

CASE STUDY

Reducing uncertainty and improving planning processes with simulation

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The Customer

OZ Minerals is a copper-focused, global, modern mining company based in South Australia. They own and operate the copper-gold mine at Prominent Hill, are developing one of Australia's largest copper-gold resources at Carrapateena, and have assets in Brazil.

OZ Minerals is in a better position to 'hit the ground running' with reduced uncertainty around operational expectations.

Mining Method

Sub-level Caving

Planning Function

Operational Mine Planning

Product

ORB - Simulation

The Problem

The copper and gold resource at Carrapateena is one of Australia's largest undeveloped copper deposits, slated to be mined using a process called sub-level caving. Entering into its second phase of construction and planning, the mining teams at OZ Minerals were starting to put into place operational planning decisions for production. These decisions needed to factor in the many varied entities, all with a wide range of operational rules.

With a large and complex operation to plan for, it was important to clearly understand the impacts these entities would have on each other and the system as a whole. OZ Minerals was looking for a better way to understand how these planning decisions would impact productivity, as well as a better way to represent and simulate cave state to operationally prepare and train their staff prior to the mine's production.

The Solution

OZ Minerals approached Polymathian to better understand their proposed operational methodology and its impact on productivity. Polymathian was able to rapidly create a detailed model of all entities in the caving operation using a bespoke, discrete event simulation tool.

The tool allows planners to visualise the cave's operations from the entire life of a production level down to day-to-day operations. Each entity and their interactions were modelled so planners could test various assumptions and constraints with ease. This breadth of detail allowed OZ Minerals to understand what is possible from a strategic and operational perspective prior to the mine even going into production. New staff were also able to use the visual simulations as a training tool.

The Benefits

OZ Minerals can now validate assumptions and test a range of scenarios prior to production, saving significant time and resources in planning and operations. Drawing on their Operations Research expertise, Polymathian was also able to help identify value opportunities for optimisation in the simulations. Most importantly, OZ Minerals is now in a better position to 'hit the ground running' with reduced uncertainty around operational expectations.

Planners can visualise operations from life of production to daily operations

Simulations enable the identification of value opportunities for optimisation