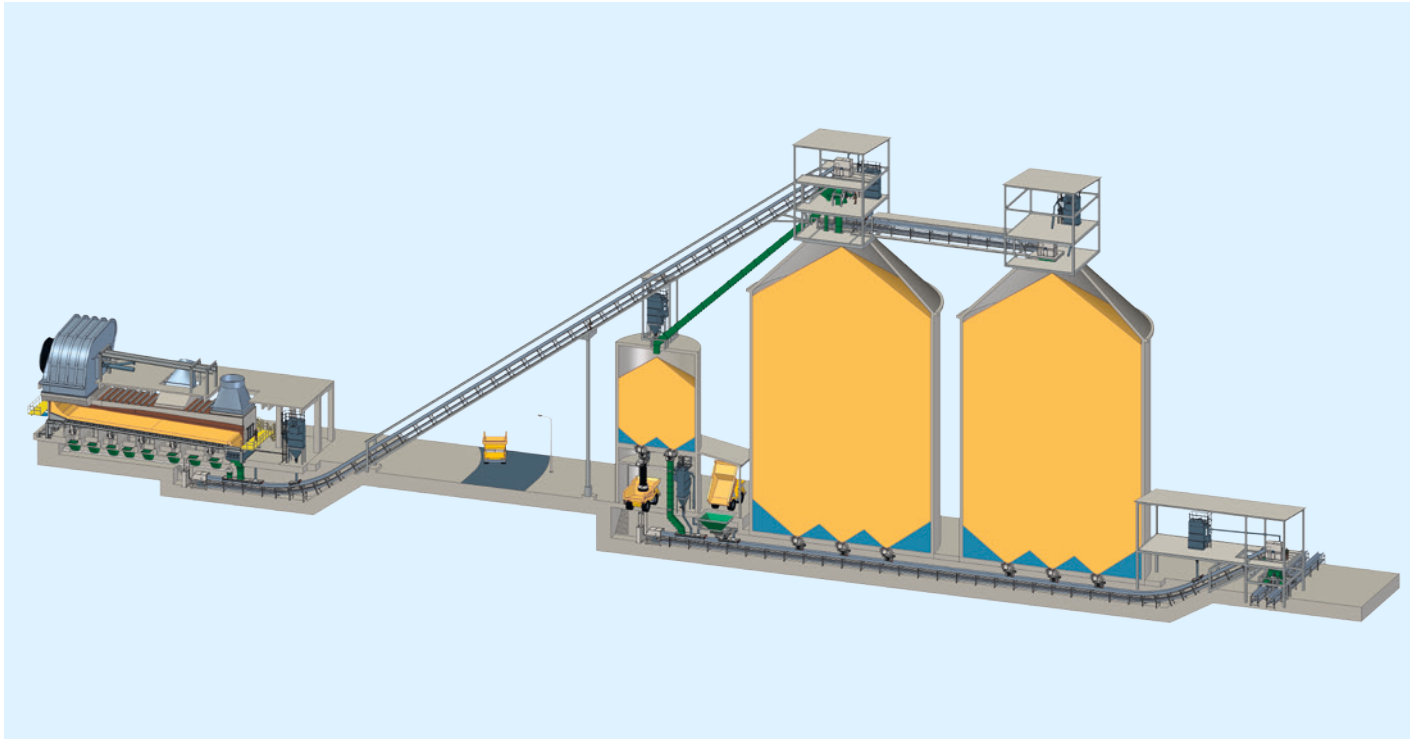




# **BEUMER APRON CONVEYORS MOVING HOT MATERIAL EFFICIENTLY**

# SAFE TRANSPORTATION OF HOT SUBSTANCES



BEUMER apron conveyors fulfil all requirements with regard to centre distances, routing and conveying heights

It is a matter of operational reliability when conveying hot materials that can leave the kiln cooling system with temperatures of up to 600 °C. In these situations, an innovative, robust and reliable conveying system is required. Sophisticated technology, many years of experience and maximum precision make sure that BEUMER Group apron conveyors cater for maximum economic efficiency.

## EFFICIENT TRANSPORTATION EVEN IF IT GETS EXTREMELY HOT

The highly heat-resistant BEUMER apron conveyors, using either a belt or chain, transport hot materials such as clinker safely – even in case of high temperatures, complicated routings and large conveying heights. This permits a choice of cell widths ranging from 500 to 2,000 mm, centre distances of up to 250 m and conveying capacities of up to 1,540 m³/h. Various designs enable possible inclinations of up to 60°, with a speed of up to 0.6 m/s.

