

Bell B40Ds are real gems for Kagem Mining



When a sign at the security gate of an emerald mine proclaims that you are now entering the premises of the single largest operating open pit mine in the world, you had better be in a superlative frame of mind.

Producing approximately 20% of emeralds available globally, the Kagem emerald mine in Zambia's Ndola Rural Emerald Restricted Area covers almost 41 square kilometres. Within its five pits Bell Equipment's legendary B40D Articulated Dump Trucks (ADTs) can be seen removing overburden to enable the mining teams to reach the so-called reaction zones, where the exquisite green gems are found.

"Kagem - the world's largest emerald mine is a subsidiary of Gemfields Plc and a model partnership between Gemfields Plc and the Zambian Government. It is home to some of the world's most renowned quality emeralds. With a long history of losses, Kagem has undergone significant transformation in the past few years under the management of Gemfields. Taking over operations of the mine in 2008, Gemfields invested a huge amount in the company and turned Kagem into a profit making company which now pays dividends to its shareholders and contributes to Zambia's direct foreign earnings," recalls Mr CV Suresh, Kagem's Director of Operations.

He says with pride: "All the workmen at Kagem are permanent; the number of employees has almost doubled since 2008. The company was recently recognised by the Ministry of Mines, Energy and Water Development's Mines Safety Department for achieving more than 3.5 million injury-free shifts – a record in the mining industry in Zambia."

Kagem is presently mining in the main Chama pit and four other bulk sampling pits are in the development stage. The Chama pit is over 900 metres long and down to a depth of 105 metres so huge quantities of overburden has to be removed before the reaction zones are reached where the emerald clusters are found.

Zambian emeralds were formed when two types of rock, Talc Magnetite Schist and Pegmatite, combined and crystalized, over millions of years. Once the overburden is removed using a traditional benching method of opencast mining and drilling, blasting, load and haul, the reaction zones are exposed and the precious stones can be removed using smaller earthmoving equipment and even manual labour.

To add to their existing fleet of earthmoving equipment, Kagem Mining took delivery of seven Bell B40D ADTs and a Bell B40D Water Tanker, with a capacity of 35 000 litres, late in 2014. According to Mr Srinivasan Ramachandran, Kagem's Head of Engineering, the reasoning for choosing Bell B40D ADTs made perfect sense.

"We had a really good experience with our previous Bell B40D ADTs, which we had bought in 2009 and which all clocked high hours before necessitating rebuilds," Mr Srinivasan Ramachandran says. "Those machines gave us 13 000 to 14 000 hours of high mechanical availability before they were refurbished."

"We had no hesitation in buying another fleet of Bell B40D ADTs because we were confident that we would once again be able to extract sustainable low-cost production rates and high hours from them because



this is what we need to do to remain at the forefront of emerald production."

Other reasons Srinivasan Ramachandran mentions for buying Bell ADTs are competitive capital costs, reasonable component and rebuild costs, excellent technical support and the facility of on-site consignment stock.

"We've always felt that Bell Equipment understands our business and appreciates the fact that we simply cannot afford machines being down for extended periods due to the absence of technicians or replacement parts," he says. "That is why with Bell having a qualified and experienced mechanic available on our site full-time and with all personnel at Bell Kitwe making the extra effort to boot, choosing equipment from Bell Equipment was easy."

Kagem Mining has recently started the fifth cutback on its Chama pit whereby the pit will ultimately be enlarged. To do this, vast quantities of overburden need to be removed and this is where the new fleet of Bell B40D ADTs will show its mettle.

Once the reaction zones are exposed, the need for smaller earthmoving equipment comes into play, which includes 30 ton ADTs as well. To this end, Bell Equipment



Brad Castle (left) Bell Equipment Sales Representative from Bell Kitwe, chats to Srinivasan Ramachandran, Kagem Mining's Head of Engineering in the Chama pit.

recently started running the new generation Bell B30E ADT on the Kagem Mining site as a demonstration machine on trial.

"We're excited at the prospect of this new generation Bell B30E ADT as the first thing that comes to mind when looking critically at our production costs, is the issue of fuel consumption," Ramachandran says. "Our initial reports show that this Bell B30E ADT, even considering running up our long and steep ramps with a full bin, is burning fuel at 18 litres of diesel an hour, which is remarkable given the working environment where it is deployed."

Kagem Mining will analyse the performance of the Bell B30E ADT over a period of a month.

Kagem Mining's Bell B40D ADT fleet were bought with extended warranties to 6 000 hours on their wet drivetrains. The company adheres strictly to service intervals as suggested by Bell Equipment. Preventative maintenance is the norm at Kagem Mining and Ramachandran believes this is an important factor in ensuring longevity of their Bell Equipment ADT fleet which keeps delivering high mechanical availabilities and lower costs per ton, during production of these sought after gemstones.