

Pan Conveyors



CONTENT

2	AUMUND Pan Conveyors
4	Pan Conveyor with Deep Drawn Pans type KZB
8	Pan Conveyor with Deep Drawn Pans and Baffles type KZB-Q
10	Pan Conveyor with Buckets type BZB
14	Pivoting Pan Conveyor type SPB
18	Reversible Deep-Drawn Pan Conveyor type KZB-R
19	Silo Discharge type SAK
20	Components Chain Technology
21	Accessories
22	Conversions and Refurbishments
23	AUMUND Services

AUMUND Pan Conveyors

Technology with proven quality, strength and reliability

AUMUND Pan Conveyors are designed to suit efficiency driven process technologies and to ensure system performance.

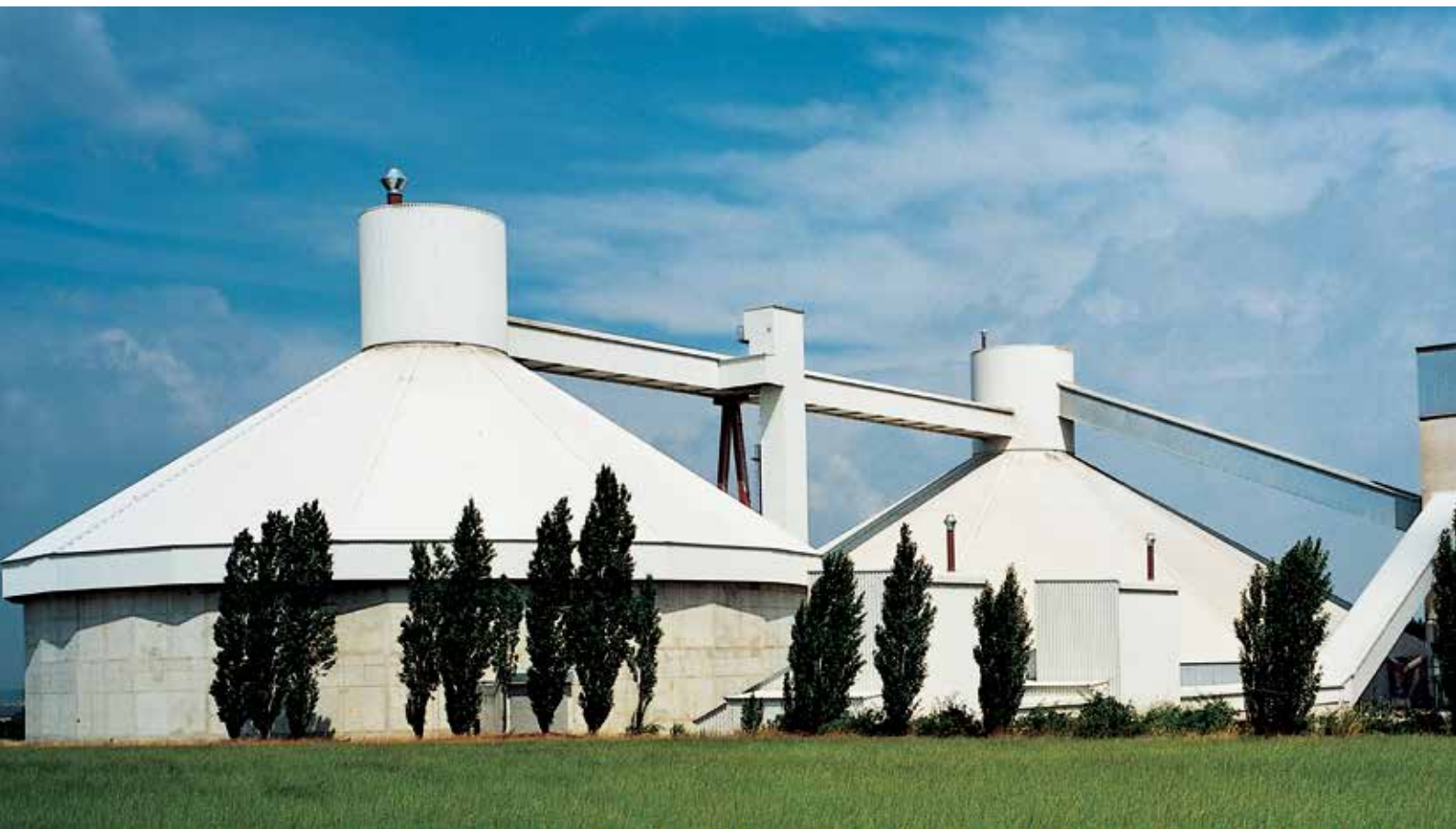
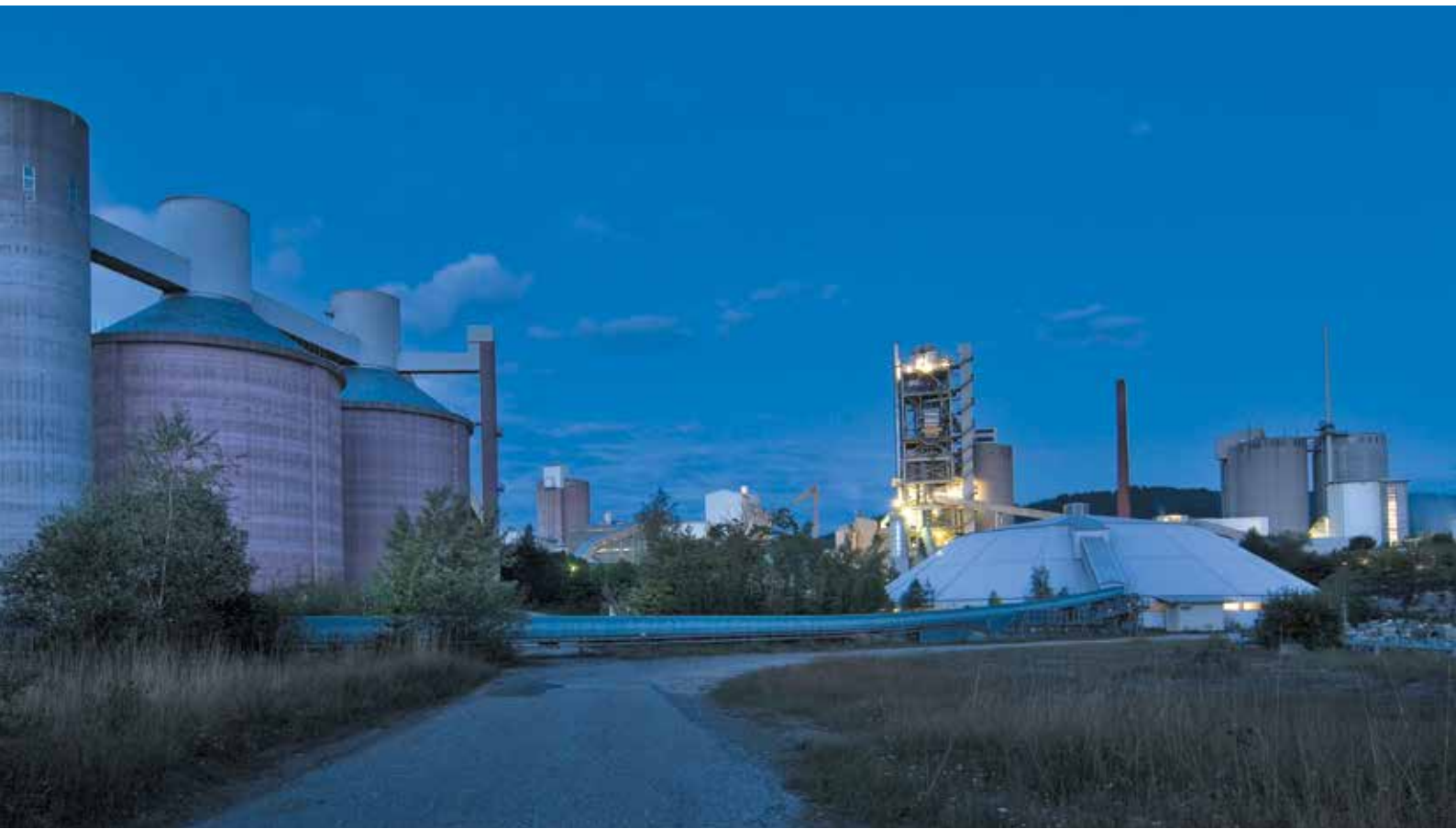
At AUMUND we know that trouble-free operation of the conveying equipment is vital for the productivity and profitability of the whole plant. Keeping in mind this objective we are committed to our high quality standards which are reflected in the exceptional service life of the AUMUND Pan Conveyor.

