

Technology Transfer Success from Flotation Research

25 July 2002

Two flotation tools developed at the JKMRRC through the P9 project are making their way into industry both for practical trouble-shooting and for longer term plant optimisation uses.

The tools emanate from Barun Gorain's PhD research conducted in the early to mid-1990s at the JKMRRC when he looked for devices to characterise flotation cells in terms of their hydrodynamic status.

From this work came a Superficial Gas Velocity probe - also known as the Jg probe - and an Air Hold Up device.

Used in conjunction with the University of Cape Town's Bubble Size Analyser, the tools have proved an invaluable aid in the development of flotation models for the simulator JKSimFloat, along with day to day plant trouble shooting and optimisation.

The instruments' current 'custodian', JKTech engineering consultant Dan Alexander said the devices had gradually become portable, reliable, and user friendly through a series of design modifications stemming back to Barun Gorain's work almost a decade ago.

Dan said there had been a surge of interest in these devices over the past few months: "While the instruments are used separately, the measurements are usually made together to achieve the best results."

The devices are designed to get hydrodynamic information inside the slurry phase of flotation, and are best used in large cells of greater than 8m³ up to 200m³.

"The instruments have been specifically designed for plants rather than laboratory-scale work," Dan said.

Superficial gas velocity - or Jg - is the average velocity of bubbles rising within the pulp phase in a flotation cell. Information from the Jg probe can help metallurgists better define the characteristics of the flotation circuit.

The Air Hold Up device measures the quantity of air inside the flotation cell. This information can help metallurgists to diagnose the performance of individual cells.

The instruments are packaged with a training component whereby JKTech metallurgical engineering consultants instruct metallurgists at the processing plant on their use.

Dan said plant metallurgists usually take the opportunity to use the instruments during the training phase to 'trouble shoot' around the plant, thereby receiving immediate benefits for their operation.

On return visits, Dan then takes plant metallurgists through incremental training steps towards using the instruments for overall plant optimisation.

"This is a good example of technology transfer in action, where the results from research from the P9 project have been translated to commercial enterprise through JKTech Pty Ltd."

Currently through the P9 project the JKMRC is working together with Professor Jim Finch and the McGill University Mineral Processing Research Group to further develop the Jg probe and the Air Hold Up device for on-line use in industrial flotation plants.