

Pan Conveyors



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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.

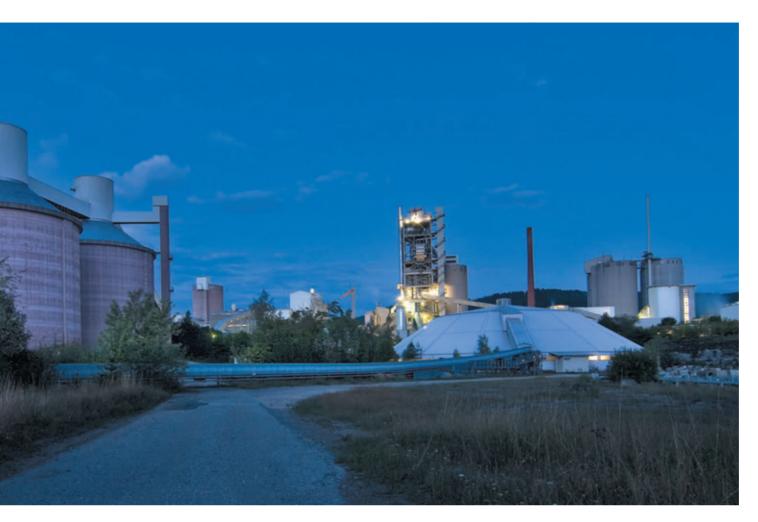
Our focus is to satisfy specific requirements with creative, cost-effective solutions for the transport of the whole range of bulk materials in cement production from limestone, cement and additives to hot and abrasive cement clinker.

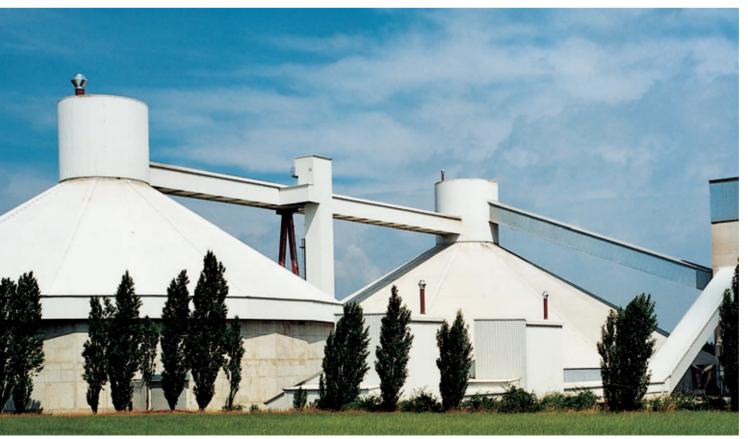
With 85 years in industrial engineering of conveying equipment we also assist customers worldwide with conceptual layouts and configuration. Our primary goal is to identify and provide the most efficient and economic conveying routes.

- 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 Pan Conveyor 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.

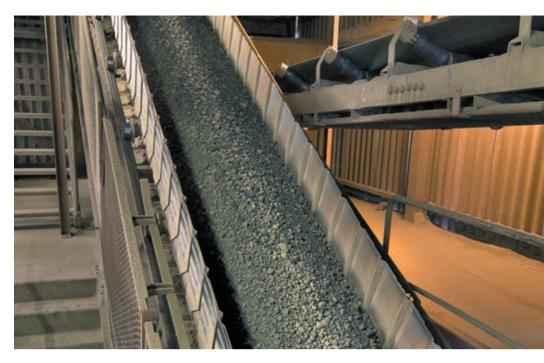
For clinker handling the Pan Conveyor type KZB suits conveying routes with an inclination up to 30°.

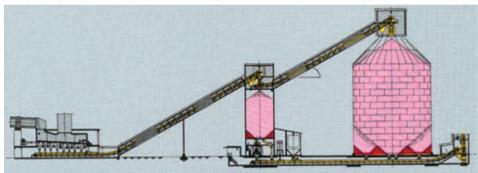
This Pan Conveyor type is the ideal direct connection between cooler and clinker stock especially for applications with grate coolers. The design allows the Pan Conveyor to be arranged underneath the whole cooler length and to collect the fines from the dust collecting hoppers same as the clinker from 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 1,000 t/h
- Chains with 290 to 3,000 kN breaking load per strand







