

Plant Optimisation Approach at the Tropicana Gold Mine.

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Abstract

AngloGold Ashanti Ltd's Operational Excellence initiative has seen an ongoing focus on margin improvements through a range of projects to deliver productivity and cost improvements at all of its operations. In processing this has meant matching processing plant capability to mining output and maximising plant utilisation and throughput without increasing operating costs. At the Tropicana Gold Mine (AngloGold Ashanti Australia Ltd 70% and manager, Independence Group NL 30%), in Western Australia, considerable emphasis was placed on optimisation of the process circuit using operational data from the processing plant. Traditionally these optimisation exercises had been executed internally by the operations team but, in an attempt to improve design and cost outcomes, a collaborative approach was selected, in which external consultants worked closely with the operations team.

The purpose of this paper is to explain the approach that was adopted by the engineering company and the owner to optimise the process circuit and achieve an associated increase in throughput whilst decreasing the operating cost at the Tropicana Gold Mine, namely:

- 1) Optimising the conveyor system to minimise shutdown duration and increase the conveyor design capacity;
- 2) Optimising the design to increase equipment life and reduce scheduled shutdown duration;
- 3) Optimising the leaching circuit;
- 4) Managing the tailing cyanide discharge levels through water management and dilution.

The authors will discuss the various decisions made during the optimisation process and will show that adopting alternate design decisions can have a major positive cost impact. Effective interpretation and understanding of the overarching issues, combined with good collaboration (one joint team including client operational personnel and design consultants), zero base design and effective use of appropriate equipment are some of the factors that can be used to deliver an optimal final outcome. Very good results were achieved at Tropicana, demonstrating the effectiveness of this approach.