Range of products and services

Here you will find an overview of our product portfolio. We also offer comprehensive services for all these products.

polyius® cement plant
• The turnkey EPC plant by thyssenkrupp Industrial Solutions

Raw material preparation
• Mobile, semi-mobile and stationary crushing plants
• Single-shaft/double-shaft hammer crusher
• Impact crushers
• Jaw crushers
• Roll crushers
• Gyratory crushers
• Cone crushers
• Roll Sieve
• Longitudinal stockpile/longitudinal blending bed
• Circular stockpile/circular blending bed
• quadropol® roller mill
• Tube mill
• polycem® high-pressure grinding roll
• sepol® high-efficiency separator
• High-efficiency cyclone
• Multi-circuit silo
• Tangential blending silo
• Storage silo
• aempol® vertical conveyor
• fluidor® pneumatic trough conveyor
• quadropol® QMK2 roller mill for coal, anthracite and pet coke

Clinker manufacturing
• dopol® 90 cyclone preheater
• propol® calcining systems
• polyius® 2-support kiln
• S-support kiln
• polyguide kiln drive
• polflame® burner
• Kiln temperature scanner
• polytrack® clinker cooler
• White-cement clinker cooler

Cement manufacturing
• Clinker store
• Clinker silos
• polycom® grinding systems
• Tube mill grinding systems
• quadropol® QMK roller mill
• sepol® high-efficiency separator
• Fines cooler
• Flash dryer
• aempol® vertical conveyor
• fluidor® pneumatic trough conveyor
• Tangential silo
• Multi-compartment silo
• Cone-compartment silo

Factory automation
• polcid® process control system
• pollab® sampling, pneumatic tube systems
• polab® APM
• polab® ACT
• polab® AMT
• polab® Shuttle
• polab® AQCnet software

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The power of true efficiency

The Business Area Industrial Solutions of thyssenkrupp is a world leader for planning, construction and service in the field of industrial plants and systems. Together with our customers, we develop solutions at the highest level and deliver efficiency, reliability and sustainability throughout the entire life cycle. Our global network, with around 16,000 employees at 70 locations, enables us to provide turnkey solutions worldwide which set new benchmarks with their high productivity and particularly resource-conserving technologies.

We are at home in many different industries. Along with chemical, fertilizer, coking, refinery, cement and other industrial plants, our portfolio also includes equipment for open-cast mining, ore processing and transshipment, as well as associated services.

As an important system partner to our customers in the automotive, aerospace and battery industries, we optimize the value chain and improve performance.

thyssenkrupp Industrial Solutions is the cement industry’s competent technology partner. As one of the few international full-line cement plant manufacturers we offer you sophisticated and innovative plant solutions based on more than 150 years of technological experience. With our engineering and process know-how and our comprehensive products and services we will prepare your cement plant for the challenges of tomorrow’s world.

Our family brand for the cement industry is polysius®. Under the brand polysius® we offer you all our solutions for the production of cement and clinker – ranging from individual machines and automation systems through operations & maintenance support to complete turnkey polysius® cement plants. Reliability and future orientation are the guiding values of our brand.

Branchenkreisel
Update 2018

Individual requirements, optimal solutions

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04 Three questions for...
Three questions for...

Frank Ruoss, Member of the Board of Business Unit Cement Technologies, and his team promote polysius® products and services in the cement industry.

Three questions, three answers — Frank Ruoss on his Business Unit’s field of activity, innovative approaches and the power of tradition.

What does thyssenkrupp Industrial Solutions offer its international customers in the cement industry?

Thyssenkrupp Industrial Solutions is a full-liner for cement plant technology. We offer the cement industry an integrated range of products and services that enable long-term economic success by reducing operational expenditure and total cost of ownership. We take on the engineering, supply and installation of individual machines, complex plant sections and complete EPC polysius® cement plants. We also provide comprehensive services for operation and maintenance, we supply spare parts and carry out modernisation projects — we are there for the plant’s entire life cycle. What sets us apart from other cement plant manufacturers is the quality we guarantee. Our products and process technologies are known for their technical sophistication, and we are constantly adapting them to new requirements. We design plants for greater production capacities, the production of multiple cement types, and higher rates of secondary fuels and raw materials.

