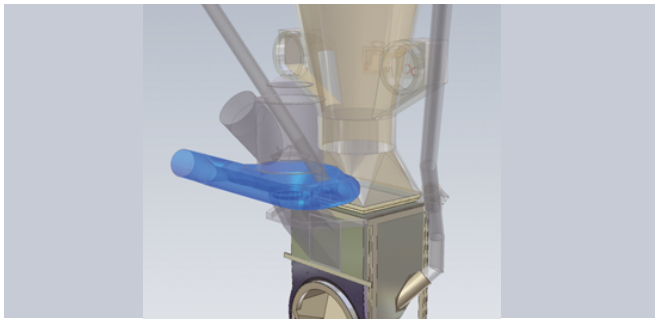


Heat-resistant, segmented dip pipes

The dip pipe stabilizes the vortex, increases separation efficiency and reduces dust recirculation. It is suspended at its upper end inside the cylindrical outlet of the cyclone.
The material of the dip pipe must withstand high temperatures (> 900 °C) and should have good resistance to chemical attack.

Air-cooled kiln inlet

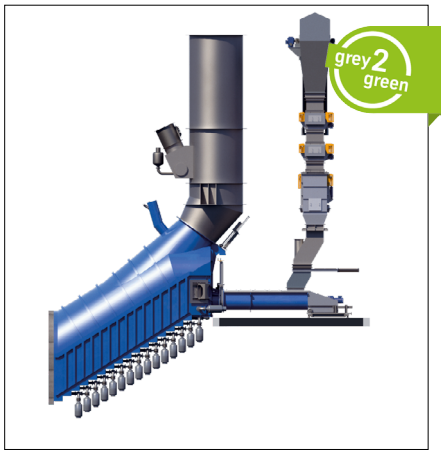
The kiln inlet housing is the connection element between the almost-horizontal, rotating kiln and the vertical calciner. Therefore, Polysius has developed a special internal design for the refractory lining of the inlet housing. This ensures optimal meal flow in the direction of the rotary kiln while minimizing dust formation and thus minimizing the amount of dust returned to the preheater.



Bypass

The bypass is attached to the front wall of the kiln inlet housing. It exhausts and cools down a partial gas flow from the kiln inlet. Furthermore, it extracts circulating pollutants, especially chloride. With the help of state-of-the-art 3D measurement technology, we are able to measure existing systems and implement the new technology. Coordination of this technology is accompanied by our process-technology experts, in order to enhance performance and energy efficiency.

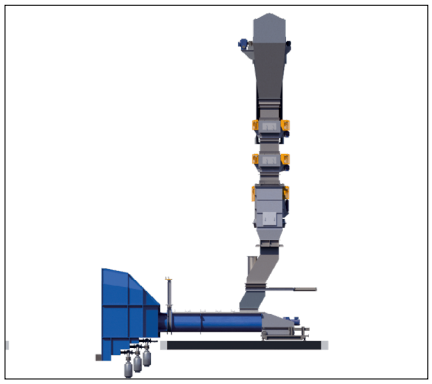
prepol® SC



prepol® SC

In comparison with a standard calciner loop, the prepol® SC opens up a new dimension in the alternative fuels that can be burned. The residence time of about 1,000 seconds particularly boosts solid-phase combustion and improves the burnout of complicated fuels in short calciner loops. Ordinary calciner technology, in contrast, has only up to seven seconds' residence time.

The prepol® SC is a very simple combustion grate made of several static, non-moving refractory steps, which give the system its name: the step combustor.



prepol® SC -S

If space in the preheater is limited, it is worth thinking about the short version of the step combustor, the prepol® SC-S. In this version, the combustor consists only of the first three steps of the grate, together with the screw-feeding system. The prepol® SC-S offers the following advantages:

- Retention time of 150–300 seconds
- Effective for drying and pyrolysing the fuel
- It is not necessary to connect the tertiary air and the hot meal, due to the short grate and the close connection to the calciner duct
- Easy retrofitting if space is limited
- Low investment, in comparison with the full prepol® SC

Short, yet powerful

prepol® SC – the key characteristics

Safe

The thermal process always takes place in at least 30% excess air. It is therefore impossible for dangerous carbonization gases such as CO, H2 and CxHn to form. Forced-feeding of the fuel means that the system is sealed off from the environment. In an overpressure situation (e.g. failure of the system fans), ignition of the fuel in the conveyors can be prevented. During a stoppage, the combustor is completely isolated from the conveyors by pneumatically-operated airlock slide valves.