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



Pan Conveyor with Deep Drawn Pans type KZB



Pan Conveyor type KZB - Detail



Deep-Drawn Pan Conveyor - Detail

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

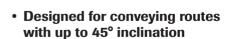
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Theoretical conveying capacity m9/h	Capacity reduction factor subject to angle of inclination.								
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2,400 450 371 557 743 928 1,114 1,300			l		l	l			
	2,400	450	371	557	743	928	1,114	1,300	



Pan Conveyor KZB-Q connecting cooler and silo

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



- Conveying heights to 78 m
- Conveying capacities to 700 t/h
- Chains with 290 to 3,000 kN breaking load per strand



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 standardized components constitute the AUMUND modular system for easy field assembly and interchangeability, an important asset for spare parts administration.



Deep Drawn Pans with Baffles

Conveying Capacities - Pan Conveyor type KZB-Q

The capacities indicated correspond to a brimfull filling (water filling) = 100 %. Capacity reduction factor subject to angle of inclination.

Conveyor section type KZB-Q		Theoretical conveying capacity m³/h						
Width	Side wall height	Conveyor speed m/s						
mm	mm	0.10	0.15	0.20	0.25	0.30	0.35	
400	250	33	50	66	83	99	116	
400	300	40	60	81	101	121	141	
400	350	47	71	95	119	142	166	
400	400	55	82	109	137	164	191	
600	250	50	74	99	124	149	174	
600	300	60	91	121	151	181	211	
600	350	71	107	142	178	214	249	
600	400	82	123	164	205	246	287	
800	250	66	99	132	165	198	232	
800	300	81	121	161	201	242	282	
800 800	350	95 109	142	190 219	237	285 328	332 383	
800	400 450	124	164 186	248	273 309	371	433	
1,000 1,000	250 300	83 101	124 151	165 201	207 252	248 302	289 352	
1,000	350	119	178	237	297	356	415	
1,000	400	137	205	273	342	410	478	
1,000	450	155	232	309	387	464	541	
1,200	250	99	149	198	248	298	347	
1,200	300	121	181	242	302	363	423	
1,200	350	142	214	285	356	427	499	
1,200	400	164	246	328	410	492	574	
1,200	450	186	278	371	464	557	650	
1,400	250	116	174	232	289	347	405	
1,400	300	141	211	282	352	423	493	
1,400	350	166	249	332	415	499	582	
1,400	400	191	287	383	478	574	670	
1,400	450	217	325	433	541	650	758	
1,600	300	161	242	322	403	483	564	
1,600	350 400	190 219	285 328	380 437	475 547	570 656	665 766	
1,600 1,600	450	248	371	495	619	743	866	
1,800 1,800	300 350	181 214	272 321	363 427	453 534	544 641	634 748	
1,800	400	246	369	492	615	738	861	
1,800	450	278	418	557	696	835	975	
2,000	300	201	302	403	504	604	705	
2,000	350	237	356	475	594	712	831	
2,000	400	273	410	547	684	820	957	
2,000	450	309	464	619	774	928	1,083	
2,200	300	222	332	443	554	665	775	
2,200	350	261	392	522	653	783	914	
2,200	400	301	451	602	752	902	1,053	
2,200	450	340	511	681	851	1,021	1,191	
2,400	300	242	363	483	604	725	846	
2,400	350	285	427	570	712	855	997	
2,400	400 450	328	492 557	656 743	820	984	1,148	
2,400	400	371	557	743	928	1,114	1,300	



Feeding of covered stockpile

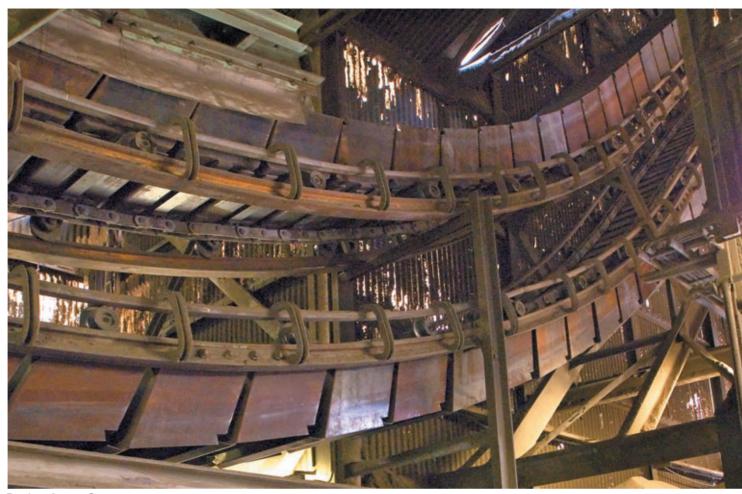
Pan Conveyor with Buckets type BZB

- Designed for conveying routes with up to 60° inclination
- · Conveying heights to 96 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 minimizes 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 modernization 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.



