

Armoured Face Conveyor Systems



Armoured Face Conveyor Systems Features

> High Productivity

Horsepower installation of up to 4800 kW (6,434 hp) for carrying capacity in excess of 6000 tonne/hr (6,614 ton/hr).

> Long Service Life

Special line pan profile shape provides minimum friction, low power requirements and extended lifetime of flight bars and profiles.

> Flexibility

Great adaptability of various shearer haulage systems to best suit the application; different drive frame options for discharge available.

> Intelligent Drive Systems

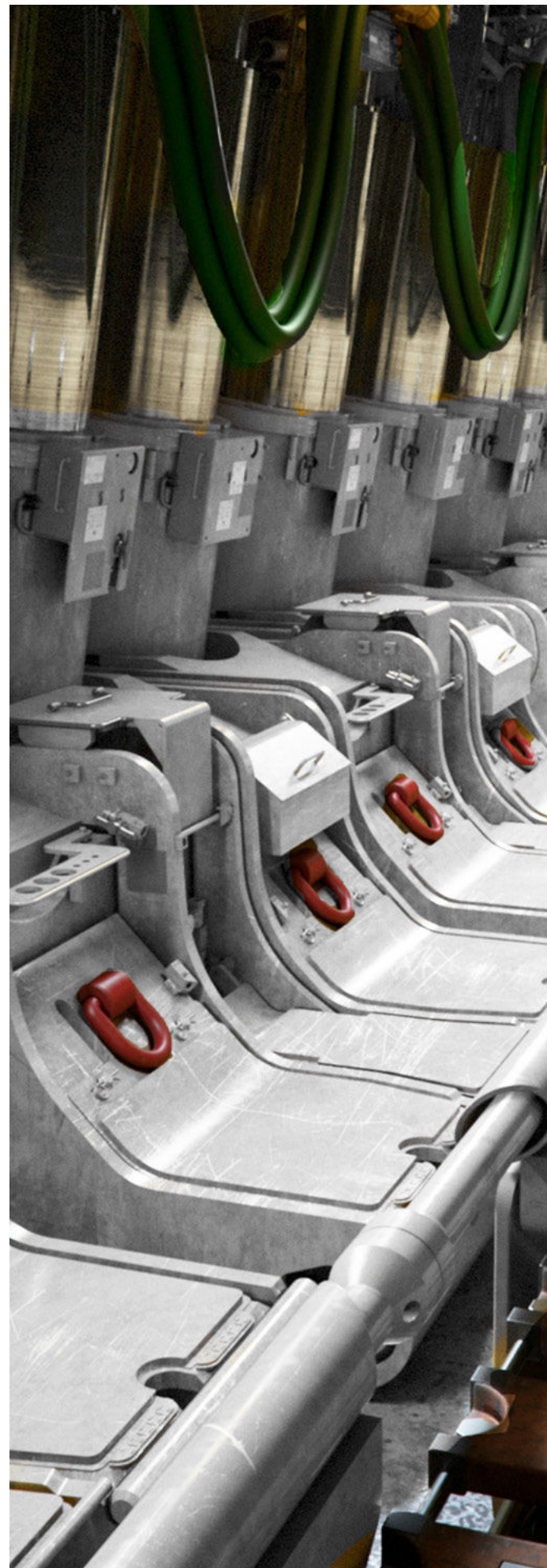
CST gearboxes with integrated soft-start-heavy-load start-up, load sharing and overload protection function.

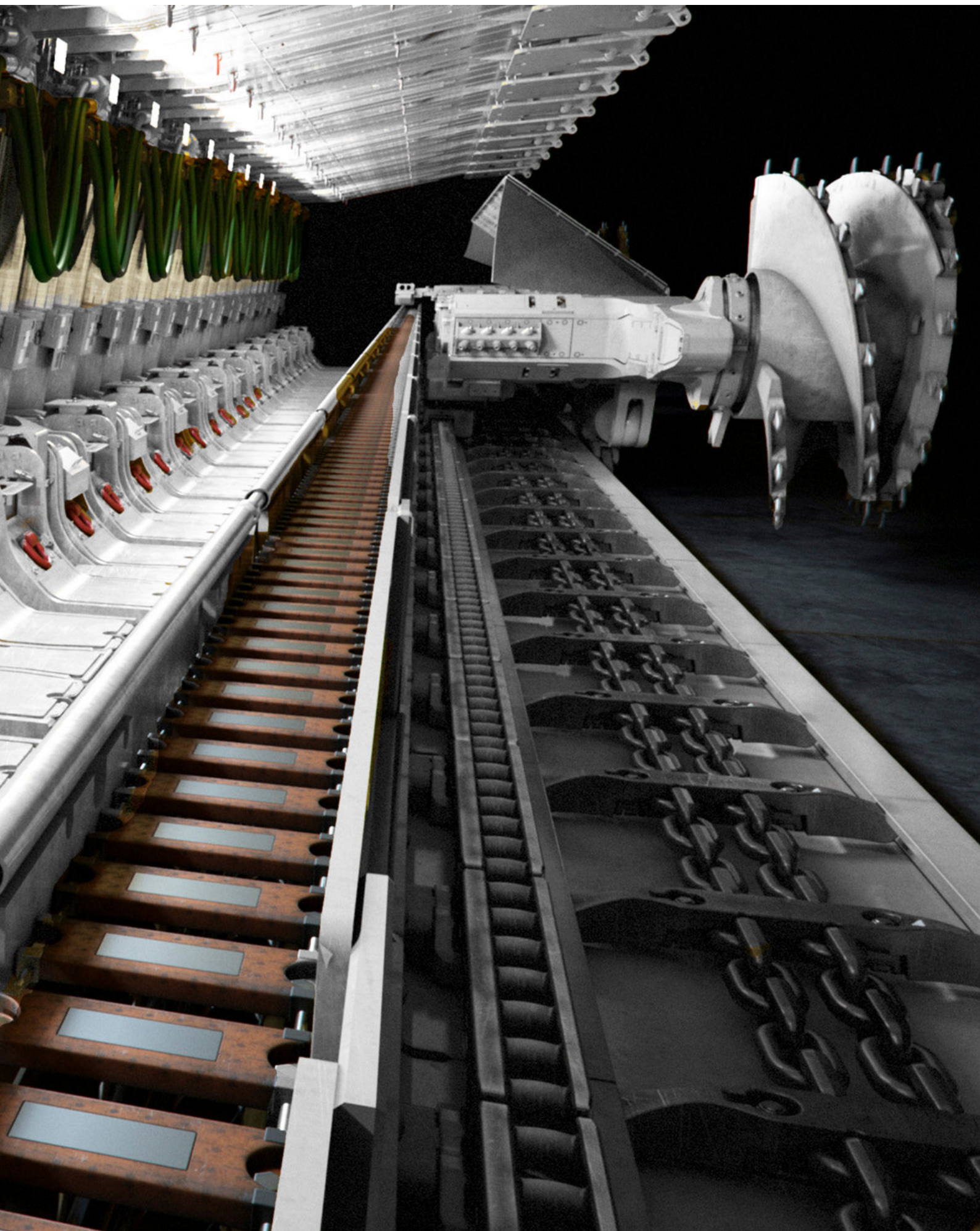
> High Serviceability

Line pan inspection doors provide easy access to bottom strand of the chain for minimized downtime at maintenance.

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ARMoured FACE CONVEYOR SYSTEMS

BEST IN THE LONG RUN



PF6 line pan

Best in the Long Run

HBT AFCs excel through cutting-edge technology, quality, experience and superior product support. Of course, that's what any AFC manufacturer would like to promise. But we can. Our engineers invented the AFC in the early 1940s. Of the ten most productive mines in the world, eight use our face conveyors.

