

# JKTech Mining Consulting

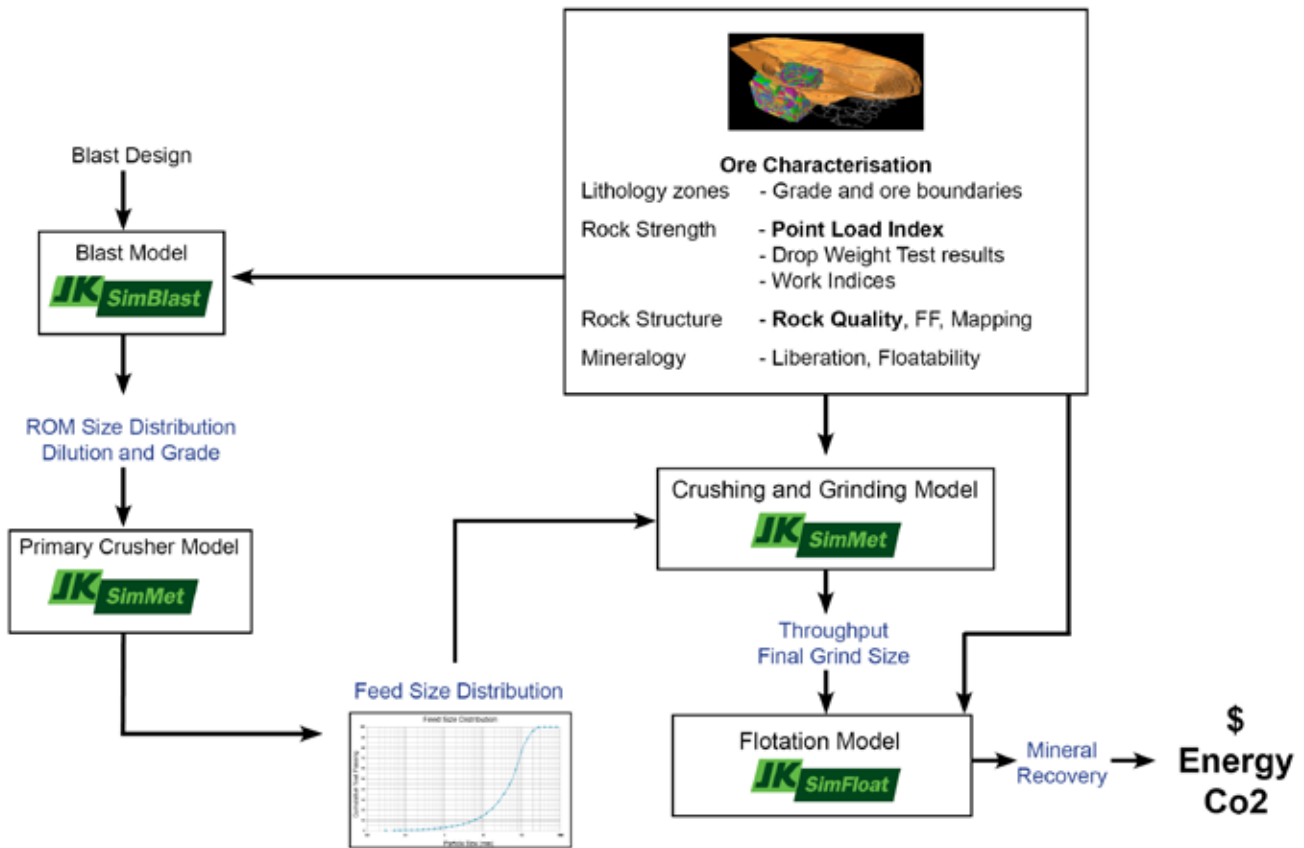
## Mine-to-Mill® Process Optimisation



JKTech offers the Mine-to-Mill® process optimisation methodology to provide significant improvements in throughput, grade and recovery from blasting through to flotation.

The Mine-to-Mill® concept introduces a holistic approach to process optimisation by identifying and measuring the leverage that each process has on different downstream processes and then optimising them to maximise the overall profitability, rather than each sub process. Successful implementation of this methodology requires a close cooperation and in depth knowledge of each key process in the Mine-to-Mill® value chain.

JKTech, with its world class mining and mineral processing team, use this methodology to improve throughput and recovery from blasting through to flotation.



# Mine to Mill process optimisation follows a scientific methodology in five phases:

## 1. Scoping

JKTech engineers visit the mine operations and discuss with key personnel from geology, mining, comminution and concentrator to understand the strategic drivers, opportunities and leverages. Historical data will be collected to evaluate the opportunity and to identify the key risks. Scoping study will result in a detailed project proposal with budgets, timelines and deliverables.

## 2. Auditing/Benchmarking

During the auditing/benchmarking phase, trial blasts will be conducted in key ore domains and campaigned through the comminution and flotation circuits. JKTech engineers will conduct surveys and audits of all the key processes (drill and blast to flotation) to benchmark the current practices and performances. Samples will be collected from the pre-dominant ore domains to determine the blastability, comminution and flotation characteristics.

## 3. Modelling and Simulations

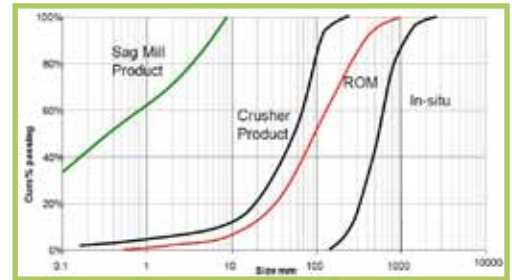
Data from the benchmark surveys and audits will be used to calibrate the blast, comminution and flotation models. These site specific calibrated models are then used to simulate changes in blasting, comminution and flotation processes to identify the most optimum process to improve the throughput and recovery. A risk analysis will be conducted on the proposed process changes and suitable controls will be recommended to mitigate them.

## 4. Optimising

Process changes identified in the simulations will be implemented in a systematic manner and the performance of the overall circuit will be monitored to quantify the costs and benefits.

## 5. Sustaining

The process changes in drill and blast, comminution and flotation processes will be incorporated in the standard procedures of the operations. Key personnel in each process area will be trained in the new procedures.



## JKTech offers

1. Benchmarking of current operational performances for the Mine-to-Mill® value chain.
2. Improved throughput and recoveries.
3. Reduced energy consumption and greenhouse gas emissions.

### JKTech Services

- Consulting (comminution, flotation, mineralogy, mining & geometallurgy)
- Process Mineralogy and In-House Instrument Analysis
- Specialist Software (JKSimMet, JKSimFloat, JKMultiBal, JKSimBlast)
- Specialist Equipment (ore breakage characterisation, flotation characterisation)
- Metallurgical Laboratory Services
- SMI Knowledge Transfer

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*JKTech's range of technologies is supported by the ongoing research activities of the Sustainable Minerals Institute at The University of Queensland.*

