



## TAKRAF CAPABILITY STATEMENT



**Mining Systems  
& Equipment**



**Bulk Material  
Handling**



**Minerals  
Processing**



**Services &  
Components**

## MINING SYSTEMS & EQUIPMENT

From efficient and reliable single machines to complex integrated mining systems, we boast a wide range of mining equipment able to cater to your specific requirements. Mining companies around the world rely on the efficiency and reliability of our machines for their excavating, crushing, conveying and dumping needs.

- Mining systems
- Bucket-wheel excavators
- Crushing plants (fully mobile, semi-mobile and fixed)
- In-Pit Crushing & Conveying (IPCC) systems
- Belt conveyors (all types, incl. bench, shiftable and mobile transfer conveyors)
- Conveyor shifting heads
- Apron feeders
- Belt feeders
- Cross-pit conveyor bridges, mobile conveyor bridges and mobile transfer conveyors
- Spreaders (all types)
- Transport crawlers
- Various auxiliary equipment

## BULK MATERIAL HANDLING

We are internationally recognized as a leading provider of innovative material handling solutions ranging from individual machines to complete handling systems across a variety of industries, ranging from mining, minerals and fertilizer, to iron & steel, power, petrochemical, paper & pulp and port terminal industries.

- Stackers (all variants of linear, slewing and luffing types)
- Radial stackers
- Bridge bucket-wheel reclaimers
- Bridge scraper reclaimers (linear and circular)
- Portal scraper reclaimers (linear and circular)
- Semi portal scraper reclaimers (linear and circular)
- Single arm portal scraper reclaimers (linear and circular)
- Combined stacker/reclaimers
- Belt conveyors (all types, including in-plant, stockyard and overland conveyors) – with or without advanced gearless drive technology
- Tube (pipe) conveyors
- Ship or barge loaders
- Ship or barge un-loaders
- Wagon and truck loading
- Wagon unloading (bottom dump and tippers)
- Mobile stacking bridges
- Continuous heap leach systems
- Various ancillary handling equipment (feeders, chutes and galleries, etc.)

## MINERALS PROCESSING

Together with our comminution expertise, we leverage our integrated product brand, globally respected liquid/solid separation and wet processing specialists, DELKOR, to offer a comprehensive minerals processing portfolio.

- Comminution (standard or X-TREME class sizers, roll crushers and High Pressure Grinding Rolls (HPGR))
- DELKOR BQR flotation cells (conventional trough, round tank and unit (flash))
- DELKOR thickeners (conventional, high rate and paste – together with mechanisms)
- DELKOR clarifiers (conventional and pinned bed)
- DELKOR horizontal vacuum belt filters
- DELKOR FP filter presses (overhead beam, sidebar and proprietary DELKOR FAST FP)
- DELKOR belt linear screens (trash, carbon recovery and carbon safety)
- Interstage screens
- Gravity concentration (DELKOR jigs and gravity sand filters)
- Dry Stack Tailings (DST) systems – from individual machines to complete systems that are based on your specific dewatering and handling requirements

## SERVICES & COMPONENTS

We provide a full range of services and support, including: project development, feasibility studies, planning, engineering & design, fabrication & component supply, supervision & commissioning, spare parts & aftermarket, inspection & maintenance, wear parts management and inspection; as well as debottlenecking, refurbishments and relocation assistance for all plants, systems and equipment covering various manufacturers.

- Spare parts and warehousing
- Site service and inspections (routine maintenance, replacements, refurbishments and enhancements)
- Advisory services (desktop, scoping and feasibility)
- Accessing our global expert TAKRAF Mining & Technology Center (TMTC) team for continuous mining, IPCC and DST studies
- Engineering, machine enhancements, refurbishment and debottlenecking studies
- Structural integrity and gap analysis studies: AS4324.1 2017
- Construction, commissioning and training services
- Material testing and simulation
- Large customized gearboxes (particularly bucket-wheel reclaimers and excavators)
- Large engineered pulleys
- Plant and equipment relocation services (engineering through to execution)
- HPGR services (incl. roll refurbishments)
- Various fabrication (incl. gear rims, slew or pivot bearings and winches, etc.)

