

Home-grown Value Addition

Weatherly is a London-based resources company active in Namibia, producing copper from the Otjihase, Matchless and Tschudi operations in Namibia, with more prospects still under development and exploration.

Tschudi is the most recent mine in the Weatherly stable to be put into operation, having produced its first copper a year ago in February 2015. It has been developed based on local expertise and is being operated by a Namibian labour force. What's more is that the metal product is refined on-site to so-called '4-nines' copper (i.e. of 99.99% purity), making it directly suitable for manufacture. It is more common to export a 20-40% copper concentrate from copper mines, leaving the refining step to factories over-seas. It is the first time that copper has been refined to this level in Namibia.

The ore is processed by the relatively low-cost technology of heap leaching which extracts the copper into an acidic water solution (opposed to producing a solid-state concentrate). Having the copper in solubilised form makes it possible to employ another well-established technology, solvent extraction, to purify and concentrate the copper-bearing stream. Finally an electrowinning step plates the copper out of solution as high-purity metal sheet, ready for sale at the highest premium offered by the copper metal market.

The design specifications for the heap leaching step at the heart of the processing plant was developed during an extensive testwork campaign in the laboratories of Mintek in Randburg, South Africa. It required characterisation of the metallurgical behaviour of both the copper-bearing minerals in the ore, as well as the gangue minerals which can give rise to undesirable side-reactions if not controlled. Mintek also evaluated the mechanical properties of the ore to ensure that the height to which the crushed ore is stacked prior to leaching is compatible with its permeability to leach solution.

The majority of the construction contracts were awarded to Namibian suppliers, and the operation provides 550 direct jobs (excluding additional jobs during construction and the many indirect jobs resulting from it in the area). The acid required for the leaching step is procured from the Tsumeb smelter in Namibia where an acid plant is currently being commissioned.

The entire process emits minimal emissions and provision for complete site rehabilitation has been planned for since the design stage.

By pooling local resources and know-how with the most suitable technologies it has been possible to produce a premium value-added product from a Namibian ore body that bears only a modest copper grade, to the benefit of Namibia and the southern African region.