

Improved tailings disposal could reduce water use

MC'KYLA NORTJÉ | CREAMER MEDIA REPORTER

Namibia is a water-scarce country in most areas; therefore, minimising water consumption in ore processing is a focus area, especially for tailings disposal, which can account for over 50% of all water used in processing, states engineering and environmental consulting firm Knight Piésold mining services consulting technical director Andrew Copeland.

Water scarcity will likely also drive increased desalinated seawater consumption, as well as groundwater protection projects, he says. “We will assist several mining clients with

water and waste management design for green-field operations, as well as expansion plans for existing mines, this year.”

Knight Piésold has notable dewatered tailings disposal experience and expects more projects to consider and implement such facilities – in addition to those already in operation at the Skorpion Zinc operation, and at the Navachab openpit gold mine.

Dewatered tailings, often referred as “dry tailings”, are not really dry but can be filtered to 15% to 30% residual moisture content. The tailings are then conveyed or trucked to a tailings disposal facility or are co-disposed with waste rock. This allows for 70% to 85% of the process water to be recycled directly at the plant with reduced water losses through seepage, entrainment or evaporation.

This technology is particularly interesting in dry climates to reduce water consumption but also reduce seepage potential. Careful engineering is required, particularly in wetter climates or when the facility still needs to be lined, to ensure that the tailings do not develop undrained properties prone to liquefaction.

“Our scope for these projects includes design of the storage facility and containing structures, staging plans, geotechnical studies, stormwater management, and mitigating groundwater contamination through groundwater modelling studies. We have seen a real benefit in optimising mine infrastructure through design to offer more cost-effective and integrated solutions.” The company is also involved in the auditing and implementation of the 2020 Global Industry Standard on Tailings Management (GISTM), published by the International Council on Mining and Metallurgy, notes Copeland.

The standard, launched in August 2020, aims to improve the safety of tailings facilities.

Copeland says the company will offer training for safe and sustainable tailings management, including courses on the GISTM and other guidelines in Namibia, this year.

This training will provide up-to-date information on how to plan, implement, operate, and sustainably manage tailings dams safely and effectively, consistent with various government and duty of care obligations, he explains.

Knight Piésold lead engineer in Namibia **Veronique Daigle**, is a Verification Service Provider assisting with Towards Sustainable Mining initiatives and protocols developed by the Mining Association of Canada.

“This is one of the lead initiatives in the world in terms of promoting continuous improvement in responsible mining. We are excited to see more of our clients moving forward as best practices evolve.” The company is involved its services include assists mines in installing monitoring systems to measure water levels and measure movement. ■■

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