Our focus is to satisfy specific requirements with creative, cost-effective solutions for the transport of the whole range of bulk materials in cement production from limestone, cement and additives to hot and abrasive cement clinker.

With more than 95 years in industrial engineering of conveying equipment we also assist customers worldwide with conceptual layouts and configuration. Our primary goal is to identify and provide the most efficient and economic conveying routes.

- For the whole range of bulk materials in cement production
- Engineered to suit plant and operator needs
- High quality standards
- Outstanding service life
- Efficient and economic conveying routes







Conveying route with AUMUND Pan Conveyors type KZB

Pan Conveyor with Deep Drawn Pans type KZB

The Pan Conveyor with deep drawn pans type KZB is designed to suit slopes matching the angle of repose of the conveyed bulk material.

For clinker handling the Pan Conveyor type KZB suits conveying routes with an inclination up to 30°.

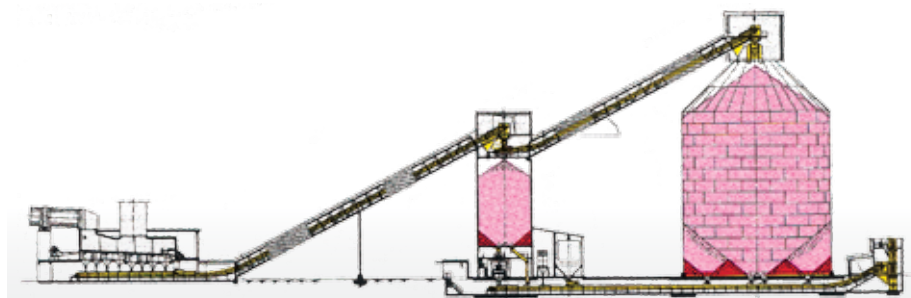
This Pan Conveyor type is the ideal direct connection between cooler and clinker stock especially for applications with grate coolers. The design allows the Pan Conveyor to be arranged underneath the whole cooler length and to collect the fines from the dust collecting hoppers same as the clinker from the crusher.

Installed underneath the clinker stock in combination with the AUMUND Silo Discharge Gate, the Pan Conveyor with deep drawn pans type KZB allows for dust-controlled clinker reclaim.

- Designed for conveying routes with up to 30° inclination
- Conveying heights exceeding 75 m
- Conveying capacities exceeding 1,320 m³/h
- Chains with 290 to 3,000 kN breaking load per strand



Deep Drawn Pan Conveyor



Deep Drawn Pan Conveyor under Clinker Cooler



Features

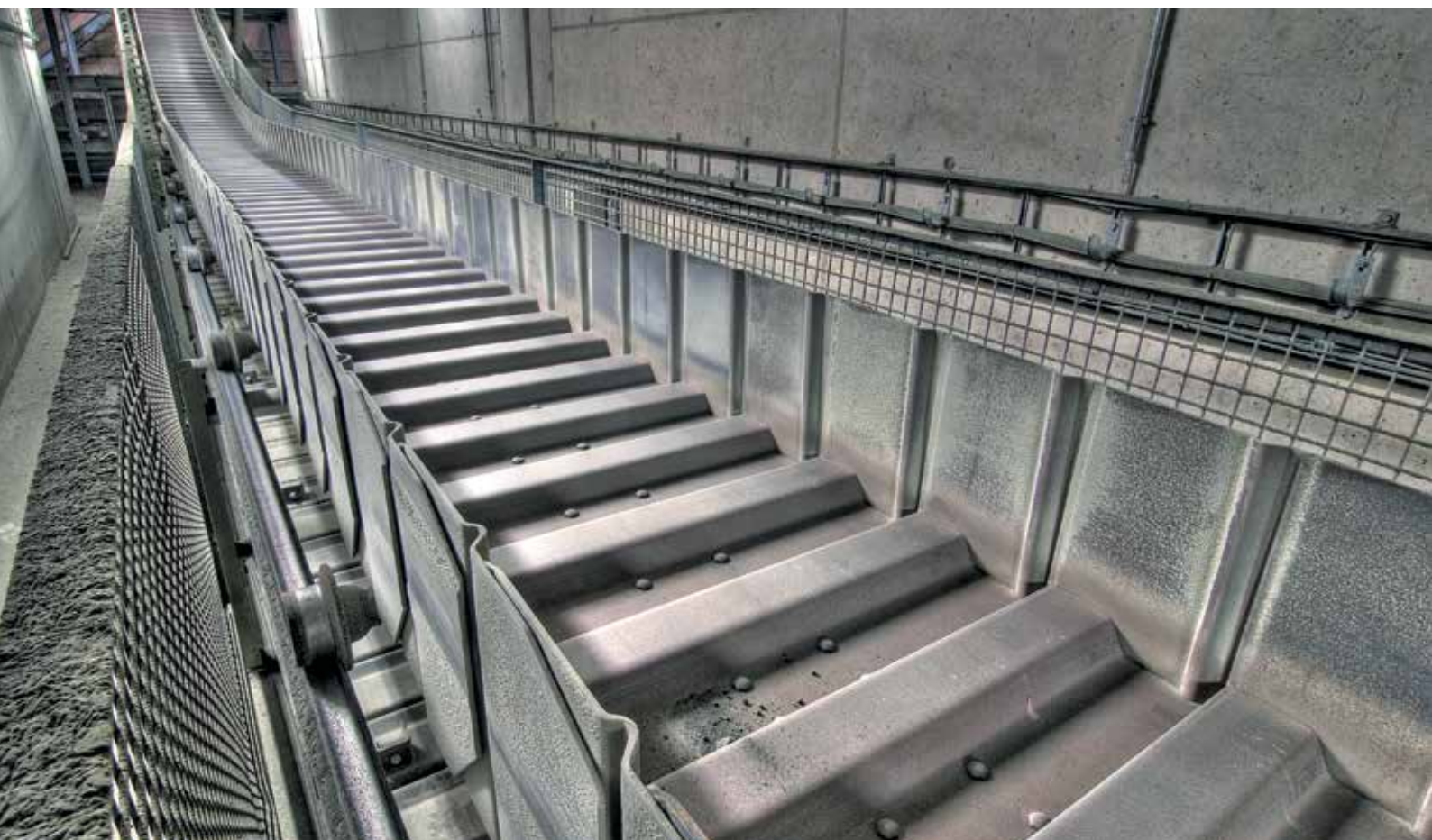
- Accepts temperatures to 700 °C
- Designed as a modular structure with standard components
- Profiled pans for high rigidity
- Minimum spillage
- Highly wear resistant chains with high yield strength
- High quality standards on all components

