ALTA 2022 26
20-27 May | Perth, Australia | Online

# PLANT DESIGN CONSIDERATIONS FOR LARGE-SCALE FILTRATION AND DRY STACKING OF COPPER TAILINGS

By

[1]Andrew Hawkey and [2]Davide Cavalli,

[1]Diemme Filtration (Aqseptence Group), Australia
[2]Diemme Filtration (Aqseptence Group), Italy

Presenter and Corresponding Author

Andrew Hawkey

## ABSTRACT

Copper mine tailings, particularly in Peru and Chile, are produced in quantities unrivalled in any other mining sector. Dry stacking has become the preferred tailings storage method and pressure filtration is the only practical technology available that reaches the low moisture content demanded by the geotechnical engineers designing the storage facilities, especially at the high altitudes where many of the copper mines in Chile and Peru are situated.

A paper presented at ALTA 2020 focused on a new filter press designed by Diemme Filtration to cater to this vast scale of mineral tailings dewatering (the GHT5000) with filter plate dimensions much larger than anything produced previously. In particular, the paper highlighted the savings in capital expenditure by using this new filter press design instead of the (already very large) units currently installed in tailings dewatering plants. For a given throughput, using the new design, the number of filter trains can be reduced by around two thirds and that results in a significantly smaller filter building footprint.

As an expansion of that topic, this paper looks at the overall tailings dewatering and stacking plant design. Aspects covered include filter feed slurry characteristics and their effects on filter performance and maintenance, positioning of filters and ancillary equipment in the filter building, options for transporting the filter cake to the stacking area, and selection of the cake stacking equipment.

Diemme Filtration has almost completed the manufacture of the first of this new generation of filters designed to suit the massive scale of the copper tailings market and is in the detailed engineering phase for a second unit. The filters need to interface efficiently with equipment upstream and downstream and in this paper we can share some of the experience gained in the last few years, particularly regarding the integration of individual unit operations.

*Keywords: Copper, Tailings, Filter Press, Filtration, Dry Stacking, Dewatering, Water Recovery, Cake Transport, Filter Feed Slurry Preparation*