## OPTIMUM CELL DESIGN FOR A DUST-FREE TRANSPORT

Overlappings of the cell side walls and cambers in the bottom plate ensure that the transported material is carried reliably and can never escape during the transport – all of this is performed in a particularly low-wear way. In addition, the cells can be equipped with baffle plates or steel boxes for routings with larger inclinations. Thanks to the high-precision series manufacture of the cells by the state-of-the-art technology, a trouble-free function is ensured.

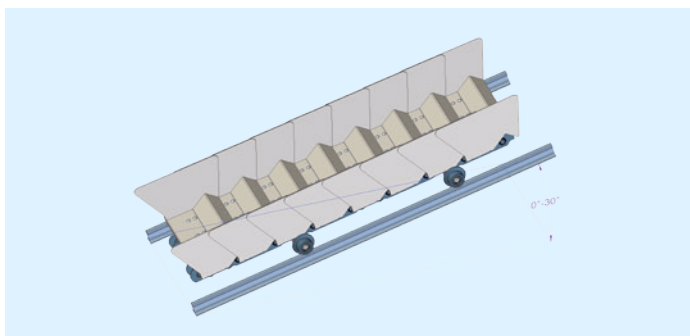
COMPARISON APRON CONVEYORS – BELT APRON CONVEYORS CELL HEIGHT 400 MM, MAX, 30° INCLINATION 1.3 T/M²						
KILN CAPACITY IN TONS PER DAY	3,000	4,000	5,000	8,000	10,000	12,000
RATED POWER (T/H)	125	170	210	330	420	500
WITH KILN FLASH + 70 % (T/H)	213	289	357	561	714	850
MIN, CELL WIDTH WITH CHAIN	500	630	800	1,200	1,400	1,600
WITH BELT	500	630	630	630	800	1,000



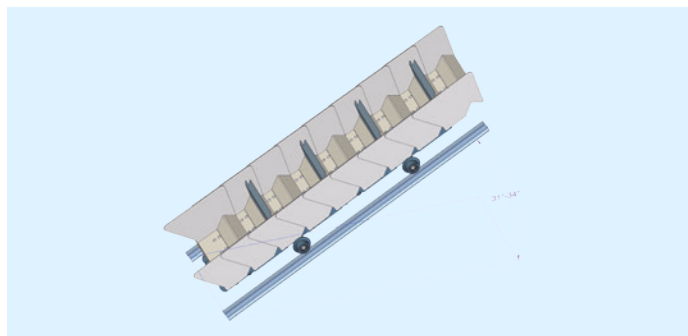
# APRON CONVEYORS

## ROBUST AND RELIABLE

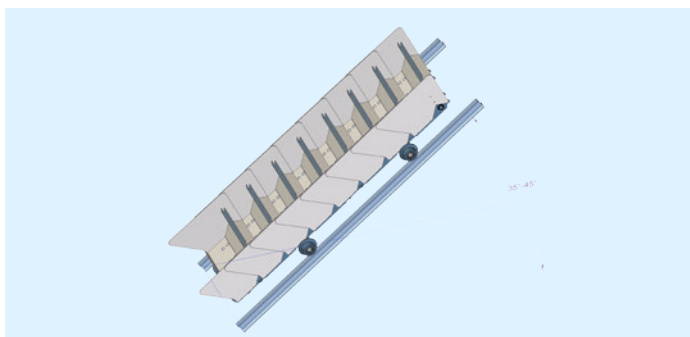
## TRANSPORT OF HOT MATERIALS



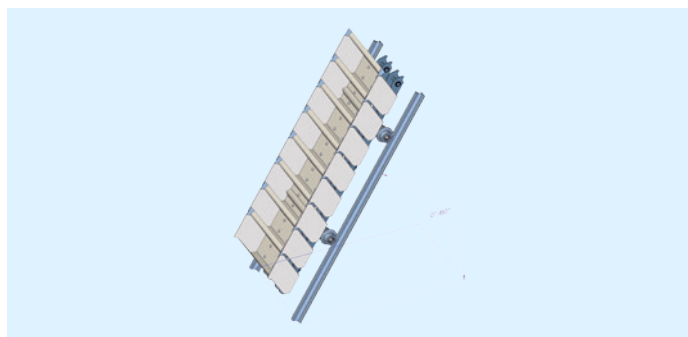
Apron conveyor without adapter bars for inclinations from 0° to 30°



