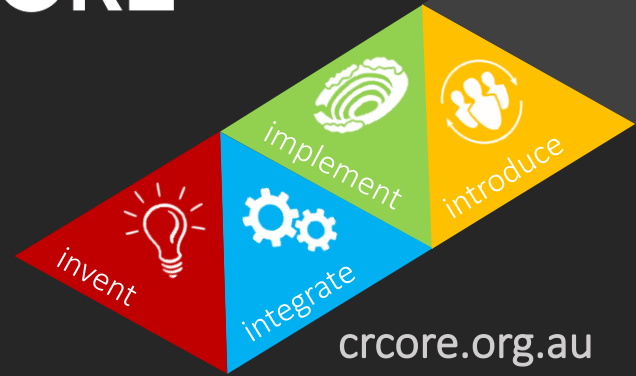


# ALTERNATIVE SIZE SEPARATOR

Project number: P2-011  
 Program Coordinator: Greg Wilkie  
 Project Leader: Raphael Picorelli  
 Timing: September 2019 to February 2021  
 Participants: Mining3, CRC ORE



## PROJECT OUTCOMES

A technology survey summarising current knowledge regarding separators by size, practices, constraints, and gaps across industries.

DEM models explored practical constraints, quantified productivity and value added of selecting designs for an alternative size separator that can change the separation range in response to ore feed.

A proof of concept device able to optimise mass pull to the plant will further enable the Grade Engineering® approach to optimise the resource utilisation of current operations.

A dynamic separation system provides additional value to Grade Engineering® by creating additional operational flexibility and presents a disruptive technology currently not available, that could be quickly adopted across the industry.



Figure 1 Dynamic Size Separator Technology Survey Sources

## 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 expertise in Mining Engineering and Grade Engineering. The CRC ORE team are experienced in Grade Engineering and can identify or create the data for the most suitable use cases for the assessment of the valorisation of Grade Engineering by-products.

Mining3 has expertise in material characterisation and sensing technologies. It has developed systems and technologies for in-situ rock mass characterisation and undertaken numerous field testing programs for evaluation and development.

The initial phase of this project linked the Mining3 team with the CRC ORE team to investigate and plan the construction of a detailed development pathway. The team clearly identified relevant technologies, conceptualise system solutions, and determined testing and validation opportunities.

Future work, including site-based activities, will likely require integration of industry partners (technology/product suppliers) to support testing and validation programs.

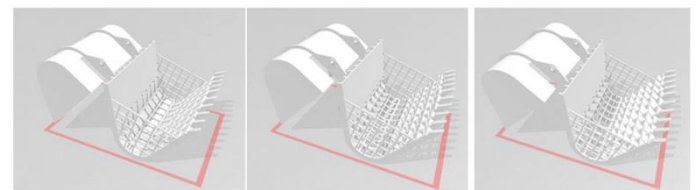


Figure 2 Example of design developed in the project ( In bucket sieve)

## BACKGROUND TO THE PROJECT

Grade Engineering® creates an opportunity to unlock additional value in ROM production by utilising early stage separation of gangue from ore. Separation based on particle size using screens is already an established technique. The response factor, or the increase in grade relative to mass pull may varies greatly between different ore types on a mine.

The research hypothesised that a new device can be developed to optimise the mass pull with respect to different ore types on a mine. These devices may use concepts from other industries or could be developed by rethinking the physical separation process. The value added by an alternative sorting accrues from enabling higher recovery at lower cost.

The aim was to develop a proof of concept device that can engineer a desired mill feed with specific cut-off size of a particle from separation event, as early as possible in the ROM process, to respond to Grade Engineering® parameters.