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## MINING SYSTEMS & EQUIPMENT

A selection of some of the solutions we offer:



### MINING SYSTEMS – complete mining solutions!

Leveraging our TAKRAF Mining & Technology Center (TMTC) expert team, together with our individual product and system experts, we can provide support from pre-feasibility mine studies, to actual machines and integrated systems.



### BUCKET-WHEEL EXCAVATORS (BWEs)

Our BWEs can be employed across a wide variety of commodities covering a wide-range of capacities, up to 20,000 m<sup>3</sup>/h, with working bench heights varying from less than 5 m to approximately 50 m.



### CRUSHING PLANTS

We design and supply specialized crushing plants catering to your specific throughput and crushing requirements covering fully mobile, semi-mobile and fixed machines. All forms of crushers can also be included – ranging from one of our proprietary machines or from an external supplier.



### IN-PIT CRUSHING & CONVEYING (IPCC) SYSTEMS

Leveraging our significant global experience in crushing plants and material handling, we boast the ability to design and deliver an IPCC solution that cuts truck haulage to a minimum and reduces your opex whilst also providing other environmental and safety benefits.



### BELT CONVEYORS (all types, incl. shiftable and shifting heads)

Our belt conveyor solutions continuously transport all material types, including excavated crushed rock and can include advanced gearless drive technology. Our significant experience in this area is a critical success factor to projects large or small.



### APRON FEEDERS

Our apron feeders are designed to cater to specific requirements determined by material, capacity and geometry. Our apron feeders are installed below dump hoppers of crushing stations and can handle conveying inclinations of up to 28 degrees.



### SPREADERS (all types)

We design and supply spreaders based on specific operational requirements that we work together with you to define. Our solutions range from compact machines to large machines with long discharge booms for high and safe dumps up to 20,000 m<sup>3</sup>/h.



### TRANSPORT CRAWLERS & VARIOUS AUXILIARY EQUIPMENT

Our transport crawlers are the heavy lifters of the industry and are designed for the movement of heavy and/or oversize mining or processing plant equipment. We are also able to support you with various auxiliary equipment matching your specific requirements.

## **BULK MATERIAL HANDLING**

**A selection of some of the solutions we offer:**

### **STACKERS**

We supply a complete range of machines for the heaping of circular or longitudinal piles, as well as for homogenizing and blending. All configurations available including fixed, radial and fully mobile long-travel options, with the option to include slewing and/or luffing as required.



### **RADIAL STACKERS**

We design, fabricate and supply a complete range of radial stackers including standard design tyre-mounted machines, as well as high throughput rail-mounted machines. Capacities range anywhere from 300 to +10,000 t/h.



### **RECLAIMERS**

A variety of different machine types can be employed to reclaim stacked material from stockpiles. Typical machines include bridge and boom-type bucket-wheel machines, drum reclaimers, scraper reclaimers and circular stacker/reclaimers. Capacities range anywhere from 300 to +20,000 t/h.



### **SCRAPER RECLAIMERS**

Scrapers are a proven, reliable and cost effective solution for numerous bulk materials and we boast a range of machine configurations specifically designed to your specific requirements, including portal, semi-portal and bridge scraper reclaimer types.



### **COMBINED STACKER/RECLAIMERS**

Primarily employed where medium or large material flows are to be stacked and then later reclaimed by the same machine. Our machines are all specifically designed to our client's requirements including all forms of circular stacker/reclaimer systems and through-loading options.



### **CONVEYORS**

We design, fabricate and supply a wide range of conveyors. From light in-plant conveyors to large shiftable, semi-fixed and fixed belt conveyors and tube conveyors, with or without advanced gearless drive technology. Capacities range anywhere from 100 to +20,000 t/h.