Apron conveyors with adapter bars for inclinations from 30° to 35°



Apron conveyors with adapter bars for inclinations from 35° to 45°



Steel box conveyors for inclinations from 0° to 60°

### PRACTICAL RUNNER FASTENING

The low-wear and dust-proof runner of the apron conveyors is fastened to the cell bottom by a clamping pipe. This permits self-adjusting of the runner so that the latter does not have to be further adjusted during installation. In addition, the runner can be exchanged within minutes.

### CHAINS FOR DIFFERENT LOADS

The chains are designed as steel-bushed roller chain with a pitch of 315 mm and can be used as single or double-strand

chain. An optimum adaptation to the required parameters of the respective system is given by finely regaded chain versions for breaking forces ranging between 250 kN and 2,700 kN.

### STEEL BOX CONVEYORS

Steel box conveyors are particularly suitable for materials with a high content of fine particles in case of steep inclines of up to 60° and narrow curve radii of 10 m.

### HIGHLIGHTS

- Ideal for hot materials with temperatures of up to 600 °C and higher
- Conveying capacities of up to 1,255 m³/h
- Cell width reaching between 500 mm and 2,000 mm
- Centre distance up to 250 m are possible
- Conveying speeds up to 0.3 m/s
- High stability and tightness of the cells
- Angles of inclination from 0° to 45° with apron conveyors
- Angle of inclination up to 60° and radius of curve of 10 m with steel box conveyors

TYPE	CELL HEIGHT mm	ANGLE OF IN- CLINATION α	VOLUME FLOW RATE M³/H*								
			Cell width in mm								
APRON CONVEYORS	300	0°-30°	500	630	800	1,000	1,200	1,400	1,600	1,800	2,000
	400		125	170	230	315	400	500	600	710	825
	500		180	235	315	420	525	650	770	905	1,045
APRON CONVEYORS	300	30°-35°	240	310	410	530	660	800	945	1,095	1,255
	400		100	125	160	200	240	280	320	360	400
	500		150	190	245	305	370	430	485	550	615
APRON CONVEYORS	300	35°-45°	205	260	330	415	495	580	665	745	830
	400		100	125	155	195	235	275	315	350	395
	500		150	190	240	300	365	425	480	540	600
STEEL BOX CONVEYORS	300	60°	205	260	330	410	490	575	655	735	820
	350		95	120	150	175	205	235	265	295	
			125	160	195	235	275	315	355	395	

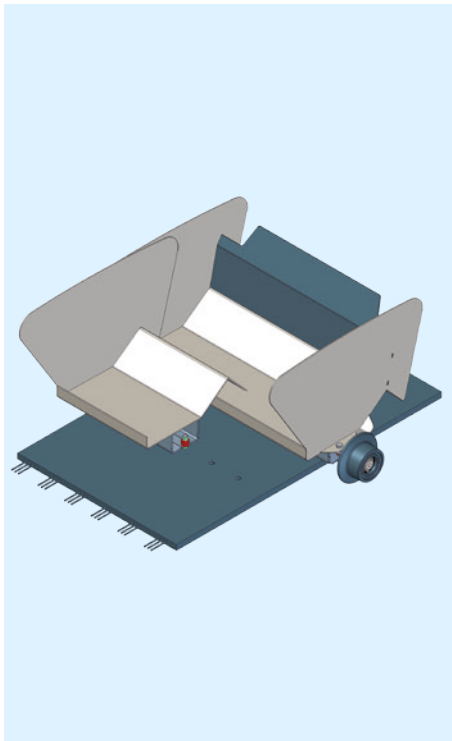
\* with a conveying speed of 0.3 m/s and a degree of filling of 100 %

# BELT APRON CONVEYORS

## MOVING HOT MATERIAL IN FASTER AND MORE EFFICIENT WAY



BEUMER belt apron conveyors



Fitting of cells on robust steel wire belt

When the challenges increase BEUMER have an extremely efficient solution to overcome difficult material flows and conveying height: The belt apron conveyors of BEUMER Group help to optimally fulfil these requirements when transporting hot material, for example clinker, behind the rotary kiln. Additionally, these conveyors provide reduced capital costs, low maintenance costs and a long service life.