Benefits

- Efficient and reliable operation
- Reduced installation time
- Low operating costs
- Minimum and easy maintenance
- Low power consumption
- Low overall investment cost
- Outstanding service life



AUMUND Pan Conveyor with Deep Drawn Pans type KZB



AUMUND Pan Conveyor type KZB



Deep-Drawn Pan Conveyor (close up)

The characteristic profile of the pans with their contact-free overlapping offers high rigidity with large pan widths and a closed surface in the return stations. Stiffeners pressed into the side plates combined with a sealing edge of special design provide the tight fitting to avoid spillage.

The range of AUMUND conveyor chains covers a large range of applications, from small capacities and horizontal conveying routes to high capacities and lifts.

The chain - for single or double strand application - is chosen to suit the actual traction force while the roller size is chosen in accordance with the weight of the pan conveyor itself and the conveyed material.

The drive units feature bevel spur gears either foot mounted with flexible coupling or shaft-mounted. For inclined conveying, the gear box is fitted with a back stop or, alternatively, a flexible coupling with brake is arranged between gear box and motor.

The coupling between motor and gear box can be hydraulic or flexible for soft start-up. Frequency converters adapt the conveying speed to the actual conveying capacity.

Conveying Capacities - Pan Conveyor type KZB*

The capacities indicated correspond to a max. filling.

Capacity reduction factor subject to angle of inclination.

Conveyor section type KZB		Conveying capacity
Pan width mm	Side wall height mm	Q max. [m³/h] & v = 0.3 m/s
400	200	70
400	250	90
400	300	100
400	350	120
400	400	130
400	450	150
600	200	110
600	250	150
600	300	180
600	350	200
600	400	230
600	450	260
800	200	180
800	250	220
800	300	260
800	350	290
800	400	330
800	450	370
1,000	200	250
1,000	250	300
1,000	300	350
1,000	350	390
1,000	400	440
1,000	450	490
1,200	250	380
1,200	300	440
1,200	350	500
1,200	400	560
1,200	450	620
1,400	250	460
1,400	300	530
1,400	350	600
1,400	400	670
1,400	450	740
1,600	250	530
1,600	300	610
1,600	350	690
1,600	400	770
1,600	450	850
1,800	250	600
1,800	300	700
1,800	350	790
1,800	400	880
1,800	450	970
2,000	250	680
2,000	300	780
2,000	350	880
2,000	400	990
2,000	450	1,090
2,200	250	750
2,200	300	870
2,200	350	980
2,200	400	1,090
2,200	450	1,210
2,400	250	830
2,400	300	950
2,400	350	1,080
2,400	400	1,200
2,400	450	1,320

The Q max figures are reference values for bulk materials with a 34 deg. angle of repose and a conveying speed v = 0.3 m/s. Exact values acc. to AUMUND calculation. Depending on bulk material characteristics max. 0.4 m/s is possible. Other conveying volumes on request.

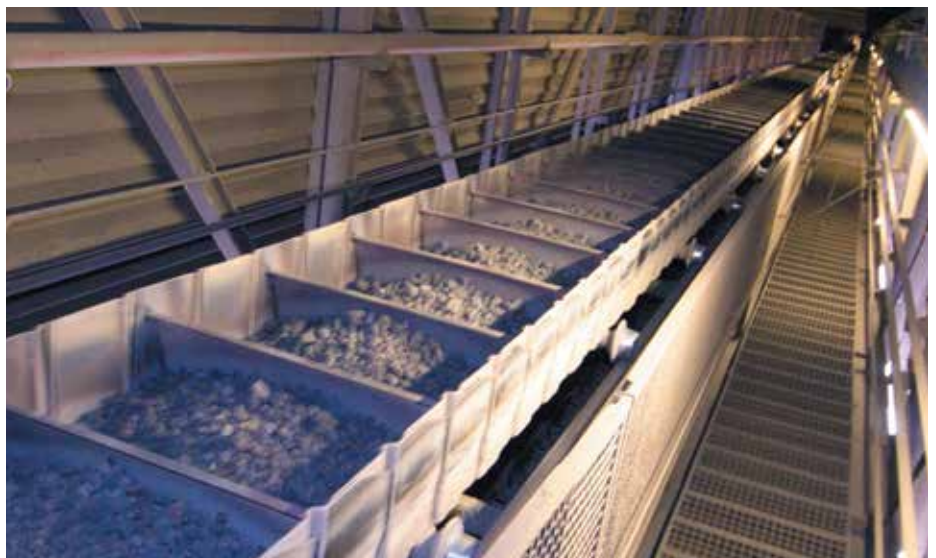
*subject to change without notice



AUMUND Pan Conveyor KZB-Q connecting cooler and silo

Pan Conveyor with Deep Drawn Pans and Baffles type KZB-Q

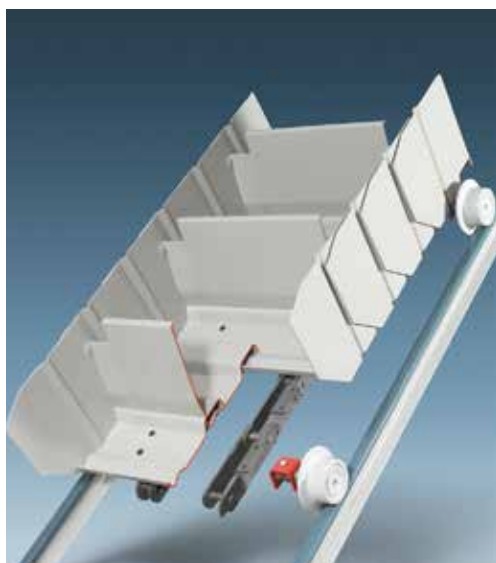
- Designed for conveying routes with up to 45° inclination
- Conveying heights to 78 m
- Conveying capacities to 700 t/h
- Chains with 290 to 3,000 kN breaking load per strand



