

TAKRAF 



THE COMPLETE DRY STACK TAILINGS SYSTEM

For sustainable safety and environmental practices

Innovation out of tradition – It pays to talk to a specialist!

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.

We at TAKRAF Group are committed to environmental and social sustainability in all our business interactions and have adopted a Zero Harm approach under our global safety promise.

Owners and operators around the world are confident that TAKRAF Group provides the most suitable solution to their unique project requirements. We assist our clients in overcoming the most complicated challenges in transforming the resource industry towards a sustainable future. We focus on specific areas that are critical for reliable and sustainable operations, as it is here where we best support our clients with innovative solutions that save energy, lower environmental impact and meet or exceed operational requirements.

We are recognized as the world's leading technology provider when it comes to run-of-mine and bulk material handling. Our TAKRAF brand portfolio ranges from overburden removal, to raw material extraction, comminution, conveying, loading/unloading, processing, homogenizing, blending, storage and final loading for onward shipment.

We leverage our global organization and aggregate our extensive expertise by offering a unique combination of both application experience and product based knowledge. Clients therefore benefit from direct technical discussions with our local specialists, who are able to draw upon this expertise and provide the most suitable local solution and service that enhances safety, improves sustainability, decreases costs and increases efficiency.

Our commitment is summarized by:

Safety | Reliability | Innovation | Sustainability



OUR APPROACH IN DRY STACK TAILINGS (DST) SYSTEMS

We strongly believe in a “systems” approach to the application of Dry Stack Tailings (DST) for tailings management. The design of a DST circuit is complex and requires a thorough understanding of all the unit processes involved. We, at TAKRAF and DELKOR, refer to our approach as “The Complete Dry Stack Tailings System” rather than the supply of individual units of equipment. The combination of the internationally recognized expertise of TAKRAF and DELKOR together makes us one of the very few global suppliers that are able to engineer and supply “The Complete DST System.” We believe that this single point of contact is a key criterion for the successful engineering, supply and construction of DST projects.

For DST, **“The Complete System is definitely greater than the sum of its parts.”**

The Complete DST System is generally comprised of the following five components:

- Thickening
- Filtration
- Transportation
- Stacking
- Geotechnical design of the stack (by other specialized entities)

Our iterative approach to DST design considerations, including residual moisture content in dewatered tailings, results in an optimized DST solution. Our solutions also incorporate both CAPEX and OPEX criteria, which meet our client’s specific project requirements. Our DST team of experts is also able to provide recommendations early on in the form of studies.

TAKRAF and DELKOR equipment comprising “The Complete Dry Stack Tailings (DST) System”

We provide a variety of solutions ranging from single equipment pieces to integrated systems and complete turnkey projects for the whole tailings process, including:

Sedimentation

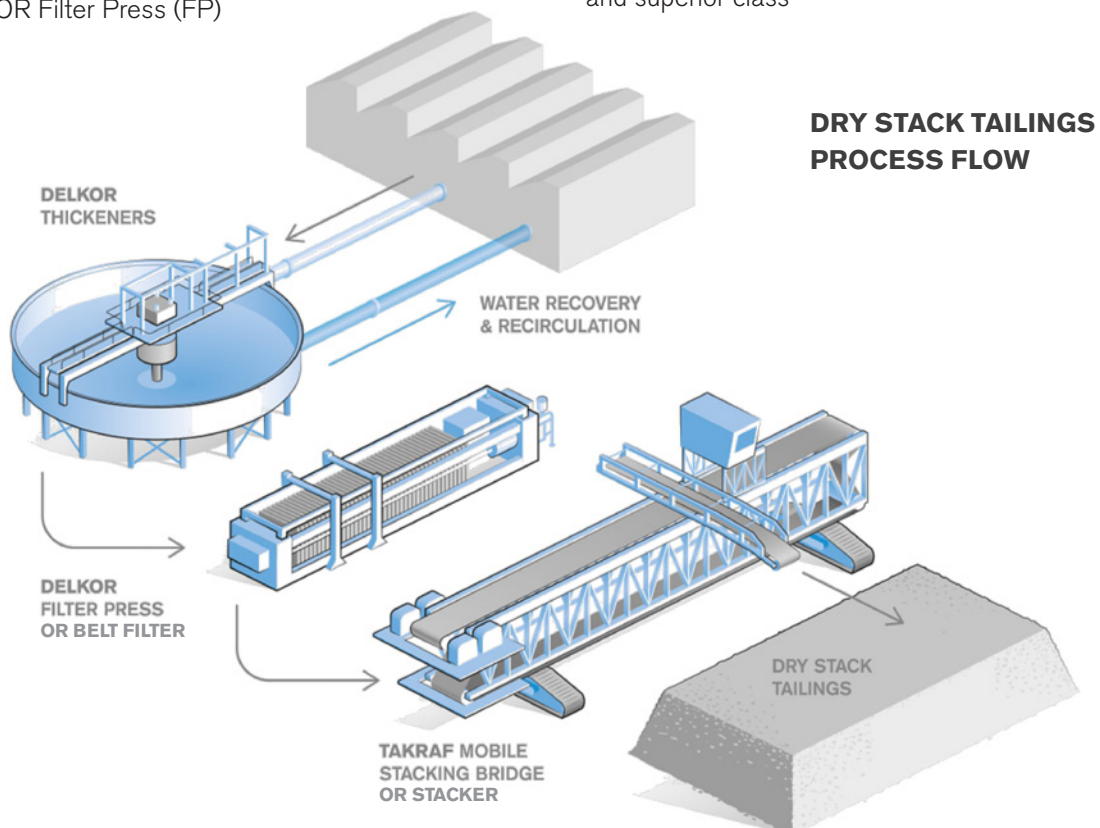
- DELKOR thickeners - conventional, high rate, high density or paste

