



Copper mining offers growth opportunity to dust suppressant supplier

Johannesburg-based nanotechnology provider Cruze Holdings expects to secure more work from African copper mining operations as its products generate savings by ensuring companies spend less on their existing road dust suppression measures.

The company may double its mining revenue within the next 12 months, says Cruze director Mark Wise, adding that, at present, the majority, or about 76% of its revenue, comes from civil work and road construction.

In August, the company treated the haulage road at diversified miner First Quantum Minerals' (FQM's) Kansanshi copper mine, in Zambia, with its Nanobond and Nanoprime surface spray products to improve dust control and reduce road and vehicle maintenance costs. Nanoprime was used as a dust palliative and soil waterproofer.

The company's raw products are imported from various suppliers across the globe and are used for soil stabilisation and dust suppression applications. Wise says the products were perfect for the haulage road project, owing to their affordability, the simplicity of their application and the resultant compliance with environmental standards.

The company may double its mining revenue within the next 12 months – Mark Wise

The nanotechnology, he adds, ensures longevity and reduces the number of repeat applications as the coating lasts longer. "Mines need only apply the solution five or six times a year, depending on frequency and load of traffic over the wearing course."

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Written by Logan Drilling Group

Tuesday, 13 December 2016 00:00 - Last Updated Tuesday, 13 December 2016 03:08

Following the first application, the Nanobond spray was applied on five other occasions over the course of a month. The initial high application rate ensures that the product saturates and penetrates deeper into the wearing course, reducing the impact of abrasive mine vehicles.

Wise points out that Nanobond and Nanoprime need not be used in conjunction, as both products are capable of coating the extremely fine dust particles that other technologies battle to capture. This is because these products are made up of 50 nm particles that are 100 times smaller than a bitumen particle at 5 000 nm and they chemically bond to the particles as opposed to coating them. Nanoprime is for above and below ground and the Nanobond is perfect for below ground operations.

Nanobond is mixed with potable water, with 1 l of Nanobond used for every 300 l of water. Wise states that, “1 l of our solution will cover a 100 m² area, which is the same area for which 100 l of competitor technology is needed.”

Nanoprime chemically bonds to the compacted base, waterproofs it and suppresses the dust in one application and requires the use of a cationic bitumen emulsion liquid called CAT60.

Wise explains that FQM first contacted Cruze in October last year. After the initial trial, FQM placed its order and has used Nanoprime at the Trident mine, which is owned by FQM subsidiary Kansanshi Copper Mines, and is located in Kalumbila, also in Zambia.

“They trialled it; it worked better than anything that they had ever used and they started placing orders.”

Kansanshi Mine roads department head Rodney Parker affirms this explaining that the product is extremely effective, simple to apply and is still cost-effective. “We highly recommend it.”

Explaining why the Cruze product offering is superior to other dust palliatives, Wise notes that the products were designed to adapt to existing environmental conditions – both above and below ground. The products chemically convert water-absorbing silanol groups to water-resistant alkyl siloxane surfaces and are able to work with any type of soil, he says.

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Further, the chemical coating as well as particle-adhesion improvement ensure that dust particles are heavier and remain clumped together for longer periods of time.

In terms of health benefits, Wise states that, as Nanobond and Nanoprime can work at 50 nm particle size, they can coat the 50 µm dust particle, which is said to cause the lung disease silicosis.

He notes that, since the FQM project, the company has received enquiries from two other mines in the Copperbelt region, adding that Cruze has already supplied quotes and is waiting on approval.

“Aside from South Africa and Zambia, we have supplied Zimbabwe, Nigeria, the Democratic Republic of Congo and Mauritius. “We are due to supply soil stabilisation technology to a Swaziland project early next year and have Tanzanian and Kenyan projects lined up.”

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Source: MiningWeekly.com , December 02, 2016.