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AUSTRALIAN JOURNAL OF MINING

JULY | AUGUST 2011

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Special AIMEX feature: Australian mining technology – leading the world

Jameson Cell inventor seeks improved flotation

Laureate Professor Graeme Jameson, who invented the Jameson Cell in the 1980s, is hard at work on a new device called the Fluidised Bed Flotation Cell.



Laureate Professor Graeme Jameson hard at work in the laboratory.

THIRTY YEARS ON from making his breakthrough discovery, Professor Jameson is working closely with the minerals industry on the problems that his eponymous cell hasn't been able to solve.

His next creation – the Fluidised Bed Flotation Cell – has the aim of extending the upper size of particles that can be treated by flotation. As grinding energy is related to the final size of particles, potential exists to reduce grinding energy by as much as half.

The new process is suitable for the recovery of copper, gold, silver, nickel, lead and zinc and a substantial benefit is that in reducing the energy needs for grinding, greenhouse gas emissions during electricity production are also reduced.

"It's a challenge I relish and I am looking forward to continuing to contribute to the University's research standing through my association with the Priority Research Centre for Particle Processing and the newly created Newcastle Institute for Energy and Resources (NIER)," commented Professor Jameson on his current work.

Going back in time, the Jameson Cell,

when it was created, was a radically different flotation device, overcoming the design and operating inadequacies of column and conventional flotation cells.

"The process is for crushed ore, in the form of a liquid slurry, to be fed into a vertical pipe that draws air down with it," Professor Jameson explained. "Mixing and adhesion occur more quickly and in a smaller space than in a conventional cell. This improves the separation and collection process."

"A higher percentage of mineral is recovered, improving the economics of a mine. This also means that less mineral is left in the tailings, from where heavy metals could leach into the soil and pose a hazard. As there is no need for a motor, air compressor or moving parts the Cells are energy efficient and cheap to operate and maintain."

After trialling and further development at Mount Isa Mines in the mid 1980s, Jameson Cells were installed at mine sites in several countries to improve recovery rates of lead, zinc, copper, nickel and other ores, and to recover fine coal that would otherwise go to waste. By 1989 MIM had bought the

world-wide rights from the University of Newcastle and begun marketing the technology internationally.

The device has since been installed in locations all over the world, with over 100 in Australia alone. According to the University of Newcastle, the Cell, by improving the processing of coal, captures around \$4bn worth of product that would otherwise be lost each year. The largest Australian installation at Curragh treats over 5 mtpa of coal fines using only twelve cells.

Laureate Professor Graeme Jameson is director of Newcastle University's Centre for Multiphase Processes. He has been recognised with many awards and election to a number of learned academies. In 2005 the University awarded him the title of Laureate Professor, and in the same year he was also awarded an Officer of the Order of Australia.

The Newcastle Institute for Energy and Resources brings together the University of Newcastle's leading researchers in a modern facility. □

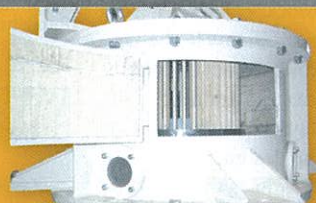
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