Filtration

- DELKOR Horizontal Belt Filters (HBF)
- DELKOR Filter Press (FP)

Material handling

- TAKRAF conveyors – plant, overland and shiftable
- TAKRAF mobile trippers
- TAKRAF mobile stacking bridges
- TAKRAF spreaders – single boom, compact class and superior class



THICKENING

DELKOR takes its knowledge and experience of over 30 years providing thickeners for the mining industry, and applies it to the extreme mechanical and process requirements needed when dealing with high yield stress underflows. Thickening using DELKOR high compaction thickeners produces one of the highest concentration of solids in the industry. The DELKOR proprietary shear thinning system is designed to reduce the yield stress of the underflow slurry to improve pumpability; thus lowering the energy consumption and wear on the slurry pumps.



FILTRATION

DELKOR's innovative filter press technology allows for shorter cycle times, higher throughput, availability and safety. This therefore renders the technology perfectly suitable for high capacity and heavy-duty applications such as concentrate and tailings dewatering for DST applications. Depending on the application and the filtration time, the most suitable DELKOR filter press technology (DELKOR overhead filter press (FP OH) or DELKOR sidebar filter press (FP SB)) is proposed.

A DELKOR FP SB filter press consists of a fabricated sidebar frame supporting a moving head and filter plates positioned between the head frame and moving head. The opening and closing cycles of the plate pack are carried out by a double-acting hydraulic cylinder, which is controlled by a hydraulic power unit.

A DELKOR FP OH filter press consists of a fabricated overhead frame supporting a moving head and filter plates positioned between the head frame and the moving head. Opening and closing of the plate pack is carried out by a dual-acting hydraulic cylinder controlled by a dedicated hydraulic power unit.

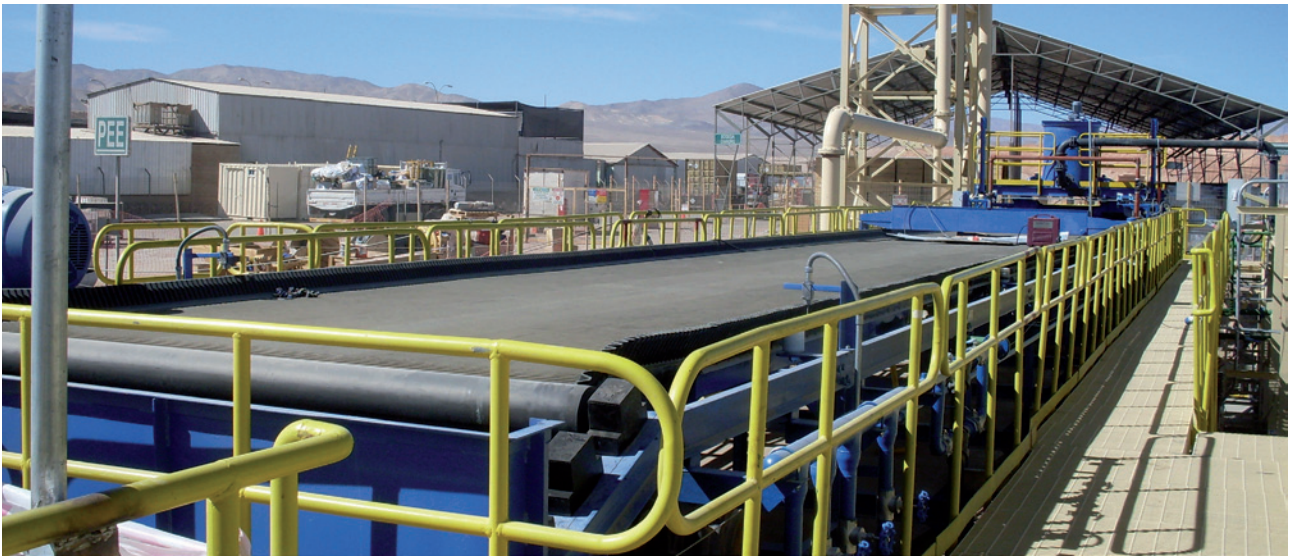


HORIZONTAL VACUUM BELT FILTERS

DELKOR horizontal vacuum belt filters are a possible alternative to filter presses for generating cake in a continuous operation.

DELKOR horizontal vacuum belt filters make use of most modern design capabilities and materials of construction to make it an efficient, reliable and cost effective solid/liquid separation unit able to withstand operating under the most arduous conditions. DELKOR's continuous improvement approach has enabled us to simplify design for easy operation, yet all the wearing parts remain easily accessible for routine maintenance purposes.

Over the last 40 years, DELKOR has led the way in innovation and implementation of world class technology and remains the supplier of the world's largest individual machine. More than 950 units have been supplied worldwide for wide range of applications exceeding total filtration area of 37,500 m². Improved design and wealth of experience has helped achieve on-line reliability in excess of 99.8 % in many plants.



MOBILE STACKING BRIDGE SYSTEMS AND SPREADERS

TAKRAF's mobile conveyor stacking bridge systems provide an efficient, reliable and easy to operate bulk material handling solution for transporting and storing filtered tailings. This method maximizes throughput to maintain plant uptime. By stacking compacted tailings, land requirements are reduced and the risk of catastrophic dam failures are minimized. Conventional tailings storage methods incur costs post-mine closeout due to maintenance; however, dry stack tailings can be rehabilitated concurrently with the mine and plant operations.



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