

# Gangue rejection circuit increases Python throughput x 5

The Python 500 modular processing plant was originally developed to process ore in an underground environment. However, recent customer demand and subsequent reconfiguration changes have enabled the Python to be applied to low-grade surface applications.

“This new Python model has low capital and operating costs, fast delivery and installation, as well as low energy consumption and infrastructure requirements. The modularity of the Python system allowed for the simple circuit changes/reconfiguration and enabled this alternative flowsheet.” Tim Hughes, Gekko’s Process Engineering Manager, said,

This has been achieved by reviewing the natural gold size distribution in waste dumps and taking advantage of the difference in crushability of the gold-bearing mineral versus the waste. The throughput rate of the Python has been increased to a nominal 250 tph with minimal reduction in recovery from the application of gangue rejection concepts.

Gekko has labelled this innovative, high volume model, the Python 2500 (P2500).

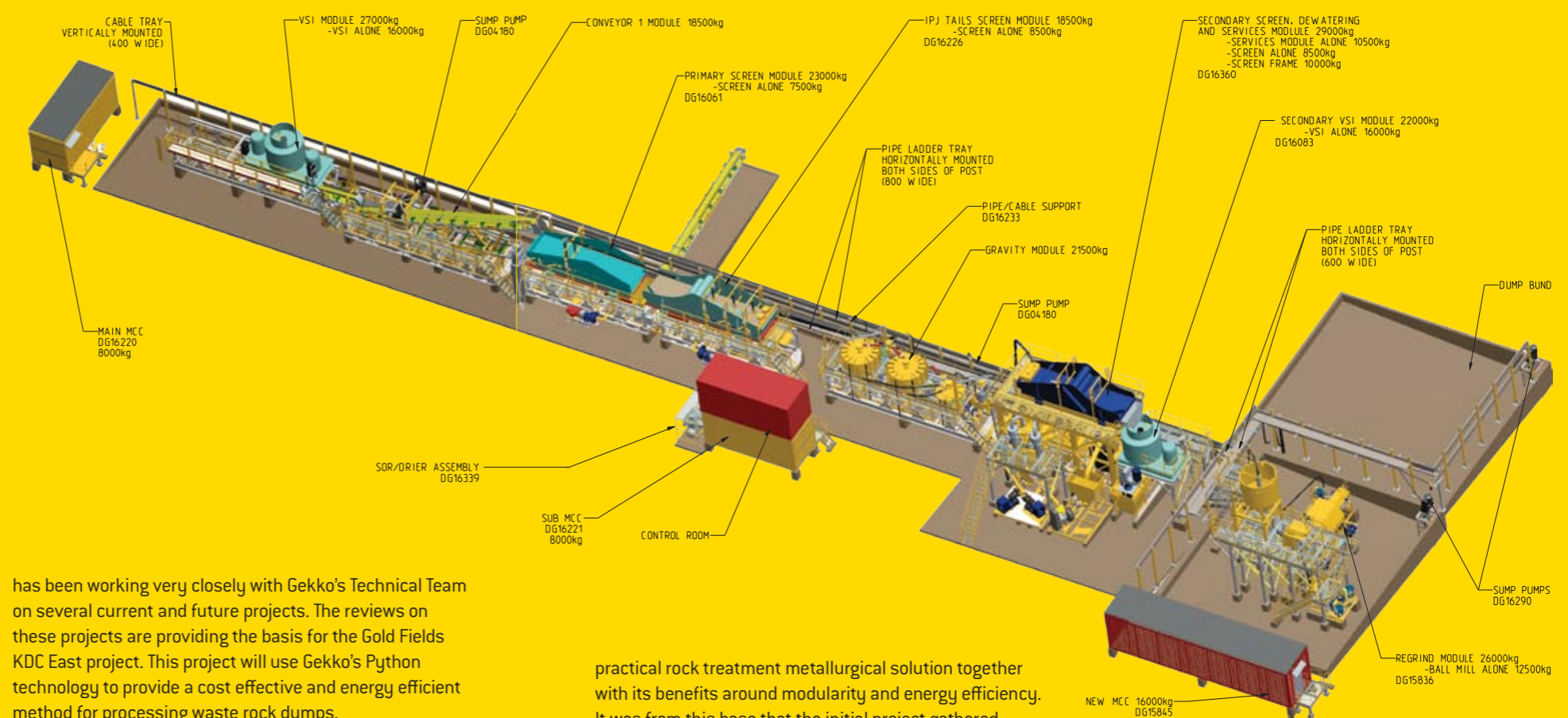
## Python 2500

The Python 2500 aims to produce a gravity and flotation concentrate from the waste rock dumps, incorporating:

