

Commissioning of the Coarse Ore Flotation Circuit at Cadia Valley Operations – The Challenges and Successes

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ABSTRACT

In August 2018 the first full scale pneumatically assisted fluidised bed flotation cells for the recovery of coarse composited gold and copper were commissioned at Newcrest's Cadia Valley operation in New South Wales. The primary objective of the installation is to recover coarse value-bearing composites that are currently lost to conventional flotation tailings, without additional power input for particle size reduction to improve mineral liberation.

The Eriez HydroFloat separator is an aerated fluidized-bed (or teeter-bed) separator that has been demonstrated to increase the recovery of coarse, poorly liberated particles, compared to conventional flotation technology, by applying flotation fundamentals to hydraulically-assisted separation. The technology was developed by Eriez in 1997 and patented in 2002.

At Cadia, composite particles have been identified as the principal carrier of gold and copper in the rougher tailings making up 50-60% of the contained value in 2-5% of the mass. Over 50% of the composite particles in rougher scavenger tails are in the lowest sulphide exposure range <10%, where recovery via the existing conventional flotation circuit is poorest at only 30%. This poor recovery of composite particles with low surface exposure presented a significant opportunity for the application of HydroFloat technology in a scavenging capacity.

The Cadia Coarse Ore Flotation Circuit is a novel application of aerated teeter-bed technology in sulphide flotation and presented many unexpected challenges during the commissioning and subsequent optimisation phases that needed to be solved to achieve successful delivery of the project. This paper gives an overview of the commissioning and ramp up journey, major operational challenges and solutions, high-level operational strategy and some analysis of the circuit performance to date.