What is it like to operate under the umbrella of the global company thyssenkrupp?

It’s a great advantage for a cement plant manufacturer to belong to a diversified industrial group, because our network grants us access to extensive additional know-how. In the construction of cement plants there are great synergies with chemical plant construction and other fields. We can take up innovations from these areas at an early stage and make them accessible to our customers in the cement industry. Some examples are new processes such as Oxyfuel, carbon capture, and usage technologies like Carbon2Chem® and smart storage systems for renewable energy like water electrolysis.

What does this name stand for today?

The name Polysius signifies a long and successful tradition as an innovation driver for cement plant technology — for us this is an important heritage. Therefore our family brand for the cement industry is now called polysius®. With this brand we — and our loyal customers — associate two guiding values: reliability and future orientation. We are the reliable long-term technology partner of the cement industry. Together with our customers we create the cement plants of tomorrow. I’m convinced that the future belongs to intelligent solutions that combine excellent economy with consistent environmental responsibility. As part of our sustainability initiative, we are currently developing innovative sustainable modules that make our customers’ cement plants greener.
thyssenkrupp’s customers in West Africa face a special geological situation, and we gladly offer them a pragmatic business solution. Because there is no naturally occurring limestone in the region, West African cement producers only run cement grinding plants and have the clinker delivered to them. We also implement partial plants, e.g. plants exclusively for cement grinding, as EPC projects.

Canada: Taking the ice roads
In a project in southeastern Quebec the remote location posed logistical challenges. Some parts of the equipment could only be delivered in winter, when ice roads made heavy transports on the water-rich peninsula possible. thyssenkrupp supplied a new clinker production line with a capacity of 6,000 tons per day. The harsh climatic conditions also have a great influence on the material properties of the clinker, and we adapted the plant technology accordingly.

Guatemala: Overcoming altitude
thyssenkrupp built a turnkey cement plant in the highlands northwest of Guatemala City. In this mountainous region the plant site extends over 1,000 meters in altitude, calling for a very complex plant design and layout. The production line itself is arranged in a U-shape to fit on a plateau. The production capacity runs to 4,500 tons of clinker per day.

Saudi Arabia: Thinking big in the desert
In the Saudi Arabian desert east of the capital Riyadh thyssenkrupp is currently constructing two turnkey cement clinker production lines. With an overall capacity of 20,000 tons of clinker per day, the new plant will be one of the largest in the country. We are acting as an EPC contractor and also supplying all and also supply all the components for the new lines, from raw material preparation and clinker manufacturing to cement loading.

West Africa: Customizing EPC projects
thyssenkrupp’s customers in West Africa face a special geological situation, and we gladly offer them a pragmatic business solution. Because there is no naturally occurring limestone in the region, West African cement producers only run cement grinding plants and have the clinker delivered to them. We also implement partial plants, e.g. plants exclusively for cement grinding, as EPC projects.

China: Converting wet RDF to energy
Many plant operators in China – and other countries as well – appreciate the capabilities of our prepoly®-SC step combustor, an add-on for the prepoly® precalciner. On this combustion grate waste can burn for more than 1,000 seconds at high temperatures. This enables an innovative waste-to-energy concept: New sorts of waste – including extremely wet refuse-derived fuels (RDF) – can be utilized, resulting in a new level of fuel-cost savings.
thyssenkrupp Industrial Solutions selects individually matched production processes and provides optimal polysius® technology for your raw material preparation.

Building on the results of the material investigations and your individual requirements, we specify the optimal production process, including the crushing, blending, storage, homogenizing, efficient grinding systems for raw and solid fuels – e.g. the quadropol® vertical roller mill or the polycom® high pressure grinding roll – and analysis technology. For this purpose, we use the databank-based software ISAR, which simulates alternative plant and process configurations, including the resulting homogeneity developments of the raw material. In this way, we can guarantee you a technologically and economically efficient process solution that meets your requirements in the long term.