AUMUND KZB-Q inclined at 45 degrees

For slopes exceeding 30 degrees retainer baffles are fitted to the deep drawn pans. These baffles are welded to the bottom plate and held in a loose fitting by cams which are pressed into the upper part of the side boards. The loose fitting allows the baffles to bend in case foreign bodies get onto the conveyor.

All further parts of the KZB-Q are interchangeable with the KZB. These standardised components constitute the AUMUND modular system for easy field assembly and interchangeability, an important asset for spare parts administration.



Deep Drawn Pans with Baffles (close up)

Conveying Capacities - Pan Conveyor type KZB-Q*

The capacities indicated correspond to a max. filling.

Capacity reduction factor subject to angle of inclination.

Conveyor section type KZB-Q		Conveying capacity		
Pan width	Side wall height	Q max. [m³/h] & v = 0.3 m/s		
mm	mm	0°	30°	40°
400	200	70	65	45
400	250	90	85	65
400	300	100	95	75
400	350	120	115	95
400	400	130	125	110
400	450	150	145	130
600	200	100	95	65
600	250	140	135	100
600	300	170	165	130
600	350	200	195	160
600	400	230	225	195
600	450	260	255	225
800	200	150	140	100
800	250	190	180	135
800	300	230	220	175
800	350	270	260	220
800	400	310	300	260
800	450	350	340	300
1,000	200	180	170	115
1,000	250	240	230	170
1,000	300	290	280	225
1,000	350	340	330	275
1,000	400	390	380	330
1,000	450	440	430	380
1,200	200	220	205	145
1,200	250	290	275	205
1,200	300	350	335	270
1,200	350	410	395	335
1,200	400	470	455	395
1,200	450	540	525	465
1,400	200	260	245	170
1,400	250	330	315	230
1,400	300	410	395	315
1,400	350	480	465	390
1,400	400	560	545	470
1,400	450	630	615	545
1,600	200	260	245	170
1,600	250	380	360	265
1,600	300	470	450	360
1,600	350	550	530	445
1,600	400	640	625	540
1,600	450	720	705	620
1,800	200	260	245	170
1,800	250	430	410	300
1,800	300	530	510	410
1,800	350	620	600	505
1,800	400	720	700	605
1,800	450	810	790	700
2,000	200	260	245	170
2,000	250	480	455	335
2,000	300	590	565	455
2,000	350	690	670	560
2,000	400	800	780	675
2,000	450	910	890	785
2,200	200	260	245	170
2,200	250	530	505	370
2,200	300	650	625	500
2,200	350	760	735	615
2,200	400	880	855	740
2,200	450	1,000	975	865
2,400	200	260	245	170
2,400	250	580	550	405
2,400	300	710	680	545
2,400	350	830	805	675
2,400	400	960	935	805
2,400	450	1,090	1,065	940

*subject to change without notice

The Q max figures are reference values for bulk materials with a 34 deg. angle of repose and a conveying speed v = 0.3 m/s. Exact values acc. to AUMUND calculation. Depending on bulk material characteristics max. 0.4 m/s is possible. Other conveying volumes on request.



