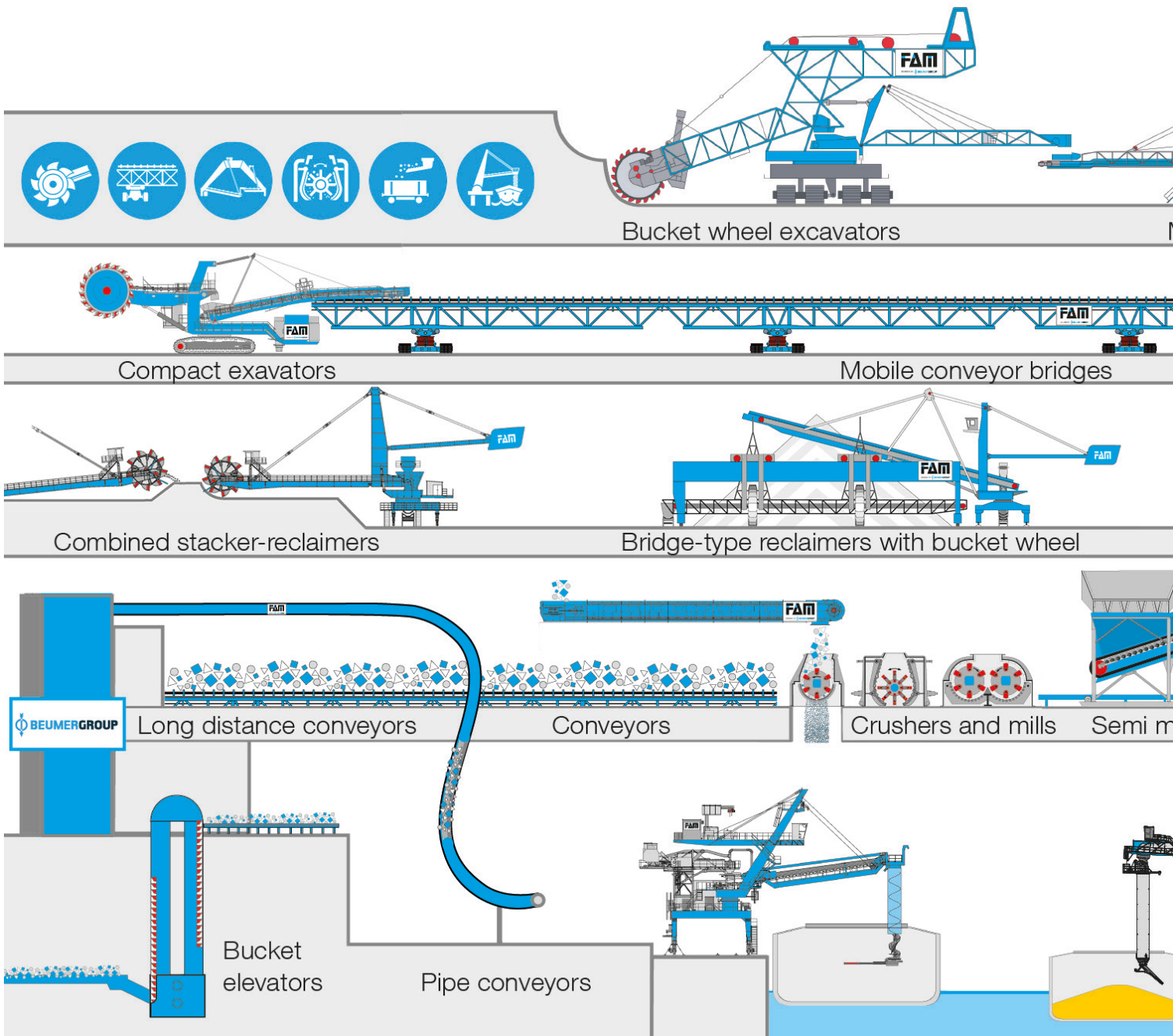


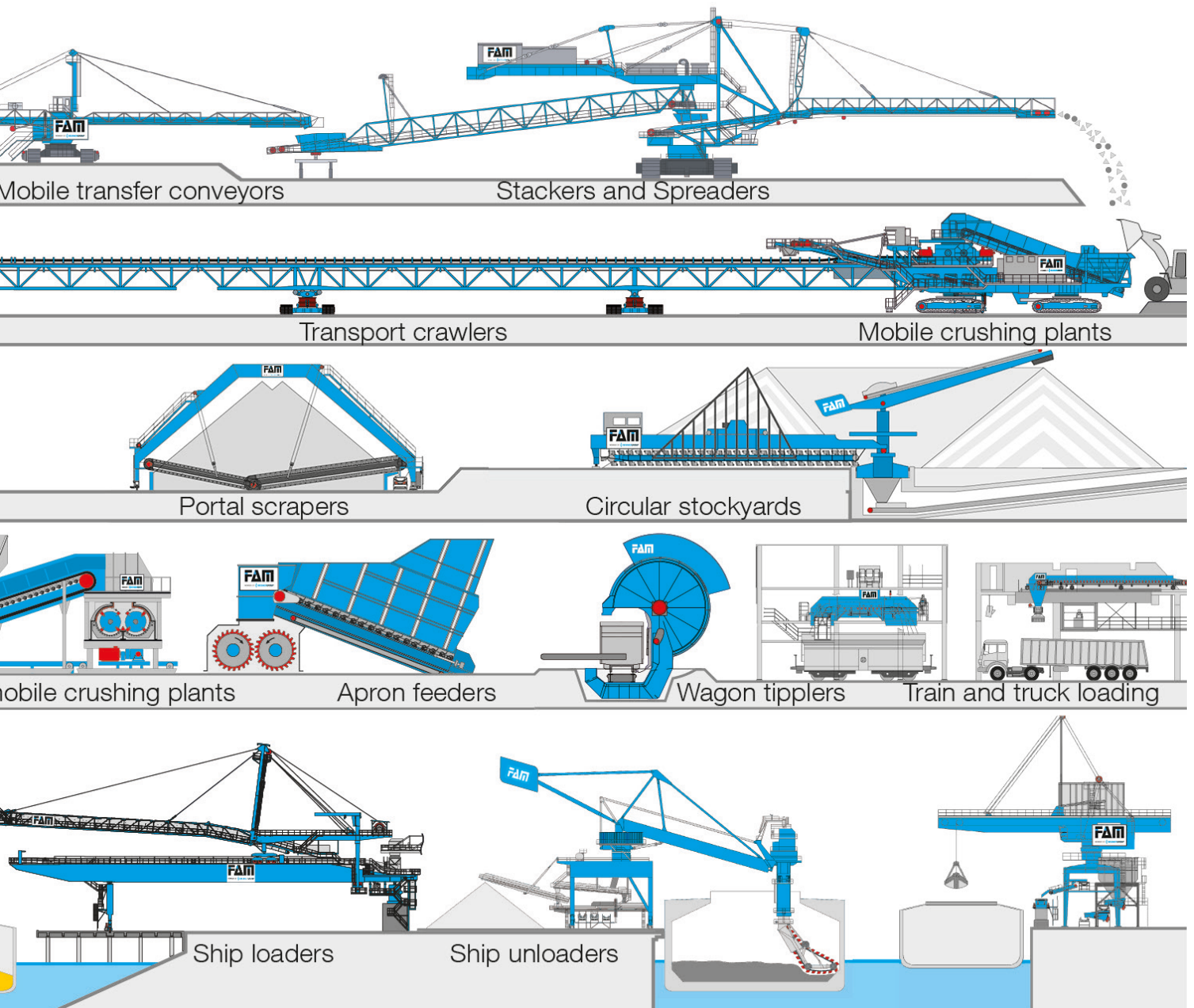


CONCEPTS AND SOLUTIONS FOR THE MINERALS & MINING INDUSTRY



FAM MINERALS & MINING - MEMBER OF BEUMER GROUP

FAM Minerals & Mining GmbH, as part of the BEUMER Group, is a globally active company headquartered in Germany with a long history as a manufacturer of conveying systems dating back to the 19th century. As one of the leading suppliers, FAM Minerals & Mining GmbH offers machines along the complete transport chain for bulk materials. From extraction, conveying, loading and storage to the processing of various raw materials, FAM Minerals & Mining GmbH offers efficient solutions for different industries. FAM as part of the BEUMER Group combines many years of know-how in series and individual production and offers high-quality engineering as well as extensive service.



