

The IsaMill - a transformation in grinding technology, providing high intensity fine grinding for maximising mineral liberation

The Isa Mill

The IsaMill is a horizontal high intensity stirred mill. It was developed in the 1990's by Mount Isa Mines for the processing of fine grained ore-bodies. It allows high energy input with a very small footprint. It operates in open circuit and can achieve very fine grind sizes with a sharp size distribution and high energy efficiency. The mill is now being increasingly adopted in conventional regrinding and grinding applications. It can use a variety of media, including inert media which can offer metallurgical advantages.

The IsaMill is marketed by Xstrata Technology. For further information visit <http://www.isamill.com>.

Test Procedure

The feed material is slurried and agitated in a 30 litre tank. The slurried material is then fed through the IsaMill and into a second tank.

Energy measurements and samples of feed and product are taken during the grinding run.

The process is repeated a number of times until the target particle size has been achieved.



Benefits

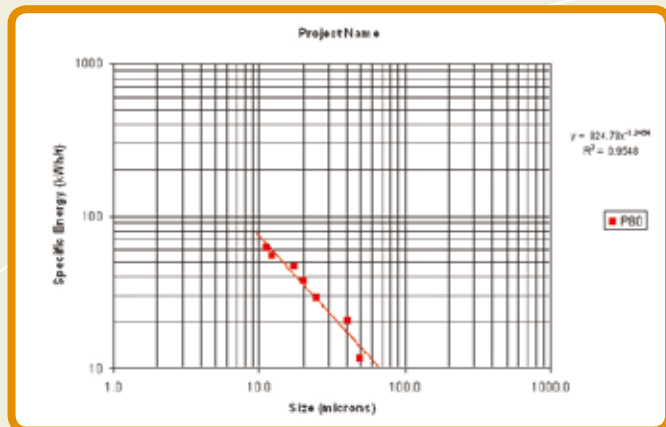
The IsaMill test can generate data which can be used to determine the effectiveness of IsaMill in a particular application and to enable process design.

Reporting

A brief one page report is produced which details:

- Test conditions
- Media Consumption
- A 'signature plot' which relates Specific Energy (kWh/t) to product particle size (P80)
- Product size distribution data from each pass of the IsaMill

JKTech Pty Ltd IsaMill Fine Grinding Test Report											
Project Name						Date(s) Tested					
Dry Description						Date Forwarded					
Dry Conc. Type						Location					
Company						IsaMill Type					
Contact Person						Media Spec.					
Contact Details						Contact Person					
Test Data											
Pass #	N (rpm)	Media Vol (L)	Media g (Start)	Media g (End)	Spilled	Time (h)	Time (m)	Time (s)	Comments		
1	1500	1.25	20	75	1.34	37	250	0.111	Feed of 15 kg ore and		
2	1500	1.25	20	75	1.45	39	640	0.197	12 liters of water		
3	1500	1.25	20	75	1.42	60	620	0.204	Additional approximately 4 liters		
4	1500	1.25	20	75	1.44	42	806	0.369	of water added to unvalva sump		
5	1500	1.25	20	75	1.41	42	970	0.453			
9	1500	1.25	20	75	1.42	45	1543	0.701			
10	1500	1.25	20	75	1.44	45	1524	0.673			
Calculated Data											
Pass #	Dross (wt %)	Media (wt %)	Q (m ³ /h)	% Solids	M (kg)	E (kWh/t)	Cumul. E	P90	P50	C50	
Feed									125.5		0.54
1	2.25	1.00	0.180	36.9%	0.097	11.6	11.6		48.8		0.68
2	2.25	1.00	0.180	44.0%	0.115	8.7	20.3		40.4		0.73
3	2.21	0.96	0.180	41.9%	0.107	9.0	29.3		24.9		0.82
4	2.18	0.94	0.180	43.3%	0.112	8.3	37.6		20.1		0.89
5	2.16	0.91	0.180	41.2%	0.105	8.7	46.3		17.6		0.97
6	2.10	0.86	0.180	41.8%	0.107	8.0	54.3		12.4		1.05
7	2.09	0.84	0.180	43.3%	0.112	7.5	61.9		11.2		1.19
8											
Target Size (if applicable)		kWh/t @ Target		Media Consumption (g/kWh)							



Capability

JKTech can provide the following:

- Evaluation of IsaMill grinding in comparison to other grinding methods
- Evaluation of the energy efficiency and consumption of various media types
- Evaluation of impact on mineral liberation using quantified mineralogy
- Evaluation of the effect of IsaMill grinding on flotation performance
- Evaluation of the effect of IsaMill grinding on thickener performance
- Evaluation of the effect of IsaMill grinding on leach performance
- Evaluation of the effect of IsaMill grinding on particle shape and reflectance
- Preliminary plant flow sheet design using IsaMilling

Sample Requirements

A test program on the IsaMill requires 30 kg of -1 mm ore. Coarser ore may be sent, however this may incur some sample preparation charges.

The client also needs to nominate the media to be used. If unusual media is specified, samples of this may need to be provided.

Normally Magotteaux's Keramax MT1 ceramic media, various River Sands or steel balls will be used.

Other JKTech Services

- Consulting (comminution, flotation, mine-to-mill)
- Quantitative Mineralogy (MLA and JKMineralogy)
- Specialist Software (JKSimMet, JKSimFloat, JKSimBlast)
- Metallurgical Laboratory Services
- Training Courses

Contact

John Dixon
Manager JKMetLab

Telephone: +61 7 3365 5908

Facsimile: +61 7 3365 5900

Email: j.dixon@jktech.com.au



JKTech's range of technologies is supported by the ongoing research activities of the world renowned JKMRRC.

JKTech Pty Ltd

Isles Road, Indooroopilly, QLD 4068, AUSTRALIA
Telephone: +61 7 3365 5842 Facsimile: +61 7 3365 5900
info@jktech.com.au | www.jktech.com.au

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the minerals industry