Several systems have successfully operated in 350 to 470 m (1,150 to 1,540 ft) faces producing up to 5000 tonnes (5,512 tons) per hour and 10 million tonnes (11 million tons) per year. Our experience and track record are unmatched in super-long and high-capacity face conveyors.

And of course, HBT – recognized as a world-leading developer and manufacturer of integrated longwall systems – has a long history of engineering solutions that meet the needs of mine operators. That's why our longwall systems have been in service in all major coal-mining regions of the world for decades.

Moving Mountains

No matter how fast your shearer can cut, you can't keep cutting until you move the coal away from the face. HBT Armoured Face Conveyors (AFCs) are designed to keep things moving and to carry the maximum possible amount of coal smoothly away from the coal face. They are designed for high availability and economy in operation. They are easy to maintain and offer long service life and a great return on investment to mine operators.



MEETING ALL NEEDS

From AFC tail drive to entry belt conveyor return end, AFC systems are designed for a variety of performance requirements in low, medium and high seams, for short and long faces. HBT meets the demand of today's high-capacity shearers and, of course, our own automated plow systems.

Range of PF Line Pans

The line pan is the backbone of the AFC – literally. It not only conveys material from the face, but also acts as the guide rail for the shearer – with traction forces of up to 1000 kN (224,809 lbf).

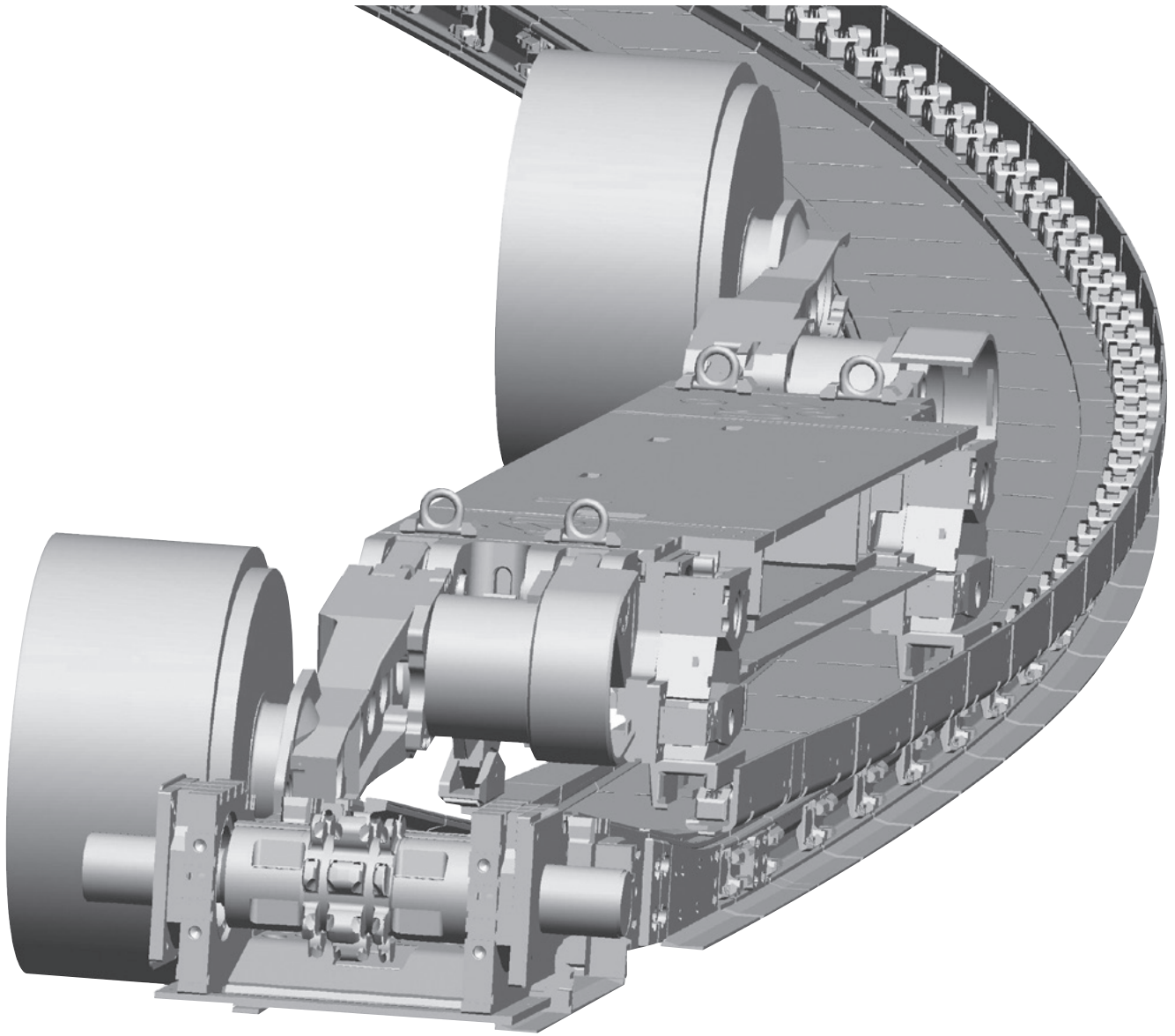
HBT offers a range of line pans to suit different needs. These range from the PF3 for capacities of up to 1300 tonnes (1,433 tons) per hour to the PF7 model with a capacity of 6200 tonnes (6,834 tons) per hour.

Typical Technical Data AFC Line Pan

Type	Width Outside	Top Plate Thickness	Bottom Plate Thickness	Dogbone Breaking Force	Production Average Per Hour
PF3	822 mm (32.4 in)	30 mm (1.2 in)	20 mm (0.8 in)	2000 kN (449,618 lbf)	1300 tonnes (1,433 tons)
PF4	932 mm (36.7 in)	40 mm (1.6 in)	25 mm (1.0 in)	3600 kN (809,312 lbf)	1800 tonnes (1,984 tons)
	1032 mm (40.6 in)				2500 tonnes (2,756 tons)
	1132 mm (44.6 in)				3500 tonnes (3,858 tons)
PF5	1042 mm (41.0 in)	50 mm (2.0 in)	30 mm (1.2 in)	4500 kN (1,011,640 lbf)	2500 tonnes (2,756 tons)
	1142 mm (45.0 in)				3500 tonnes (3,858 tons)
	1342 mm (52.8 in)				5000 tonnes (5,512 tons)
PF6	1042 mm (41.0 in)	30 + 25 mm (1.2 + 1.0 in)	30 mm (1.2 in)	4500 kN (1,011,640 lbf)	2500 tonnes (2,756 tons)
	1142 mm (45.0 in)				3500 tonnes (3,858 tons)
	1342 mm (52.8 in)				5000 tonnes (5,512 tons)
PF HD	1062 mm (41.81 in)	60 mm (2.36 in)	30 mm (1.18 in)	4500 kN (1,011,640 lbf)	1800 tonnes (1,984 tons)
	1162 mm (45.75 in)				2500 tonnes (2,756 tons)
	1262 mm (49.69 in)	70 mm (2.76 in)	40 mm (1.57 in)		3500 tonnes (3,858 tons)
	1362 mm (53.62 in)				5000 tonnes (5,512 tons)
PF7	1542 mm (60.7 in)	30 + 25 mm (1.2 + 1.0 in)	30 mm (1.2 in)	4500 kN (1,011,640 lbf)	6200 tonnes (6,834 tons)