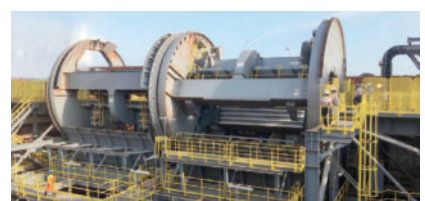
### **SHIP OR BARGE LOADERS & UNLOADERS**

Our ship loading and unloading systems can be employed across a wide variety of applications as well as catering to a range of vessel sizes from small barge trans-shipment operations up to the largest Capesize vessels.



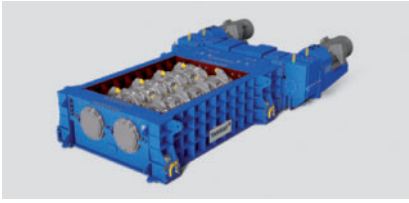
### **WAGON UNLOADING**

Our wagon unloading system and equipment cater to our clients' requirements and incorporate various solutions according to their specific application, including actual site conditions and the minimizing of environmental impact.



## MINERALS PROCESSING

A selection of some of the solutions we offer:



### SIZERS

We offer standardized primary, secondary and X-TREME class sizers for various crushing applications, as well as unique machines that cater to specific client requirements. We are now able to integrate our proprietary machines into our complete mining and crushing plant solutions in instances where it provides the best outcome for our clients.



### HIGH PRESSURE GRINDING ROLLS (HPGRs)

HPGRs are modern and efficient comminution machines, which are becoming increasingly popular in minerals processing. The main motivation to use HPGR's is to save energy and production costs and our TAKRAF HPGR is a benchmark in comminution technology.



### DELKOR BQR FLOTATION CELLS

DELKOR BQR flotation cells achieve optimum operation through purpose-designed levels of solids suspension, air rate adjustment, easy froth-cone positioning and a stable pulp-froth interface. Our DELKOR BQR flotation cells range in size from 0.5 m<sup>3</sup> to 150 m<sup>3</sup>.



### SEDIMENTATION: DELKOR THICKENERS & CLARIFIERS

DELKOR can offer everything from a simple feedwell upgrade on an existing thickener through to a full turnkey supply of the design, fabrication and supervision of installation of a 60 m high density thickener.



### FILTRATION: HORIZONTAL BELT FILTERS & FILTER PRESSES

Our DELKOR horizontal vacuum belt filters and our DELKOR filter presses (overhead beam, side bar and FAST (proprietary technology)) are suitable for dewatering a wide range of commodities. We boast the right machine that is best suited to your specific dewatering application.



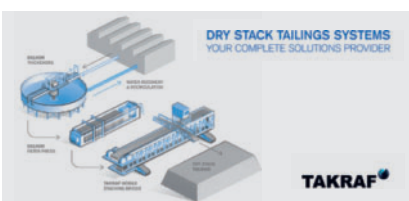
### DELKOR BELT LINEAR SCREENS

Our DELKOR belt linear screens were developed in order to resolve a major problem in the CIP/CIL process – the effective removal of waste material from slurries. Our units are capable of screening between 150 and 2,000 microns and are widely accepted for the removal of tramp from fines or slurries.



### LEACH PAD SYSTEMS

TAKRAF references in numerous industrial stacking & reclaiming leach pad systems within the mining process to extract precious metals such as copper, uranium, and other ore compounds.



### DRY STACK TAILINGS (DST) & WASTE HANDLING SYSTEMS

We are able to provide bespoke DST solutions that consider all factors, including residual water content in dewatered tailings on total system capex and opex. Our solutions include all material handling options from portable grasshopper systems to conveyors, mobile trippers and stacking bridges to spreaders from 300 to +10,000 t/h.

## SERVICES & COMPONENTS

A selection of some of the solutions we offer:

### SPARE, WEAR & CRITICAL PARTS

We provide the full range of recommended spare and wear parts packages – critical spare parts packages and engineered spare parts solutions such as crawlers, customized gearboxes, engineered pulleys, gear rims, slew bearings, pivot bearings and winches.