### HOT CAPACITY WITH PEAK VALUES

The belt apron conveyors of BEUMER Group are able to convey hot materials, as for example clinker, with angles of inclination of up to 60° without particular measures, at a speed of up to 0.6 m/s in safe and efficient way. The systems withstand extreme heat and may reach conveying capacities of up to 1,540 m³/h.

### MINIMISED WEAR AND TEAR THANKS TO EFFICIENT TECHNOLOGY

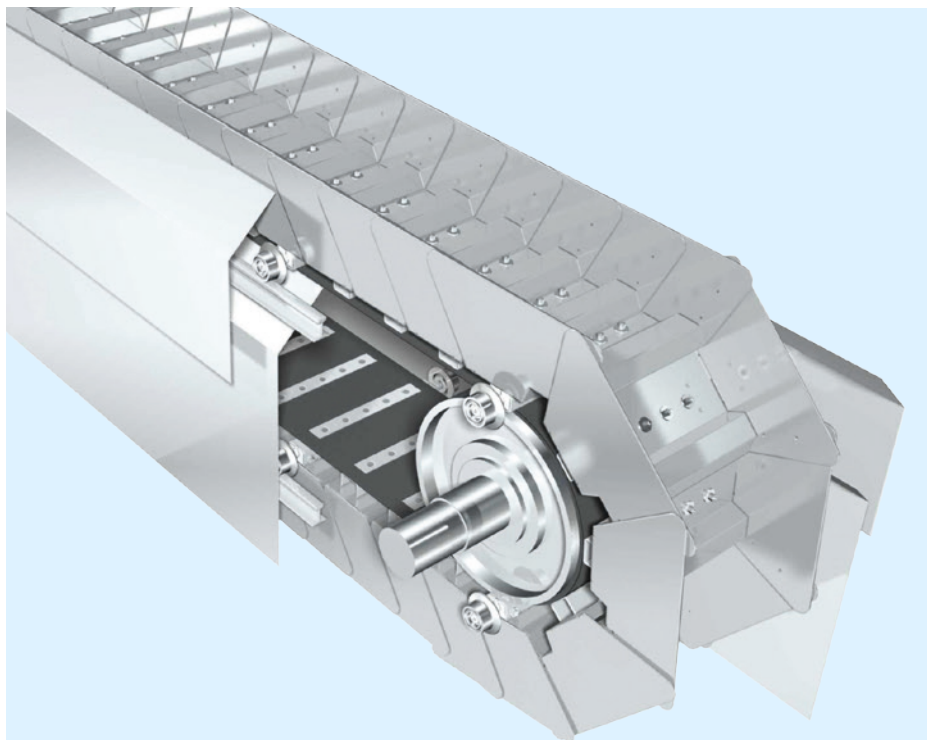
Belt apron conveyors are based on field-proven BEUMER belts as used in our bucket elevators: The cells are bolted on a low-wear, durable steel wire belt. The fastening bolts are not in contact with the transported material, since they are located in a special profile below the cell. This prevents the heat from penetrating to the belt.

TYPE	CELL HEIGHT mm	ANGLE OF IN- CLINATION α	VOLUME FLOW RATE M³/H*						
			Cell width in mm						
			500	630	800	1,000	1,200	1,400	1,600
BELT APRON CONVEYORS	300	0°–30°	250	340	460	630	800	1,000	1,200
	400		360	470	630	840	1,050	1,300	1,540
BELT APRON CONVEYORS	300	30°–35°	200	250	320	400	480	560	640
	400		300	380	490	610	740	860	970
BELT APRON CONVEYORS	300	35°–45°	200	250	310	390	470	550	630
	400		300	380	480	600	730	850	960
BELT APRON CONVEYORS	300	60°		190	240	300	350	410	470
	350			250	320	390	470	550	630

\* with a conveying speed of 0.6 m/s and a degree of filling of 100 %



Transport of hot materials with temperatures of up to 600 °C and higher



Design of belt apron conveyors

#### COST BENEFITS EVERYWHERE

The narrow and weight-reduced design of the belt apron conveyors reduces the steel structure and freight costs. Furthermore, the minor net weight lowers the static and dynamic loads which, for example, affect the clinker silo. Within the framework of a new construction project, the silo can be dimensioned to a more restricted load and thus the construction costs can be reduced. The lightweight design also lowers operational costs. The use of the durable BEUMER steel wire belt instead of a chain lowers the maintenance costs, extends maintenance intervals and saves the lubrication.

