

Jameson flotation cell for enhanced selective separation of fine and ultra-fine particles

- Ongoing Countries covered: European Union
Other

Summary:

Enhanced flotation cell: The generation of higher turbulence combined with adjusted air bubble size is a solution to floating fine particles. The innovation is an example for academic research that crossed the "innovation valley of death".

Description:

The Jameson cell has been developed to improve fine particle flotation by intensifying the froth flotation process (i.e. high turbulence and small bubble sizes for increased particle bubble collision rate). Opposite to conventional cells, the air is entering the cell together with the pulp via a so-called down-comer, where fine bubble generation and intensive mixing takes place.

The innovation was initiated by an R&D project ordered by the mining company Mount Isa Mines from the inventor Jameson, a researcher at the University of Newcastle. The development was further supported by the company through financing pilot-scale testing and the ordering of initially two full-scale cells.

1986 Patent application

1988 First installation at Mount Isa lead-zinc concentrator

1989 First installation in a coal flotation plant

Since then further optimisation (models 1994, 2000, 2009).

Today the patent is owned and marketed worldwide by Glencore Technology

The innovation has already proven its enhanced efficiency for several commodities.

Areas of application comprise:

- Concentration of metal bearing minerals
- Coal cleaning
- Waste water treatment

Good practice areas:

Resource security

Recovery of fines, feasible concentration of very fine grained ores, also solids removal in wastewater treatment

Economic sustainability

Less losses of valuables

Organisations involved:

Glencore Technology

University of Newcastle

Innovation category:

Product

Impact on the mining value chain

- mineral and metallurgical PROCESSING (incl. Permitting)

Mine closure / Waste

- mining waste reuse/recycling/valorisation

Linked policies

Extractive Waste Directive

Transferability:

Technical solution: Given. Continued development for product improvement and new application areas;
Innovation process: Invention and innovation initiated out of the academic sector

Innovation drivers and barriers

Drivers:

Economic

Metal losses in the Mount Isa Mines beneficiation process.

Impact Area

Area:

Environment, Quantity of natural resources

Impact on listed area:

Increased resource efficiency

Area:

Economic, Competitiveness

Impact on listed area:

Reduced specific production costs (mineral industry)