SYSTEMS YOU CAN BUILD ON

Mined raw materials travel along extensive transport routes. Ores, raw salt feeds, waste rock and overburden pass through various steps from mine to mill (mining, material transfers, comminution, mineral processing, hydrometallurgy, filtration and tailings disposal). Our systems ensure smooth, economical and environmentally friendly processing at each stage of materials handling.

BEUMER GROUP – MADE DIFFERENT

A long-term perspective based on quality, sustainability and innovation: for over 80 years our privately-owned, family-run business has developed tailor-made system solutions for conveying, loading, palletizing and packaging technologies as well as sortation and distribution systems.

All systems fulfill the most demanding specifications, by using the best material and latest technology. With our research and development efforts we can guarantee that our solutions will fit your requirements now and in the future.

THE CORNERSTONE OF OUR PRODUCT RANGE IS TURNKEY SOLUTIONS FOR THE FOLLOWING AREAS:

- › Mining
- › Port Handling
- › Fertilizer Industry
- › Metallurgy
- › Power Plants
- › Building Materials Industry
- › Chemical Industry
- › Cement Industry

OPENCAST MINING TECHNOLOGY – MACHINES FOR GLOBAL MINING



OPENCAST MINING EQUIPMENT

- › Bucket Wheel Excavators
- › Belt Wagons
- › Spreaders
- › In-Pit Crushing Systems
- › Mass Distributors
- › Cable Reel Cars
- › Crawler-Mounted Conveyor Bridges

In the area of opencast mining technology, FAM offers an impressive selection of various machines and systems, such as bucket wheel reclaimers for extraction of mineral resources like lignite, hard coal, overburden, marl, etc.

Opencast mining is a mining technique of extracting minerals from the near-surface layer of earth, these raw materials can be then used for further processing, for example, in production of metals or building materials. Our product portfolio ranges from mining equipment (e.g., excavators) to crushers, belt conveyors and subsequent stacking technology.

LEARN MORE:





Bucket wheel excavator SR800P9, leached copper ore 9650 m³/h, 14500 t/h, Chile

BUCKET WHEEL EXCAVATORS

- ▶ FAM bucket wheel excavators are continuous mining machines for overburden, brown coal or hard coal, marl and other mineral resources, which can be extracted by means of specially designed buckets. Our machines are able to efficiently extract raw materials from deposits of different sizes.
- ▶ In most cases, conveying equipment is integrated into the excavating system to enable the transportation of the material obtained.



Transfer conveyor on crawlers BW1200.22/28R, bridging length 50 m, marl 2300 t/h, 1600 m³/h, USA

BELT WAGONS

- ▶ FAM designed belt wagons are standalone machines built on crawlers which serve to transport and discharge the overburden or minerals. In opencast mining these machines are very important links for continuous excavating, transporting and discharging activities especially when mining and dumping areas are spread apart over significant distances.
- ▶ The belt wagons help save on overall investments and operating costs which otherwise would be substantially higher due to the need to acquire larger main equipment.



In-pit crushing plant, overburden 5250 t/h, Uzbekistan

IN-PIT CRUSHING SYSTEMS

- ▶ FAM in-pit crushing plants are used to reduce the size of hard materials for their further transport by conveyors. The crushed overburden is delivered onto the belt conveyor of the crusher's discharge boom which transfers it further to the mobile conveyor bridge.



Spreader ST12100.60, overburden 12100 t/h, 8100 m³/h, Uzbekistan

CRAWLER-MOUNTED SPREADERS

- ▶ FAM spreaders mounted on crawlers are utilized in opencast mines for the last step in the continuous dumping process.
- ▶ The FAM assortment includes slewable spreaders mounted on crawlers in two-piece design with a spreading part and an intermediate conveyor, one-piece design with a feed bridge for conveying capacities of up to 20.000 m³/h and a direct disposal spreader with an oversized discharge boom of up to 196 m for direct tilting of the overburden.