Effective

The use of air cannons ensures that the fuel is actively transported and turned over. Every air blast brings the fuel into contact with fresh oxygen, and every agitation separates the smaller particles, so that only the large fuel particle fraction remains on the step grate. The prepol® SC thus operates extremely effectively, as the fuel is only processed as far as necessary until it can enter the calciner as gas-stream-entrainable char. Relative to the low space requirement of the combustor, very large quantities of fuel can thus be processed effectively.

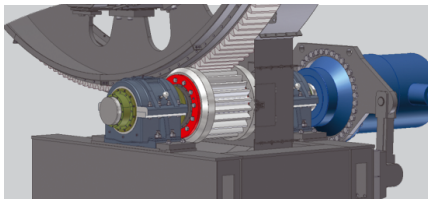
Flexible

The prepol® SC is made for all kind of fuels, but is flexible in size. According to given boundary conditions, the width and length of the unit can be adjusted. For complex retrofits, the grate can be shortened – and the prepol® SC-S still offers 50 times more combustion time than existing calciner loops, while needing a minimum of space.

Simple and reliable

The combustor consists entirely of mechanical components that have already thoroughly proven their reliability in the cement industry. The screw conveyors and the air cannons have been optimized for the rough conditions of the fuel-handling applications. The astonishing thing is that although both systems actively assist fuel conversion through agitation of the fuel, they are not subjected to the thermal and chemical stresses in the combustion space. The mechanically-moved components are located completely outside the combustor.

polysius® rotary kiln solutions



polguide drive concept

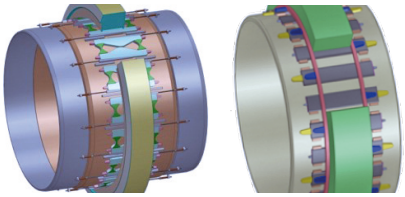
Optimal load on the kiln girth gear and pinion is achieved by means of a swivelling baseplate with a guided self-aligning pinion. This mechanism compensates for operationally-related meshing interference between the pinion and girth gear at all times.

Kiln bearing replacement

With the new concept, roller stations can be modified to the globally-proven polysius® roller stations irrespective of the make of rotary kiln – particularly in the case of problems with hot bearings or broken axles at rotary kiln roller stations.

Pneumatic seal

The pneumatic inlet and outlet seals isolate the kiln process from the environment. The aim is to seal against false air, which has a negative impact on the process, the final quality of the product, and energy consumption.



Splined and loose tyre fastening

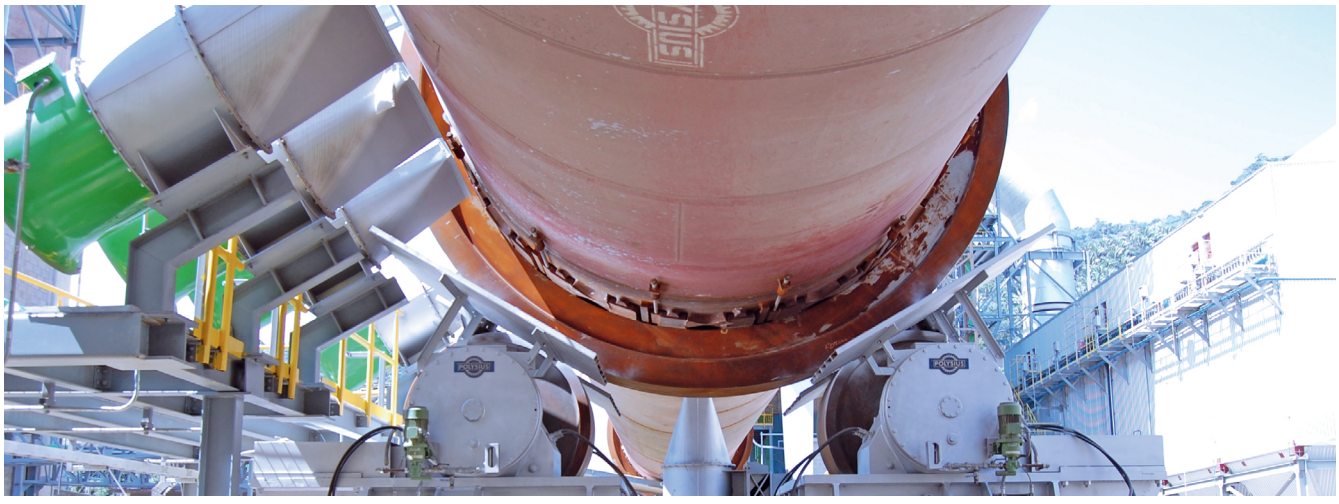
There are two different systems that can be used for fastening kiln tyres to a kiln shell: the splined or the loose tyre fastening system. The splined tyre fastening system transfers the load to be supported from the rotary kiln shell into the kiln tyre by means of a form-fit connection. This type of system ensures that the kiln shell is kept as round as possible, resulting in less stress for the brick lining.