#### QUIET OPERATION FOR HIGHER PRODUCTIVITY

The high smooth running of the belt apron conveyors considerably minimises the noise emissions, and is perceived by the human ear as less than half as loud as conventional apron conveyors with chain. This reduces the noise level and spares employees, environment and the surrounding area.

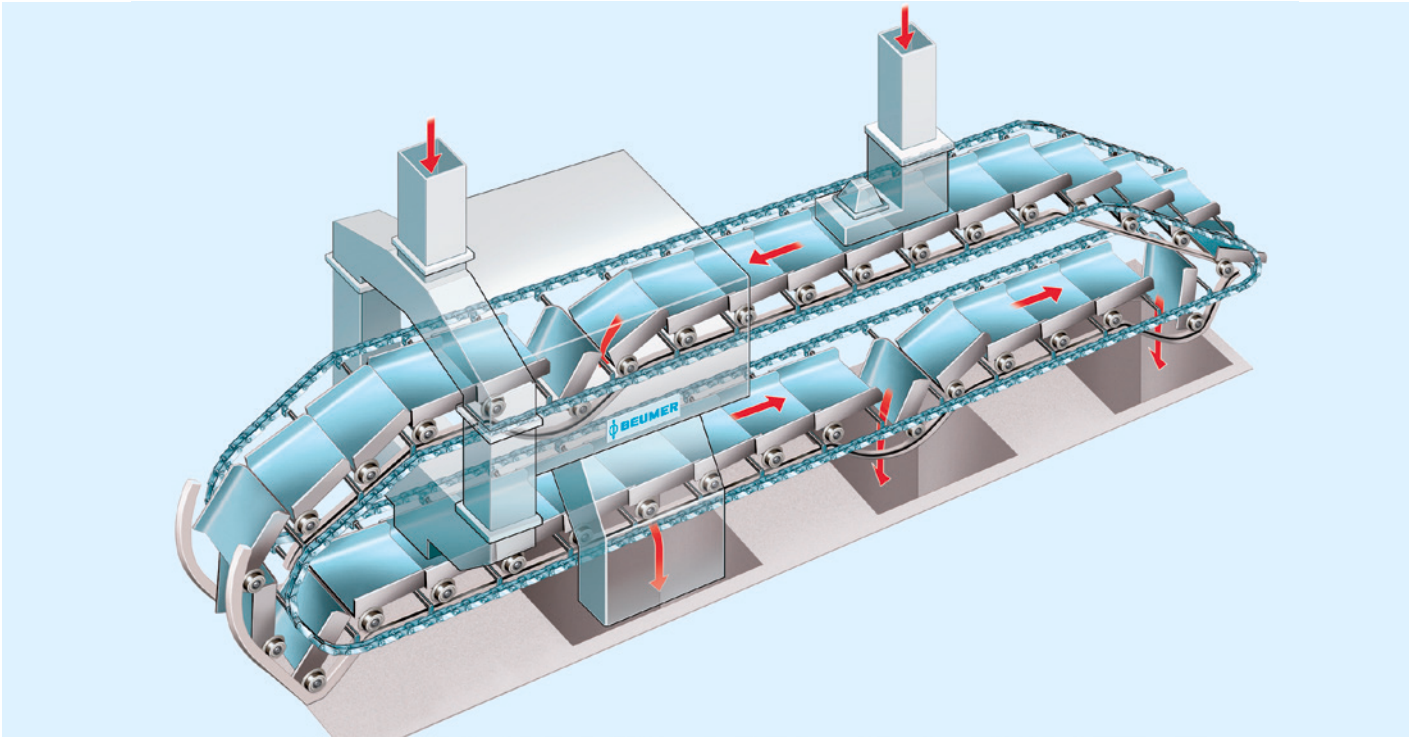
#### HIGHLIGHTS

- Ideal for hot materials with temperatures of up to 600 °C and higher
- Conveying capacities up to 1,540 m<sup>3</sup>/h
- Cell widths reaching between 500 mm and 1,600 mm
- Centre distances exceeding 250 m are possible
- Conveying speed up to 0.6 m/s
- Angles of inclination up to 60°
- Reduced investment costs
- Long service life of the belt
- Low noise emission



# TIPPING TRAY CONVEYORS

## FLEXIBLE DISCHARGE OF VARIOUS BULK MATERIALS



Design of tipping tray conveyors

The use of high-quality materials in connection with an innovative technology and careful processing, caters for long service life and thus for a high economic benefit.

