The Python 500 modular plant installed at the Gold Fields Kloof GROWTH Project

Positive recovery results from Python at Kloof

Gekko Systems was contracted by Gold Fields in June 2010 to design, build, install and commission a Python 500 modular plant for its Kloof GROWTH project in South Africa. The purpose of the plant was to treat surface rock waste dumps located next to the site's mining shafts. In addition, the Python trial is part of a Gold Fields R&D project to test the innovative, low energy, modular processing system for other future applications.

The plant was installed and commissioned in January 2011 and results from sample surveys completed by Gold Fields in May 2011, indicated that the InLine Pressure Jigs (IPJ) are recovering 79% of the gold into 27% weight. This result is plotted against the results of the CGR testwork undertaken in Gekko's metallurgical laboratory in the graph shown in Figure 2.

David Taunyane, Head of Processing, South African Region, Gold Fields Ltd says, "With the plant running steadier since the last two months, recoveries of above 70% have consistently been realized in the IPJs at a mass pull recovery of 20% from a head grade of 0.65g/t yielding an impressive 2.6g/t.

"The higher recoveries in the IPJs are due to the preferential liberation of gold bearing material in the Vertical Shaft Impactor (VSI). Currently the IPJs are fed with material passing 3.35mm which is in line with the test work that at a size range of 2-12mm, optimum gangue rejection is achieved. The remaining gold is further recovered in the Flash Float Circuit in which results obtained from the plant indicates that more than 60% recoveries at a mass pull of 5% with residual gold values of below +0.05g/t. The higher recoveries are achieved at a coarser grind of 1.14mm versus 38.6% that was obtained in test work conducted on the finer grind of 0.85mm material."

Under the Python's innovative flow sheet the need for a ball mill is eliminated which significantly reduces the energy consumption of the plant. As a result, the comminution circuit of the Python 500 is estimated to be operating at less than 10kWh per tonne treated.

Table 1: Python Performance September 2011

	Tonnes	Gold Content	Grade
Feed	18276	12.939	0.708
Conc	4826	11.568	2.397
Tailings	13450	1.371	0.102
Recovery		89.4%	
Mass Yield	26.4%		

The figures in Table 1 above indicate a gold recovery of 89.4% of the gold entering the Python section of the plant, in 26.4% mass. Pending the finalisation of the current modifications and optimisation of fine crushing in the VSI crusher circuit, the concentrate produced from the IPJs is pumped directly to the leaching section of the Kloof No. 1 Plant for final gold recovery.

Figure 2: IPJ predicted and actual recovery curve aligned