- Single pass Vertical Shaft Impactor (VSI) crushing of the minus 32mm feed from the waste rock dumps
- Wet screening at 3mm with rejection of the plus 3mm fraction to tailings
- InLine Pressure Jig (IPJ) rougher pre-concentration of the minus 3mm fraction
- Wet screening of the rougher IPJ tails at nominally 1.4mm with rejection of the +1.4mm to tailings and the minus 1.4mm sent to flotation
- IPJ cleaner concentration of the rougher IPJ concentrate with IPJ cleaner concentrate sent to concentrate treatment
- Wet screening of the IPJ cleaner tail at nominally 1.4mm with closed circuit VSI crushing of the plus 1.4mm fraction
- Water recovery using hydro-cyclones and recycle water tank from the minus 1.4mm fractions
- Flotation of gold and sulphides from the minus 1.4mm (nominal) stream using purpose built flash flotation or similar cells.

## Gold Fields employs Python technology

Gold Fields South Africa has been a long-term supporter of Gekko equipment and over the last 12 months the company



has been working very closely with Gekko’s Technical Team on several current and future projects. The reviews on these projects are providing the basis for the Gold Fields KDC East project. This project will use Gekko’s Python technology to provide a cost effective and energy efficient method for processing waste rock dumps.

Since the installation of the Python 500 at Gold Fields’ Kloof project, Gold Fields has provided samples to Gekko’s metallurgical laboratory from their projects around the world. The test work protocols are based on further investigation of the ore suitability for the Python 2500 concept. This test protocol developed by Gekko includes:

- Pre-screening and gangue rejection
- HPGR and/or VSI comminution test work
- Multi-stage crush/grind and gravity recovery analysis
- Flotation recovery analysis
- Pre-concentrate upgrade
- QEMSCAN mineral analysis

Further to the direct Python amenability testing, there is the concentrate treatment stage which includes but is not limited to:

- Intensive cyanidation of concentrates to test for amenability to the Gekko InLine Leach Reactor technology
- Conventional Carbon-In-Leach tests
- Regrinding of concentrates
- Carbon uptake testing
- Electrowinning testing

The Python technology appealed to Gold Fields as a

practical rock treatment metallurgical solution together with its benefits around modularity and energy efficiency. It was from this base that the initial project gathered momentum, culminating in the installation of the initial Python at KDC Operations in South Africa in 2011. The current Python 500 at KDC will soon be upgraded to treat 250tph. The increased throughput will allow Gold Fields to process the waste material at a significantly accelerated rate. It will also take advantage of learnings that have been gained from operations to date which highlight that up to 80% of the gold is contained in a relatively fine component of the waste material. The upgraded flow sheet utilises this to full advantage, whilst still maintaining the energy efficiency inherent in the fine crush and pre-concentration approach utilising the IPJ in combination with flotation.

## Gekko South Africa welcomes Project Leader for Gold Fields Python

Gekko Systems is pleased to welcome Trevor Hay to the South African office. Trevor is a qualified Mechanical Engineer and will be supporting the Gold Fields KDC East projects as a Project Manager. Ben Salter, Technical Sales Engineer, also based at Gekko’s South African office, is undertaking a key supporting role to Gold Fields’ Kloof Python plant which was installed in 2010.

	Python 500	Python 2500
Nominal feed Rate	50-60tph	~250tph
Max Feed Size	250mm	~50mm
Tonnes rejected at +3mm	0tph	100tph
Tonnes rejected at +3mm-1mm	0tph	90tph
Tonnes rejected at -1mm	~44-55tph	~54tph
Tonnes concentrate	~6tph	~6tph
Estimate kWh/t	10	3

Table 1: Comparison Table of Python 500 versus Python 2500