### MORE AND MORE FLEXIBILITY

The tipping tray conveyor with intermediate discharge station is used at those places where several feeding and discharging points can be optionally approached or different materials such as clinker, limestone and gypsum can be transported and distributed at the same time. This may be the case when silo batteries and storehouses are being fed. Various bulk materials can be conveyed and discharged at the same time in the upper and in the return strand.

### HIGHLIGHTS

- High flexibility
- Several feeding and discharging points are possible
- Transport in the upper and return strand
- Low energy consumption
- Low wear and tear

TYPE	CELL HEIGHT mm	VOLUME FLOW RATE M <sup>3</sup> /H*				
		Cell width in mm				
		800	1,000	1,200	1,400	1,600
TIPPING TRAY CONVEYORS	220	235	310	390	485	585

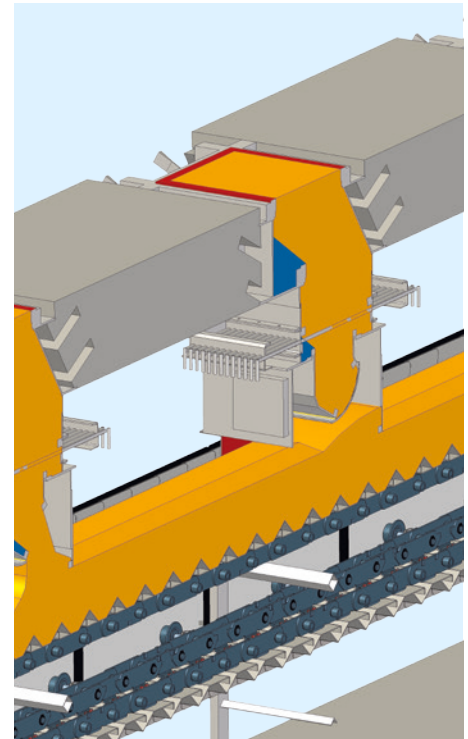
\* with a conveying speed of 0.3 m/s, a degree of filling of 100 % and an angle of inclination of 0°

# ACCESSORIES

## PERFECT TECHNOLOGY FOR AN OPTIMUM TRANSPORTATION



*Dust-reduced silo discharge system for environmental protection*



In order to prevent pollution of systems and environment, BEUMER Group has developed a silo discharge system which is compatible with the apron conveyors and minimises the dust exposure while the bulk materials are transferred from the silo to the apron conveyors.

### THE SILO DISCHARGE SYSTEM

A gravity-draining silo discharge system is used as interface between the clinker silo and the apron conveyor. Owing to its constructive design, the silo discharge system is able to close against the standing material accumulation and therefore the dedusting unit can be omitted in this area.

The discharge rate can be limited by a layer control gate. Should it become necessary to increase or reduce the conveying capacity, this can be achieved either by adjusting the layer control gate or by regulating the conveying speed of the apron conveyor.

### HIGHLIGHTS

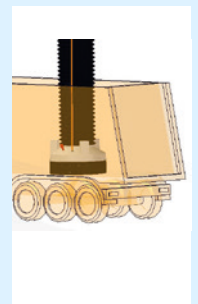
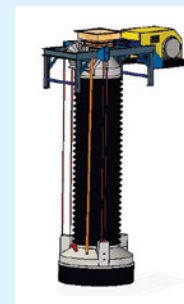
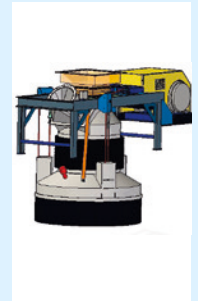
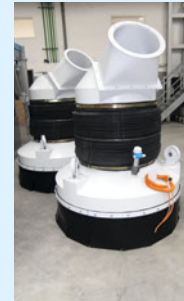
- Optimum dust protection cover by silo discharge system
- No dedusting filter required
- Discharge rate of more than 1,000 t/h
- Low wear and tear
- Long service life

