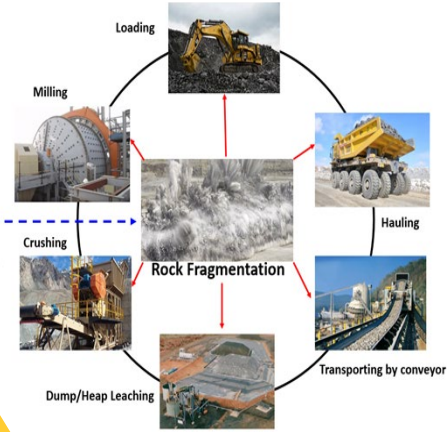
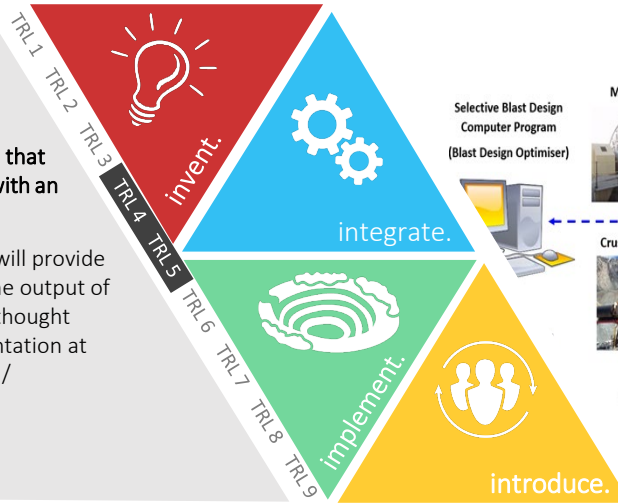


Custom blast design value proposition

PROJECT P2-007

This project aims to provide a value proposition for bespoke blast design that hasn't previously been articulated, with an aim to influence industry practice.

Analysing value from cases studies will provide confidence on the applicability of the output of this work. The project will create a thought leadership position ready for presentation at industry knowledge transfer events / conferences etc.



Research collaboration

Mining3 is a world-leading research organisation, directed by its global mining industry members to develop and deliver transformational technology to improve the productivity, sustainability, and safety of the mining industry.

Mining3 has experience in the design and optimisation of differential blast operations integrating Drill and Blasting theories with the concepts of Mine to Mill optimisation and Grade Engineering. The effect of the blast fragmentation on the downstream processes is incorporated in the optimisations.

The CRC ORE Implementation team are experienced in Grade Engineering and can identify or create the data for the most suitable use cases.

Program Coordinator: Greg Wilkie, CRC ORE
Project Leader: Ebrahim F. Salmi, Mining3
Timing: May 2019 - July 2020
Participant: Mining3

Background & aims

This project is a continuation of a previous CRC ORE project P2-002 (Advanced Blast Design Optimisation for Maximising Value Through Grade Engineering Levers). In P2-002, the Mining3 team tested the prototype tool named "Advanced Blast Design Optimisation Tool" (ABDOT) for differential blasting and the selective fragmentation of ore and waste for Grade Engineering.

In the P2-007 project, the ABDOT optimiser will be modified, augmented, and used for the optimisation of a few different case studies, including a monometallic ore, a copper case, and a polymetallic ore, a lead, and zinc case.

The value add from using the ABDOT blast optimisation can be identified by applying the blast optimiser tool for the optimisation of the blast design in the above-mentioned different cases and for different scenarios of Standard Blast Design, Mine to Mill, and an integrated Mine to Mill and Grade Engineering blast design.

Focus on outcomes

It is expected that the value and applicability of the custom blast design depends on the amenability of the ore to Grade Engineering. The higher the ranking response of the ore, the more suitable the ore will be for custom blast design and selective fragmentation, for Grade Engineering.

Identification of critical inputs and clustering of the rock masses based on the fused grade and blastability data will select the best polygons that can be used for the blast design.

Additional value from integration of ABDOT to Grade Engineering blast design can help to improve the throughput of the mills and to improve the profit per hour, in brownfield projects. For greenfield projects this will allow reducing the sizes of the processing plants and minimising the capital costs and energy consumption.