CASE STUDY

Optimising from Gold Mine to Mill

BlendOpt

Paradyn

Integrated
Value-chain
Optimisation

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CASE STUDY

Optimising from Gold Mine to Mill

Make High-Quality Decisions

BlendOpt Value-chain Optimisation Platform

The Challenge

A gold mining company was using a complex Excel spreadsheet to schedule ROM stock levels, mill feed blends, throughput and recovery on a daily time granularity for one month.

Technical services believed that the spreadsheet had become overly complex, hard to interrogate assumptions, easy to introduce errors and generally difficult to maintain and was looking for an alternative. Ore that was not directly crushed was sent to ROM stockpiles categorized by various properties including grade, arsenic, and talc content. Crusher and mill capacities were calculated based on planned outages. The operation had an overarching aim to increase gold ounces and expected improvements were possible through better control over feed blend conditions.

Over 30 recovery related calculations were embedded within the production planning Excel workbook which were difficult to interpret and maintain, and tech services was losing confidence in the resulting decisions emerging from the workbook. Furthermore, ROM stockpiles modelled within the workbook resulted in negative values due to the optimisation process generating infeasible plans.

Technical services assessed a number of options for replacing their spreadsheet and chose the BlendOpt value-chain optimiser to construct a digital twin of their operation. This decision was made following a proof of concept (POC) project which demonstrated BlendOpt's combination of prescriptive analytics and mathematical optimisation was well suited to solving their gold mine-to-mill planning problem.

The Solution

A digital-twin of the customer's operation was modelled within BlendOpt, including mill, crusher, stockpiles, and recovery calculations. BlendOpt was used to run a range of scenarios evaluating different conditions.

The Value Unlocked for our Client

BlendOpt eliminated human error in planning decisions. When combined with more frequent and rapid data updates in BlendOpt, this resulted in greater trust and confidence in planning forecasts.

Formula modelling within BlendOpt is human-readable, expressed as it would be if the formulas were written down in the end-user's preferred notation - this improved reliability and confidence in planning decisions by introducing maintainable and easily understood recovery calculations.

BlendOpt suggested the best crusher and mill feed schedules to users based upon available inventory and predicted variability, while complying with grade constraints and crusher and mill capacity constraints.

BlendOpt's prescriptive analytics also included interactive charts which presented the user with HIG, Float, and CIL calculations over time.

The BlendOpt Solution

Paradyn's BlendOpt value-chain platform powered by Collaborative Mathematical Optimisation (CMO) can help you:

- Satisfy constraints in your value-chain
- Optimise for any objective including tonnage, revenue, and cost
- Optimise and integrate operational, tactical and strategic planning from minutes to years
- Improve collaboration and synchronisation between planning and operations
- Publish reports to relevant stakeholders
- Reconcile forecast with actuals
- Optimise reserving, processing, blending and logistical decisions
- Product portfolio optimisation
- 'What-If' scenario analysis

Read our articles to learn about Paradyn's innovative value-chain optimisation technology and how it can help your operation.

The Benefits

- Prescriptive Analytics
- Optimised Gold Recovery
- Optimised Crusher and Mill Utilisation

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