A good example of an important technological innovation in raw material preparation is our polysius® automated storage system. As the first-ever fully automated bulk storage system for the cement industry, this is a technical breakthrough. This high-tech storage solution reduces the health and safety risks for the operating personnel, and full automation helps to reduce both CAPEX and OPEX. A polysius® automated storage system has been in operation in a cement plant in Halimur, Turkey, since 2017.

The cement manufacturing process starts with the extraction and preparation of the raw material. Even at this stage, the requirements are high because only with homogeneous and high-grade raw meal is it possible to manufacture high-grade cements in a cost-effective manner. Our experienced geologists determine the raw materials that occur in your quarry in order to subsequently analyze and evaluate them in our chemical, mineralogical and physical laboratories.

Raw material preparation

From the quarry to preheater feeding with raw meal

180°
In the polysius® automated storage system, a 180° slewing belt stacker installed in the middle runs up and down on rails.
Our innovative solutions make a convincing choice across the board. We reacted to the increasing shortage of fuels at an early stage and developed concepts for the use of substitute materials. Thus, not only do we make robust and reliable design and high operating reliability possible, we also enable low resource consumption, low operating and capital costs and process-integrated concepts for the reduction of CO₂, other greenhouse gases and dust. Future-proof, cost-effective, reliable and resource-conscious: the benefits of proven and innovative polysius® technology for our customers.

One of our unique products for clinker manufacturing is the polflame® clinkering zone burner. It incorporates numerous innovative design ideas of ultramodern pyroprocessing technology. The polflame® burner helps to conserve primary fuels, reduce CO₂ emissions and cut fuel costs. Its patented design assures a high and precisely adjustable supply of oxygen to the heart of the flame. This leads to a good ignition and burnout of different fuels, creating optimum conditions for a high secondary fuel rate.

Maximum performance, minimum costs, low greenhouse gas emissions and highest quality – our customers’ requirements are multifaceted. So are the capacities of polysius® products for clinker manufacturing.

Our innovative solutions make a convincing choice across the board. We reacted to the increasing shortage of fuels at an early stage and developed concepts for the use of substitute materials. Thus, not only do we make robust and reliable design and high operating reliability possible, we also enable low resource consumption, low operating and capital costs and process-integrated concepts for the reduction of CO₂, other greenhouse gases and dust. Future-proof, cost-effective, reliable and resource-conscious: the benefits of proven and innovative polysius® technology for our customers.

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Clinker manufacturing

In modern cement plants the burning process is performed in three consecutive units. First, a multistage cyclone preheater with calciner, where the raw meal is preheated with kiln exhaust gas to approx. 800 to 900 °C and calcined. Then, there is the rotary kiln, where the sintering – a chemical-mineralogical process during which the cement clinker is formed – takes place at approx. 1,450 °C. Subsequently, the clinker minerals are “fixed” by the cooling process in the clinker cooler. The exhaust air from the cooler, which contains the recuperated heat, is used in the kiln as combustion air.

The optimized clinker manufacturing process is carried out in three stages:

1. Preheating and calcining of the raw meal in the cyclone preheater
2. Burning of the raw meal in a rotary kiln at a temperature of approximately 1,450 °C to form clinker
3. Cooling of the clinker

Today, plants from thyssenkrupp Industrial Solutions can be operated with 100% substitute fuel.
Cement manufacturing

Our polysius® cement manufacturing equipment is ready to meet the economic and ecological requirements of the cement industry. And we are ready to be your long-term technology partner.

There are more and more cement components. Cement producers want to manufacture different types of cement in one plant. Production output is rising – capacities of up to 10,000 tons per day of clinker are now standard. For these reasons, the complexity of cement grinding systems is constantly increasing. We will be happy to advise you which solution is best suited to your requirements.