Conveyor bridge on crawlers MSB3480.9TC with tripper car, copper sulfide 3500 t/h, Chile

CRAWLER-MOUNTED CONVEYOR BRIDGES

- ▶ FAM crawler-mounted conveyor bridges were specifically designed for a continuous dynamic operation to streamline the technological process of piling the ore, reclaiming leached stockpiles and creating new ore stockpiles space-efficiently and in a timely manner.

STOCKYARD TECHNOLOGY – EFFICIENT MACHINES FOR OPTIMAL STORAGE MANAGEMENT



STOCKYARD SYSTEMS

- › Stackers
- › Semi-Portal Scrapers
- › Portal Scrapers
- › Side Scrapers
- › Slewing Scrapers
- › Bridge-Type Reclaimers
- › Bucket Wheel Reclaimers
- › Stacker-Reclaimers
- › Circular Stacker-Reclaimers
- › Loading Systems
- › Conveying Systems
- › Individual Solutions

Storage and homogenization of various bulk materials is a significant part of the handling processes within the overall logistic networks of the bulk material processing industry. Dynamic and efficient handling requires the stockyards to be equipped with appropriate technology (e.g., stackers, reclaimers, conveyor systems, etc.).

Our product line of stockyard technology encompasses conveying systems, stackers and scrapers of various types, as well as bucket wheel machines.

LEARN MORE:





Stacker ST4000.29, bauxite 4000 t/h, Saudi Arabia

STACKERS

- › FAM stacking machines are primarily used to fill bulk materials into stockpiles or to create various types of blending beds serving for homogenization of materials with different properties.
- › In longitudinal stockyards the most common are rail-mounted mobile stackers. The discharge booms of these stackers are often slewable and/or can be raised and lowered.



Portal scraper KP550.45, sand 550 t/h, Belarus

PORTAL SCRAPER

- › The portal of an FAM portal scraper fully spans the stockpile. It rests on two opposite undercarriages, allowing stockpiles of up to 75 m wide to be spanned. The scraper boom is moved by a hoist. The bulk material is transferred to the discharge conveyor via a transfer trough (located outside the portal) or a feed table (inside the portal).
- › When used in outdoor stockyards, portal scrapers often have one or two main booms arranged in parallel. In their raised position, the booms extend beyond the contour of the portal.



Bridge-type reclaimer KB344.35, niobium ore 350 t/h, Brazil

BRIDGE-TYPE RECLAIMERS

- › FAM bridge-type reclaimers are exclusively employed in face reclamation. For face reclamation, mainly bridge-type machines with scraper chains or bucket wheels as reclaiming elements are used.
- › The supporting structure is formed by a bridge girder under which the scraper chain or bucket wheel is installed. Harrow-type carriages with harrow arms are mounted on the bridge structure, on either one or both sides. Their shape is adapted to the cross-section of the stockpile.



Stacker-reclaimer STR6000/8000.60, hard coal 8000 t/h, Australia

STACKER-RECLAIMERS & BUCKET WHEEL RECLAIMERS

- › The blending or pre-homogenization process within one storage facility is ensured by the combination of a specific type of stacking technology with a specific type of unloading technology.
- › Because the boom of our stacker-reclaimer unit can be swiveled and its inclination is adjustable, it provides without restriction numerous stockpile building variations (cone-shell, strata, chevron and windrow).