Typical Technical Data Stageloader Line Pan

Type	Width Outside	Top Plate Thickness	Bottom Plate Thickness	Dogbone Breaking Force	Production Average Per Hour
PF4	932 mm (36.7 in)	40 mm (1.6 in)	25 mm (1.0 in)	3600 kN (809,312 lbf)	2000 tonnes (2,205 tons)
	1132 mm (44.6 in)				3800 tonnes (4,189 tons)
	1332 mm (52.4 in)				5500 tonnes (6,063 tons)
PF6	1342 mm (52.8 in)	50 mm (2.0 in)	30 mm (1.2 in)	4500 kN (1,011,640 lbf)	5500 tonnes (6,063 tons)
	1542 mm (60.7 in)				6200 tonnes (6,834 tons)
	1742 mm (68.6 in)				7000 tonnes (7,716 tons)



3D-Simulation of a shearer on a PF6 face conveyor at the head end under extreme bending

AFC COMPONENTS **ENGINEERED TO PERFECTION**

ENGINEERED TO PERFECTION

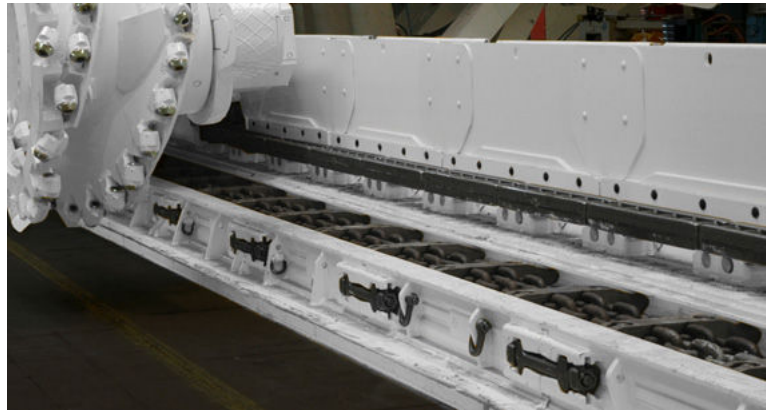
There are many parts to an Armoured Face Conveyor: shearer haulage system, drives, drive frames and sprockets, gearboxes, line pans, chain conveyors as well as entry conveyors and belt tail pieces. Each of these components has to be engineered to perfection, but also has to work together optimally with the other parts of the system.

HBT AFC components achieve this. Each is designed for powerful, reliable and economical operation with low maintenance over a long service life, promoting high productivity and delivering a great return on investment.

Shearer Haulage System

HBT rackbar shearer haulage systems meet the demands of today's high-performance shearers. We use design and material selection aimed at achieving maximum system availability, longest possible shearer, sprocket and trapping shoe life and on-system suitability for seam undulations.

As with all HBT products, these systems are the result of extensive R&D work and comprehensive laboratory and field testing. This ensures the optimum solution for haulage system and sprocket. This led to a unique design concept with optimized first/last tooth geometry rackbars available with pitches of 126 mm (4.96 in) for medium-production and 146/151 mm (5.75/5.94 in) for high-production shearers.



JumboTrack shearer haulage system



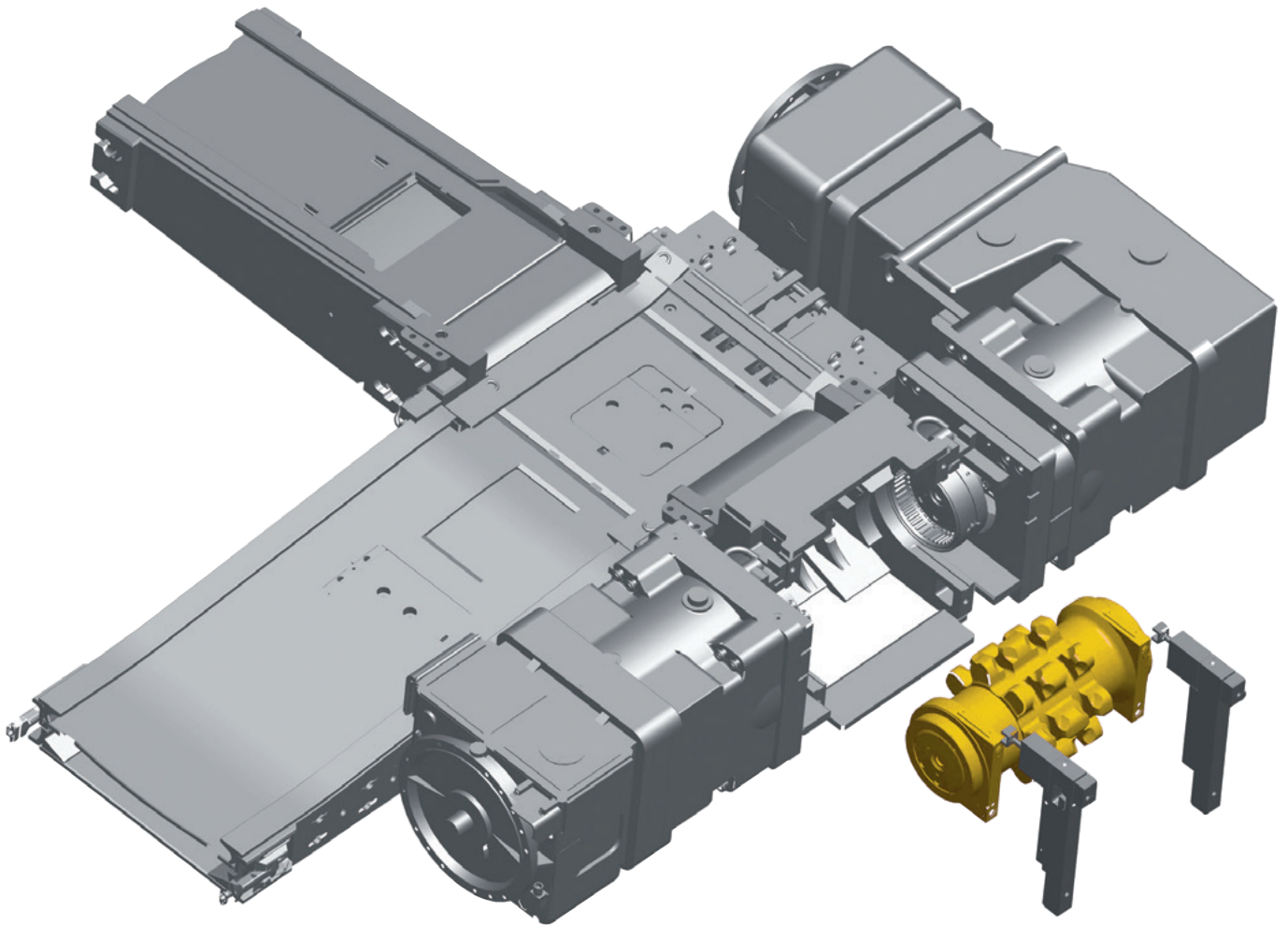
Cross frame

DRIVE FRAMES

Head-gate drive frames operated today are typical of the cross-frame design. Different capacity ratings are available depending on the total power required. The frame sides are manufactured from thick, solid plates to handle the high torque that may be generated and to ensure an adequate safety margin. Flange plates used to mount the transmission units enable easy handling.

BENEFITS

- Head drive does not cause a production bottleneck, maximum stability at maximum power, high power drives can be installed, upgrade normally possible, high AFC performance and availability.



Sprocket Module

AFC COMPONENTS ENGINEERED TO PERFECTION

DRIVE MODULES

The latest development is a drive frame with replaceable one-piece sprocket/shaft/bearing – a “drive module”. These are available in various sizes to suit individual power requirements, right up to 2×1800 kW (2,412 hp) per drive. The drive module is identical for both main and tail drive. The drive frames are independent of the gearboxes used – flange plates and stub shafts are used for interfacing. Two hydraulic cylinders are integrated in the frames for disassembly of the drive module. These are powered by an external pump. There are similar designs for smaller drive frames.

