

Bell B45Es are the jewels in Kagem Mining's fleet

Emerald mining is a risky business as the rare green stone, found only in certain parts of the world, is a hundred times rarer than diamonds. That is why, when mining emeralds, you need to be absolutely sure of the resource and waste no time in moving enough soil and rock to expose the emerald crystal bearing rocks.

Zambia's emerald mines produce some of the best coloured stones in the world and in an area known as the Ndola Rural Emerald Restricted Area, we find the company Gemfields' Kagem Mine, officially the largest such mine in the world and producing about 25% of the global yield.

"We're proud to say that with three operating pits and our main pit having a strike length of 2,2km and 130m at the deepest point, ours is the largest emerald mine in the world," says Prahalad Kumar Singh, the General Manager. "Our expected mine life is still 25 years and should market dynamics change, it could see us resorting to underground mining as well."

Zambia's emeralds are thought to have been formed some 500 million years ago. Because of the gem's rarity, accurate geophysical information is vital to minimize mining costs that could spiral out of control should blanket digging be attempted. Anomalies in the prospective mining areas are picked up through aeromagnetic surveys and radioactive characteristics are noted before core sample drilling can commence. Bulk sampling is used to determine feasible mining areas.

"We aim to find 250 carats for every tonne of ore mined but even then, only about 25 to 30% is a saleable product," Kumar explains.

"From that small percentage, a mere 1% will be premium quality and provide about 65% of revenue which further explains why we have to move so much soil and rock as quickly and cost-effectively as possible to mine accurately and show a profit."


"Moving many thousands of tonnes of soil and rock to expose the emerald crystals implies using yellow metal machines and for more than 10 years we have built a solid business relationship with Bell Equipment here in Zambia," he adds. "We started off using Bell B40D Articulated Dump Trucks (ADTs) and have over the years owned many of these workhorses throughout the D-series upgrades."



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Kagem Mining's new Bell B45E fleet is utilized extensively and runs on average for 18 hours in a 24-hour cycle, seven days a week with fuel consumption at between 28 and 30 litres an hour.



An expansion project in 2018 saw Kagem Mining take delivery of 12 Bell B45E ADTs, such as the one pictured here.

Kagem Mining has no hard and fast rule on replacing earthmoving equipment but rather considers any machine's condition, depreciation and costs when it reaches five years and, depending on cashflow, considers replacement then. The year 2016 saw the company change tack when it took delivery of four Bell B45D ADTs and the success and marked increased production of these larger ADTs showed a clearer path ahead.

A recent expansion project in 2018 necessitated replacing some of the older fleet and again Kagem Mining turned to Bell Equipment to supply 12 Bell B45E ADTs, a 37 000 litre water bowser on a B45E chassis and a Bell 225F Tri-wheeled Tyre Handler. Delivery took place in a phased manner between August and October 2018. All machines were bought with an extended warranty to 10 000 hours on the wet drivetrain.

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"I have often been asked why we run ADTs manufactured by Bell Equipment and our reasoning is simple," Singh says. "Bell Equipment gives us a distinct advantage in that the company's machines are produced in Africa for African conditions with parts readily available, a hugely

important consideration in seemingly isolated Africa. There is no bureaucracy created by franchising, which causes delays in delivery, and at Bell Equipment you can discuss a problem with someone who you know, especially at its Customer Service Centre in nearby Kitwe."

Singh quotes an example of Bell Equipment's personal touch when he tells how former Group Chief Executive, Gary Bell, had spoken to Gemfields' principals at their London head office assuring them of the OEM's commitment to supporting its products in Zambia. This, Singh believes, is the stuff that builds mutual trust and reciprocal loyalty.

"We're confident that Bell Equipment understands our business and the challenges we face," he says. "Warranty claims are acted on without delay and we commend Bell Equipment for the high levels of after sales service and technical backup it maintains."

Kagem Mining has recently embarked on utilizing Bell Equipment's Reman programme by committing nine older Bell B40D ADTs to the campaign. "These machines have done between 16 000 and 18 000 hours and we've decided on this route because of new taxes on gemstones that have cut into our bottom-line profits," he explains. "When you consider that the refurbishment will add a further 8 000 to 10 000 hours to the B40D ADT's life, the cost involved is workable as we can capitalize it and then depreciate it, which gives us a tax advantage."