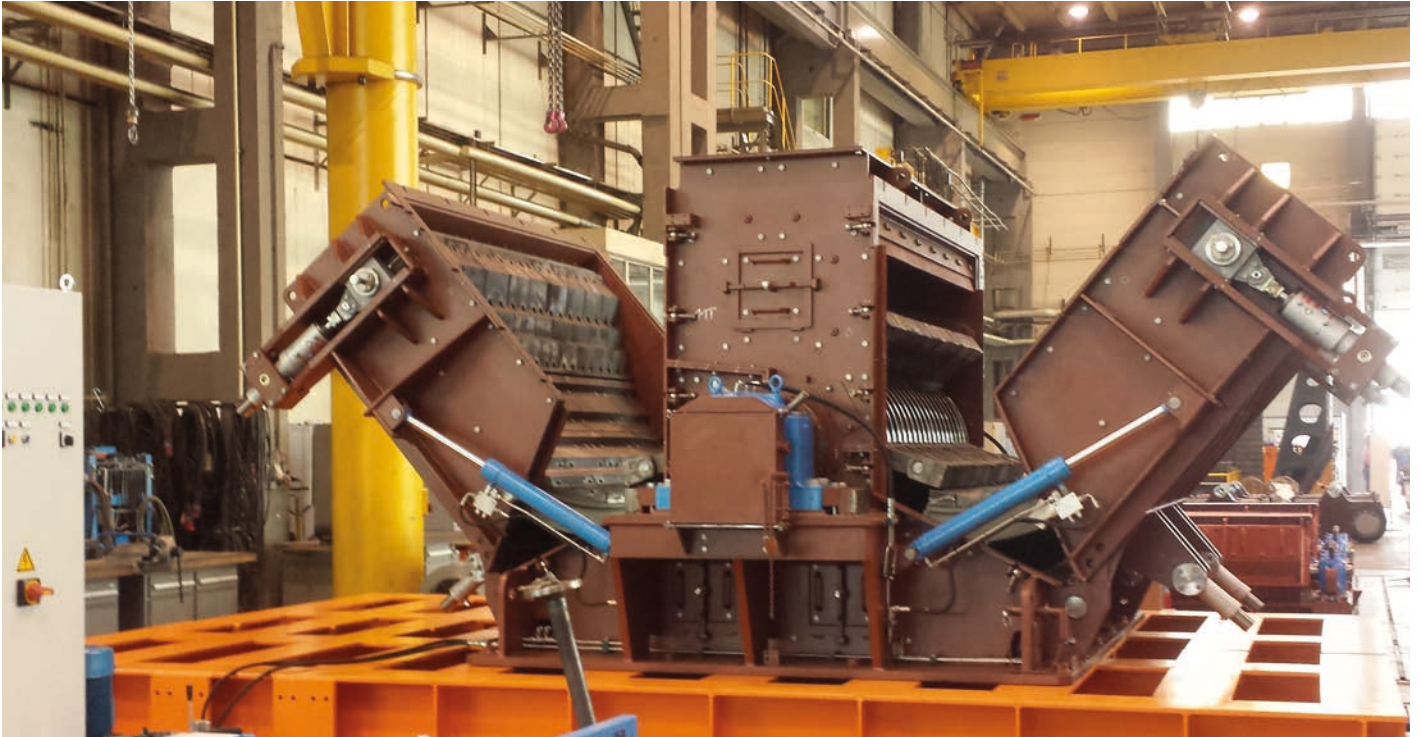


2x circular stacker-reclaimer CST2000/1000.125, coal 2000 t/h - 1000 t/h, Germany

CIRCULAR STACKER-RECLAIMERS

- › Due to their compact design, FAM circular stacker-reclaimers are well suited for the roofed storage of bulk materials. In contrast to longitudinal stockyards, the continuous process of simultaneous loading and unloading of a single circular building is possible without restrictions.

PROCESSING TECHNOLOGY – MACHINES FOR INDUSTRIAL MATERIAL PROCESSING



FAM CRUSHERS AND MILLS

- › Roller Mills
- › Reversible Hammer Mills
- › Special Hammer Mills
- › Single Roller Crushers
- › Double Roller Crushers
- › Double Roller Sizer
- › Double Rotor Hammer Crusher
- › Impact Hammer Crushers
- › Roller Screens
- › Apron Feeders
- › Feed Hoppers
- › In-Pit Crushing Systems
- › Mobile and Semimobile Crushing System

Our size reduction equipment includes diverse crushers and mills for extensive material processing in a variety of industries. Sand and gravel, clay and limestone, gypsum, building site rubble – the reference list of the BEUMER Group's materials is extensive. From a technical standpoint, the systems are always at the heart of production. The product portfolio includes various crushing & screening plants, including impact, hammer, single & double-roll crushers, plus many more crushers and mills. E.g. cement works rely on the BEUMER Group's solutions to move limestone over long distances from the quarry to the plant, making operations more sustainable and reducing the plant's ecological footprint. We strive to be a benchmark in providing you with high quality in every aspect of your individual needs for specialized equipment.

