MORE OUT OF TAILINGS: METAL AND ACID PRODUCTION, CIRCULARITY AND ENERGY TRANSITION

By

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ABSTRACT

The need to "extract more from less' is not a byword that sits well in the mining industry. Head grade degradation, basically processing ever more ore to produce ever less final product with an inevitable increase in waste, is a fact for many operations.

The need for more circular solutions required for the emerging energy transition (i.e. the demand for ever more non-ferrous and critical minerals) requires us to rethink what we can do differently. The processing of tailings from the copper ore processing offers significant potential to recover valuable elements like copper, cobalt, and nickel as well as to produce sulphuric acid for different applications in the fertilizer and metallurgical industry. Perhaps the time is right for a well proven industrial process to be part of the push towards a true circular economy?

We intend to present our views on the renaissance of a technology value chain – the roaster-gas cleaning acid plant - widely used in the past and its applicability to the current scenarios. This process chain is capable of utilising virgin pyrite ores as well as pyrite tailings, with a view to maximum extraction of valuable ferrous, non-ferrous and critical minerals, reducing acid mine drainage, production of clean energy as well as providing a 'regionalised' sulphuric acid supply. When these commodity flows are considered in total as revenue streams, return on investment is, in many cases positive – substantiating the claim that one can obtain 'more out of ore'.

Keywords: Fluid Bed Technology, Roasting, Tailings, Pyrite, Metal Recovery, Sustainable, Circular Solution, Acid Production, Battery Metals, Valuable Metals; CFB, Fertilizer,