

METSO OUTOTEC FLOWBOTTOM, FIRST REFERENCE EXPERIENCES AND LOOK BACK TO DEVELOPMENT

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ABSTRACT

Gold Cyanide Leaching agitators have been fairly standard for recent decades with only incremental changes. Good mixing is an important factor in gold cyanide leaching as the reaction kinetics are often controlled by mass transfer. In order for the leaching to proceed effectively, the solids should maximize the contact area with the solution, thus requiring complete solids suspension. This occurs when there is no solid settling nor solids bed formation at the bottom of the tank with all solids suspended. In optimal CIL configuration the agitation is optimized to achieve this solids suspension and required gas dispersion with lowest possible power consumption. Metso Outotec has developed new solution to optimize energy consumption and carbon attrition.

In the first FlowBottom reference site Metso Outotec set out to solve a problem, where processing of high-grade gold concentrate resulted in recurring solids settling in the leaching tanks at the customer site. Inadequate suspension of solids led to reduced capacity, more difficult adjustment of the slurry density and downtime of the tanks increased considerably.

Investigation of a solution started with authentic solids tested at the research center at Pori, Finland, and the tests confirmed the sanding issues with the existing agitation configuration providing a reference point. An improved agitation solution was tested and tailored for the leaching tanks, which consisted of dual OKTOP®3300 impellers, FlowBottom element, and a SandSense measuring system for agitation optimization. The performance of this configuration was validated at the site and it was confirmed that the solution was able to completely suspend the solids without need for agitation power increase.

After more than 7 months of the upgrade with FlowBottom and SandSense, the tanks have not experienced downtime due to solids settling, and utilization of their full effective volume has meant that the capacity of the tanks has increased by up to 15%. In this work we will explain the functionality of FlowBottom, SandSense and achieved benefits in Svartliden, and estimate what kind of further benefits it can provide in the CIL process.

Keywords: CIL, CIP, OKTOP, FlowBottom, SandSense, Gold, Sanding, Solid suspension, Energy savings