LEARN MORE:





Double roller crusher ZWB0815MS-H, burnt lime 130 t/h, Germany

CRUSHERS

- › FAM designed crushers are used for crushing minerals, raw materials and other bulk commodities. The types of crushing machines are distinguished by their working principles: by pressure, impact, hammer, or shear. In contrast to mills, crushers process the feed materials into grain sizes from coarse to medium granulation.
- › The FAM product range includes impact crushers, single, double and shear roller crushers, continuous roller crushers and hammer crushers.



Reversible Hammer Mills PHM1628MVD, coal 650 t/h, China

MILLS

- › FAM designed mills are used for comminution with a fine or ultra-fine target granulation. The types of mills are distinguished by their working principles: by pressure, impact, hammer, or shear. Mills could be equipped with a screen for grain size control and separation.
- › The FAM product range includes roller mills, hammer mills, reversible hammer mills and special hammer mills as well as appropriate roller screens.



Apron feeder AF3400x22 heavy-duty type, oil sand 7260 t/h, Canada

APRON FEEDERS

- › FAM designed apron feeders are generally used to remove material from under hoppers, which are typically built from steel or concrete and sit directly above the apron feeders.
- › The conveying part which carries the material consists of pan strands composed of individual pan links. The line of pans is pulled on two parallel chain strings which through deep hardening of the chain links and targeted heat treatment of the pins and bushings create an extremely break and wear resistant chain.



Roller screen RR2218, limestone 750 t/h, Kazakhstan

ROLLER SCREENS

- › FAM designed roller screens are sifting machines whose separation area consists of individual motorized shafts rotating in the same direction. The shafts are furnished with curved triangular or round discs which are mounted eccentrically.
- › The material movement pattern and the arrangement of the rolls ensure a gently rolling throughput of the product. Loamy, sticky adhesions to the coarse material are separated and screened together with the end product.



In-pit crushing system FZWB2025, on crawlers, overburden 5250 t/h, Uzbekistan

PORT TECHNOLOGY – INDIVIDUAL MACHINES FOR EACH PORT



PORT TECHNOLOGY

- › Shiploaders
- › Ship Unloaders
- › Continuous Ship Unloaders

The optimization process of the port logistics requires efficient loading systems which belong to the FAM competency.

Our product range encompasses continuous ship unloaders with bucket wheel elevators, stationary and mobile ship loaders, as well as versatile ship loading systems. In addition, we offer the port appropriate stockyard equipment to streamline bulk materials handling.

LEARN MORE:





Shiploader SL1200.31.D.H, mobile, loading with cascade chute, urea 1200 t/h, Turkmenistan

SHIPLOADERS

- › When selecting and designing a shiploader, the quality and properties of the bulk material, local conditions, performance parameters and environmental requirements play a decisive role. That's why FAM has developed a variety of different loading systems.
- › stationary shiploaders
- › mobile shiploaders mounted on rails
- › quadrant radial-type shiploaders
- › shiploaders with gravity spiral chute for loading bagged goods.



Ship unloader GUL1000.13KG, mobile, hard coal 1000 t/h, Germany

SHIP UNLOADERS

- › For bulk materials unloading, two types of handling systems are basically deployed: continuous and discontinuous.
- › Grab-type unloaders with a movable superstructure and a single-link or double-link luffing boom.
- › When high handling capacities are required, grab-type unloaders with rail-mounted portal bridge show the best performance.



2x conti ship unloader CSU1300.21S, mobile, Shard coal 1300 t/h, Germany

CONTINUOUS SHIP UNLOADING SYSTEMS

- › Ship unloaders with bucket elevators are significantly more efficient and flexible in the emptying of a ship's hold than grab-type unloaders.
- › The continuous mode of operation helps reduce the environmental footprint. It allows for dust-free and low-noise operation and it is at the same time very gentle on the material handled, including the residuals cleaning in the vessel holds.