Kiln outlet segment

The protective segment at the kiln outlet separates the kiln process from the surroundings. The aim is to provide a seal against false air, with the highest process reliability and availability.

Graphite seal

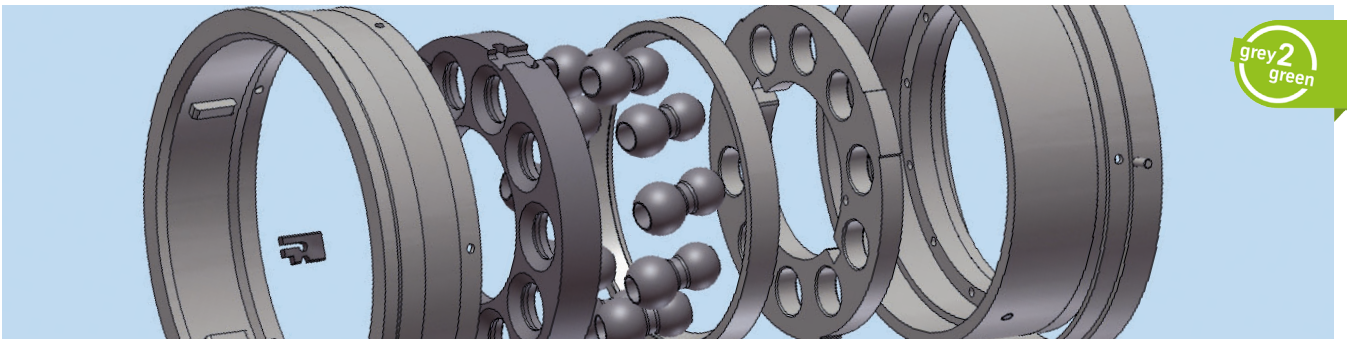
Inlet and outlet graphite seals separate the kiln process from the environment. They are designed to seal off the kiln process from leakage air while ensuring maximum process reliability and availability.
This is an alternative to pneumatic sealing and is often used when converting third-party seals and kilns.



polysius® rotary kiln

polflame® burner

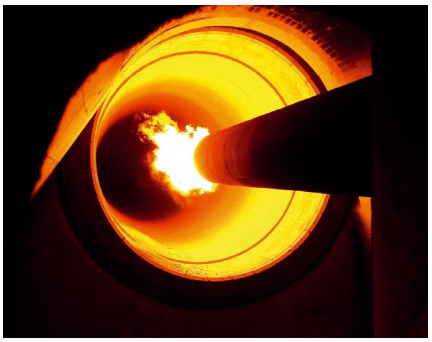
For high product quality with every type of fuel



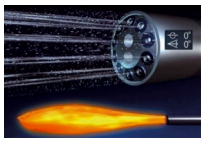
polflame® burner tip

Thanks to its highly efficient primary air nozzles, the burner can be optimally adjusted to the ignition behavior and burnout performance of the individual fuels during operation.

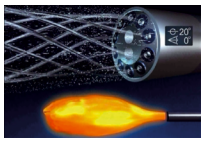
polflame® VN meets all process-technology requirements – from easily flammable fuels such as oil, natural gas, brown coal or hard coal, to petcoke and anthracite coal and entrainable substitute fuels.