Feeding of covered stockpile

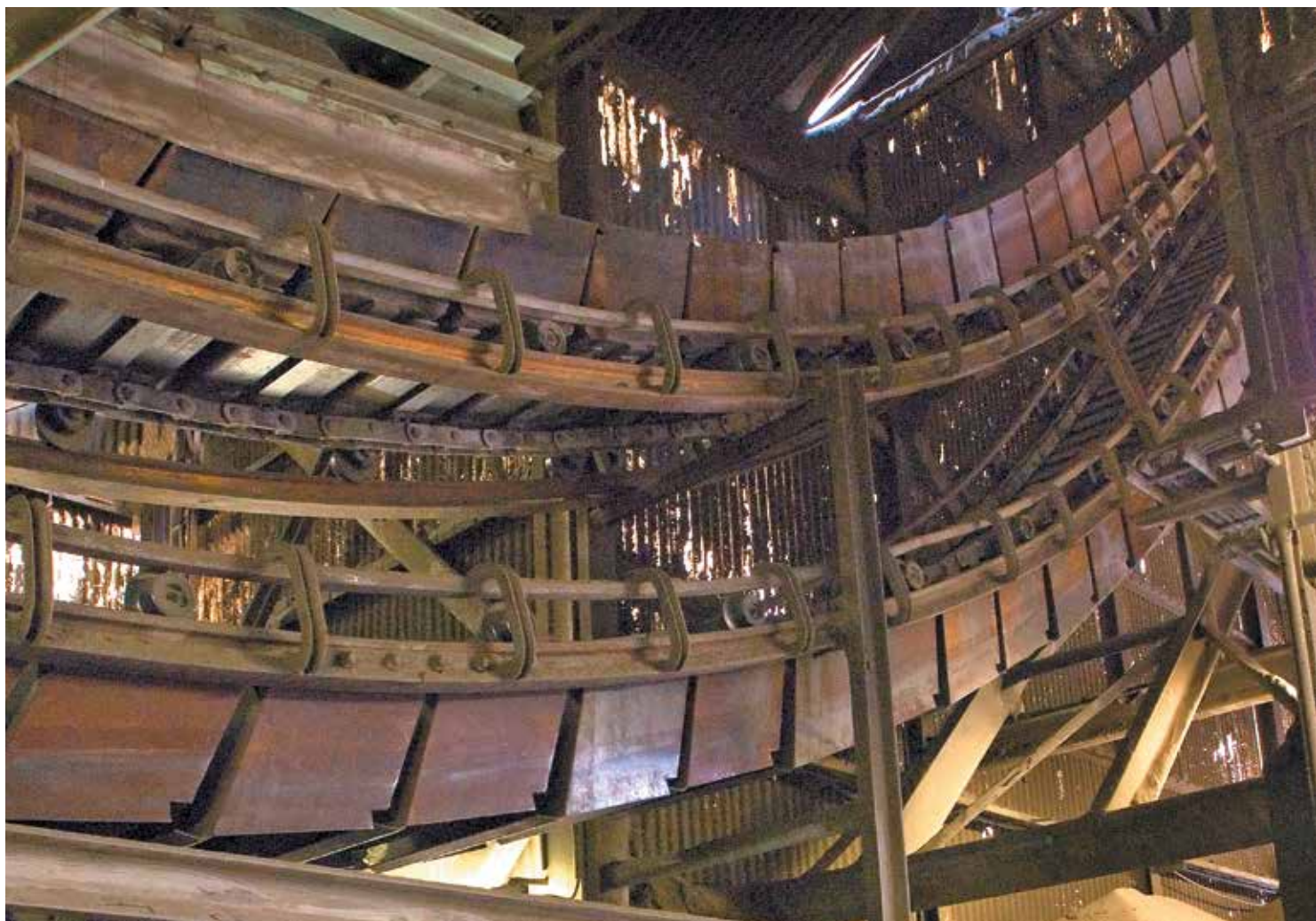
Pan Conveyor with Buckets type BZB

- Designed for conveying routes with up to 60° inclination
- Conveying heights to 100 m
- Conveying capacities to 500 t/h
- Chains with 290 to 3,000 kN breaking load per strand

Wherever conveying of clinker with a high content of fines is required, the Bucket Conveyor type BZB is the most appropriate choice. The bucket design with either forward or backward overlapping is designed to suit this particular application and minimises spillage and cleaning.

Designed for conveying at an inclination up to 60 degrees, the Bucket Conveyor fits into layouts combining high elevation with restricted space. The narrow curve radius is a further feature to suit these applications where only limited space is available, a considerable advantage for modernisation projects or conversion in existing plants.

Uniform bucket filling and even material distribution over the whole bucket width is ensured by expert planning of the feed chute system - a pre-requisite for trouble-free operation with minimum dust generation.



AUMUND Bucket Apron Conveyor



Feeding of mill hoppers



Clinker Transport with AUMUND Conveyor type BZB



AUMUND Bucket Apron Conveyor type BZB (close up)

Conveying Capacities - Bucket Conveyor type BZB*

The capacities indicated correspond to a max. filling.

Capacity reduction factor subject to angle of inclination.

Pan width mm	Side wall height mm	Theoretical conveying capacity m³/h Conveyor speed m/s 0.3			
		0°	30°	45°	60°
400	200	70	70	50	35
400	250	90	85	70	55
600	200	105	100	75	55
600	250	135	130	100	80
600	300	160	155	130	110
800	250	180	175	135	110
800	300	215	210	170	145
800	350	250	245	210	185
800	400	285	280	245	220
1,000	300	265	260	215	185
1,000	350	310	305	260	230
1,000	400	355	350	305	275
1,200	350	375	365	310	275
1,200	400	430	420	365	330
1,400	350	435	430	365	320
1,400	400	500	490	425	380
1,600	350	500	490	415	365
1,600	400	570	560	490	435

*subject to change without notice

Depending on bulk material characteristics max. 0.4 m/s is possible.

The bucket - standard widths to 1,600 mm - features a built-in stiffener for high solidity.

Depending on the case of application the overlapping of the buckets is either forward or backward. With the tight bucket arrangement the BZB meets the criteria for proper feeding with minimum spillage.

The modular system also applies for the AUMUND Bucket Conveyor, ensuring interchangeability and combination with components like those used with the Deep Drawn Pan Conveyor.

Features

- Ideal for conveying of clinker with a high content of fines
- Narrow curve radius, down to 10 m
- Expert design of the feed chute system
- Designed as a modular structure with standard components
- Minimum spillage
- Highly wear resistant chains with high yield strength
- High quality standards on all components

Benefits

- Efficient and reliable operation
- Suits applications with limited space
- Low operating costs
- Minimum and easy maintenance
- Outstanding service life



Feeding two silos in line

Pivoting Pan Conveyor type SPB

For bulk material distribution into a series of silos or hoppers, the Pivoting Pan Conveyor offers the most versatile arrangements.

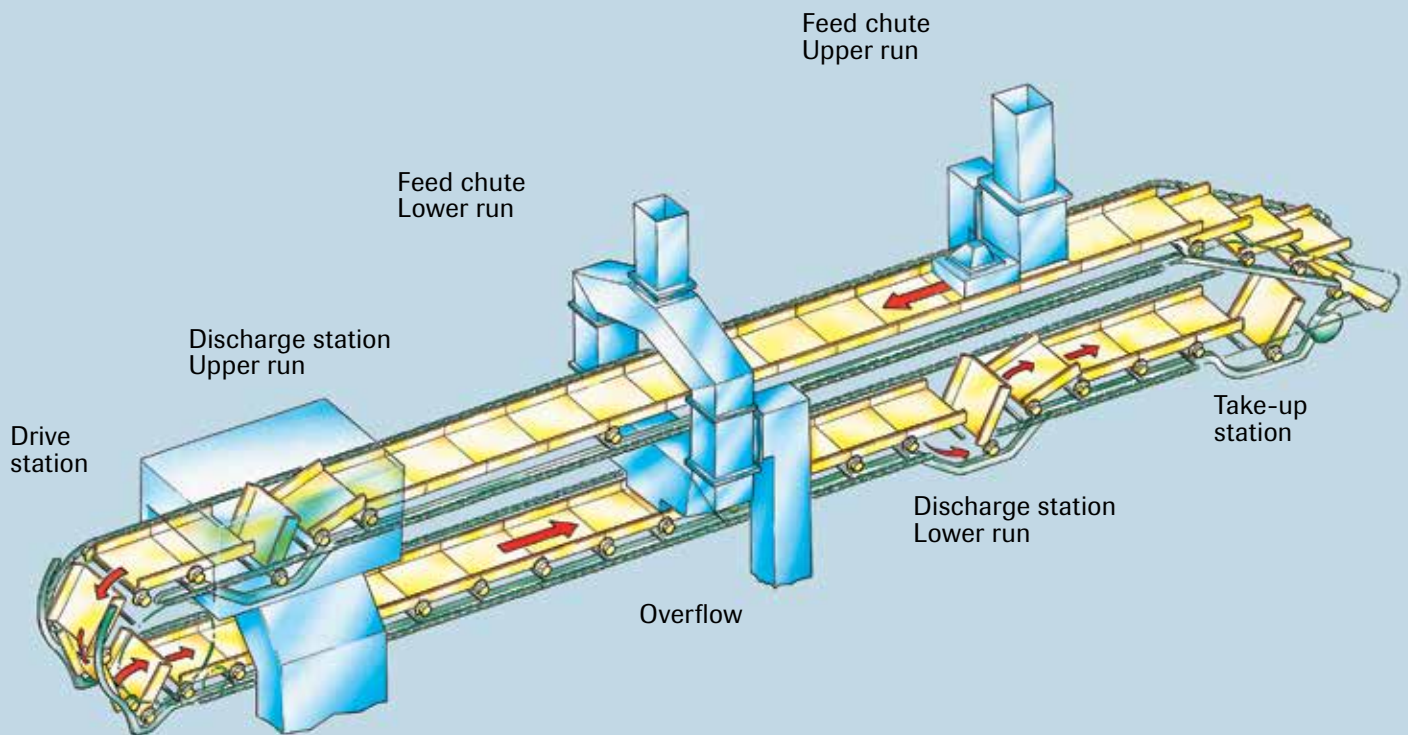
The Pivoting Pan Conveyor ensures PLC controlled multiple distribution of various materials with just one conveyor.