Shiploader SL990.24, mobile, urea 990 t/h, Nigeria

CONVEYING SYSTEMS – FROM MINING TO PRODUCT SHIPPING



FAM CONVEYING SYSTEMS

- › Belt Conveyors
- › Chain Conveyors
- › Drive Stations
- › Shifting Heads
- › Tripper Cars
- › Feeding Hoppers
- › Hopper Cars
- › Components

LEARN MORE:



It is impossible to imagine vast areas of production without continuous conveying. Our continuous conveyors in various designs and configurations link individual components of one plant into a highly functional and efficient entity.

Decades of experience, extensive know-how in calculating and designing, as well as in-house belt pulley manufacturing allow us to offer high quality solutions for safe and optimal operation.

CONVEYING TECHNOLOGY SOLUTIONS:

- › Stationary
- › Shiftable
- › Mobile on crawlers
- › Mobile on tracks
- › Semi-mobile on skids
- › Reversible
- › Slewing
- › Lifiable and lowerable
- › Telescopic
- › Curve negotiable
- › With flat belt
- › With troughed belt
- › With closed belt
- › Belt conveyors for short and medium-range distances
- › Mobile and shiftable belt conveyors
- › Hoppers and discharge conveyors
- › Stockyard and stacker conveyors
- › Customized comprehensive solutions for bulk material (material reception, transport, transfer and trans-shipment)

LOADING & UNLOADING SYSTEMS – SOLUTIONS FOR THE BULK HANDLING



Wagon unloading WUL9.200, dedusting, petrol coke 200 t/h, Romania

LOADING AND UNLOADING SYSTEMS

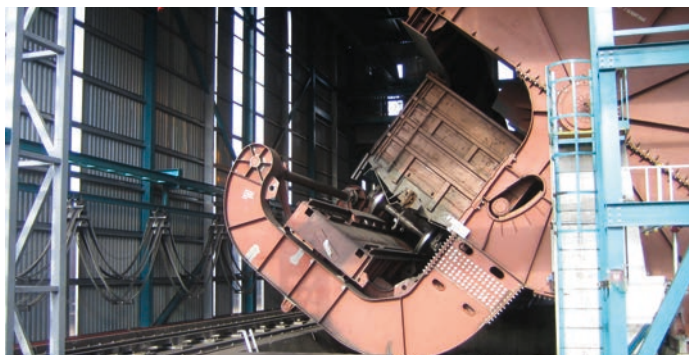
- › Truck Loading
- › Train Loading
- › Wagon Unloading
- › Wagon Defrosting



Train loading, lignite 400 - 7500 t/h, Germany

TRAIN LOADING

- › FAM automatic train loading systems enable continuous loading of railroad wagons. Before the train arrives at the loading station, it passes through an empty train registration system, which verifies the fill level using a scanner. Wagons that are already loaded get automatically blocked and excluded from the loading process. During loading, the fill level is monitored by ultrasonic sensors. When the desired fill level is reached, the knife gate of the hopper outlet opening automatically closes.

