

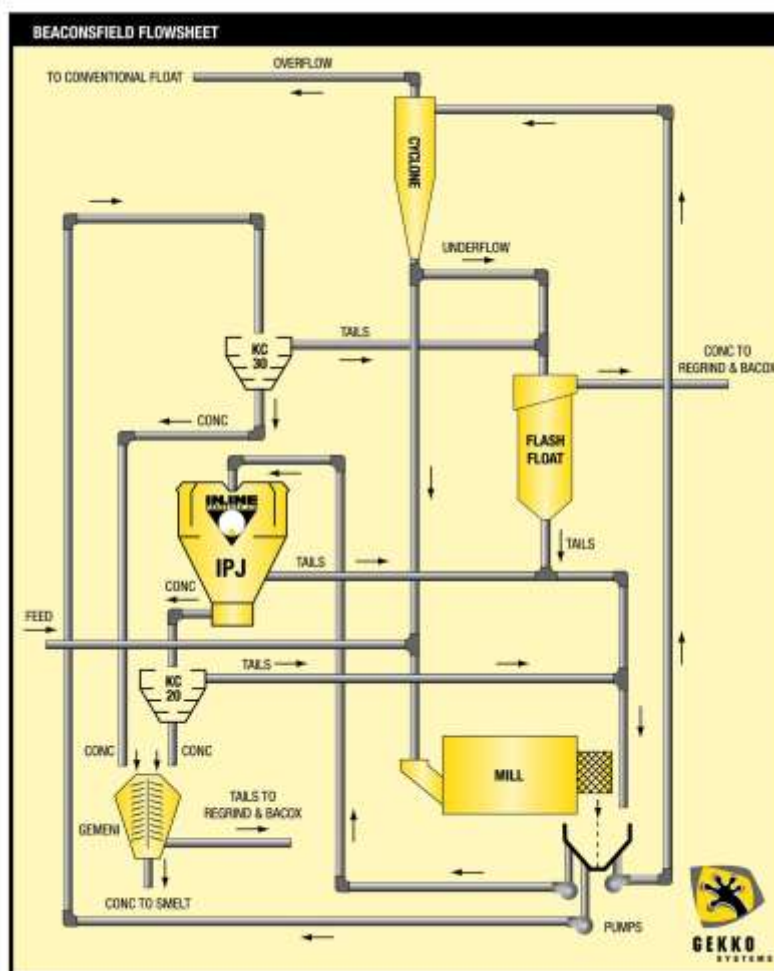
Beaconsfield

Installation of the InLine Pressure Jig



Model:	IPJ1500
Purpose:	Maximise gravity gold recovery
Place:	Beaconsfield, Tasmania, Australia
Mill Superintendent:	Richard Holder
Date:	2003
Results:	382 g/hr Au recovered

Beaconsfield Gold Mine in Tasmania operates a gravity recovery circuit ahead of a flotation plant in order to maximise the gold recovery in the total plant. The gravity circuit plays a critical role in the recovery of gold from the total circuit as the flotation recovery alone drops when the gravity recovery is off-line. Utilising both InLine Pressure Jigs and centrifugal concentrators allows for a very strong combination of complementary technologies. The gravity circuit at Beaconsfield is made up of an InLine Pressure Jig IPJ1500 that is fed by a separate pump located at the mill discharge. The tailings from the IPJ return to the cyclone feed pump and the concentrate feeds a Knelson Concentrator CD20 that cleans the IPJ concentrate to produce a high-grade product.



Beaconsfield Flowsheet

In parallel to this circuit is a Knelson Concentrator CD30 that is also fed from the mill discharge hopper and also produces a high-grade concentrate. The CD30 tailings are returned to the flash flotation feed ultimately limiting free gold miss-reporting to the subsequent Bacterial Oxidation and leaching circuits.



The two high-grade concentrates are tabled daily on a Gemeni Table to produce a smeltable grade concentrate. The Gemeni table tailings then report to the concentrate re-grind, Bacterial Oxidation and then leaching circuit.

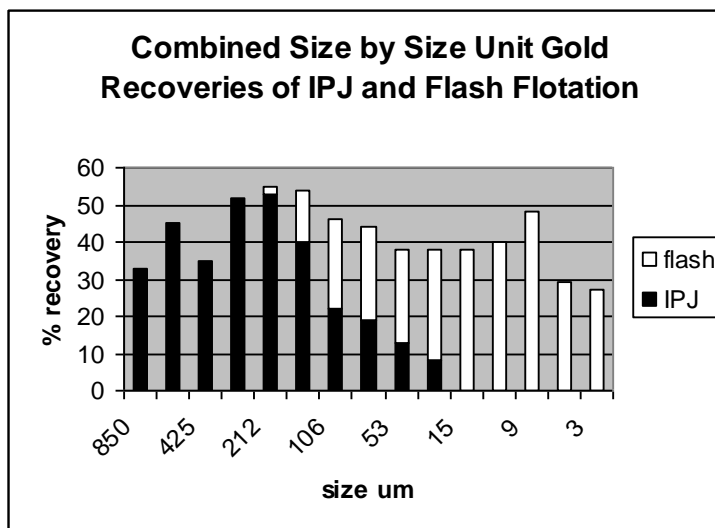
An independent survey shows the unit recoveries and performance at the time of the survey. The table below shows the recovery by size for each unit in the primary circuit, and is useful in understanding the capabilities of each technology.

Summary of Unit Performance at the Beaconsfield Mine

Unit	Feed Stream	Feed Rate t/h	Unit Rec'y %	Rec. Rate g/h	Upgrading Ratio	P ₈₀ Gold Rec'd µm	Gold Dist'n ¹ %
InLine Pressure Jig	Mill Discharge	60	26	382	4:1	320	52%
20" Knelson	IPJ Conc.	4	52	202	72:1	320	28%
30" Knelson	Mill Discharge	60	18	209	110:1	320	28%
Flash Flotation	Knelson CD30 Tail	60	17	161	9:1	106	21%
Cyclone ²	Mill Discharge	120	93	2211	1.2: 1	320	22%

(¹: as a function of mill feed gold, ²: the cyclone is treated as a concentrator where "concentrate" is the cyclone underflow and recovery is the cyclone underflow / cyclone feed)

The combination of continuous concentrators such as the IPJ and flash flotation are a powerful tool when the two recovery charts are combined, as shown in the figure below. The size distribution of the gold recovered by the IPJ significantly reduces from the 106 µm range where it can be seen the flash flotation recovery significantly increases. The complementary nature of all the devices and their abilities is important as it can lead to considerably increased overall recovery.



Size-by-size Gold Recovery for Flash Flotation and InLine Pressure Jig (IPJ) at the Beaconsfield Mine

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CASE STUDY