

# Kimberley Diamonds

## Installation of the InLine Pressure Jig

<b>Model:</b>	IPJ2400
<b>Purpose:</b>	Pre-concentration prior to DMS
<b>Place:</b>	Kimberley Diamond Mine; Australia
<b>Metallurgical Superintendent:</b>	John Hinkling
<b>Date:</b>	September 2007
<b>Results:</b>	Increased plant throughput from 30tph to 100tph

Kimberley Diamond Company's mining operations are based at its Ellendale Diamond Project, located 140km east of the coastal town Derby in Western Australia's Kimberley Region (2,000 km north of Perth) The Ellendale West Plant comprises of an InLine Pressure Jig (installed in 2002) with the unit having operated reliably over this time.

Miles Kennedy, Founder and former Executive Chairman of Kimberley Diamonds commented that *"Kimberley Diamond Company NL has been using to very great and beneficial effect, a Gekko InLine Pressure Jig at its West Diamond Recovery Plant, Ellendale Pipe 9, for the past 5 years. Prior to the installation of the pre-concentrating IPJ, the throughput design capacity of this plant was rated at 30 tonnes per hour (tph) which we were immediately able to increase to 100 tph following the successful installation of the IPJ by Sandy Gray and his team."*

*"What strikes me as a remarkable feature is the running cost which we have calculated as being a mere 3 cents per tonne and it has run reliably in the treatment of over two million tonnes to date. Congratulations to Gekko for developing this superb product"* adds Mr. Kennedy.



L-R Mark Nullemeier, Dave Burner and Glenn Field

The InLine Pressure Jig was installed to remove vegetation from, and pre-concentrate the feed to the DMS plant while the surface of the Ellendale pipe was being treated, allowing the DMS unit to treat much more head feed. The InLine Pressure Jig is a very cost effective pre concentrator on this deposit and plays an important role as a 'de-vegetator'

The gangue has an SG of 2.3 which allows the jig to be run very loosely and because of this contrast in density with the diamonds (3.5 SG) the IPJ can get an efficient separation without pre sizing. The size of the West Plant DMS circuit matches the capacity of the jig con feed, and these two factors help make a simple balanced unit.

*“If we did not have the InLine Pressure Jig, the West Plant would be limited to about 30 tph and the DMS would need a larger preparation screen to treat this rate”* says Metallurgical Superintendent, John Hinkling.

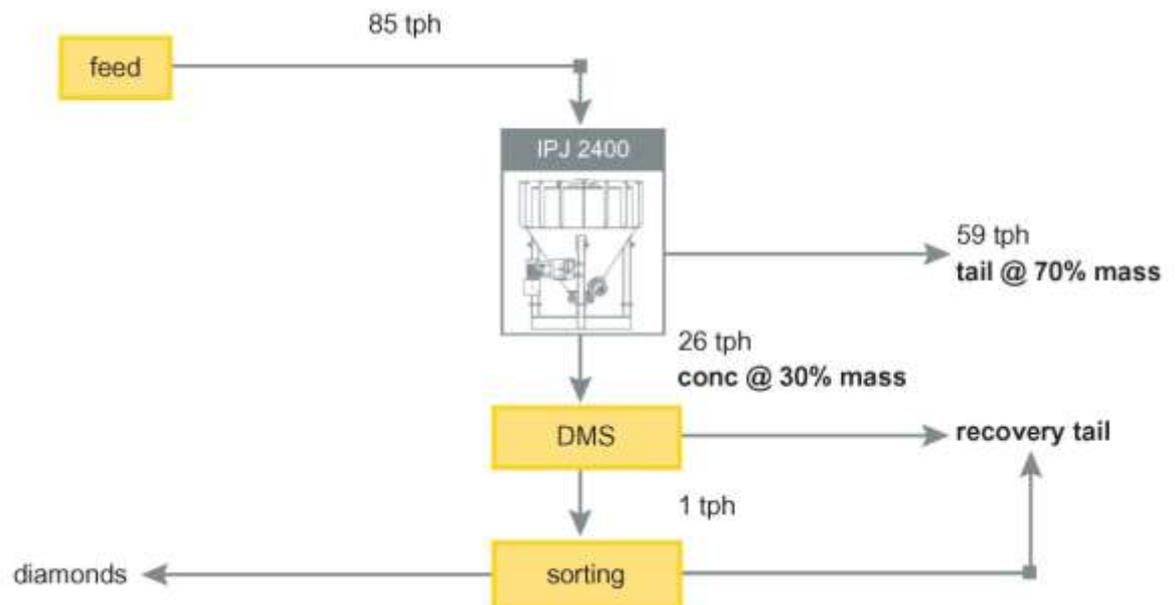
*“The IPJ by itself would produce much more concentrate than a DMS but the combination of the jig ‘roughing’ and the DMS concentrating is very successful on the coarse stone sizes. The jig recovery starts to become less efficient than the DMS at about 3mm stone size and is probably down to about 93% at 2mm and 70% at 1.2mm - the simple way that we run it.*

*The efficiency can be improved by sizing the feed and feeding to multiple jigs, each adjusted to process a particular size fraction, but then feed size distributions and the important requirement of a steady feed rate rapidly complicate the system.*

*An IPJ requires more control, is sensitive to feed:- rate, size and density and is less efficient on smaller stone sizes, it uses about twice as much water as a DMS unit but costs far less to run and requires very little maintenance, in the right conditions it is a winner.*

*On our present plants the IPJ would replace DMS capacity, if we run into trouble with DMS capacity on E9 it would be well worth considering. E4 has smaller average stone size than E9 - a jig does work here but should probably be approached with more caution than at E9.*

*A jig for diamonds from alluvials will be sensitive to the density of the wash, if the wash gravel is heavy diamonds will float off the heavy bed that collects in the jig.”*



**For more information contact:**

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