- Pan reversing system for simultaneous conveying on the upper and lower run
- Intermediate discharge stations placed at any given position
- Upper and lower run feeding
- Specific feeding and discharge features

Feeding onto the upper run is performed with a standard feed chute whilst a two-way chute leads the bulk material to the lower run. Equipped with an overflow system the feed chutes also ensure direct discharge of the bulk material into the silo or hopper.

Intermediate discharge stations may be positioned where required and permit remote controlled switching from one discharge station to the other.

Bulk material directed onto the upper run can subsequently be transferred to the lower run through an intermediate discharge station located on the upper run.



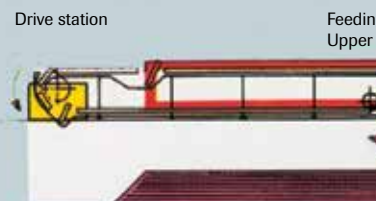
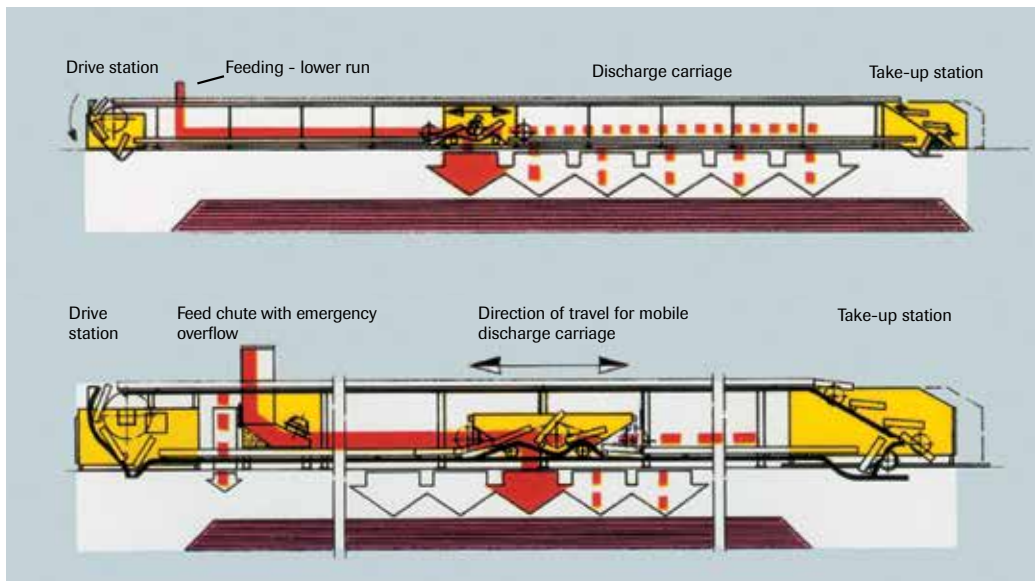
Upper and lower run feeding and discharge

The material may then be distributed into clinker silos or mill hoppers through discharge stations on the lower run. Simultaneous conveying on the upper and the lower run is a further alternative. A hopper can thus be loaded with cement clinker by way of the lower run whilst for example gypsum is conveyed on the upper run.

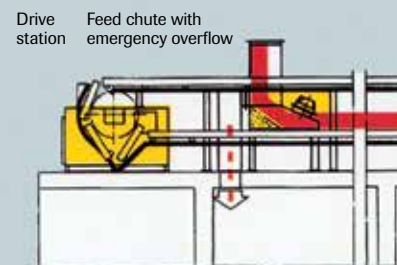
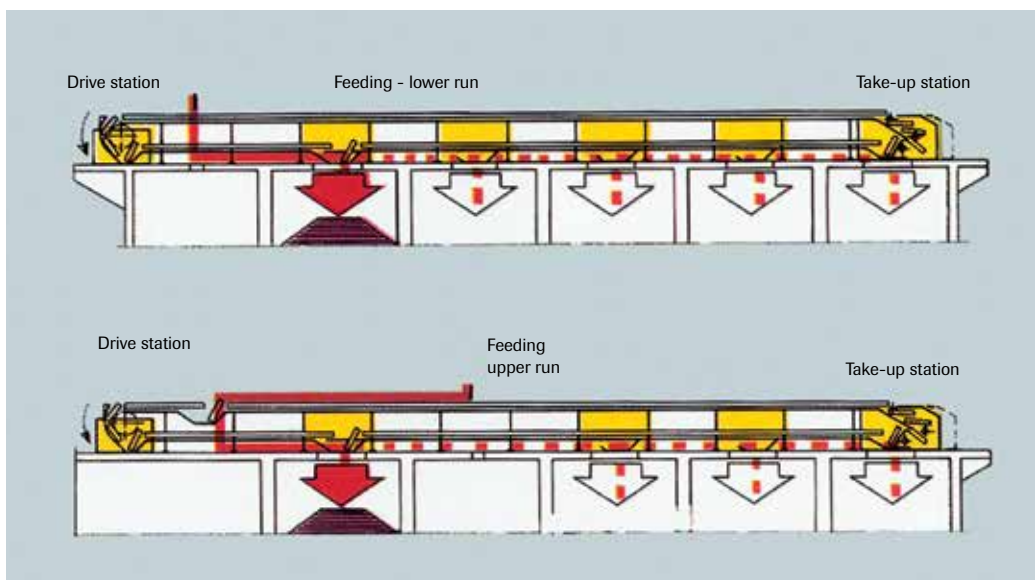