TYPE	VOLUME FLOW RATE M <sup>3</sup> /H								
	Cell width in mm								
	500	630	800	1,000	1,200	1,400	1,600	1,800	2,000
SILO DISCHARGE SYSTEM BELT APRON CONVEYOR	360	470	630	840	1,050	1,300	1,540		
SILO DISCHARGE SYSTEM APRON CONVEYOR	240	310	410	530	660	800	945	1,095	1,255

# LOADING SYSTEMS FOR OPEN VEHICLES



*Fast, dust-reduced bulk material loading*



*Bulk loading heads for open vehicles*

BEUMER Group offers the suitable technology also for the onward transport of bulk materials, enabling open vehicles to be loaded with reduced dust development.

## INTELLIGENT, DUST-REDUCED LOADING

Various bulk loading heads, with integrated wear protection and a loading capacity of up to 300 m<sup>2</sup>/h, are available for the dust-reduced loading of open vehicles. When the loading process starts, the bulk loading head is lowered to the floor of the vehicle and the material feed is switched on. The bulk loading head is raised automatically by a fill level switch in the lower dedusting hood, which is activated by the rising material. The edge of the dedusting hood always rests on the material cone while it rises, so that no dust can escape. The bellows or the telescopic tubes for the dust extraction have to be connected to a central dedusting air system. The feed of material with temperatures of up to 250 °C is carried out by corresponding conveying systems or flow regulating devices as for example clamshell gates.

## HIGHLIGHTS

- Dust-reduced loading of open vehicles
- Automatic loading process
- Loading capacity of up to 300 m<sup>2</sup>/h
- Material temperatures of up to 250 °C
- Integrated wear protection
- Standard lifting heights of 3,000 and 3,600 mm



# WELL-PROVEN BEUMER APRON CONVEYORS



## BEUMER APRON CONVEYORS

- › Lafarge, Poland
- › CRH, Serbia
- › Yamama, Saudi-Arabia
- › TPI, Thailand
- › Dangote, Kongo



## BEUMER BELT APRON CONVEYORS

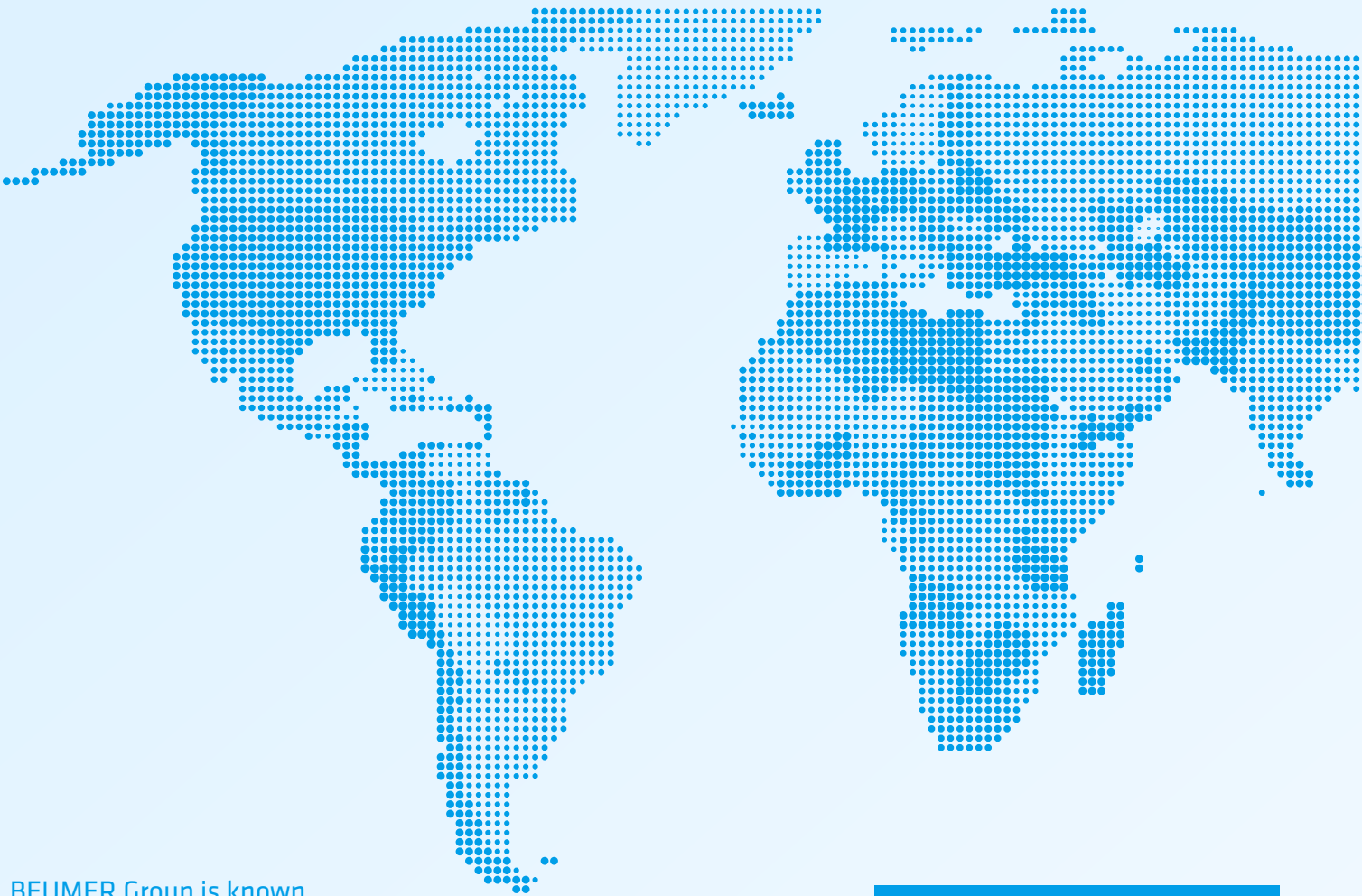
- › Cemex, Germany
- › Aalborg Portland, Denmark
- › Jidong Cement, China
- › TPI, Thailand
- › Holcim, Argentina