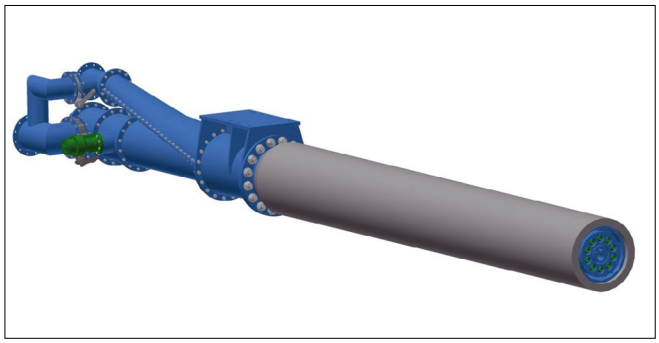
Quick and easy adjustment of the flame shape



Low swirl number – long, soft flame



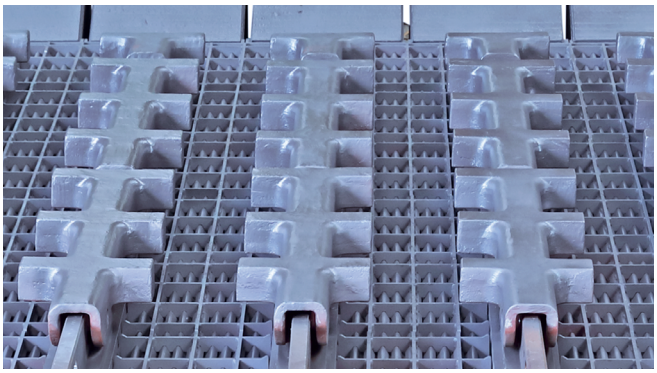
High swirl number – short, sharp flame



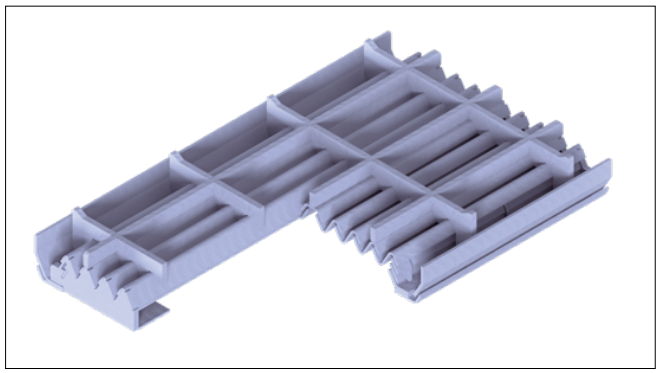
Structural design

polytrack® clinker cooler

We offer various possibilities so that you can achieve the highest possible cooling capacity and reduce energy consumption. Our experts can convert your entire cooler or replace only the aeration units. The aim is to improve clinker cooler performance. It is also possible to modify a cooler made by a different manufacturer.



polytrack® cooler module



Design of the aeration units

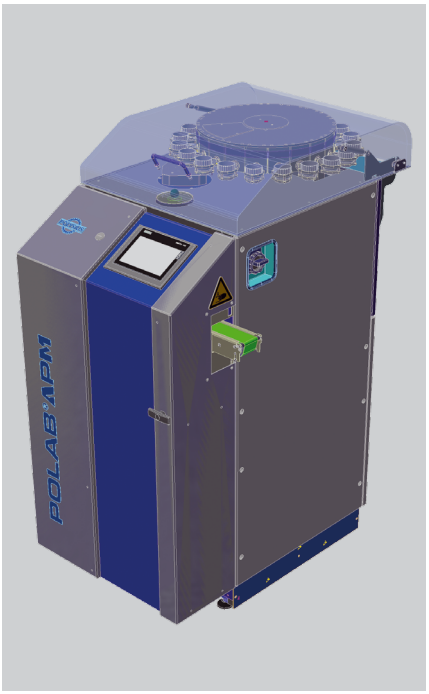
polab® laboratory automation

If your production monitoring system fails, the result is often production losses. That is why it is so important to have your polab® system checked. Ongoing system maintenance and servicing are the recipe for success in ensuring the optimal availability of your quality assurance system. Polysius offers specially tailored solutions for your automation system, with the service conducted by our specialists at the agreed intervals.

Our services ensure the high reliability and cost effectiveness of your laboratory automation system. The core components of what we offer are continuous system maintenance and servicing, rapid supply of spare parts, up-to-date information, as well as comprehensive training measures. During the assignment, we check your polab® configuration for functional reliability. This includes checking and, if necessary, replacing any parts that are sensitive to wear. On request, we also integrate new, advanced developments into your system. As a result, up-to-date experience and state-of-the-art technology can be automatically integrated into your installation.

