Glencore Technology installs 350th Jameson Cell

Developed in the late 1980s, the Jameson Cell is widely implemented in the mining industry and is known as a versatile technology used for a number of minerals and applications in every mining region in the world.

Throughout the years, our employees at Mount Isa Mines (MIM) and Glencore Technology have been at the forefront of developing processes and technologies that improve efficiency and maximise the economic viability of mining operations.

For the past 30 years Glencore Technology has also been dedicated to marketing our innovations around the world, along with developing new technology for the metals and mineral processing industries.

The Jameson Cell is a high-intensity froth flotation cell typically used as part of the cleaning circuit in a Concentrator Plant.

The cells can also operate in conjunction with Glencore Technology's IsaMill™ circuits, also developed at MIM in the early 1990s.

The technology works by creating a high pressure jet of slurry that entrains and mixes air in a modified pipe, referred to as a 'downcomer', to create very fine air bubbles. The particles or valuable minerals attach themselves to the air bubbles and float to the surface in the tank section of the Jameson Cell where they are recovered for further processing.

While the principle of using air bubbles to recover particles is the basis of mineral flotation, it is the fast and efficient way air bubbles are generated and how the bubbles and particles interact that make Jameson Cells unique, and contribute to its world-wide use in the mining industry.

The Jameson Cell was jointly developed by MIM and Professor Graeme Jameson from the University of Newcastle.

Mount Isa Mines' Copper Concentrator installed Jameson Cells in 2015 to refurbish aging infrastructure and deliver increased production performance

In the late 1960s Professor Jameson started a long-term research program based on the flotation process and improving the recovery of fine particles through this process.

In 1985, after more than 20 years of research, MIM commissioned Professor Jameson to undertake a project to improve the flotation performance of the Lead-Zinc Concentrator, ultimately aiming to improve the recovery of fine particles via flotation methods.

By working with our Plant Metallurgists, Professor Jameson was able to refine the technology using a two tonne per hour pilot cell at our Lead-Zinc Concentrator in 1986. Following the successful treatment of the fine grade lead-zinc particles using the pilot cell, MIM ordered four full-scale cells in 1989; two for the Lead-Zinc Concentrator and two for the Lead-Zinc Concentrator to be built at the Hilton Mine.

Word quickly spread on the success of the Jameson Cell, and its technology was immediately implemented in the coal industry with six installations at Newlands Coal in the Bowen Basin to improve the recovery of coal fines. In this application the cell design was further improved as well as enlarged to treat the much higher tonnes treated by the coal industry.

Since its development, the Jameson Cell has risen to the challenge and has been adopted in a range of applications, starting off with lead-zinc and coal, and now including copper, other base metals, industrial minerals such as potash and phosphate, graphite and oil sands.

Its widespread success can be attributed to its economical and high performance flotation that delivers multiple benefits that conventional cells cannot match.

It has cemented its place in the mining industry by transforming traditional circuit designs to allow cleaner circuits to be designed with fewer cells in a smaller footprint, while also achieving cleaner and higher grade concentrate recovery.

The cell has also been able to improve an operation's fine particle recovery, quite noticeable in the coal industry, where some of the streams it treats were once regarded as waste and unable to be economically recovered with conventional technologies.

Today, there are 350 Jameson Cells installed in 28 countries, with the Mark IV Jameson Cell being the most recent model.

In 2015, the Jameson Cell won the Prime Ministers Award for Innovation, recognising the importance of this technology and the role it plays for a prosperous Australian economy.

The Jameson Cell has played a significant role in increasing efficiency to recover particles and unlocking the potential of previously unrecoverable particles that would have otherwise been discarded as waste material.

Its success is testament of the longevity of the Jameson Cell technology as well as its widespread application in mining sites around the world; whether it's treating graphite in Mozambique, oil sands in Canada or copper in the jungles of Laos.