

Mining Solutions

RHEOMAX® DR Copper CCD Case study



BASF's Mining Solutions at a glance

BASF's Mining Solutions business offers a diverse range of mineral processing chemicals and technologies to improve process efficiencies and aid the economic extraction of valuable resources.

We offer our products and technology solutions to the global mineral processing industry along with expert advice and technical support. Our global team is driven by a common goal to provide the best sustainable solution to meet our customers' processing needs. With technical representation in over 100 countries, BASF's technical support is provided on a global, regional and local basis.

Our chemical and process expertise includes reagents, equipment, process technologies and know-how. All of which are focused on hydrometallurgy, solid liquid separation, tailings management, materials handling, flotation and grinding.



RHEOMAX®

Density and Rheology technology

The RHEOMAX® DR range delivers higher density and more robust flocculant particles than conventional flocculants, and are effective for many different mineral ore types. This change to aggregate shape means that flocs are more tolerant to solids concentration and shear variations in the feedwell, and the dense particle shape also allows for faster consolidation, high underflow densities and low underflow yield stress.

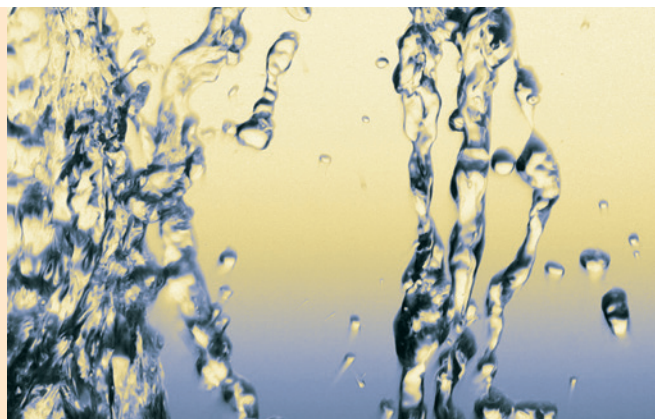
Process Description

In this case the customer is running a CCD circuit to remove leached copper from the waste solids. The first washer overflow proceeds to clarification followed by a solvent extraction (SX) stage, and finally electrowinning to release the pure copper metal.

The waste solids are washed through the length of the CCD circuit and are transported by pipeline to the tailings disposal area.

Issue

The CCD circuit is running at below optimum throughput and is unable to tolerate an increase in feed solids required to meet target production levels. Greater feed fluxes have resulted in overloaded feedwells with rising bed heights and consequent low underflow densities. Higher levels of conventional flocculant dosing did not ease the situation.