For every system, Polysius offers a customized package of spare parts for on-site storage. This allows you to carry out repairs quickly and without problems. If a particular spare part should still be missing, we arrange for delivery as quickly as possible.

polab® APM sample preparation for XRF and XRD



polab® APM plus

Compact, flexibly configurable and upgradeable, polab® APM integrates into a single machine all the components needed for preparing samples of specific materials.

polab® APM advantages at a glance

- Combined mill and press in one small unit with a minimum footprint of only 600 x 1,230 x 735 mm
- Patented grinding unit for efficient and gentle grinding, and optimized sample preparation for the different requirements of XRF and XRD
- Excellent reproducibility
- High sample throughput and integrated ring cleaning device for APMplus
- Predefined automatic and user-specific sample preparation routines
- Operator panel for simple and intuitive operation
- Grinding and pressing functions can be selected in a combined process or as single processes

polab® APM sample preparation

polab® AQCnet

polab® AQCnet is Polysius' next-generation laboratory control software. It thus forms the intelligent basis for reliable and high-performance product quality control.

AQCnet controls systems of all sizes, from a simple laboratory with one analyser, to laboratories with two full automation systems and more than 15 dispatch stations. Apart from managing the pneumatic tube system, robots, sample tracking, and some LIMS functions, the software also provides controllers for the cement production process.

In times of surging costs for raw material, fuel and CO_2, controller algorithms for raw meal, cement or the separator reduce costs by a significant margin. Solutions are available for even the most complex feed configurations or cement types.

polab® service hotline

polab-service@thyssenkrupp.com
Phone: +49 2525 99-2342

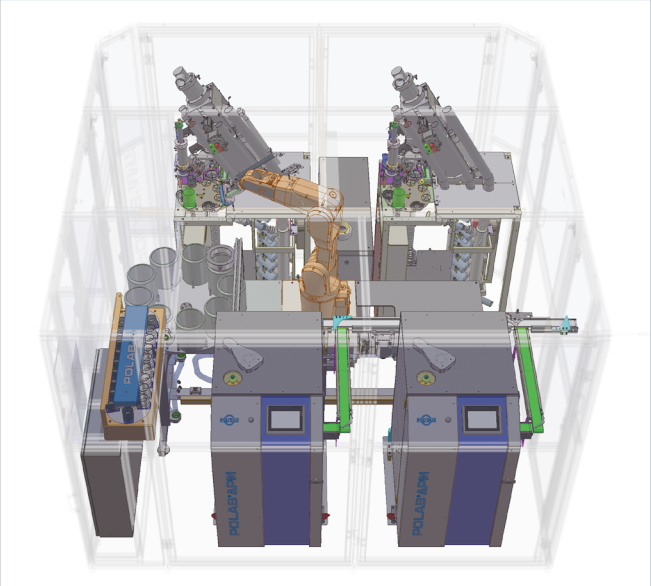
polab® AMT and linea

Fully automated, modular and customizable laboratory systems

The polab® AMT and polab® linea laboratory automation systems are Polysius full-size solutions for medium to very large cement plants. Whereas the polab® linea is of a narrow design and features sample transport via transport belts and handling units, the polab® AMT is more compact, and sampling handling is managed via an industrial robot. Both systems are fully modular and feature the same internal components, allowing for easy upgrades in the future. Their small footprint allows them to fit easily into existing buildings in the plants, thus reducing investment costs.

Both systems are fully enclosed in a modern housing made of aluminum and glass, allowing access to the room while they are in operation. During servicing and maintenance, individual modules may be removed while the overall system remains in operation, thus limiting the interruption of a plant's quality control system.

Both the AMT and the linea are controlled by the new polab® AQC-net software, which can be adapted to our customers' requirements. Service and spare parts are available on a long-term basis.



polab® AMT with outer frame rendered in see-through form.

polcid® control system

Anyone who builds systems should not only concentrate on selling and marketing the products, but also on the availability of the systems during their entire service life. The heart of your system is the control system. Here, your staff are informed about all the important process data and factors that influence production quality and output quantity.