### MAINTENANCE, INSPECTION & TECHNICAL ASSISTANCE

Engineering, maintenance and structural inspections and services. We provide all necessary engineering and site assistance for troubleshooting and/or major repairs; as well as offering specialized technical assistance and maintenance for critical machines.

### PROJECT STUDIES

Desktop, scoping and feasibility studies, continuous mining, dozer push and IPCC (fully or semi mobile) studies, Dry Stack Tailings (DST), engineering, structural inspections, GAP analysis AS4324.1-2017, expansions, enhancements, refurbishments and debottlenecking.

### EQUIPMENT SELECTION

Our TMTC study group ensures you select the optimal equipment(s) for your project. Capex and opex direct from the OEM including mining economics, pit design, equipment & maintenance calculations, LOM plans & 3D modeling, strip ratio & overburden analysis, material testing and simulation – rock strength, geotechnical, bulk density bearing pressure, fragmentation, abrasiveness, flowability & moisture behavior.

### REFURBISHMENT, UPGRADING & DE-BOTTLENECKING

Consulting on carefully targeted refurbishment and enhancement projects as an alternative to the purchase of new equipment. Services include: engineering and refurbishment, expansion and refurbishment of existing facilities, machine upgrades, enhancements and overhauls, automation, condition monitoring and remote surveillance.

### CONSTRUCTION, ERECTION & DECONSTRUCTION

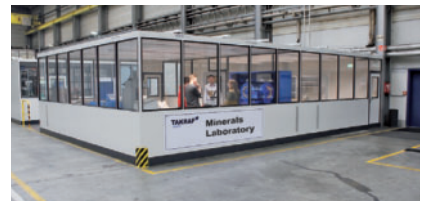
We provide a wide range of services to manage and support installation and commissioning and machine deconstruction projects. Our installation experts boast significant global experience from harsh site and environmental conditions around the world.

### MATERIAL TESTING & SIMULATION

Our Research and Development (R&D) in the field of rock material-equipment-interaction is, by tradition, an integral part of our ongoing development processes. In so doing, we ensure that equipment design and layout also reflects the specific requirements of the rock material.

### CUSTOMIZED PARTS & SERVICING

Customized gearboxes and servicing: regular inspections, reliable spare parts supply, on-site repair support, as well as reconditioning. HPGR services: supply of customized spare rolls, as well as the refurbishment of worn-out rolls. Engineered pulleys (conventional and gearless drives) take-up devices and maintenance carts for conveyor maintenance in tunnels.



TAKRAF Group, through its established and well-known brands, TAKRAF and DELKOR, provides innovative technological solutions to the mining and associated industries. We leverage our experience, acquired over more than a century, to provide equipment, systems and services that best satisfy our clients' mining, comminution, material handling, liquid/solid separation and beneficiation requirements. Owners and operators around the world trust our engineered solutions to lower the total cost of ownership and reduce environmental impact by improving efficiency with safe and reliable equipment. For sustainable solutions backed by expert service you can rely on TAKRAF Group. Visit us at [www.takraf.com](http://www.takraf.com).

## TAKRAF GROUP - WORLDWIDE PRESENCE

**TAKRAF** provides comprehensive client support services all over the world. Moreover we are able to propose customized maintenance solutions such as spare part supply and stock management and/or maintenance contracts.



### Certification

TAKRAF prides itself upon ensuring that its offices are certified and comply with all local requirements. In many instances our offices also comply with:

- Occupational Health & Safety Management System: OHSAS 18001:2007
- Environmental Management Systems: ISO 14001:2015
- Quality Management System: ISO 9001:2015

### Contacts

Please view the contacts page of our website: [www.takraf.com](http://www.takraf.com) for a view of your local office, alternatively please contact our headoffice in Germany for assistance:

#### TAKRAF GmbH

Torgauer Strasse 336

04347 Leipzig - Germany

T: +49 (0)341 2423 500

[info@takraf.com](mailto:info@takraf.com), [www.takraf.com](http://www.takraf.com)