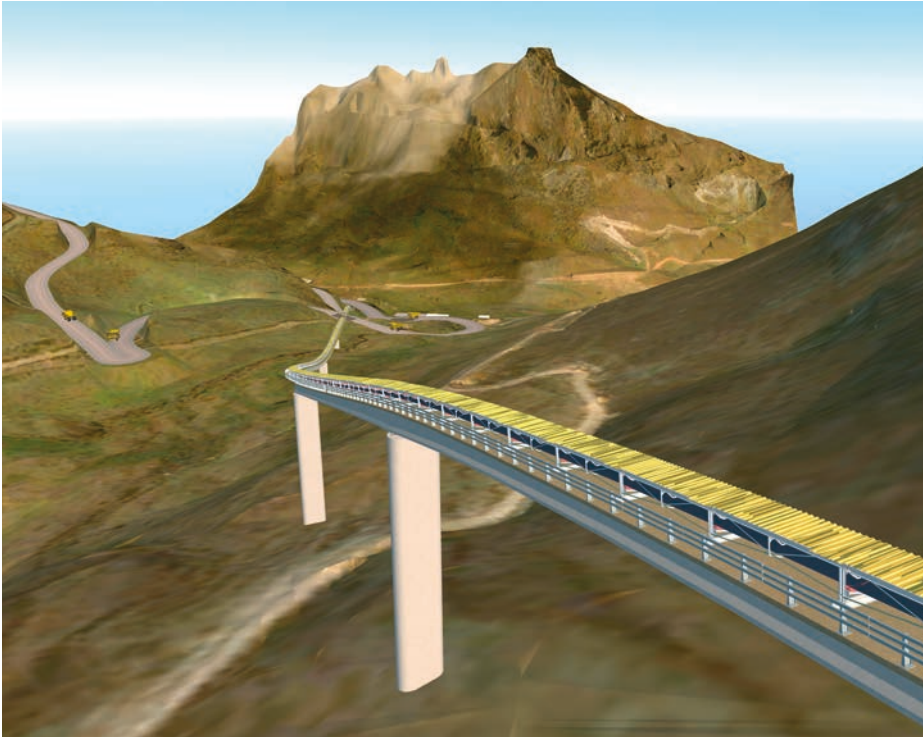


Wagon unloading WUL25.1700, fully automatic, dedusting, hard coal 1700 t/h, 24 wagons/h, Latvia

WAGON UNLOADING

- › FAM designed wagon tippler stations unload the entire wagons either by tipping or rotary (flipping) mechanism until the material is discharged by gravity through the wagon loading bay opening. The tipping system can either be accomplished using front tipplers or side tipplers; however, side tipplers are more popular because of a much higher unloading efficiency. Especially the high-performance wagon side tipplers with a hydraulic or electro-mechanic drive are capable of discharging at a speed of up to 60 wagons per hour.

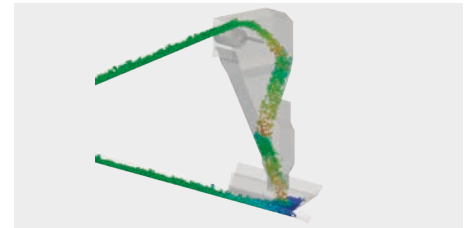
WE ARE YOUR PARTNER – FROM PLANNING TO OPERATION



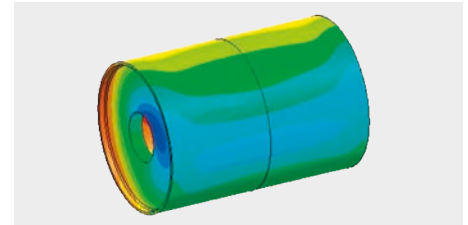
3D planning and animation



3D Drone Mapping



DEM



FEM

We will move mountains together. Depending on your requirements, we can partner with you during the entire life cycle of your systems, starting from day one of your project, with feasibility studies and 3D planning. Minimal data input is sufficient to achieve extensive 3D visualization during the early design phase. As soon as detailed results are required, we will consider the exact parameters for your project.

WE CREATE THE BIG PICTURE

- › 3D planning and animation using state-of-the-art software
- › Quick design changes
- › Support during approval processes
- › Quick determination of cut and fill volumes
- › Minimal data input necessary

ALWAYS UP TO DATA (3D DRONE MAPPING)

- › Topography & concept from one single source
- › Easy capturing of the actual environment and potential obstacles
- › Safe surveying method (no need to be physically present in the area)
- › Time-saving and precise planning based on up-to-date topography
- › Reduces project lead time

CONNECTED SYSTEMS (IOT/BIG DATA)

- › Interactive monthly reports to visualize the system performance, KPIs and scheduled service intervals
- › Notification features to receive failure messages, service intervals reminders and status updates
- › Continuous data analysis to optimize the entire system

DOWN TO THE LAST DETAIL:

We leave nothing to chance. We use proven methods like DEM and FEM in order to guarantee minimal failure rates and long durability of our machines, ensuring compliance with the highest quality standards.

SIMPLY WORLD-CLASS CUSTOMER SUPPORT



CUSTOMER CARE

Our customer care programme enables 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.



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.



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.



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.



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.



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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that serve technical progress.



Products and technologies with the BEUMER label „made different“ are characterized by enhanced sustainability. It is based on their economic, ecological and social performance evaluated by the BEUMER Sustainability Index (BSI).