The availability of your control system is an important aspect in the maintenance of reliable production operations. It is a productive system and therefore an important component in every plant. That is why we attach great importance to the fact that you, as our customer, can fully benefit from your decision to invest in polcid® control technology. With polysius® connect remote diagnostics, Polysius offers you a perfect service organization whenever you need support from us. We offer:

- Technical support through remote service
- Continuous system care and maintenance
- Information and advice on possible system upgrades of existing applications
- A comprehensive range of seminars

The polcid® process control system combines comprehensive process engineering know-how and ultramodern hardware and basic software from the world's leading manufacturers of process control system components, creating an optimal system structure for our client industries.

Planning security, investment protection, continuity, and service with process know-how are additional benefits.

Up to date – thanks to our upgrade.

polysius® digital solutions

Data management and conditon monitoring
To make the most of the plant's data, Polysius offers smart tools for intuitive visualization and easy interpretation. The data can be transferred into our IoT cloud. Our tools create an in-depth analysis, reports, recommendations or warnings in the event of fault indications.

Real-time optimization
We combine our cement process experience with machine-learning algorithms to reach your KPI targets.
Your benefit: maximized throughput and increased energy efficiency.

We adapt our pre-configured models to your specific plant or machine.
Your benefit: fast implementation, while achieving the best results.

We use state-of-the-art machine-learning technologies.
Your benefit: continuous re-adjustment of the operating parameters to changing process conditions.

Combining the best of both perspectives.

Machine-learning | Process Experience

polysius® connect

"See through our experts' eyes"

Remote assist automation

Through remote diagnostics, active intervention in the automation system, and support for your own maintenance technicians, we offer you efficient and cost-effective methods of technical assistance.

Remote operating support

Our multipurpose central control room in our headquarters is a real-time copy of the central control room at the site. We can support our customers in the event of problems of any kind during plant operation – quickly and efficiently.

Remote service

Our experts can provide our customers with real-time on-site assistance for immediate troubleshooting, as well as for regular maintenance and much more.

Field and workshop services

We are a local service partner with plant know-how. We can provide fast, local and comprehensive assistance when it comes to supplying or overhauling strategic spare and wear parts. We also offer field service support, such as ad-hoc repairs, technical assistance, maintenance, inspections and additional services.

poldrive® drive check-up

In order for our customer drive solutions to have a long life, we have developed a comprehensive preventive check-up: poldrive®. Our experts regularly check the drives of the production machines. This allows possible problems to be identified at any early stage. Serious damage can therefore be averted – and maximum availability of the plant is ensured.

polscan® optoelectronic measuring method

polscan® is a highly accurate optoelectronic measuring method that can measure rotary kilns quickly and precisely during operation. It allows us to diagnose reliably the vertical and horizontal deviation of the rotary kiln axis, as well as the deformation, eccentricity and ovality of the kiln shell.

Drone inspections

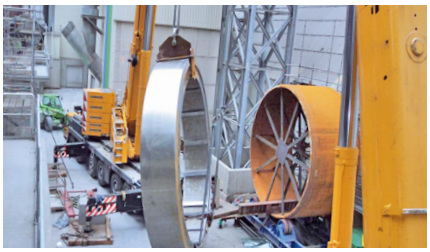
The range and flexibility of our industrial drones allow a whole new kind of inspections. This makes it easy to inspect large areas quickly and to reach high and obstructed locations.

polgrind® slide ring and tyre grinding

Our polgrind® service ensures that tyres and supporting rollers are trued-up again. polgrind® is available for our customers worldwide. Universal electrical devices ensure compatibility across the globe.

PlantScan 3D

With the help of accurate laser scanners, we create a 3D model of your plant, process systems or terrain. As a result, maintenance work and service lives can be calculated more accurately.



polysius® repair service

Polysius offers a worldwide repair service, and installation of spare parts for our customers' cement plants. We support them during the entire project, from planning, to preparation and execution.

On-site training

"We make our customers' employees fit for the future"

Whether it be in our training center or at our customers' plant sites, we offer training courses for our entire portfolio for the cement sector and for all machines and processes – from quarries to cement grinding. In methodological training courses, we increase the depth of knowledge of the employees, whether they are responsible for production, maintenance, automation, or the laboratory. The content focus of the training courses is on operation and optimization, mechanical maintenance of the machines, as well as process control systems and laboratory automation equipment. The participants learn the design and function of the machines and are familiarized with the measures to be taken for optimized operation and maintenance, as well as behavior in troubleshooting situations. In addition, they gain an overview of current developments and get to know the current state of the art. We make our customers' employees fit for the demands of daily operations.

Curious to find out more?
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engineering. tomorrow. together.