Mill hopper feeding

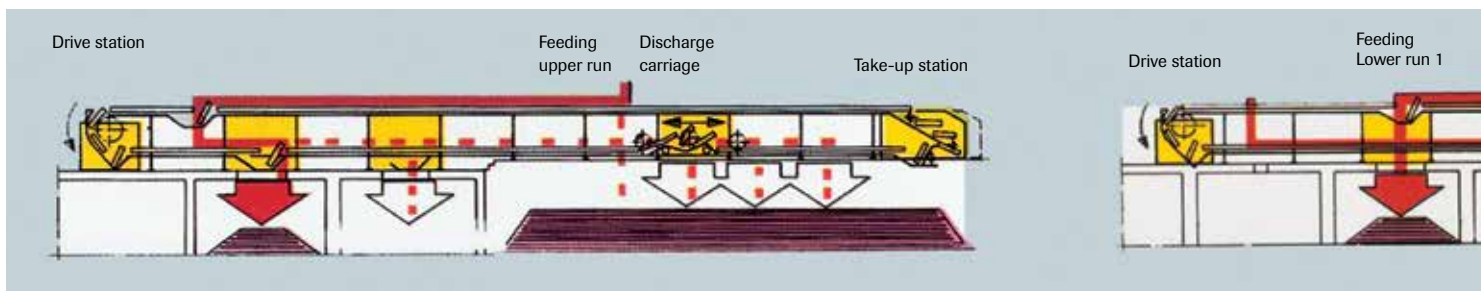
Bulk Material Distribution into Storage Halls

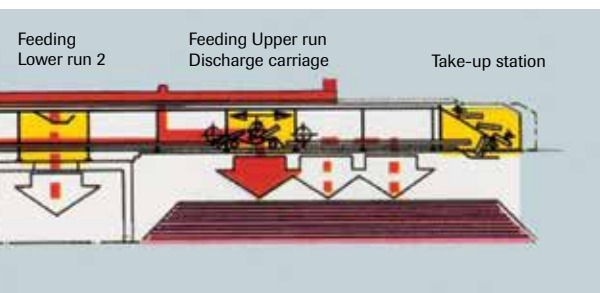
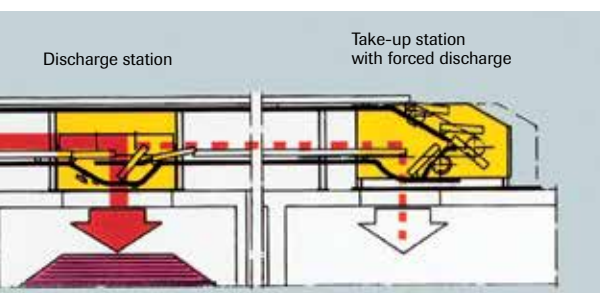
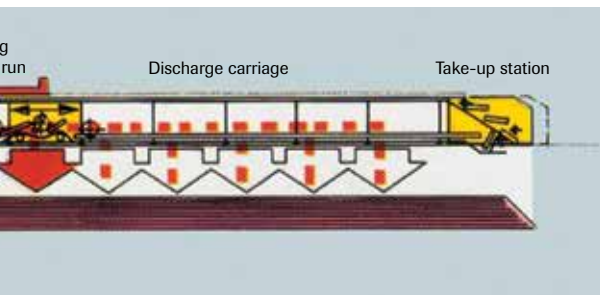


Bulk Material Distribution into a Series of Silos



Bulk Material Distribution into Silos and Storage Hall





Conveying capacity - Pivoting Pan Conveyor type SPB*

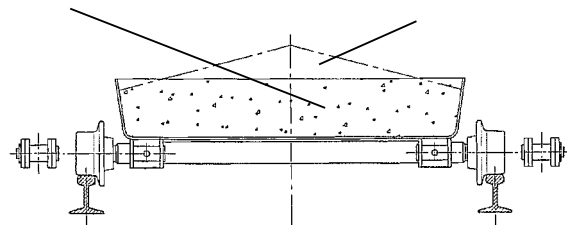
The capacities indicated correspond to a brimfull filling (water filling) =100%

Conveyor section		Theoretical conveying capacity m ³ /h
Pan width mm	Side wall height mm	Conveyor speed m /s
		0.30
400	150	78
400	200	96
600	150	120
600	200	150
800	150	168
800	200	204
1,000	150	216
1,000	200	264
1,200	150	270
1,200	200	330
1,400	150	330
1,400	200	396
1,600	150	390
1,600	200	468

*subject to change without notice

Theoretical rate limit

Filling rate limit



Feeding of long clinker storage halls requires continuous shifting of the discharge point. A mobile discharge carriage which can be moved to any given position above the hall is used with this particular application. The clinker is continuously distributed over the whole travel length of the carriage.

- Automated feeding of clinker silos, mill hoppers and clinker halls
- Simultaneous conveying of different bulk materials
- PLC-controlled operation
- Automated material distribution controlled by level sensors
- Customised layout and planning
- Standardised components

Sensors on the conveyor supports monitor the position of the travelling carriage. Level indicators control automatic shifting of the carriage as soon as a maximum filling level is reached inside the storage hall.



Clinker Silos 2 x 60,000 t (example)

Reversible Deep-Drawn Pan Conveyor type KZB-R

For applications where conveying in both directions is required, the Deep Drawn Pan Conveyor may be converted into a reversible conveyor. Alternate feeding of two silos with just one conveyor is made possible by simply changing the conveying direction.

This conveyor of special design suits horizontal arrangements. The illustration shows a plant where feeding of two clinker silos is performed with one Bucket Elevator and one Reversible Conveyor. The Bucket Elevator unloads the clinker in the centre of the subsequent Reversible Conveyor which then feeds the clinker to either one of the silos.

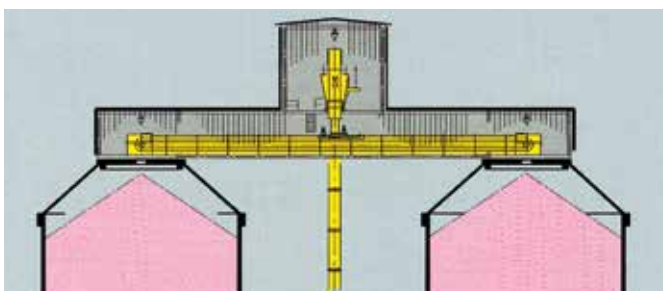
Operation of the Reversible Conveyor is PLC controlled from the central control room ensuring that the pans

are cleared before shifting from one direction to reverse conveying.

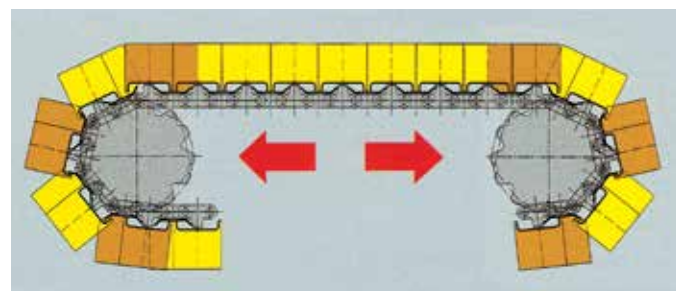
To achieve this type of operation the pans are arranged such that the pan overlapping always points into the chosen conveying direction.

If required with a long centre distance, both conveyor ends are fitted with a drive unit.

