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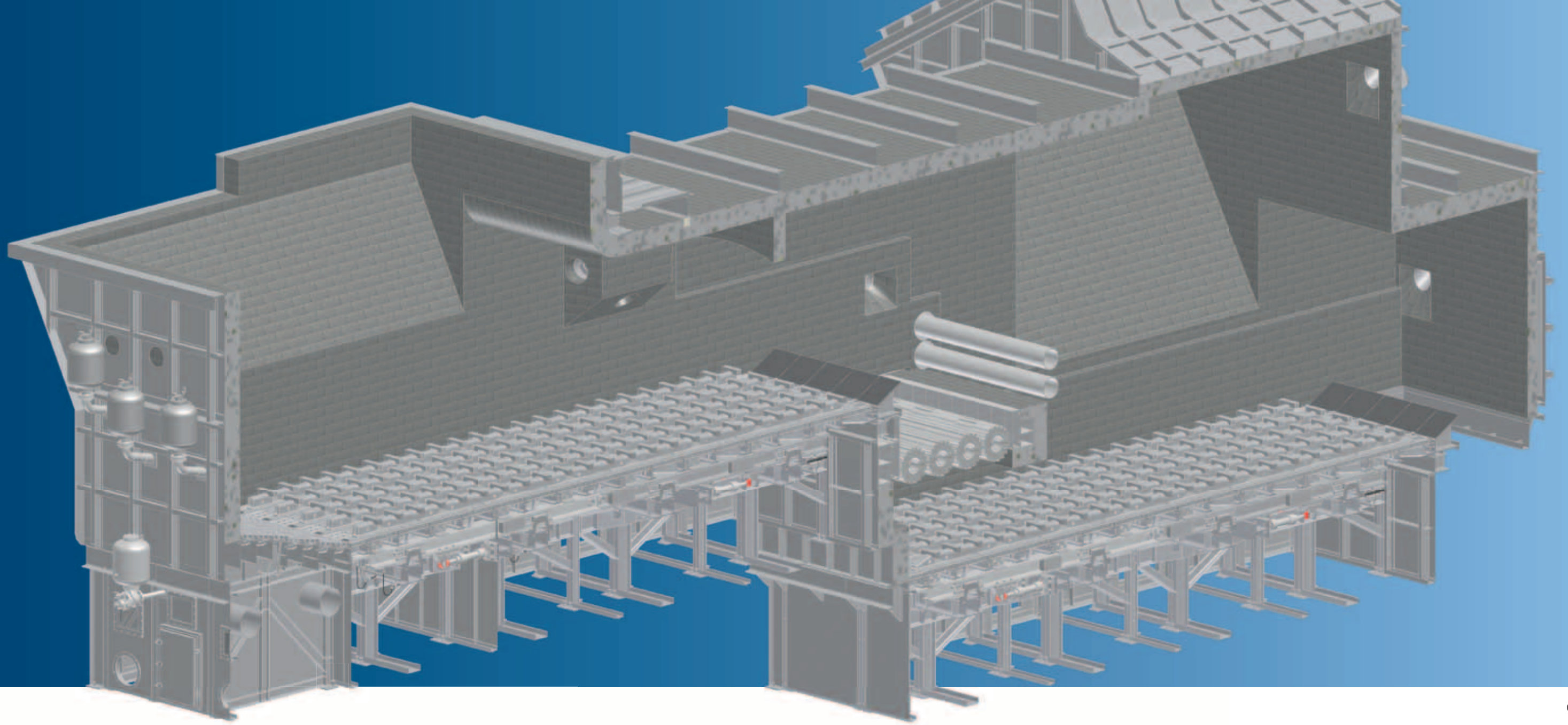
The POLYTRACK® clinker cooler

ThyssenKrupp Polysius



ThyssenKrupp





Cool design.

## Proven. Reliable. Future-proof.

Technically mature and nevertheless state of the art. Two characteristics – a contradiction? No. At all events not at ThyssenKrupp Polysius! With the POLYTRACK® clinker cooler, ThyssenKrupp Polysius AG, one of the world's leading engineering companies providing equipment to the cement and minerals industries, has again proven that these characteristics can be combined in one product, thanks to outstanding innovation and solution-finding competence.

The cooler's high availability and excellent degree of recuperation convince customers all around the world. Every single day. Because the innovative cutting edge technology is attractive for both new investments and for system conversions.

Plant owners demand clinker coolers that are

- high-performance,
- compact,
- low-wear,
- flexible in use,
- favourably-priced,
- reliable in operation and
- easy to maintain.

This highly complex list of requirements is exactly fulfilled by the advantages reliably provided by POLYTRACK® – the clinker cooler made by ThyssenKrupp Polysius. Its numerous innovative process and design details make POLYTRACK® a future-oriented mechanical and process technological solution.

## POLYTRACK® – the clinker cooler made by ThyssenKrupp Polysius

### POLYTRACK® advantages at a glance

The POLYTRACK® clinker cooler is a combination of a static, horizontal aeration floor and an above-floor clinker conveying system. Its convincing advantages are the very high clinker bed transporting efficiency and strict separation of the functions of transportation and aeration, due to:

- ✓ optimum transverse distribution of the clinker resulting in uniform and efficient cooling of all particle size fractions over the entire width of the cooler,
- ✓ extremely low overall height,
- ✓ very high thermal efficiency,
- ✓ robust, low-wear and easy-to-maintain design providing outstanding availability and
- ✓ consistent modular construction.
- ✓ Moreover, the POLYTRACK® tolerates fluctuations in the kiln process; its flexible and high-performance clinker bed transportation system copes with even the most difficult operating conditions.



