BOKELA

TAILINGS

Unifying environmental sustainability and cost-efficiency

Jürgen Hahn, Senior Manager Product and Business Development

WHITEPAPER

Safety hazards, environmental risks and huge fresh water consumption are among the main issues discussed with regard to tailings. Most if not all of these problems could be solved, if tailings were dry stacked and most of the water was recycled back into the process. Sounds utopic? We make it a reality.

TAILINGS – UNIFYING ENVIRONMENTAL SUSTAINABILITY AND COST-EFFICIENCY

Many experts consider filtration with filter presses to be the solution when it comes to enabling dry stacking. From a process perspective, there is nothing wrong with this answer. However, the CAPEX and OPEX of filter presses are the highest compared to most other options. For the South American mega tailings projects with capacities of up to 200 000 t/d and more, the capital expenditure for filter presses exceeds the margin of 1 billion US$.

They key to more efficiency therefore lies in the filtration equipment: Switching from filter presses to high performance vacuum disc filters can reduce capital costs to less than a third and equally achieves the moisture required for dry stacking.

Modern vacuum disc filters, so called „high performance vacuum disc filters", are designed for maximum solids throughput and run with much higher slurry levels (up to 50 percent) in the trough compared to standard vacuum disc filters. This means that half of the filtration area is used for cake formation and the other half for cake drying while standard vacuum disc filters use only a quarter of the area for cake formation.

Furthermore, these modern filters have been designed to minimize pressure losses. While standard vacuum disc filters get about half of the vacuum (-30 kPa to -45 kPa) at the filter cake compared with the -80 kPa provided by the vacuum pump, high performance vacuum disc filters still get about 90 percent of the vacuum (-65 kPa to -75 kPa) at the filter cake.

In addition, the maximum solids throughput of the high performance vacuum disc filter design is up to 305 percent compared to the 100 percent of a standard vacuum disc filter design. In other words, a project needs only a third of the filtration area if high performance vacuum disc filters are used instead of standard vacuum disc filters.

Our high performance vacuum disc filters are available with sizes up to 352 m² filtration area. Considering the moisture improvements and solids throughput increase, they are a serious challenge to the current standard which is filter presses with regard to the efficient and sustainable filtration of tailings.

Main benefits:

- lowest capital cost of all filtration solutions
  sustainable use of water through recovery and recirculation
- safe and environmentally friendly stacking of dewatered tailings
- low energy consumption
- reducing the amount of binder
- low use of filter aids
- low operating costs
- small footprint

BOKELA
THE FILTRATION PEOPLE

BOKELA GmbH | Tullastr. 64 | 76131 Karlsruhe | Germany | bokela.com