Bucket Apron Conveyor



Feeding of mill hoppers



Clinker Transport with Conveyor type BZB



Bucket Apron Conveyor type BZB Detail

The bucket - standard widths to 1,600 mm - feature 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.

Conveying Capacities - Bucket Conveyor type BZB

The capacities indicated correspond to a brimfull filling (water filling) = 100 %. Capacity reduction factor subject to angle of inclination.

Conveyor section type BZB		Theoretical conveying capacity m³/h						
Width	Side wall height		Conveyor speed m/s					
mm	mm	0.10	0.15	0.20	0.25	0.30	0.35	
400	200	21	31	42	52	62	73	
400	250	27	40	54	67	81	94	
600	200	31	47	62	78	94	109	
600	250	40	60	81	101	121	141	
600	300	49	74	99	123	148	172	
800	250	54	81	107	134	161	188	
800	300	66	99	131	164	197	230	
800	350	78	117	155	194	233	272	
800	400	90	135	179	224	269	314	
1,000	300	78	117	156	196	235	274	
1,000	350	92	138	184	230	277	323	
1,000	400	106	159	212	265	318	372	
1,200	350	111	166	221	277	332	387	
1,200	400	127	191	255	318	382	446	
1,400	350	129	194	258	323	387	452	
1,400	400	149	223	297	372	446	520	
1,600	350	148	221	295	369	443	516	
1,600	400	170	255	340	425	510	594	

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.

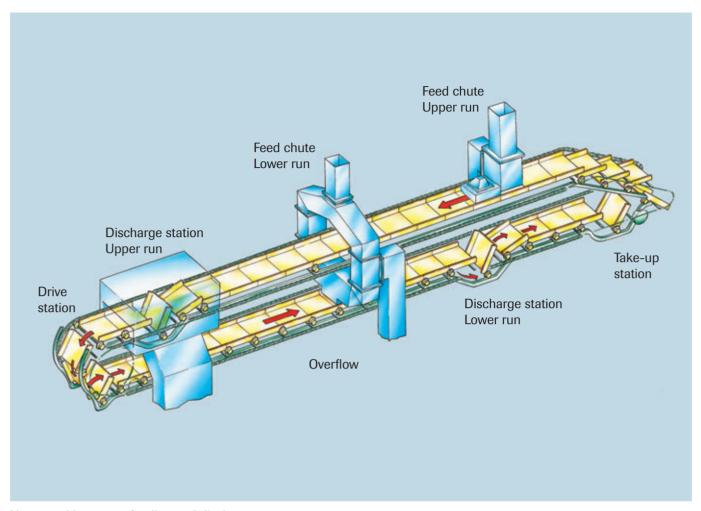
The Pivoting Pan Conveyor ensures PLC controlled multiple distribution of various materials with just one conveyor.

- 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.



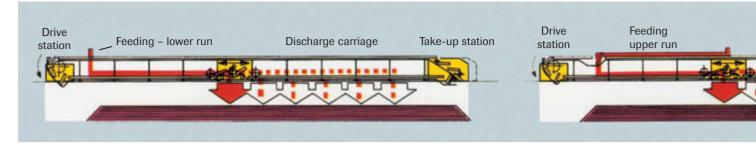
Upper and lower run feeding and discharge

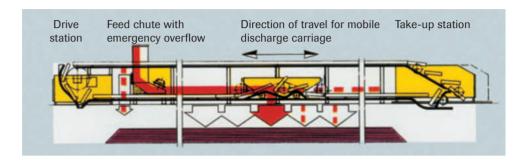
The material may then be distributed into clinker silos or mill hoppers through discharge stations on the lower run. Simultaneous conveying on the upper and the lower run is a further alternative. A hopper can thus be loaded with cement clinker by way of the lower run whilst for example gypsum is conveyed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



