Process improvement at Kumba Iron Ore Sishen and Kolomela mines through the use of GEOSCAN on belt analysis equipment

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ABSTRACT

Kumba Iron Ore, part of AngloAmerican, operates the Sishen and Kolomela mines in the Northern Cape region of South Africa. The mines utilise a number of processes for handling and upgrading the ore, including direct shipping, screening, upgrade jigs (including one of the largest jig plants in the world), and dense medium separation. The processes allow Kumba Iron Ore to exploit and optimise the outcomes depending on the variation in the ore. To obtain the maximum potential for each of these processes, Kumba Iron Ore quickly recognised the value in being able to measure the grade and quality of material at various points throughout their various processes. Scantech's GEOSCAN on belt analysis systems have been adopted throughout Kumba's operations in the Northern Cape and have become an indispensable tool in their operations.

Kumba Iron Ore purchased their first GEOSCAN in 2008 and have progressively expanded to 12 GEOSCANs throughout their Sishen and Kolomela operations. A single GEOSCAN is installed at Kolomela mine to assess the grade of ore for stockpiling and shipping. Five GEOSCANs are installed throughout Sishen mine's jig plant, including on the run-of-mine feed to the plant and on the various products belts. There are a further six GEOSCANs installed within the dense medium separation plant on run-of-mine, drum and cyclone feeds and products. Sishen is currently using the data for monitoring with a view to active control. This paper gives a brief introduction to the equipment and how it works, and summarises how Kumba Iron Ore uses the analysis data in operations to maximise the benefit from their processes, as well as giving an overview for ongoing and future works.