

## CAVTUBE™ SPARGING

**DeGrussa Copper Mine improves its performance with the Eriez CavTube Column**

The results being achieved by the full-scale column at DeGrussa are very encouraging. Early results suggest that the recovery improvement target has been exceeded.

***“Because of our worldwide experience in copper cleaning and our in-house scale-up rules, we are comfortable in predicting full-scale performance, based on our lab and pilot-scale test work.”***

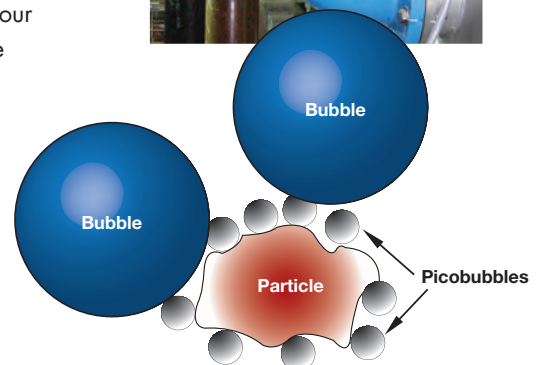
— Homie Thanesekaran  
Eriez Flotation Division

Sandfire Resources’ DeGrussa copper-gold operation in Western Australia is a new high-grade copper sulfide mine which was completed in 2013 and now firmly established as one of the Asia-Pacific region’s premier, high-grade copper mines. DeGrussa commenced as an open-pit operation but now treats solely underground ore through its 1.5Mtpa concentrator. The mine produces up to 300,000 tonnes-a-year of high grade copper concentrate.

After 18 months of operations, Sandfire’s Principal Metallurgist, John Knoblauch, contacted Homie Thanesekaran at the Eriez® Flotation Division (EFD) to ask about ways to improve the cleaning circuit, which uses conventional mechanical cells. Sandfire contacted Eriez because of their special expertise in floating extremely fine particles using their CavTube™ sparging technology, having sold more than 160 copper cleaning columns world-wide.

EFD arrived on-site and conducted test-work on various streams to investigate the suitability and conditions for installing a column. EFD worked with the experts at Sandfire for more than four months to identify the best location for a column in the existing flow-sheet to produce optimal results for DeGrussa. Based on this extensive test work, EFD recommended that a column cell should be installed at the head of existing cleaner circuit, as a cleaner scalper.

**MORE >**

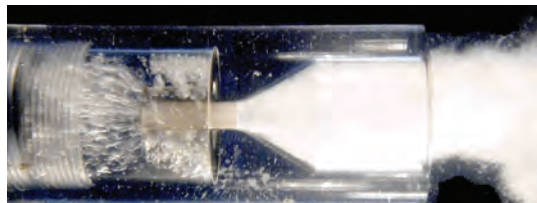


Because of EFD's knowledge and confidence in the ability to scale-up the technology, the team was able to show Sandfire the expected industrial performance of a full-scale column based on results from a 150 mm diameter lab unit. These results were subsequently validated on a 500 mm pilot plant unit which reduced the amount of risk for Sandfire to proceed with a full-scale industrial unit.

In 2014, Sandfire allocated approximately \$14 million towards processing plant enhancements at DeGrussa and EFD's copper cleaner column was part of that package. The column was subsequently installed in December 2014 and commissioned in February 2015.

The 4270 mm x 10000 mm column was designed with a CavTube sparging circulation system. This technology uses the principle of cavitation to nucleate very fine air bubbles directly onto ore particles in a slurry that is re-circulated from the column through the sparging system. This enhances the frequency of bubble-particle contacting and improves the attachment of fine particles, especially compared with conventional mechanical technology. In addition to being ideally suited to floating fine particles, the CavTube does not have internal parts that would be subject to premature wear by the flow of the slurry. It should be noted that the addition of wash water provides great flexibility to operators to fine tune the cell's product grade.

Eriez Flotation Division has sold more than 1,000 flotation columns world-wide. Their expertise is sizing and selling equipment for flotation applications that involve fine or coarse particles. These applications are typically not optimally served with conventional flotation technology. The Eriez Flotation Division can undertake test work or flow-sheet development at their corporate lab - locally with approved test lab service providers or on-site with trained EFD staff.



An acrylic model of an Eriez Cavitation Tube showing the generation of picobubbles.

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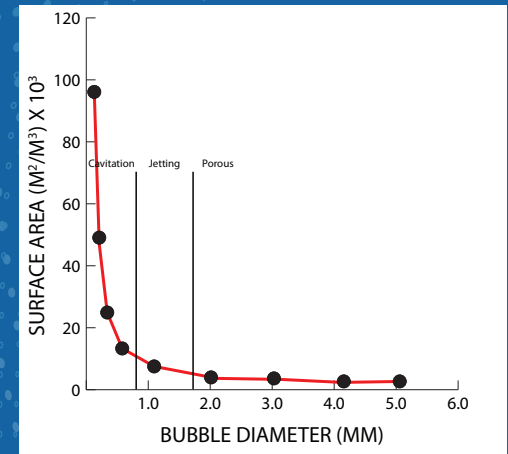
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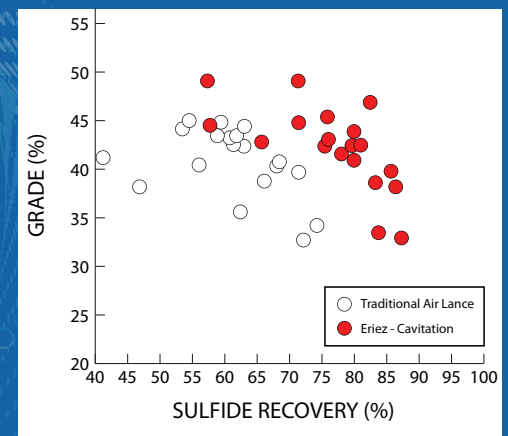
### Cavitation Tubes:

- Ensure a higher attachment probability... higher recovery of hydrophobic particles
- Produce higher recoveries for ultra-fine material... greater concentrate production
- Improve bubble/particle collision rates... lower reagent costs
- Have no direct impediments to flow... longer wear life with better materials of construction



This chart shows the relationship between bubble diameter and the generation of surface area indicating that superficial surface area (i.e., capacity) is maximized when using hydrodynamic cavitation.

### Improved Recoveries



Improvement in sulfide recovery using the Cavitation-Tube sparging system when treating -50 micron fines.



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