## BEUMER LOADING SYSTEMS

- › HeidelbergCement, Romania
- › P.T. Semen, Indonesia
- › Al Jouf Cement, Saudi-Arabia
- › Holcim, Ecuador

# SIMPLY WORLD-CLASS CUSTOMER SUPPORT



BEUMER Group is known worldwide for its individually tailored customer support. This is based on a global network of regional service centres. Our support solutions will keep your systems operating – 24 hours a day, 365 days a year.

## BEUMER GROUP – EVERYTHING FROM ONE SINGLE SOURCE

We also act as the main contractor on behalf of our customers and provide comprehensive, highly customised concepts.

Competent engineering, fast and reliable on-site service as well as optimal spare parts supply round out our offering and ensure high reliability of the systems.





*At BEUMER Group, the focus is always on people.  
We build strong partnerships through personal  
relationships and individual attention.*



#### CUSTOMER CARE

Our customer care programme entitles you to multiple service options, such as maintenance and repair on site through our field service engineers or regular safety checks according to statutory rights. If hardware replacements are needed, our comprehensive warranty service ensures you are always covered.



#### TRAINING AND QUALIFICATION

We offer standard and tailored customer training programmes to make sure your teams are fully qualified to operate your systems. With hands-on guidance, conducted either on-site or at BEUMER Group locations, your teams can maintain optimal operational performance.



#### HOTLINE SUPPORT

Our hotline support is manned 24/7 by highly trained, multi-skilled engineers who all have at least four years of direct field experience. Most cases are solved remotely, however, should the problem require more specialised attention, a BEUMER Group engineer will be quickly sent out.



#### MODERNISATION

We are constantly developing new ways to upgrade our software and hardware to extend a system's lifetime, lower energy costs and increase efficiency. We will keep you informed of all relevant upgrade opportunities, based on an understanding of your business and system needs.



#### SPARE PARTS LOGISTICS

We guarantee spare part replacements around the world through our local companies. As a BEUMER Group customer, you will have your own individual contact to assist you with technical inquiries, warranty issues or repair orders and to secure that your order is delivered on time.



#### RESIDENTIAL SERVICE

With our residential service, we are on-site every day to take complete responsibility for your system uptime, performance and operational efficiency. We can take care of all maintenance and management, including system improvements, contingency plans, specialist advice and repairs.



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