

# JKTech Products

## Specialist Equipment and Software

Delivering innovations to the global resource industries through world class ore/process characterisation equipment and software applications.



**JKTech Pty Ltd**  
[www.jktech.com.au](http://www.jktech.com.au)

# FLOTATION CHARACTERISATION TOOLS

*The JKTech range of specialist flotation equipment is the result of decades of flotation characterisation research and development by the JKMRC and industry. These tools provide the parameters necessary to simulate and optimise flotation circuits using JKSimFloat software.*

## JK Gas Hold-up Probe

Gas hold-up ( $\epsilon_g$ ) is the volume fraction of air contained within the pulp phase of the flotation cell. The JK Air Hold-up Probe consists of a vertical cylinder with mechanical valves at the top and bottom. It is lowered into the flotation cell just below the pulp/froth interface. After a period of time, the top and bottom valves are rapidly closed, the probe is lifted out of the flotation cell and the content measured.

## Anglo Platinum Bubble Sizer (APBS)

The Anglo Platinum Bubble Sizer is a portable device to measure both the bubble size distributions and the superficial gas velocity directly within a flotation cell. The device comprises of a sampling tube attached to the bottom of a sealed viewing chamber. Bubbles from the pulp phase within the flotation cell travel in the sampling tube under non iso-kinetic conditions. The sample of bubbles is photographed with a digital still camera and specialist image analysis software processes the images to derive the bubble size distribution.

The superficial gas velocity is measured by the displacement of water by gas over a known period of time, using a calibrated cylinder on top of the viewing chamber. JKTech is the global distributor of the APBS, which is manufactured by Stone Three Venture Technology (Pty) Ltd in South Africa.

## Batch Flotation Cell

The JK Batch Flotation Cell is a bottom-driven cell that provides an accurate, reliable means of generating reproducible laboratory flotation test results. When provided with bubble sizing measurements, it accurately determines scale-up characteristics, allowing simulation and design of plant operations.

The JK Batch Flotation Cell is the authorised specialist equipment required to measure the JK Floatability Index (JKFi) that allows characterisation of the floatability of different ore types, reagents and other operating conditions.

## JK Samplers

JKTech's range of slurry samplers enables easy and representative sampling of industrial scale flotation cells and slurry streams for the purposes of comprehensive plant surveys or simple circuit analysis.

- The JK Dip Sampler can be extended up to a length of 4 metres to sample inside even the largest of industrial scale flotation cells. Sample containers of 1L and 2L can be accommodated.
- The JK Lip Sampler captures flotation cell overflow from the lip of flotation cells.
- The JK Stream Cutter can be supplied in various sizes and handle lengths to facilitate easy and safe sampling of open slurry streams.



# ORE BREAKAGE CHARACTERISATION TOOLS

*JKTech's ore breakage characterisation tools provide the ore specific parameters required by JKSimMet, JKTech's world renowned grinding circuit simulation software. The geometallurgical applications for JKTech's ore breakage characterisation tools also continue to be expanded and developed by ongoing industry sponsored research.*

## JK Rotary Breakage Tester® (JKRBT®)

The JK Rotary Breakage Tester is a new generation of breakage characterisation tool that rapidly generates highly repeatable ore impact breakage data for use in design of AG/SAG mills and crushers for new projects or for existing plant optimisation projects. JKRBT data also has value for geometallurgical applications such as contributing to resource valuation and mine planning.

The JKRBT consists of a hand operated rotary feeder, a rotor-stator impacting device with its drive system, and an operation control unit. A 450 mm diameter rotor with three guiding radial channels accelerates individual particles and ejects them at the circumference of the rotor. The particles impact the surrounding anvils at a known velocity, from which the specific impact breakage energy can accurately be determined.

The JKRBT is built and serviced by the Australian specialist mining equipment manufacturer Russell Mineral Equipment (RME) in Toowoomba, Australia. Each device is delivered with a JKTech technology licence to perform JK Rotary Breakage Tests, a spare parts kit, JKTech's JKRBT Data Analysis Software, operation and maintenance manuals and commissioning and operator training.

## JK Drop Weight Tester

The JK Drop Weight Tester is the authorised specialist equipment required to conduct the JK Drop Weight Test, as well as the SMC Test®, proven global industry standards for ore breakage characterisation.

The JK Drop Weight Tester comprises a steel drop weight which is raised by a winch to a known height. A pneumatic switch releases the drop weight which falls under gravity and impacts the rock particle which is placed on a steel anvil.

The device is enclosed in perspex and incorporates a variety of features to ensure operator safety. By varying the height from which the drop weight is released and the mass of the drop weight, a very wide range of energy inputs can be generated.

## JK Blast Movement Monitors (BMM)

This revolutionary system developed by the JKMRRC, consists of electronic transmitters placed within the blast volume prior to blasting which are then located after the blast. They provide accurate 3-dimensional movement vectors within hours of blasting before excavation, allowing the ore block boundaries to be adjusted to compensate for the measured movement. Ore loss and dilution can be minimised, increasing revenue for the same operating cost.