With our profound process technology know-how and continuous research & development, we adapt our portfolio to new market requirements and your individual needs. Cement technology by thyssenkrupp Industrial Solutions offers you high throughput, availability and comminution efficiency. We also take thermal engineering into account to ensure the drying of moist components with waste heat.

Just to name a few examples from our portfolio: The grinding systems of choice are the ultramodern QM quadropol® vertical roller mill, the energy efficient polycom® high pressure grinding roll or a tube mill; our sepol® high-efficiency separator can help the operator to reduce the energy costs per ton of cement; the aeropol® and fluidor® systems ensure an efficient conveying of the materials. All our machines and systems are designed to offer you maximum product flexibility. Key aspects are high performance, reliability, user-friendly maintenance and low energy consumption.

In the final process stage the buffer-stored clinker is ground together with additives to form high-grade cement in an economically efficient manner. The increasing substitution of clinker extends the product range of cement manufacturers. Components such as granulated blast furnace slag, gypsum, Pozzolans and limestone can also reduce capital costs, operating expenses and pressure on natural resources. The end product is stored in silos before it is dispatched in bags or bulk.

White cement

Production of the highly desirable white cement requires well-selected machines and process technologies, as white cement production is an energy-intensive process. Our polflame® burners offer a great variety of possible flame settings, and our air-air heat exchangers can be used to manage the temperature of the particularly sensitive white cement clinker. Our specific process know-how and production technology have been tried and tested in numerous new and modernisation projects around the globe.
Factory automation

Our polab® laboratory automation system supports alternative production concepts and prepares your production for the growing demands placed on the quality characteristics of cements.

Every cement plant benefits from excellent quality assurance and a high degree of automation. We offer you high-end systems for controlling and optimising your processes and support you during installation, commissioning and operation.

With polab®, we give you flexible strategies for ensuring the quality of all intermediate and end products in all phases of your production process. The range of products and services includes custom-tailored process-monitoring, control, regulation and optimisation systems, as well as systems for ensuring constant product quality. Our global service provides ultra-rapid support by means of remote diagnosis and can arrange service assignments for you at short notice.

The polcid® process control system provides users with application software that is optimally configured for the cement industry. Thanks to our many years of automation know-how, as well as well-founded process and plant knowledge, we can guarantee you the highest standard in this regard. The process control system is based on hardware and software components from world-renowned automation companies and allows unrestricted possibilities for adaptation.

With polab® we offer an extensive product range of semi-automated and fully automated systems, including sampling systems, pneumatic-tube dispatch, sample preparation systems and the polab® AQCnet software for monitoring and quality assurance.
We follow technological trends and also use synergies within our diversified thyssenkrupp group, adapting proven technology from various other areas.

We benefit in particular from the process engineering expertise of our colleagues in chemical plant construction. Here are some examples of new approaches in the fields of sustainability/intelligent climate protection and digital transformation/smart technology. Some are already available, some are close to market maturity, while others look very promising but still need some work. We will continue to observe innovations in all industrial sectors to keep the cement industry at the cutting edge of technology.
When you operate a complex plant, you expect optimum performance – you want your plant to create and maintain long-term value. Here you can rely on our professional support. Our competent experts are at your side right from the start and at all times during the many years of your plant’s life.

Our customers benefit from a huge trove of technical and economic know-how and our globally networked, efficient structures for servicing and maintenance work. thyssenkrupp’s spare-parts management offers you the most cost-effective spare parts and the fastest possible delivery.

In our local service centers we have the specific know-how to give you a helping hand. Our experts define the optimum operating and service intervals. Through modernisation and maintenance, we increase operating economy and service life of your plant – to make it future-proof. Furthermore, we can adapt automation options to your individual requirements and ensure the qualification of local employees through instruction and training courses. In addition, we offer you integrated asset management that can help to reduce the overall costs of a plant. Our services increase your long-term success.

Our view of service

Save time when looking for our service

thyssenkrupp Industrial Solutions provides high-quality parts and extensive services as your lifecycle partner. The Service Product Finder on www.thyssenkrupp-industrial-solutions.com offers an overview of all our service solutions.