- Alternate feeding of two silos with one conveyor
- Conveying in both directions by simply shifting to reverse conveying



Clinker silo feeding with reversible Pan Conveyor



Reversible Pan Conveyor - functional principle



AUMUND Silo Discharge with Remote Control (example)

Silo Discharge Gate type SAK

For clinker silo discharge with low dust emission, for proportional addition of low-burnt or imported clinker AUMUND's product range includes the Gravity Discharge Unit operating in combination with the Deep Drawn Pan Conveyor. The height of the material layer on the Pan Conveyor determines the discharge rate and the feeding capacity onto the subsequent conveying equipment. Preset during commissioning, it is adjusted to the specific requirements of the plant.

With its built-in motorised shell gate the Gravity Discharge Unit prevents the clinker from falling in an uncontrolled manner onto the pan conveyor. It reclaims the clinker at low speed and minimises dust generation.

Where adequate, the Gravity Discharge Unit may also be manually operated.

For uniform discharge of the stored volume, a multitude of motorised Gravity Discharge Units are installed underneath the clinker silo. Switching between discharge points is made by remote control assisted by ultrasonic sensors detecting lack of clinker on the conveyor.



Components

AUMUND Pan Conveyors feature standardised components forming part of the modular system. Components of different Pan Conveyor types are interchangeable, a major advantage for spare parts management.

- Bogie-type rails ranging from size S14 to S30, chosen to suit the Pan Conveyor size
- Roller guide-rails in the curve area
- Standard roller design with tempered running surface and multiple sealing and life lubrication
- Drive and tail shaft sprockets with exchangeable toothed segments for easy replacement
- Sprockets with double tooth pitch meshing with the sprocket teeth only after each second turn for increase of lifetime
- Chains with breaking loads ranging from 290 kN to 3,000 kN

Type	for conveyor type	breaking load kN*
AU3032.2	KZB	
BAU3032.2	BZB	290
AU4540.2	KZB	
BAU4540.2	BZB	510
AU5544.2	KZB	
BAU5544.2	BZB	700
AU6052.2	KZB	
BAU6052.2	BZB	900
AU6060.2	KZB	
BAU6060.2	BZB	1,200
AU7065.2	KZB	
BAU7065.2	BZB	1,500
AU8076.2	KZB	
BAU8076.2	BZB	1,900
AU9085.2	KZB	
BAU9085.2	BZB	2,350
AU10090.2	KZB	
BAU10090.2	BZB	3,000

Chain pitch 250 mm. *Subject to change without notice

Chain Technology

- High precision manufacturing technology
- Special, wear-resistant steel
- High yield strength

AUMUND chains for Pan Conveyors are fabricated from special steel suitable for accurate laser cutting. The high precision manufacturing technology combines high yield strength with perfect distribution of forces.

The chain features a divided chain locking link, so field assembly is simplified.



Accessories

- Two way distribution chute
- Three way distribution chute
- Motorised flat gate
- Maintenance trolley for conveyor bridge

Remote control of downstream conveying directions is performed with the AUMUND two or three-way distribution chute. The chutes are fitted with shell gates actuated either by a gear motor or an hydraulic / pneumatic cylinder. Casing and shell gates are of wear-resistant design for a long service life. Motorised flat gates of sturdy design complete the range of accessory equipment for material distribution.

In addition, AUMUND offers maintenance trolleys with rack and pinion drive to be installed inside conveyor bridges for transportation of heavy tools, oil bins or equipment components to the top of high clinker silos. The maintenance trolleys are designed to suit any angle of inclination.

The range of accessory equipment is completed by truck and ship loading systems with low dust generation and electronic control for easy loading operations.



Installation of new bucket strand (example)

Conversions and Refurbishments

- Upgrading of existing plant components
- Targeting increased efficiency
- Higher output
- Improved availability

With our expert team of engineers planning selective modernisation measures, we pay special attention to the upgrading of existing plant components, targeting increased efficiency, higher output rates and improved availability.

Upgrading of your materials handling and storage equipment to state-of-the-art technology is achieved through a tailor-made refurbishment process under optimum utilisation of time and budget.

Most of the existing components are re-used in the refurbishment process to save cost.

Engineered conversions and refurbishments for increased efficiency and output are performed on AUMUND equipment as well as on the equipment of other manufacturers.



Pre-assembly of chain strands

AUMUND Services

Customer Proximity around the World

At AUMUND, service does not end at the sale of the equipment. It's the beginning of a long-term partnership. AUMUND offers you a full range of services – from commissioning to the delivery of quality spare and wear parts to customized preventive maintenance programs and equipment upgrading. The benefits for you: Maximum equipment efficiency at lower operating cost.

Spare and Wear Parts

A comprehensive range of genuine spare parts is available for our entire product range from stocks in Germany, Hong Kong/China, Brazil, the USA and Saudi Arabia. Our product specialists provide assistance and respond instantly.

Preventive and Predictive Maintenance PREMAS 4.0

Knowing beforehand that service will be needed allows you to schedule downtime and save money with timely repairs. Repairs or retrofits can be accurately anticipated allowing for the downtime to be at the most convenient times and at the lowest possible cost.

Retrofits & Modernisation

Aged and worn equipment? Capacity increase needed? Too high operating cost? AUMUND “just as new” retrofits are economical and tailor-made solutions for improving your existing equipment at reasonable cost.

Errection & Commissioning

Today, presence “on the spot” is an absolute “must”. Therefore, the AUMUND Group Field Service engineers are available on all continents to guarantee immediate and competent support.



AUMUND Group Spanning the Globe

The AUMUND Group offers efficient solutions for conveying and storage of bulk materials. A particular strength is the technologically mature and extremely reliable machinery for handling all kinds of bulk materials, even hot, abrasive or sticky. More than 22,000 installations worldwide substantiate the excellent reputation and market position of the Group. The AUMUND Group is active in more than 150 countries with 19 locations all over the world and a global network of almost 80 representatives.

The AUMUND Group Sales & Services worldwide

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Branch Office Wroclaw / Poland

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AUMUND Machinery Trading (Beijing) Co. Ltd / China

AUMUND Asia (Hong Kong) Ltd / China

AUMUND Corporation / USA

AUMUND Ltda / Brazil

AUMUND Engineering Private Ltd / India

AUMUND Group Field Service GmbH / Germany

SCHADE Lagertechnik GmbH / Germany

SCHADE Lagertechnik GmbH
Branch Office Moscow / Russia

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SAMSON Materials Handling Ltd
Branch Office Bristol / UK

PREMAS Preventive Maintenance Service AG /
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TILEMANN Chains & Components GmbH / Germany

The AUMUND Group operates Service Centres and Warehousing for spare parts in Germany, the USA, Brazil, Hong Kong/China and Saudi Arabia. Almost 60 dedicated Supervisors tend to clients' needs across the globe and a specialized Team provides PREMAS® Preventive Maintenance Service and PREMAS 4.0 Predictive Maintenance Service including inspections and consulting.



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