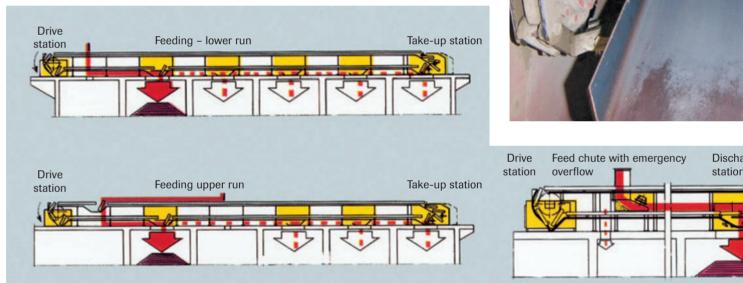
Mill hopper feeding

Bulk Material Distribution into Storage Halls

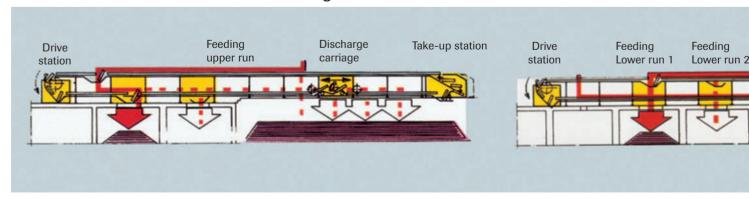


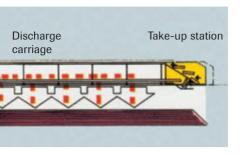


Bulk Material Distribution into a Series of Silos

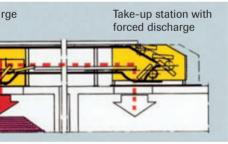


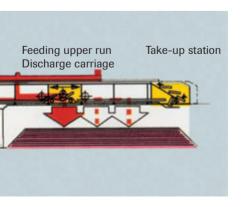
Bulk Material Distribution into Silos and Storage Hall











Conveying capacity - Pivoting Pan Conveyor type SPB The capacities indicated correspond to a brimfull filling (water filling) =100 % Theoretical conveying capacity m³/h Conveyor section Pan width Side wall height Conveyor speed m /s Filling rate limit Plw mm 0.20 0.25 0.30 0.10 mm 115% 105% 120% 110% 125% 115% 130% 1.000 1,000 120% 135% 1 200 1,200 125% 140% 1.400 1,400 130% 1,600 140% 1.600 130% 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.

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.

- 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
- Customized layout and planning
- Standardized components



Clinker Silos 2 x 60.000 t

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.

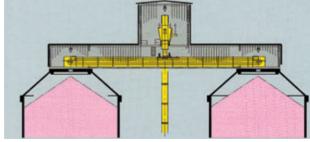
Operation of the Reversible Conveyor is PLC controlled from the central control room ensuring that the pans

are cleared before shifting from one direction to reverse conveying.

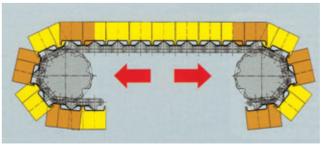
To achieve this type of operation the pans are arranged such that the pan overlapping always points into the chosen conveying direction.

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



Silo Discharge with Remote Control

Silo Discharge 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 motorized 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 minimizes dust generation.

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

For uniform discharge of the stored volume, a multitude of motorized 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 standardized 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





for conveyor type	breaking load kN
BZB	290
KZB	
BZB	510
KZB	
BZB	700
KZB	
BZB	900
KZB	
BZB	1,200
KZB	
BZB	1,900
KZB	
BZB	2,350
KZB	
BZB	3,000
	KZB BZB

Chain pitch 250mm

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
- Motorized 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 a hydraulic / pneumatic cylinder. Casing and shell gates are of wear-resistant design for a long service life. Motorized 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

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

After-Sales 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.

• Commissioning and Field Service

Today, presence "on the spot" is an absolute "must". Therefore, our commissioning and service engineers operate from support centers on all continents to guarantee immediate and competent support.

Spare and Wear Parts

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

Retrofits

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.

• Preventive Maintenance

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.



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AUMUNDGROUP

Your partner for all requirements regarding material handling and storage.

We design, engineer, manufacture, erect and service reliable equipment.

Reputation and competence proven by more than 10.000 installations in over 100 countries.

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