BENEFITS

- Drive module can be replaced underground without disassembly of the gearboxes, drive units are available in different sizes and are independent of the gearbox used.

GR SPROCKET

In contrast to conventional sprockets, the HBT GR sprocket is specially designed to spread the load across three teeth, ensuring maximum contact surface between the chain links and the sprocket teeth during operation. This results in lower wear and extended life of the sprocket and the chain.

BENEFITS

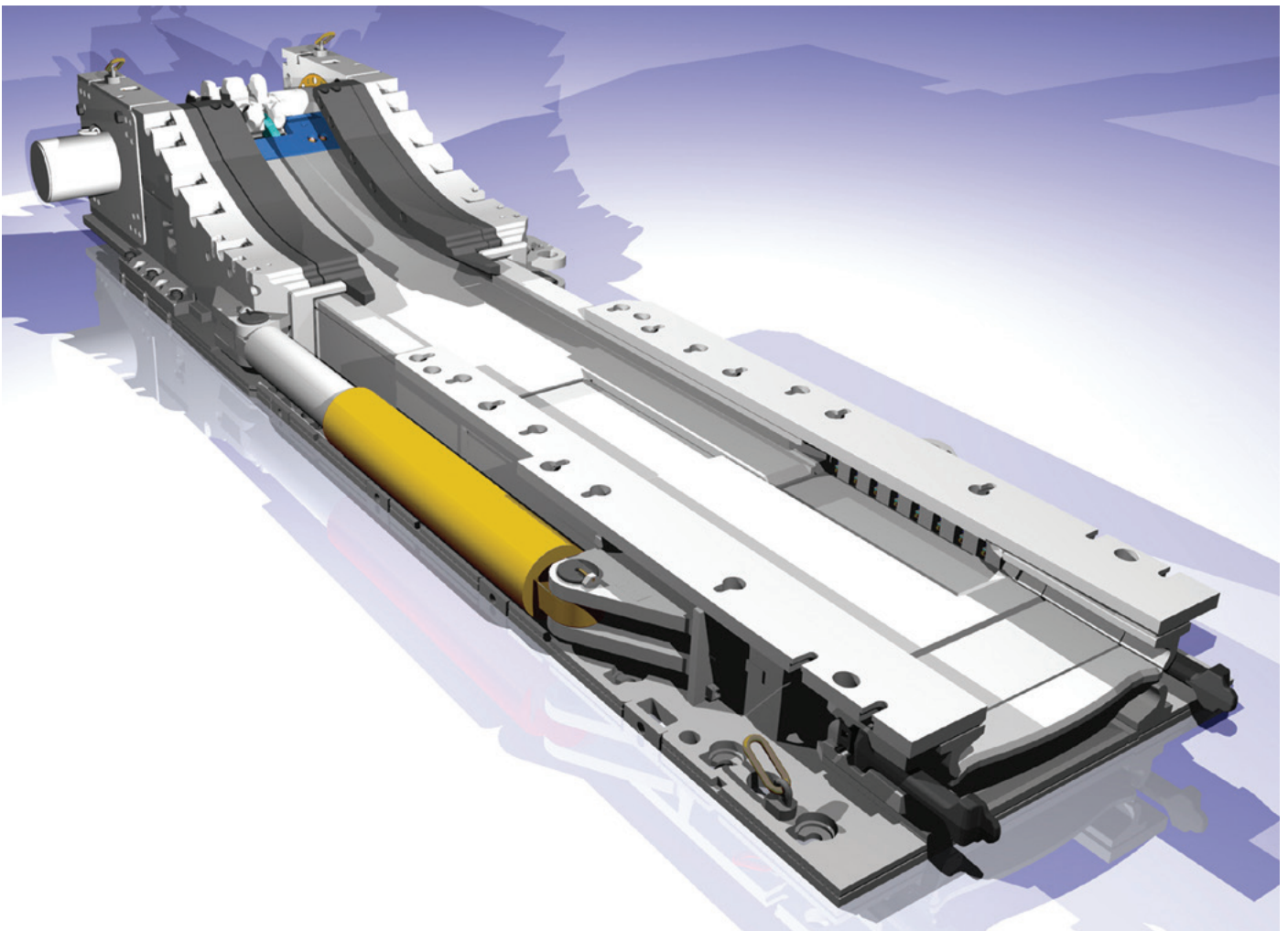
- More efficient power transmission with GR sprocket (97 percent vs. 93 percent), resulting in extended sprocket and chain life and less chain stretch.

TAIL DRIVES

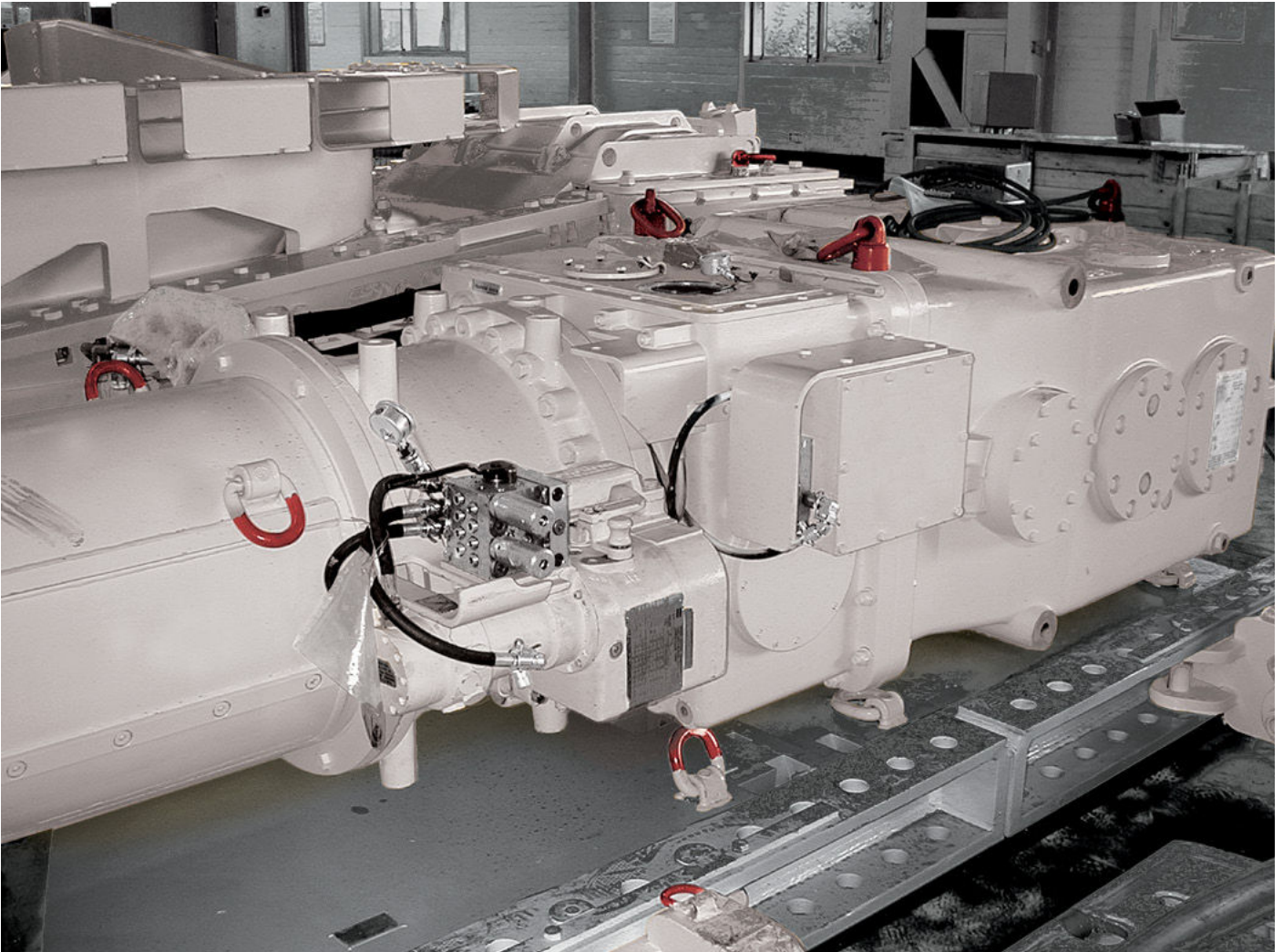
Tail drives are normally the tensionable type, especially with long faces and/or high installed power. These have a stroke of 0.50 m (19.7 in) for shorter, less powerful conveyors, and 1 m (39.4 in) for long faces or conveyors with extremely high installed power. These allow control of 1 m (39.4 in) and 2 m (78.7 in) of slack chain respectively. An automated system keeps the AFC chain at optimum tension during operation.