BMM's are manufactured and sold by Blast Movement Technologies Pty Ltd ([www.bmt.com.au](http://www.bmt.com.au)).



# SOFTWARE

## **JK SimMet** - Simulating Comminution and Classification Circuits

Tailored specifically for both design engineers requiring process simulation models, and plant and development metallurgists wishing to characterise plant behaviour, JKSimMet integrates all tasks associated with data analysis, optimisation, design and simulation - including the storage and manipulation of models, data and results. JKSimMet allows the user to:

- Build a graphic-based flowsheet of the processing plant
- Assign machine criteria and model parameters to each plant case study
- Simulate the effect of changes in operating conditions to predict product flows and size distributions
- Determine optimum conditions, including plant throughput

## **JK SimFloat** - Simulating Flotation Circuits

Designed to service the needs of plant metallurgists, operators, researchers and consultants, JKSimFloat is a general purpose package for the simulation of flotation plant operations. JKSimFloat has been applied to many operations world-wide, in commodities including base and precious metals, resulting in significant increases in recoveries and grades. JKSimFloat allows the user to:

- Build a graphic-based flowsheet of the flotation circuit
- Assign machine criteria and model parameters to each plant case study
- Simulate the effect of changes in the flowsheet to predict the flows and size and element distributions
- Determine optimum grade and recovery via simulation

## **JK MultiBal** - 2-D Mineral Processing Mass Balancing

A powerful tool for the mass-balancing of mineral processing plants, JKMultiBal builds upon the strengths of JKSimMet and JKSimFloat to produce a state of the art two dimensional (size-by-assay) mass-balancing software solution. JKMultiBal allows the user to:

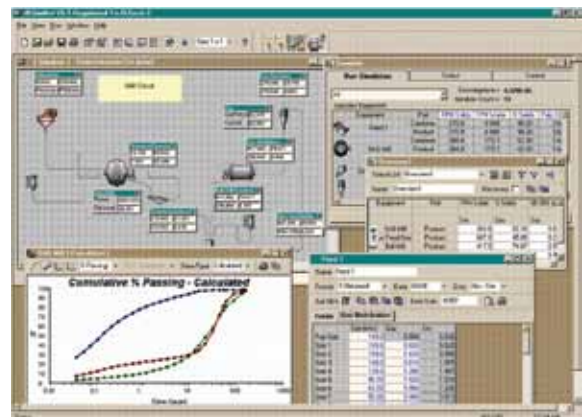
- Build a graphic-based flowsheet of the circuit
- Mass balance plant data to obtain a consistent data set
- Calculate missing data for streams within the circuit

## **JK SimBlast** - Simulating Blasting

JKSimBlast is a software system for simulation and information management for blasting in mines and related operations, enabling the prediction, measurement and analysis of blast performance. JKSimBlast allows the user to:

- Define site-specific parameters, explosives, units, operating conditions and objectives
- Store blast data in a structured system, with specialist tools for editing and analysis
- Integrate related data from other applications

JKSimBlast is distributed globally through Soft-Blast ([www.soft-blast.com](http://www.soft-blast.com)).



## BENEFITS OF WORKING WITH JKTECH

1. Access to cutting edge research and technology from the Centres of the Sustainable Minerals Institute (SMI).
2. A dedicated team of world class specialists, experts in their field, working to maximise the potential of each stage in your project lifecycle.
3. Innovative and proven techniques developed by leading industry experts.
4. Measurable increases in productivity and metal recovery, resulting in a more sustainable and profitable operation.
5. A global network of agents delivering JKTech products and services.

### About The Company

JKTech Pty Ltd is the technology transfer company for the Sustainable Minerals Institute (SMI) at The University of Queensland. Its role is to take viable research outcomes and transfer them to the international minerals industry.

JKTech offers a range of innovative solutions for the minerals industry aimed at optimising sustainability, increasing productivity and metal recovery and reducing operating costs. These specialist products and services include consulting, software, equipment, laboratory services and knowledge transfer.



## FURTHER INFORMATION ON JKTECH PRODUCTS

*All JKTech's specialist equipment and software products are used on a regular basis by our consultants to deliver process and design optimisation solutions to the global resource industries.*

For more detailed information on JKTech's entire range of specialist equipment and software, please visit the JKTech website, [www.jktech.com.au](http://www.jktech.com.au), or contact our Products Manager, Dr Rolf Fandrich.

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## JKTech Services

JKTech's extended range of technologies and products, all supported by the ongoing research activities of the Sustainable Minerals Institute at The University of Queensland, include:

- Consulting (comminution, flotation, mineralogy, mining & geometallurgy, mine-to-mill)
- Process mineralogy and in-house instrument analysis
- Specialist Software (JKSimMet, JKSimFloat, JKMultiBal, JKSimBlast)
- Specialist Equipment (JKRBT, JK Drop Weight Tester, flotation characterisation equipment)
- Metallurgical Laboratory Services
- SMI Knowledge Transfer (professional development, training courses, workshops)

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