# The clinker bed transportation principle

## The basis for success

The clinker bed transportation principle – a special feature of this clinker cooler – is very effective:

In the direction of conveyance of the clinker, transport tracks move to and fro above the static aeration floor. The rows of transport tracks are installed at a particular distance to each other. Between them the cooling air enters the bed of clinker. The required width of the cooler determines the number of transport track rows. Each row of transport tracks spans the entire length of the cooler.

To convey the clinker bed the transport tracks are moved forward together and are then individually moved back.

By varying the transport stroke length and frequency, the conveying speed of the clinker bed and thus the clinker bed depth and the clinker throughput can be optimally controlled over the entire width of the cooler. This well-tried clinker bed transportation principle of the POLYTRACK® provides the best preconditions for thorough cooling of all particle size fractions.

The variable forward stroke speed of the transport tracks results in optimum transverse distribution of the clinker over the entire width of the cooler, allowing compensation for off-centre clinker discharge from the kiln and reliably preventing fritting of the clinker on the grate.



### Intermediate crusher concept

Thanks to the highly effective clinker bed transportation principle, there is no need for inclination of the cooler and the whole structure is therefore of horizontal design.

The POLYTRACK® consequently has an extremely low construction height. This drastically reduces the required capital expenditure (for the cooler itself and, as a consequence, also for the rotary kiln and preheater) and allows the POLYTRACK® to be installed in situations where it had previously been impossible to use conventional coolers – e.g. in the case of conversions.

Despite the limited installation height, it is still possible to install a roll crusher as intermediate crusher in order to intensify the cooling process.

Thanks to the intermediate crusher, the cooling process on the second grate is optimised, reducing the ultimate clinker temperature and thus also producing higher cooler exhaust air temperatures. These higher exhaust air temperatures have a decisive influence on the operating economy of cooler waste heat utilisation systems (e.g. heat utilisation for power generation; heat utilisation for drying etc.).

The exposed hot interior of the clinker broken by the intermediate roll crusher is effectively cooled on the second grate and the extracted heat is transferred to the cooler exhaust air.



### Aeration concept

To prevent the wear of one component from affecting the efficiency or throughput of the machine, the functions „clinker bed transportation“ and „cooling air distribution in the clinker bed“ are strictly separated from each other in the POLYTRACK®.

The air distribution takes place via static aeration units located between the transport tracks.

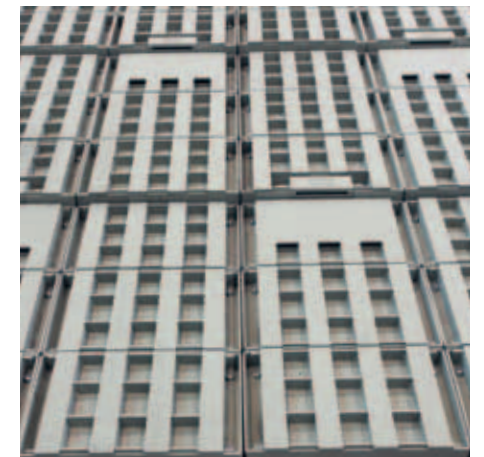
These large-area pockets integrated in the aeration floor are permanently filled with clinker and thus provide autogenous wear protection. Wear of the transport tracks is minimal, due not least to the robust design, and has no effect on the aeration of the clinker bed.

### Sealing concept

Special, wear-free sliding element pairs reliably seal the few contact zones between static and moving cooler components.

Consequently, there is no need for wear-prone conveyors for evacuating clinker that has fallen through the grate. This is a further advantage with regard to minimising the overall height.

The air blast units installed in the inclined aeration surface of the static pre-grate very effectively eliminate fritted heaps of clinker (so-called „snowmen“) before they can become a problem.





# The modular concept

Extremely flexible application opportunities for new systems and conversions also result from the cooler's modular concept:

The modules are 4.8 m or 7.2 m long and available in widths of 1.5 m/2.0 m and 2.5 m.

With small module dimension steps – of 0.5 m over the width and only 2.4 m over the length – it is possible to precisely design coolers to suit spatial and process technological requirements.

Particularly in the case of system conversions, these small module dimension steps permit optimum adjustment to the given building structures without detracting from the process technology.

ThyssenKrupp Polysius service specialists provide customers with important information for achieving optimum operation over the entire life cycle of a system. Quickly and efficiently. They assist customers on-site all around the world, for instance in the maintenance or optimisation of entire plants or individual machines, or in the finding of totally new solutions.

The modules are preassembled in the manufacturing shop. This ensures optimum alignment of the transport tracks and aeration units, saving time and effort at the plant site, shortening the installation and commissioning periods and, in the case of conversions, also reducing the plant downtime.

Perfectly preassembled, the POLYTRACK® module awaits delivery. It will then be quickly and easily installed at the customer's plant site.



Assembly of POLYTRACK® modules for a 7,000 tpd cooler.



Photos from different conversion projects.