BENEFITS

- Maximum chain life and minimum conveyor downtime for double cut.



Tensionable tail drive



HBT intelligent CST drive system for high-capacity face conveyors

AFC GEARBOXES

SMOOTH AND SAFE OPERATION

GEARBOXES

HBT offers gearbox solutions – simple planetary or bevel-spur gearboxes for low-power requirements and the installation of a clutch between motor and gearbox for medium-power installations.

The UEL gearbox – a planetary gearbox with an integrated clutch – is designed for higher-power requirements. This friction clutch is closed through face support hydraulic fluid. A hydraulic control system allows the clutch to be set to a certain torque.



HBT CST gearbox

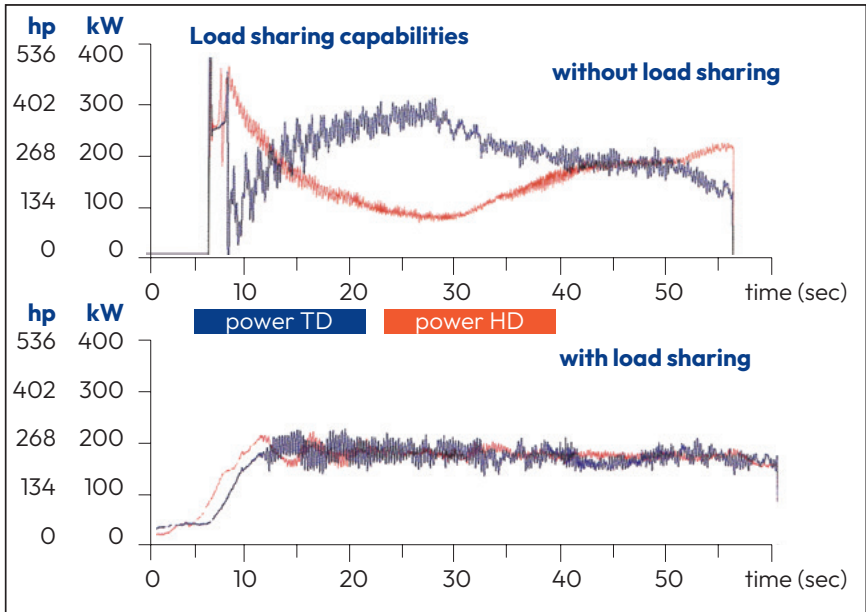
OVERLOAD PROTECTION

Overload protection is achieved by measuring the slip of each gearbox. In the event of a chain stall, both motors are switched off. Alternatively, the clutches at both drives can be opened using an optional drive control unit.

The Controlled Start Transmission (CST) drive system is designed for long, high-capacity faces. This drive system allows no-load motor startup, synchronized soft-start and heavy-load startup, as well as accurate load sharing and excellent overload protection.

BENEFITS

- HBT has the right drive for your application ensuring smooth and safe operation of the conveyor with overload protection and a range of other safety features as required.



TD = Tail Drive HD = Head Drive

CHAINS

OPTIMUM PERFORMANCE AND SERVICE LIFE



Trial run of a complete system



PowerChain and sprocket in use with a HBT beam stageloader



PowerChain inside a HBT BSL in the crusher area

Chains

For years, we have been matching chain and sprocket design in high-performance face conveyors to achieve optimum performance and service life. This resulted in the 42 × 146 mm (1.70 × 5.70 in) combination chain, the standard chain for applications in the USA and Australia since 1991, and later in the 48 × 144/160 mm (1.90 × 5.70/6.30 in) chain for what was then the world's most powerful conveyor installation with 3 × 1000 kW (3 × 1,341 hp) on a single longwall face conveyor. The latest development is the HBT PowerChain. It is available in sizes 34, 42 and 52. Size 52 is designed to be used with up to 1200 kW (3 × 1,608 hp), with a chain suitable for up to 1800 kW (3 × 2,412 hp) under development.

PowerChain

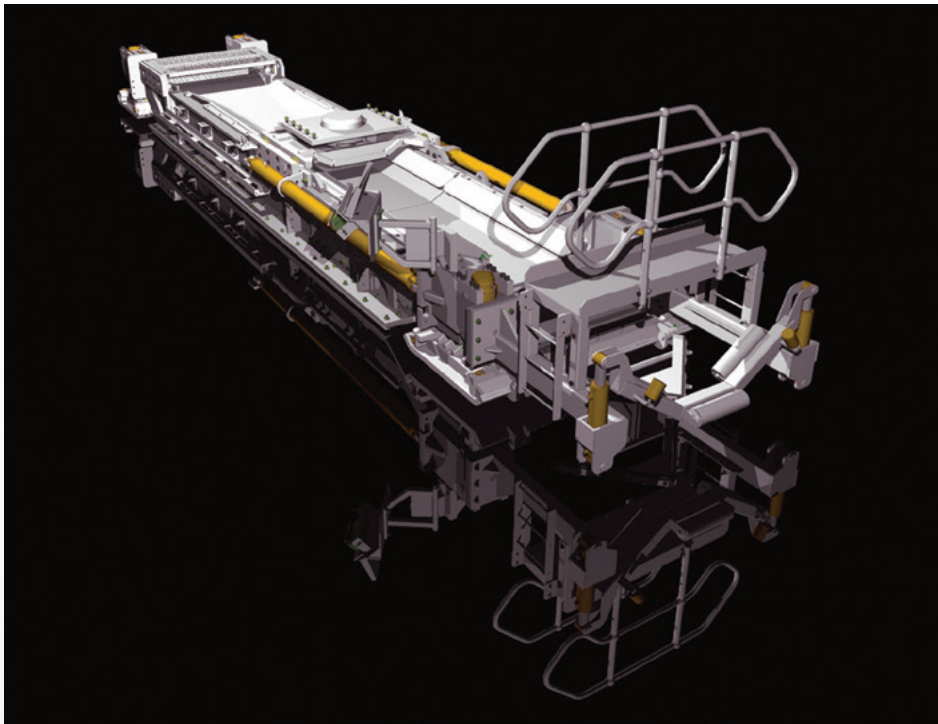
The wide, arc-shaped cross-section of the vertical links allows a low-profile line pan and the special shape of the horizontal link provides a large running surface where required, drastically reducing surface pressure and chain-joint wear. The method for attaching the flight bar is patented.

The PowerChain 42 × 140 mm (1.7 × 5.5 in) has a breaking force of 2370 kN (532,797 lbf), the PowerChain 52 × 175 mm (2.0 × 6.9 in) of 3610 kN (811,560 lbf).

BENEFITS

- Faster removal of mined coal by providing high-reliability, high-availability transportation with design features ensuring low wear and long service life, greater permissible elongation of chain compared to round link.