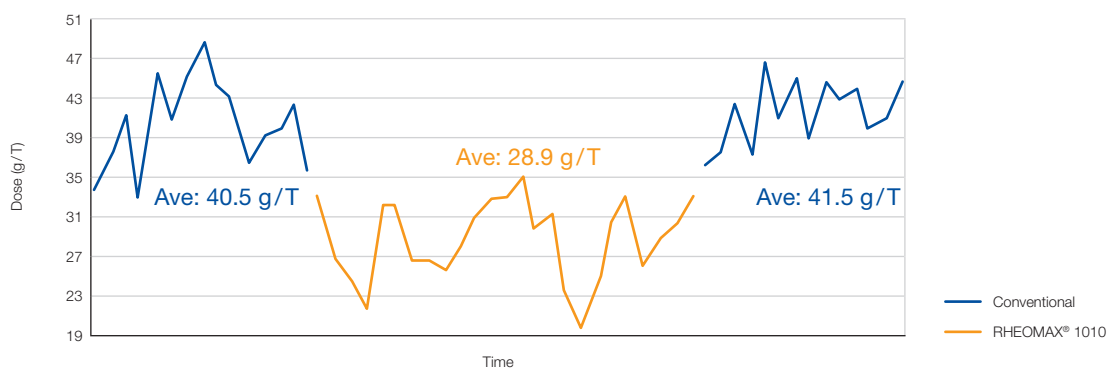


Solution

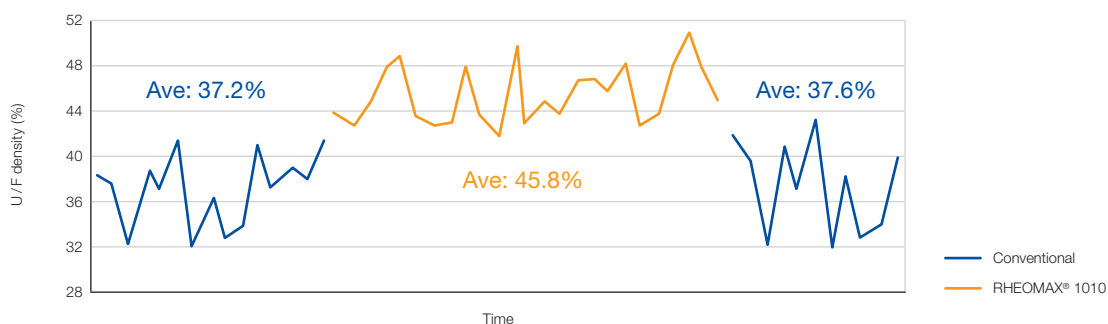
The flocculant for the CCD circuit was changed to RHEOMAX[®] 1010. This produced a tighter floc aggregate which allowed the desired increase in flux concentration to be achieved. Bed height was easily controlled and the underflow density was increased beyond previous site performance. In addition the overall flocculant usage was reduced by 28%.

Results – CCD circuit thickener

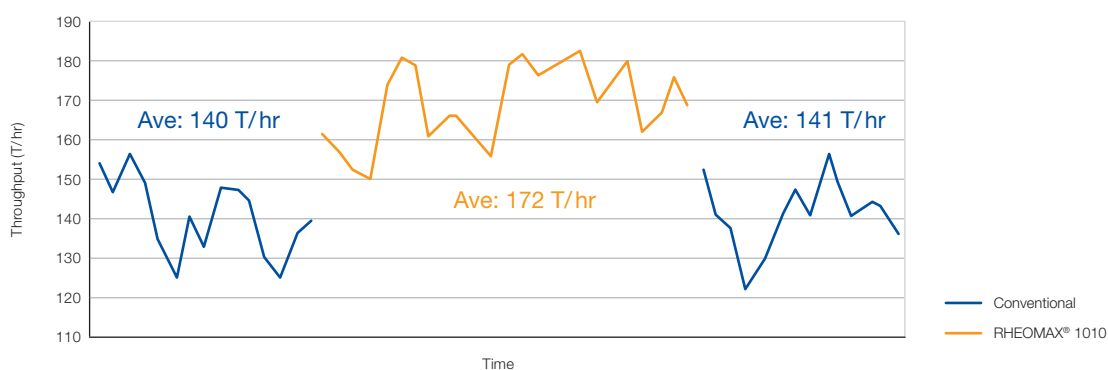
Flocculant dose requirement



Underflow density



Plant throughput



Highlights of RHEOMAX® 1010 performance

- Reduced dose rate – 28.6% decrease (major reagent savings)
- Improved underflow density – 23.1% increase
- Increased plant throughput: 22.8% improvement (better leach efficiency)
- USD 0.5 million increase in reagent cost = USD 8.4 million increased throughput
= USD 7.9 million total benefit

Technical Service

Full technical service and advice in all aspects of product selection, laboratory tests and plant trials will be provided.

Health & Safety

Detailed information on handling and any precautions to be observed in the use of the product(s) described in this leaflet can be found in our relevant health and safety information sheet.

RHEOMAX®

Operational benefits	Economic benefits	Environmental benefits
Higher underflow density	Reduced requirement for fresh plant water from external sources	Reduced fresh water replenishment
Greater plant throughput	Lower reagent consumption	Reduced water loss to tailings
Increased recovery of quality water/leach reagent	Improved leach efficiency	Reduced water loss to evaporation
More consistent dose response to fluctuations in feed solids	More consistent plant performance	Lower energy consumption
Reduced shear degradation due to fluctuations in feed well turbulence	Lower pump energy consumption	Reduced land requirement for tailings disposal

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