

# Piloting Study of the Reflux Flotation Classifier (RFC) at a Queensland Copper Mine

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## ABSTRACT

FLSmidth's new Reflux Flotation Cell (RFC) is an innovative flotation system that is proving to transform the hydrodynamics of traditional flotation. This novel flotation system has shown to reduce the flotation volume required by an order of magnitude when compared to traditional systems. Enhanced kinetics are achieved by increasing operating bubble surface area flux by as much as tenfold to what is possible with existing technologies. The cell operates to maximize recovery while producing a high-grade flotation product. This is achieved by operating an effective sparging system to promote bubble-particle attachment by producing optimum bubble sizes at high shear rates. The addition of wash water allows for grade control/rejection of slimes and ensuring positive bias flow in the separator to maximize separation efficiency. FLSmidth has tested this technology on a pilot scale at a Queensland Copper mine. A continuous sample in the form of slipstream from the feed to the existing rougher flotation circuit was tested. This paper aims to detail the testing campaign and relay the results achieved showing the comparative performance to that of the existing plant rougher-scavenger flotation circuit. Copper recoveries and grades equivalent to that of the production circuit were readily achieved at retention time requirements in the order of 10-15% of the production circuit requirements. Direct comparison to plant performance as well as conventional laboratory flotation kinetic tests will be discussed along with the impact of these results and implementation of this technology on copper rougher flotation circuit design.