ENTRY CONVEYORS AND BELT TAIL PIECES PERFECTLY MATCHED TO THE AFC



Bootend assembly

Entry conveyor or stageloaader pans are normally of the same type as used in the face. These are normally wider than the AFC. While the return roller is integrated into the cross frame design, the head drive frame of the stageloaader is tensionable using hydraulic cylinders.

The crusher, usually an impact roller, is integrated into the stageloaader design. The following goose-neck lifts the stageloaader discharge over the belt tail piece. Belt tail pieces are available in fixed-, skid- or crawler-mounted versions with an overlap of up to 3.5 m (11.5 ft), all equipped with self-cleaning return drums. The operator can use any specified belt width in this tailor-made equipment.



Complete HBT entry conveyor or beam stageloaader (BSL) including crusher and belt tail piece

BENEFITS

- Stageloaader and crusher completely matched to AFC, both with higher capacity to prevent bottlenecks; tailor-made belt tail piece for required capacity and belt dimensions, allowing BTP to handle longitudinal and lateral entry gradients; automated chain tensioning system.

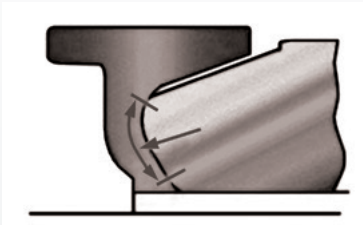


LINE PANS FOR EVERY NEED

Rolled steel is smoother, stronger and harder-wearing than a casting and generates less friction and noise. That's why HBT has focused on rolled steel designs for line pans. All aspects of the line pans have been engineered with reliability, productivity and serviceability in mind.

Compatibility testing

CONVEYOR LINE PANS A LINE PAN FOR EVERY NEED



Profile shape of PF conveyors

MAXIMUM CONTACT

The profiles are designed to maximize the contact area between the flight bar and the profile, thus minimizing contact pressure during operation.

- Minimizes friction, reduces power requirements for the face conveyor and results in longer service life of the flights and profiles.

ROLLED STEEL

Rolled material has a smoother surface than castings. The material shows maximum wear resistance after initial material conveyance.

- Lower friction and longer service life for wear parts. Up to 10 million tonnes (11 million tons) under normal conditions and up to 20 million tonnes (22 million tons) under favorable conditions.

SAFE DOGBONE TECHNOLOGY

The forged dogbone pocket and the designed breaking force of up to 4500 kN (1,011,640 lbf) guarantee safe operation of the conveyor at all times. Sophisticated design has been further optimized, ensuring greater tensile strength to reduce stress spikes and ensure perfect protection of the dogbone pocket and the pan itself in the event of an overload.

- Longer service life of dogbone pockets, no damage to conveyor or dogbone housing as the dogbone always breaks first.



Dogbone

CONVEX/CONCAVE PAN ENDS

HBT line pans feature convex/concave pan ends that ensure reduced noise levels. Our line pans are suitable for bi-directional operation.

WELDS WITHOUT WEAR

HBT PF line pans have a rolled profile design. Each of the identical profiles are attached with two welds to the top plate of chosen length and width. This results in great flexibility in pan design. Only one of the welds is located in the wear area of the line pan in the top strand.

- High stability of the pan ensured by three welds even when the top plate is totally worn out.

WEAR-RESISTANT TOP PLATE

The top plate is made of wear-resistant material. The thickness varies from 30 mm (1.2 in) (PF3) to 50 mm (2.0 in) (PF5).

- Long service life with matched profile type end.

FLEXIBILITY

The line pans are designed to allow deflection between individual line pans of $\pm 6^\circ$ vertically and $0.8\text{--}1.2^\circ$ horizontally.

- Increased flexibility, adaptation to undulating seams, short snake sections possible.

SAFE TRANSFER OF TRANSVERSE FORCES

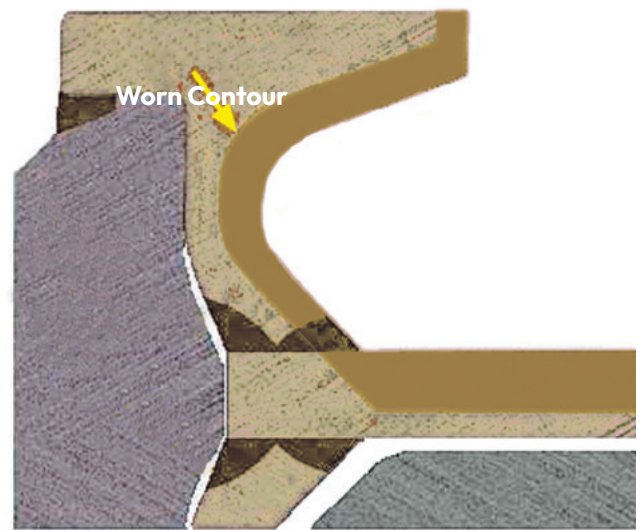
Transverse forces are transferred through the top plate to the relay bar arrangement.

- High pan stability, even for high-reaction forces; safe operation; low noise; minimum maintenance; full reversibility.

INSPECTION DOORS

A sliding inspection door typically installed in every 6th pan and every special pan allows access to the bottom race of the chain conveyor. The integrated drawer guide ensures safe seating of the doors. The inspection door can be removed from gob or face side.

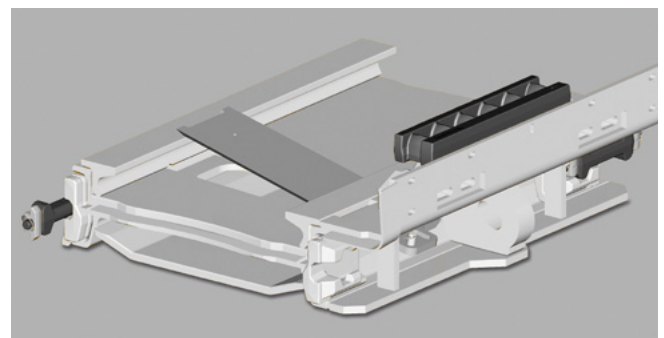
- Easy access to bottom chain, minimum downtime during maintenance or repair.



PF5 profile design with wear pattern



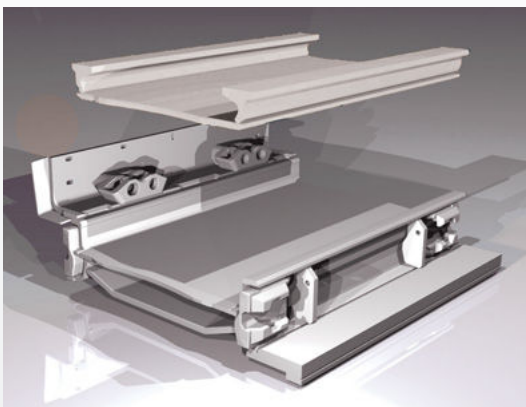
Vertical bending capability of HBT face conveyor systems





HBT PF6 LINE PAN

LOWER WEAR AND LONGER SERVICE LIFE



PF6 pan with replaceable top trough

PF6 – THE STATE-OF-THE-ART LINE PAN

Wear is the weak point in line pan design. Hauling millions of tonnes (tons) of coal away from the longwall is clearly going to result in high levels of wear. Back in 2002, we decided to try something revolutionary. A group of experts from different countries with many years of experience on various conveyor types was brought together to create a new type of pan that would combine the benefits of rolled and cast line pans to provide an optimum solution to mining industry needs.

THE FIRST TO REALLY LAST AND LAST

The team developed an innovative pan design meeting all the requirements regarding quality, resistance to wear and conveying capacity in ultra-long panels. The result is the PF6, a hybrid pan that addresses the weakest point in pan design: wear. The simple solution was to make the parts subject to the most wear replaceable.

With its patented trough concept and extremely rugged pan design, the PF6 is particularly suitable for applications in longwalls with extended face length and for panels with coal reserves of 10 million tonnes (11 million tons) and up.

SEPARATION OF WEAR PARTS AND STRUCTURAL PARTS

The smart and totally new idea of splitting up the different functional areas in the PF6 allows the separation of wear parts and structural parts. Very hard, wear-resistant materials are used for wear parts, while the structural parts are made of high-strength steel.

- Ability to replace wear parts, substantially longer service life, lower overall pan wear.

OPTIMIZED CONTACT SURFACES

The special shaping of the bottom race – which almost doubles the contact surface – reduces flight bar shoulder wear and substantially reduces friction. The curved transition at the pan ends greatly reduces noise during operation of the chain conveyor.

- Minimal friction and power loss, longer flight bar and profile service life, lower noise.

MAXIMUM PAN STABILITY

The frame of the pan consists of two C profiles connected by a baseplate. Two tried-and-tested PF5 profiles are welded to the bottom plate of the top trough and then welded or bolted to the pan base. This allows problem-free replacement of worn top troughs.

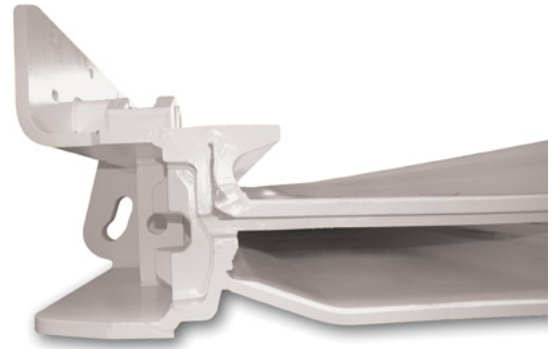
Pan sections are connected by dogbones inserted into pockets in the C profiles. These are designed to engage exactly, providing optimal absorption of vertical and horizontal reaction forces. This ensures reliable transmission of high lateral forces, such as from roof supports. All forces were calculated and the pan was successfully tested with the frame of the PF6 pan only.

- High stability and positive force transmission, easy maintenance, trouble-free operation in both directions.

CUSTOMIZATION

Whether the design of the cover plates or the design of spill plates for hoses and cables, all components of the PF6 are individually designed to meet our customers' requirements.

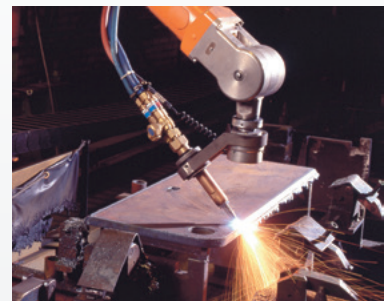
- Optimal adaptation to local conditions, perfect functioning with various shearer haulage systems.



Profile of the PF6 shearer line pan



Simulation of a hump during a compatibility test with a shearer



ROLLED STEEL SURFACES AND ROBOT WELDING

Extremely smooth rolled-steel surfaces ensure minimum friction and power loss. Robot welding ensures standardized welds that can be removed automatically when the top race is worn, allowing replacement of the trough. This innovation is expected to increase the service life of the substructure by a factor of 3.

- Longer service life, simple replacement of wear parts, lower friction and power loss.

HBT PF HD LINE PAN

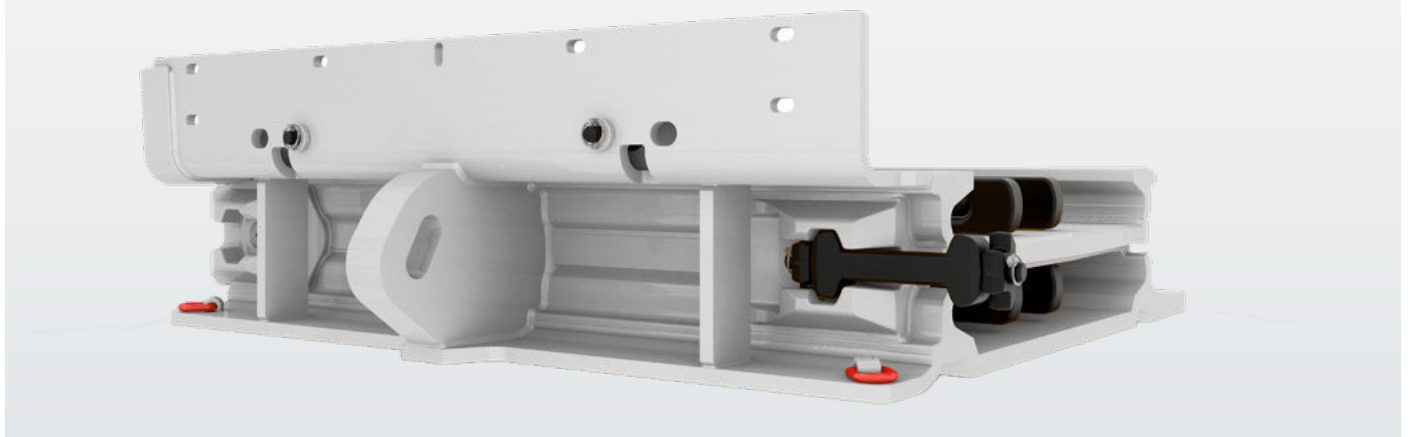
EXCEPTIONAL WEAR RESISTANCE IN HEAVY-DUTY APPLICATIONS



The HBT PF HD line pan for armored face conveyors is specially designed for heavy-duty longwall applications with very demanding conditions. The design is based on actual customer requirements and represents the most robust and reliable HBT line pan available, with an increased wear backup. The PF HD line pan lasts up to two times the life of corresponding PF5 or PF6 pans.

The mono pan design with the new heavy-duty profile features an increased wear backup and flight bar overlap, as well as reduced height outside and improved welding connections. The thickness of the deck plate is 70 mm (2¾ inch minimum to 3 inch maximum) or 60 mm (2¼ inch minimum to 2½ inch maximum). The bottom plate thickness is 30 mm (1¼ inch) or 40 mm (1½ inch minimum to 1¾ inch maximum).

The PF HD line pan is available in the widths 1062, 1162, 1262 and 1362 mm (41.81, 45.75, 49.69 and 53.62 inches).



HEAVY-DUTY FEATURES

MONO PAN DESIGN

The PF HD line pan features a mono pan design without replaceable deck plates. Top and bottom plates are made of wear-resistant steel, and the thickness of both plates has increased by 33 to 40 percent for improved wear backup.

NEW PROFILE

The newly designed sigma profile features an additional 10 mm (0.39 inch) thickness for very long service life. This extra thickness also ensures an increased flightbar overlap for enhanced guidance on the long run. The special shape of the profile, with a beveled edge on the outer contour at the face side, optimizes loading performance. The cut coal in front of the face side loads more easily onto the conveyor when the AFC advances.

To connect the sigma profiles to the deck plate, the PF HD line pan features a modified, patented welding geometry. This full-penetration welding ensures a strong connection between profile and deck plate, even at maximum wear.

NEW POCKET DESIGN

A new optimized dogbone pocket design uses a closed pocket shape with increased longitudinal load-absorbing welds. The pocket features a symmetrical shape with a reinforced cross section to withstand the strong forces of shearer passage and dogbone pulling forces.

CORROSION PROTECTION

Optional sacrificial anodes can be installed in the dogbone pocket area to reduce corrosion in high-stress areas. This ensures maximum corrosion protection for the high-stress parts of the pocket and the dogbone.

IMPROVED MAINTENANCE DOOR

The PF HD line pan features the maintenance door functionality used on other PF line pans; however, it has been adjusted to resist high wear.

The improved design of the face side area features a threaded slot to lift the maintenance door, which is hidden outside of the wear area. It is sealed to prevent fine coal from entering the bottom race. Moreover, the welding on the face side is not interrupted because of the maintenance door.



New heavy-duty profile with increased wear backup



Closed dogbone pocket shape – prepared for sacrificial anodes



A WORLD-CLASS MANUFACTURING FACILITY

HBT premium face and entry conveyor systems and the respective system components are manufactured at the HBT headquarters in Luenen, Germany.

To meet the increasing demands of global customers, HBT has increased the investment and made expansion at the Luenen facility. HBT set up a research and development center with experienced engineers from the HBT global R&D networks to continuously develop innovative products to meet the requirements of customers from all over the world.

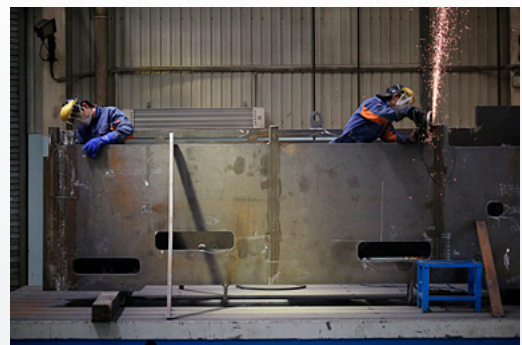
MANUFACTURING EXCELLENCE

HBT has achieved the highest standards in terms of quality, safety, supply-chain integration and employee engagement. In addition, HBT obtains numerous key international certifications, including DIN EN ISO 9001, DIN EN 1090, DIN EN ISO/IEC 17025, and DIN EN ISO 3834-2.

The HBT Production System is at the very heart of the enterprise strategy – and that is for a particular reason. By making the production system part of how HBT does business, it can deliver superior value to mining customers around the world.

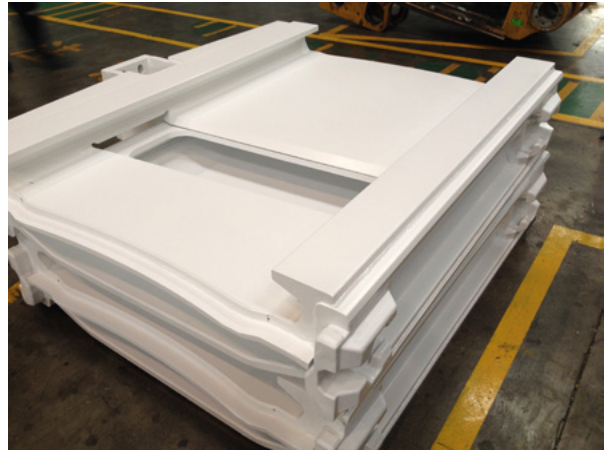
The HBT production system is the common order-to-delivery process that optimizes execution and enables achieving safety, quality, velocity, and cost goals.

The production process leads the manufacturing facility in Luenen to apply a consistent set of standard processes in manufacturing. Processes which are constantly being improved through the elimination of waste by using 6Sigma and 6Sigma lean tools.



MATERIAL QUALITY CONTROLS

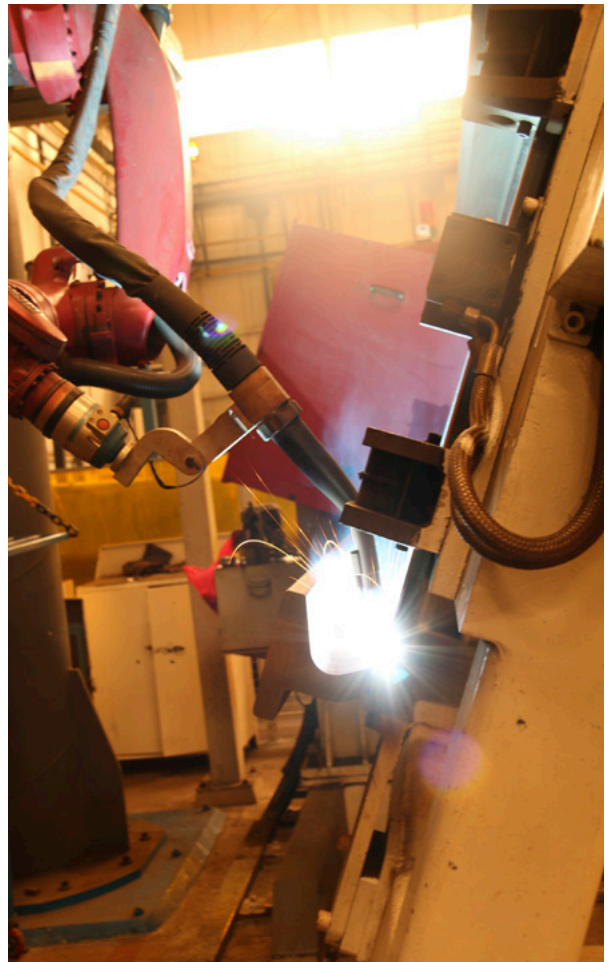
The Purchasing, Supply Chain and Quality Departments of HBT strictly follow the production processes to make sure all raw materials meet the rigorous HBT quality standards. External suppliers adhere to production part approval requirements to ensure parts meet the design requirement. The Quality Department performs dimensional and material inspection for all supplier parts at the relieving dock.



WELDING QUALITY

HBT manufacturing has a team of International Certified Welding Engineers, International Certified Welding Technicians and International Certified Welding Inspectors. All the welding work at HBT is done by highly qualified welders to ensure our HBT equipment lives up to customer expectations. All welding operators complete a rigorous training program that includes certification via visual, destructive and macroscopic inspections to meet HBT's high quality standards.

Welds must pass stringent visual inspections by quality control personnel to ensure dimension and quality of components.



ADVANCED MACHINING CENTERS

Computer-controlled machining centers maintain accurate positioning of milling, drilling, and boring operations. Machining precisely controls location, size and surface finish of critical features, which assures perfect assembly of every machine.

WORLD CLASS COMPONENTS

Our major components are sourced from HBT component factories and HBT suppliers who are aligned to a supplier quality excellence process certification plans. We conduct constant quality auditing of the incoming components. The advanced product quality planning process along with a production part approval process ensures quality of each part.





MANUFACTURING EXCELLENCE

WORLD CLASS WELDING, MACHINING AND QUALITY CONTROL



PRECISION ASSEMBLY

Qualified components that pass inspections are taken to Final Assembly Station. The components are strictly classified and located for assembly. This attention to detail creates reliability and durability, which translate into long life.

To ensure the components' quality and conformity comply with technical requirements for final assembly, components are fabricated to the strictest Assembly Work Instructions and Assembly Process Standards.

PRE-DELIVERY PROCESS

The pre-delivery inspection and audit processes ensure uniformity in product characteristics and conformity to all specifications. All machines enter the static test booth made with acoustic enclosure to test product performance. All test results are stored and analyzed for trends to monitor quality.

The audit is performed after the machine has been certified through the inspection process. Benefits include:

- Ensure world-class product quality
- Eliminate any failures
- Validate machine performance
- Confirm that controls and procedures are satisfactory

The pre-delivery processes ensure that the machine received by the customer and dealer is 100 percent defect free and compliant with HBT quality standards and the shipping order.





QUALITY PROCESS CONTROL

HBT conducts strict quality process control to ensure the conveyor systems and components manufactured meet customer requirements:

- ▶ Customer acceptance validation enabling process
- ▶ Quality culture deployment – zero defects
- ▶ Rigorous in-process quality gates and inspections
- ▶ Product validation before shipment
- ▶ Quality stand down
- ▶ Stop to fix

A special Inspection Plan is standardized to detect nonconformance and defects. Any nonconformance triggers notice to the responsible personnel for rework. Gauge and inspection equipment calibration and built in quality deployment are conducted to achieve manufacturing of 100 percent defect-free products.



